Revised Ordinance Governing
MBBS DEGREE COURSE AND CURRICULUM of
Phase II Subjects- RS4

RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES, KARNATAKA
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4th T Block, Jayanagar, Bengaluru – 560 041

ACA/DCD/MCI/CBME/Para clinical (UG)/385/2020-21 **Date: 30/12/2020**

NOTIFICATION

Sub: Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase II as per CBME guidelines for RS4 Batch.

Ref: 1) Minutes of BOS Para-clinical UG held on 25/09/2020
2) Proceedings of CAC meeting held on 01/10/2020
3) Proceedings of 152nd Syndicate meeting held on 09/10/2020

In exercise of the powers vested under Section 35(2) of RGUHS Act, 1994, the Revised Ordinance pertaining to Regulations and Curriculum of MBBS Phase II as per CBME guidelines for RS4 batch is notified herewith as per Annexure.

By Order,

REGISTRAR

Copy to:

1. The Principal Secretary to Governor, Raj Bhavan, Bangalore - 560001
2. The Principal Secretary Medical Education, Health & Family Welfare Dept., M S Building, Dr.B.R. Ambedkar Veedhi, Bangalore – 01.
3. The Principals of all affiliated Medical colleges of RGUHS, Bangalore.
4. PA to Vice – Chancellor/PA to Registrar/Registrar (Eva.)/Finance Officer, Rajiv Gandhi University Health Sciences, Bangalore
5. All Officers of the University Examination Branch/ Academic Section.
6. Guard File / Office copy.

SECTION I

PREAMBLE

Introduction to CBME based curriculum

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate is able to recognize "health for all" as a national goal and should be able to fulfill his/her societal obligations. The revised curriculum has attempted to enunciate the competencies the student must be imparted and should have learnt, with clearly defined teachinglearning strategies and effective methods of assessment. Communicating effectively and sympathetically with patients and their relatives has been visualized as a core area of the revised curriculum. These and other goals identified in the curriculum are to be implemented in all medical colleges under the ambit of Medical Council of India from August 2019 and to smoothen this process Guidelines have been prepared for its effective implementation. In response to the need for a seamless introduction of the curriculum into the Undergraduate system, all medical colleges need to upgrade the teaching-learning skills of their faculty. Earlier experience with implementation of curricular changes suggests that a carefully managed, sustainable approach is necessary to ensure that every college has access to the new skills and knowledge enunciated in the new curriculum. Faculty training and development thus assumes a key role in the effective implementation and sustenance of the envisaged curricular reforms.

INTRODUCTION

The undergraduate medical curriculum of the medical council of India is created to ensure that the medical doctor who emerges from the MBBS training program is capable of assisting the nation to achieve its goal of health for all. In addition, it aspires to ensure that the "graduate" meets or exceeds global bench-mark in knowledge, attitude, skills and communication. This intent is at the core of the Graduate Medical Regulations, 2019.

The Graduate Medical Regulations, 2019 represents the first major revision to the medical curriculum since 1997 and hence incorporates changes in science and thought over two decades. A significant advance is the development of global competencies and subject-wise outcomes that define the roles of the "Indian Medical Graduate". Learning and assessment strategies have been outlined that will allow the learner to achieve these competencies/outcomes. Effective appropriate and empathetic communication, skill acquisition, student-doctor method of learning, aligned and integrated learning and assessment are features that have been given additional emphasis in the revised curriculum.

The revised curriculum is to be implemented by all medical colleges under the ambit of Medical Council of India from August 2019. The roll out will be progressive over the duration of the MBBS course.

This document represents a compilation of the resource material that was used in the Curricular Implementation Support Program (CISP) and has attempted to provide a stepwise and comprehensive approach to implement the curriculum. It details the philosophy and the steps required in a simple and richly illustrated manner. Teaching slide decks, faculty guides and online resource material supplement this document. The document is to be used in conjunction with the Competency document, AETCOM module and the GMR document.

Indian Medical Graduate Training Programme

The undergraduate medical education programme is designed with a goal to create an "Indian Medical Graduate" (IMG) possessing requisite knowledge, skills, attitudes, values and responsiveness, so that she or he may function appropriately and effectively as a physician of first contact of the community while being globally relevant. To achieve this, the following national and institutional goals for the learner of the Indian Medical Graduate training programme are hereby prescribed:-

National Goals

At the end of undergraduate program, the Indian Medical Graduate should be able to:

(a) Recognize "health for all" as a national goal and health right of all citizens and by undergoing training for medical profession to fulfill his/her social obligations towards realization of this goal.

(b) Learn every aspect of National policies on health and devote her/him to its practical implementation.

(c) Achieve competence in practice of holistic medicine, encompassing promotive, preventive, curative and rehabilitative aspects of common diseases.

(d) Develop scientific temper, acquire educational experience for proficiency in profession and promote healthy living.

(e) Become exemplary citizen by observance of medical ethics and fulfilling social and professional obligations, so as to respond to national aspirations.

Institutional Goals

(1) In consonance with the national goals each medical institution should evolve institutional goals to define the kind of trained manpower (or professionals) they intend to produce. The Indian Medical Graduates coming out of a medical institute should:

(a) be competent in diagnosis and management of common health problems of the individual and the community, commensurate with his/her position as a member of the health team at the primary, secondary or tertiary levels, using his/her clinical skills based on history, physical examination and relevant investigations.

(b) be competent to practice preventive, promotive, curative, palliative and rehabilitative medicine in respect to the commonly encountered health problems.

(c) appreciate rationale for different therapeutic modalities; be familiar with the administration of "essential medicines" and their common adverse effects.

(d) be able to appreciate the socio-psychological, cultural, economic and environmental factors affecting health and develop humane attitude towards the patients in discharging one's professional responsibilities.

(e) possess the attitude for continued self learning and to seek further expertise or to pursue research in any chosen area of medicine, action research and documentation skills.

(f) be familiar with the basic factors which are essential for the implementation of the National Health Programmes including practical aspects of the following:

(i) Family Welfare and Maternal and Child Health (MCH)

(ii) Sanitation and water supply

(iii) Prevention and control of communicable and non-communicable diseases

(iv) Immunization

(v) Health Education

(vi) Indian Public Health Standards (IPHS), at various levels of service delivery

(vii) Bio-medical waste disposal

(viii) Organizational and/or institutional arrangements.

(g) acquire basic management skills in the area of human resources, materials and resource management related to health care delivery, hospital management, inventory skills and counseling.

(h) be able to identify community health problems and learn to work to resolve these by designing, instituting corrective steps and evaluating outcome of such measures.

(i) be able to work as a leading partner in health care teams and acquire proficiency in communication skills.

(j) be competent to work in a variety of health care settings.

(k) have personal characteristics and attitudes required for professional life such as personal integrity, sense of responsibility and dependability and ability to relate to or show concern for other individuals.

All efforts must be made to equip the medical graduate to acquire the skills as detailed in Table 11 Certifiable procedural skills – A Comprehensive list of skills recommended as desirable for Bachelor of Medicine and Bachelor of Surgery (MBBS) – Indian Medical Graduate.

Goals and Roles for the Learner

In order to fulfil the goal of the IMG training programme, the medical graduate must be able to function in the following roles appropriately and effectively:-

- Clinician who understands and provides preventive, promotive, curative, palliative and holistic care with compassion.
- Leader and member of the health care team and system with capabilities to collect analyze, synthesize and communicate health data appropriately.
- Communicator with patients, families, colleagues and community.
- Lifelong learner committed to continuous improvement of skills and knowledge.
- Professional, who is committed to excellence, is ethical, responsive and accountable to patients, community and profession.

Competency Based Training Programme of the Indian Medical Graduate

Competency based learning would include designing and implementing medical education curriculum that focuses on the desired and observable ability in real life situations. In order to effectively fulfil the roles as listed in clause 2, the Indian Medical Graduate would have obtained the following set of competencies at the time of graduation:

Clinician, who understands and provides preventive, promotive, curative, palliative and holistic care with compassion

- Demonstrate knowledge of normal human structure, function and development from a molecular, cellular, biologic, clinical, behavioural and social perspective.
- Demonstrate knowledge of abnormal human structure, function and development from a molecular, cellular, biological, clinical, behavioural and social perspective.
- Demonstrate knowledge of medico-legal, societal, ethical and humanitarian principles that influence health care.
- Demonstrate knowledge of national and regional health care policies including the National Health Mission that incorporates National Rural Health Mission (NRHM) and National Urban Health Mission (NUHM), frameworks, economics and systems that influence health promotion, health care delivery, disease prevention, effectiveness, responsiveness, quality and patient safety.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to elicit and record from the patient, and other relevant sources including relatives and caregivers, a history that is contextual to gender, age, vulnerability, social and economic status, patient preferences, beliefs and values.
- Demonstrate ability to perform a physical examination that is complete and relevant to disease identification, disease prevention and health promotion.
- Demonstrate ability to perform a physical examination that is contextual to gender, social and economic status, patient preferences and values.

- Demonstrate effective clinical problem solving, judgment and ability to interpret and integrate available data in order to address patient problems, generate differential diagnoses and develop individualized management plans that include preventive, promotive and therapeutic goals.
- Maintain accurate, clear and appropriate record of the patient in conformation with legal and administrative frame works.
- Demonstrate ability to choose the appropriate diagnostic tests and interpret these tests based on scientific validity, cost effectiveness and clinical context.
- Demonstrate ability to prescribe and safely administer appropriate therapies including nutritional interventions, pharmacotherapy and interventions based on the principles of rational drug therapy, scientific validity, evidence and cost that conform to established national and regional health programmes and policies for the following:

(i) Disease prevention,

(ii) Health promotion and cure, (iii) Pain and distress alleviation, and

(iv) Rehabilitation.

- Demonstrate ability to provide a continuum of care at the primary and/or secondary level that addresses chronicity, mental and physical disability.
- Demonstrate ability to appropriately identify and refer patients who may require specialized or advanced tertiary care.
- Demonstrate familiarity with basic, clinical and translational research as it applies to the care of the patient.

Leader and member of the health care team and system

- Work effectively and appropriately with colleagues in an inter-professional health care team respecting diversity of roles, responsibilities and competencies of other professionals.
- Recognize and function effectively, responsibly and appropriately as a health care team leader in primary and secondary health care settings.
- Educate and motivate other members of the team and work in a collaborative and collegial fashion that will help maximize the health care delivery potential of the team.
- Access and utilize components of the health care system and health delivery in a manner that is appropriate, cost effective, fair and in compliance with the national health care priorities and policies, as well as be able to collect, analyze and utilize health data.
- Participate appropriately and effectively in measures that will advance quality of health care and patient safety within the health care system.
- Recognize and advocate health promotion, disease prevention and health care quality improvement through prevention and early recognition: in a) life style diseases and b) cancers, in collaboration with other members of the health care team.

Communicator with patients, families, colleagues and community

- Demonstrate ability to communicate adequately, sensitively, effectively and respectfully with patients in a language that the patient understands and in a manner that will improve patient satisfaction and health care outcomes.
- Demonstrate ability to establish professional relationships with patients and families that are positive, understanding, humane, ethical, empathetic, and trustworthy.

- Demonstrate ability to communicate with patients in a manner respectful of patient's preferences, values, prior experience, beliefs, confidentiality and privacy.
- Demonstrate ability to communicate with patients, colleagues and families in a manner that encourages participation and shared decision-making.

Lifelong learner committed to continuous improvement of skills and knowledge

- Demonstrate ability to perform an objective self-assessment of knowledge and skills, continue learning, refine existing skills and acquire new skills.
- Demonstrate ability to apply newly gained knowledge or skills to the care of the patient.
- Demonstrate ability to introspect and utilize experiences, to enhance personal and professional growth and learning.
- Demonstrate ability to search (including through electronic means), and critically evaluate the medical literature and apply the information in the care of the patient.
- Be able to identify and select an appropriate career pathway that is professionally rewarding and personally fulfilling.

Professional who is committed to excellence, is ethical, responsive and accountable to patients, community and the profession

- Practice selflessness, integrity, responsibility, accountability and respect.
- Respect and maintain professional boundaries between patients, colleagues and society.
- Demonstrate ability to recognize and manage ethical and professional conflicts.
- Abide by prescribed ethical and legal codes of conduct and practice.
- Demonstrate a commitment to the growth of the medical profession as a whole.

Broad Outline on training format

In order to ensure that training is in alignment with the goals and competencies listed in sub-clause 2 and 3 above:

- There shall be a "Foundation Course" to orient medical learners to MBBS programme, and provide them with requisite knowledge, communication (including electronic), technical and language skills. The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible in order to enhance learner's interest and eliminate redundancy and overlap.
- Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case based learning.
- Clinical training shall emphasize early clinical exposure, skill acquisition, certification in essential skills; community/primary/secondary care-based learning experiences and emergencies.
- Training shall primarily focus on preventive and community based approaches to health and disease, with specific emphasis on national health priorities such as family welfare, communicable and noncommunicable diseases including cancer, epidemics and disaster management.
- Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories.
- The development of ethical values and overall professional growth as integral part of curriculum shall be emphasized through a structured longitudinal and dedicated programme on professional development including attitude, ethics and communication.
- Progress of the medical learner shall be documented through structured periodic assessment that includes formative and summative assessments. Logs of skill-based training shall be also maintained.

Appropriate Faculty Development Programmes shall be conducted regularly by institutions to facilitate medical teachers at all levels to continuously update their professional and teaching skills, and align their teaching skills to curricular objectives.

SECTION II

Admission to the Indian Medical Graduate Programme

NATIONAL ELIGIBILITY-CUM-ENTRANCE TEST AND COMMON COUNSELLING

SECTION III

Migration

AS PER MCI GUIDELINES

SECTION IV

REGULATIONS GOVERNING MBBS DEGREE COURSE

[Eligibility for Admission, Duration, Attendance and Scheme of Examination]

1. ELIGIBILITY

As per guidelines of Medical Council of India

2. DURATION OF THE COURSE

Every learner shall undergo a period of certified study extending over 4 ½ academic years, divided into nine semesters from the date of commencement of course to the date of completion of examination which shall be followed by one year of compulsory rotating internship.

Each academic year will have at least 240 teaching days with a minimum of eight hours of working on each day including one hour as lunch break

The period of 4 ½ years is divided as follows:

- **Pre-Clinical Phase [(Phase I) - First Professional phase of 13 months** preceded by Foundation Course of one month]: will consist of preclinical subjects – Human Anatomy, Physiology, Biochemistry, Introduction to Community Medicine, Humanities, Professional development including Attitude, Ethics

& Communication (AETCOM) module and early clinical exposure, ensuring both horizontal and vertical integration.

• **Para-clinical phase [(Phase II) - Second Professional (12 months**)]: will consist of Para-clinical subjects namely Pathology, Pharmacology, Microbiology, Community Medicine, Forensic Medicine and Toxicology, Professional development including Attitude, Ethics & Communication (AETCOM) module and introduction to clinical subjects ensuring both horizontal and vertical integration.

The clinical exposure to learners will be in the form of learner-doctor method of clinical training in all phases. The emphasis will be on primary, preventive and comprehensive health care. A part of training during clinical postings should take place at the *primary level* of health care. It is desirable to provide learning experiences in secondary health care, wherever possible**.** This will involve:

(a) Experience in recognizing and managing common problems seen in outpatient, inpatient and emergency settings,

(b) Involvement in patient care as a team member,

(c) Involvement in patient management and performance of basic procedures. **Clinical Phase** – **[(Phase III) Third Professional (28 months)]**

(a) Part I (13 months) - The clinical subjects include General Medicine, General Surgery, Obstetrics & Gynaecology, Pediatrics, Orthopaedics, Dermatology, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Psychiatry, Respiratory Medicine, Radiodiagnosis & Radiotherapy and Anaesthesiology & Professional development including AETCOM module.

(b) Electives (2 months) - To provide learners with opportunity for diverse learning experiences, to do research/community projects that will stimulate enquiry, self directed experimental learning and lateral thinking [9.3].

(c) Part II (13 months) - Clinical subjects include:

i. Medicine and allied specialties (General Medicine, Psychiatry, Dermatology Venereology and Leprosy (DVL), Respiratory Medicine including Tuberculosis) ii. Surgery and allied specialties (General Surgery, Orthopedics [including trauma]), Dentistry, Physical Medicine and rehabilitation, Anaesthesiology and Radiodiagnosis) iii. Obstetrics and Gynecology (including Family Welfare) iv. Pediatrics

v. AETCOM module

 A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course

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DISTRIBUTION OF SUBJECTS BY PROFESSIONAL PHASE

Phase and Year of MBBS Training	Subjects and new teaching elements	Duration	University examination
First professional MBBS	• Foundation course (1month) • Human Anatomy, Physiology& Biochemistry • Introduction of Community Medicine, Humanities • Early Clinical Exposure • Attitude. Ethics and Communication Module (AETCOM)	1+13 months	I Professional
Second professional MBBS	• Pathology, Microbiology, Pharmacology, Forensic Medicine And Toxicology • Introduction to clinical subjects including community Medicine • Clinical postings • AETCOM	12 months	II Professional

Third professional MBBS-part I	• General Medicine ,General Surgery, OBG, Paediatrics, Orthopaedics, Dermatology, Pyschiatry, Otorhinolaryngology, Ophthalmology, Community Medicine, Forensic Medicine and Toxicology, Respiratory Medicine, Radiodiagnosis & Radiotherapy, Anaesthesiology • Clinical Subjects /postings • AETCOM	12 months	III Professionalpart I
Electives	• Electives ,skills and assessment	2 months	
Third professional MBBS-part II	• General Medicine ,Paediatrics, General Surgery, Orthopaedics, Obstetrics and Gynaecology, including Family welfare and allied specialties • Clinical Postings /subjects • AETCOM	13 months	III Professionalpart II

3. ATTENDANCE

Every candidate should have **attendance not less than 75% of the total classes conducted in theory and not less than 80% of the classes conducted in practical** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination. **75% attendance in Professional Development Programme (AETCOM Module) is required for eligibility to appear for final examination in each professional year** (vide Medical Council of India Notification on Graduate Medical Education (Amendment) Regulations 2019, published in the Gazette of India Part III, Section 4, Extraordinary issued on 4th November 2019)

- In subjects that are taught in more than one phase – the learner must have 75% attendance in theory and 80% in practical in each phase of instruction in that subject.
- If an examination comprises more than one subject (for e.g., General Surgery and allied branches), the candidate must have 75% attendance in each subject and 80% attendance in each clinical posting.
- Learners who do not have at least 75% attendance in the electives will not be eligible for the Third Professional - Part II examination.

The Principal should notify at the College the attendance details at the end of each term without fail under intimation to this University.

A candidate lacking in the prescribed attendance and progress in any subject(s) in theory or practical should not be permitted to appear for the examination in that subject(s).

4. TEACHING HOURS

Second Professional teaching hours

Subjects	Lecture (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
Clinical Subjects	75**	-	540***		615
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
Total	-	-	-	-	1440

* At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.

** 25 hours each for Medicine, Surgery and Gynecology & Obstetrics.

***The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

*Early clinical exposure hours to be divided equally in all three subjects **AETCOM module shall be a longitudinal programme

- Teaching and learning shall be aligned and integrated across specialties both vertically and horizontally for better learner comprehension. Learner centered learning methods should include problem oriented learning, case studies, community oriented learning, self- directed and experiential learning.
- Didactic lectures shall not exceed one third of the schedule; two third of the schedule shall include interactive sessions, practicals, clinical or/and group discussions. The learning process should include clinical experiences, problem oriented approach, case studies and community health care activities.

SCHEME OF EXAMINATION

5. INTERNAL ASSESSMENT:

General guidelines

- Regular periodic examinations shall be conducted throughout the course. There shall be **minimum three internal assessment examinations** in each Para-clinical subject and no less than two examinations in each clinical subject in a professional year.
- An end of posting clinical assessment shall be conducted for each clinical posting in each professional year
- The **third internal examination** should be conducted on the lines of the university examination. • When subjects are taught in more than one phase, the internal assessment must be done in each phase and must contribute proportionately to final assessment. For example, General Medicine must be assessed in second Professional, third Professional Part I and third Professional Part II, independently.

- An **average of the marks scored in the three internal assessment examinations** will be considered as the final internal assessment marks.
- Learners **must secure not less than 40 % marks in theory and practical separately and not less than 50% marks of the total marks (combined in theory and practical)** assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial measures by the institution. If he/she successfully completes the remediation measures, he/she is eligible to appear for University Examination. Remedial measures shall be completed before submitting the internal assessment marks online to the university.
- **Internal assessment marks will reflect under separate head in the marks card of the university examination. The internal assessment marks (theory/practical) will not be added to the marks secured (theory/practical) in the university examination for consideration of pass criteria.**
- **The results of IA should be displayed on the notice board within a 1-2 week of the test.**
- Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

6. UNIVERSITY EXAMINATION

Examination schedule

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General guidelines

- University examinations are to be designed with a view to ascertain whether the candidate has acquired the necessary knowledge, minimal level of skills, ethical and professional values with clear concepts of the fundamentals which are necessary for him/her to function effectively and appropriately as a physician of first contact. Assessment shall be carried out on an objective basis to the extent possible.

- Nature of questions will include different types such as structured essays (Long Answer Questions - LAQ), Short Essays and Short Answers Questions (SAQ). Marks for each part should be indicated separately.

- The learner **must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together) to pass.**

- Practical/clinical examinations will be conducted in the laboratories. The objective will be to assess proficiency and skills to conduct experiments, clinical examination, interpret data and form logical conclusion, wherever applicable.

- **There shall be one main examination in an academic year and a supplementary to be held not later than 90 days after the declaration of the results of the main examination.**

- **A learner shall not be entitled to graduate after 10 years of his/her joining of the first part of the MBBS course.**

- **A maximum number of four permissible attempts would be available to clear the first Professional University examination, whereby the first Professional course will have to be cleared within 4 years of admission to the said course. Partial attendance at any University examination shall be counted as an availed attempt.**

- **SECOND PROFESSIONAL EXAMINATION:**

  The second professional examination shall be held at the end of second professional training (11 months), in the subjects of Pathology, Microbiology and Pharmacology.

Phase II

Table: Examination components, Subjects and Distribution of Marks

THEORY	**PATHOLOGY**	**PHARMACOLOGY**	**MICROBIOLOGY**
Written Paper			
No. of Papers & Maximum Marks for each paper.	**2×100=200**	**2×100=200**	**2×100=200**
Total theory	**200**	**200**	**200**
PRACTICAL			
1. Practical exam	**80**	**80**	**80**
2. Viva-voce	**20**	**20**	**20**
Total practical	**100**	**100**	**100**
Internal assessment*			
Internal Assessment (Theory)	**40**	**40**	**40**
Internal assessment (Practical)	**40**	**40**	**40**

*** Internal assessment marks will reflect under separate head in the marks card of the university examination.**

Type, number of questions and distribution of marks for written paper

TYPES OF QUESTION	NUMBER OF QUESTIONS	MARKS FOR EACH QUESTION
Long essay	**2**	**10**
Short essay	**10**	**5**
Short answers	**10**	**3**

7. SUBMISSION OF LABORATORY RECORD

a. At the time of Practical Examination each candidate shall submit to the Examiners his/her laboratory record duly certified by the Head of the Department as a bonafide record of the work done by the candidate.

8. ELIGIBILITY TO APPEAR FOR EXAMINATION

The following criteria to be met by the students to be eligible for the university exams:

a. Shall have undergone satisfactorily the approved course of study in the subject/subjects for the prescribed duration.
b. Shall have attended not less than 75% of the total classes conducted in theory and not less than 80% of the total classes conducted in practical separately to become eligible to appear for examination in that subject/subjects.
c. Minimum of 40% marks to be obtained **separately** in theory and practical AND atleast 50% marks of the total marks **combined** in theory and practical assigned for internal assessment is to be obtained in a particular subject to appear for university exam. (average of 3 internal assessments theory and practical separately)
d. Learners must have completed the required certifiable competencies for that phase of training and completed the logbook appropriate for that phase of training to be eligible for appearing at the final university examination of that subject.

9. CRITERIA FOR PASS

For declaration of pass in any subject in the University examination, a candidate shall pass both in Theory and Practical examination components separately as stipulated below:

- The Theory component consists of marks obtained in University Written papers only. For a pass in theory, a candidate must secure at least 40% marks in each of the two papers with minimum 50% of marks in aggregate (both papers together).

- For a pass in practical examination, a candidate shall secure not less than 50% marks in aggregate, i.e., marks obtained in university practical examination and viva voce added together.

- **Internal assessment marks will reflect as a separate head of passing at the university examination.**
- A candidate not securing 50% marks in aggregate in Theory or Practical examination + viva in a subject shall be declared to have failed in that subject and is required to appear for both Theory and Practical again in the subsequent examination in that subject.

10. DECLARATION OF CLASS

a. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 75% of marks or more of **grand total marks (university examination)** prescribed will be declared to have passed the examination with distinction.

b. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 65% of marks or more but less than 75% of **grand total marks (university examination)** prescribed will be declared to have passed the examination in First Class.

c. A candidate having appeared in all the subjects in the same examination and passed that examination in the first attempt and secures 50% of marks or more but less than 65% of **grand total marks (university examination)** prescribed will be declared to have passed the examination in Pass Class.

d. A candidate passing a university examination in more than one attempt shall be placed in Pass class irrespective of the percentage of marks secured by him/her in the examination.

Note: Please note fraction of marks will not be rounded off for clauses (a), (b) and (c)

Appointment of Examiners

(a) Person appointed as an examiner in the particular subject must have at least four years of total teaching experience as assistant professor after obtaining postgraduate degree in the subject in a college affiliated to a recognized/approved/permitted medical college.

(b) For the Practical/ Clinical examinations, there shall be at least four examiners for 100 learners, out of whom not less than 50% must be external examiners. Of the four examiners, the senior-most internal examiner will act as the Chairman and coordinator of the whole examination programme so that uniformity in the matter of assessment of candidates is maintained. Where candidates appearing are more than 100, two additional examiners (one external & one internal) for every additional 50 or part there of candidates appearing, be appointed.

(c) In case of non-availability of medical teachers, approved teachers without a medical degree (engaged in the teaching of MBBS students as whole-time teachers in a recognized medical college), may be appointed examiners in their concerned subjects provided they possess requisite doctorate qualifications and four years teaching experience (as assistant professors)

of MBBS students. Provided further that the 50% of the examiners (Internal & External) are from the medical qualification stream.

(d) External examiners may not be from the same University.

(e) The internal examiner in a subject shall not accept external examinership for a college from which external examiner is appointed in his/her subject.

(f) A University having more than one college shall have separate sets of examiners for each college, with internal examiners from the concerned college.

(g) External examiners shall rotate at an interval of 2 years.

(h) There shall be a Chairman of the Board of paper-setters who shall be an internal examiner and shall moderate the questions.

(i) All eligible examiners with requisite qualifications and experience can be appointed internal examiners by rotation in their subjects.

(j) All theory paper assessment should be done as central assessment program (CAP) of concerned university.

(k) Internal examiners should be appointed from same institution for unitary examination in same institution. For pooled examinations at one centre approved internal examiners from same university may be appointed.

(l) The grace marks up to a maximum of five marks may be awarded at the discretion of the University to a learner for clearing the examination as a whole but not for clearing a subject resulting in exemption.

SECTION V COURSE CONTENTS

PATHOLOGY

PREAMBLE

Pathology bridges the gap between basic sciences and clinical medicine, so a proper understanding of pathological processes is crucial for medical practice. The main goals of undergraduate pathology teaching have always been to provide a language or framework for the description of disease and to provide students with knowledge of the functional and structural changes in disease so that clinical signs and symptoms can be understood and interpreted. The understanding of the pathological basis of disease is so vital for practice of medicine that its teaching needs to be integrated throughout the medical course.

The new Graduate Medical Education Regulations provides for an outcome driven undergraduate curriculum, to provide the orientation and the skills necessary for life-long learning, to enable proper care of the patient. The undergraduate medical curriculum has thus evolved from being teacher-centered to student centered, from discipline-based to integrated core and options-based and from passive acquisition of knowledge imparted by teachers to active problem-based learning. Skill acquisition is an indispensable component of the learning process in modern medicine. However the need for development of professional attitude, behaviour and communication skills befitting a medical practitioner is well perceived and emphasized by the new curriculum with incorporation of AETCOM sessions.

Pathology teaching is perceived as fact-based, but the present curriculum will evolve pathology into clinical oriented specialty. The key elements of the curriculum such as integrating basic science with clinical oriented learning, direct faculty feedback, interactive with experiential learning and competency-based student assessments will bring in remarkable changes in pathology teaching. These changes will provide the Indian Medical Graduate a strong foundation in the pathophysiological basis of disease which is critical to the formation of a competent clinician.

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GOAL AND OBJECTIVES

GOAL

The broad goal of the teaching of undergraduate student in Pathology is to provide the students with a comprehensive knowledge of the mechanisms and causes of disease, in order to enable him/her to achieve complete understanding of the natural history and clinical manifestations of disease.

OBJECTIVES

a) KNOWLEDGE

At the end of the course, the student should be able to:-

1. Describe the structure and ultrastructure of a sick cell, mechanisms of cell degeneration, cell death and repair and be able to correlate structural and functional alterations.
2. Explain the pathophysiological processes which govern the maintenance of homeostasis, mechanisms of their disturbance and the morphological and clinical manifestations associated with it.
3. Describe the mechanisms and patterns of tissue response to injury such that she/he can appreciate the pathophysiology of disease processes and their clinical manifestations.
4. Correlate normal and altered morphology (gross and microscopic) of different organ systems in common diseases to the extent needed for understanding of disease processes and their clinical significance.

b) SKILLS

At the end of the course, the student should be able to:-

1. Describe the rationale and principles of technical procedures of the diagnostic laboratory tests and interpretation of the results.
2. Perform the simple bed-side tests on blood, urine and other biological fluid samples.
3. Draw a rational scheme of investigations aimed at diagnosing and managing the cases of common disorders.
4. Understand biochemical/physiological disturbances that occur as a result of disease in collaboration with preclinical departments.

c) INTEGRATION

At the end of training he/she should be able to integrate the causes of disease and relationship of different etiological factors (social, economic and environmental) and that contribute to the natural history of diseases most prevalent in India.

TERMS AND TEACHING GUIDELINES

1. LECTURE

Is a teaching learning method which includes traditional and interactive sessions involving a large group.

2. SMALL GROUP DISCUSSION

Is an instructional method involving small groups of students in an appropriate learning context.

3. DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe demonstration,assists the performer, perform in a simulated environment, perform under supervision or perform independently.

4. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning , choosing and implementing appropriate learning methods.

5. SKILL ASSESSMENT

Is a session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know.

MINIMUM TEACHING HOURS

Sl No	Topic	Number of competencies	Lecture	SGD/ Tutorial	DOAP	SDL
1	Introduction to pathology	3	1	2	0	0
2	Cell Injury and Adaptation	8	5	4	4	0
3	Amyloidosis	2	0	2	0	0
4	Inflammation	4	4	2	4	0
5	Healing and repair	1	1	1	0	0
6	Hemodynamic disorders	7	4	2	2	1
7	Neoplastic disorders	5	6	4	4	0
8	Basic diagnostic Cytology	3	0	4	0	0
9	Immunopathology and AIDS	7	5	2	0	0
10	Infections and Infestations	4	1	6	0	1
11	Genetic and Paediatric diseases	3	3	0	0	0
12	Environmental and Nutritional diseases	3	2	0	0	2
13	Introduction to haematology	5	2	0	2	1
14	Microcytic Anaemia	3	1	0	1	0
15	Macrocytic Anaemia	4	1	0	1	0
16	Haemolytic Anaemia	7	3	2	2	0
17	Aplastic anaemia	2	1	0	0	0
18	Leucocytic disorders	2	2	4	2	0
19	Lymph node and spleen	7	1	4	2	0
20	Plasma cell disorder	1	0	2	0	0

21	Haemorrhagic disorders	5	3	2	0	0
22	Blood banking and transfusion	6	2	0	2	0
23	Clinical Pathology	3	0	2	2	0
24	Gastrointestinal Tract	7	4	4	2	0
25	Hepatobiliary system	6	2	4	2	0
26	Respiratory system	7	5	2	2	0
27	Cardiovascular system	10	2	8	2	0
28	Urinary tract	16	4	6	2	1
29	Male genital tract	5	2	0	2	0
30	Female genital tract	9	4	2	2	0
31	Breast	4	2	0	2	0
32	Endocrine system	9	2	4	2	4
33	Bone and soft tissue	5	2	2	2	2
34	Skin	4	1	0	0	0
35	Central Nervous system	3	1	2	2	0
36	Eye	1	-	-	-	-
	Revision at the end of first block (one)	-	-	-	2	-
	Revision at the end of second block (one)	-	-	-	2	-
	Revision at the end of third block (three)	-	-	-	6	-
	Total	**181**	**79**	**79**	**60**	**12**

COMPETENCIES, SPECIFIC LEARNING OBJECTIVES, TEACHING LEARNING AND ASSESSMENT METHODS

TOPIC- INTRODUCTION TO PATHOLOGY (PA-1)

PA 1.1 - Describe the role of a pathologist in diagnosis and management of disease

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

1.1.1. Describe the role of Pathologist in diagnosis and treatment.

1.1.2. Describe the role of Pathology in correlating clinical findings and disease process
.
1.1.3. Enumerate different sections of Pathology and its diagnostic role.

PA 1.2 - Enumerate common definitions and terms used in Pathology

PA 1.3 - Describe the history and evolution of Pathology

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

1.2.1. Define Etiology, Pathogenesis and Pathology.

1.2.2. Correlate the clinical findings with pathology.

1.3.1. Describe the brief history and evolution of Pathology

TOPIC- CELL INJURY AND ADAPTATION (PA-2)

PA 2.1 - Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.1.1. Enumerate the different causes of cell injury.

PA 2.2 - Describe the etiology of cell injury. Distinguish between reversible-irreversible injury: mechanisms; morphology of cell injury

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.2.1. Describe the pathogenesis of cell injury.(At least a few causes)

2.2.2. Enumerate the microscopic differences between reversible and irreversible cell injury.

2.2.3. Describe the mechanism of reversible and irreversible cell injury.

2.2.4. Enumerate few biochemical changes frequently associated with irreversible cell injury.

2.2.5. What is lipofuscin and mention its importance.

PA 2.3 - Intracellular accumulation of fats, proteins, carbohydrates, pigments

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.3.1. Enumerate the causes of intracellular and extracellular hyaline deposition

2.3.2. Enumerate the causes of fatty degeneration. Name the organs affected.
2.3.3. Discuss the pathogenesis of fatty liver. Describe the morphology of fatty liver.

2.3.4. Enumerate special stains used to demonstrate Fat, Glycogen and Calcium.

2.3.5 Enumerate the causes of intracellular accumulation of proteins.

2.3.6. Enumerate different types of pigments in health and disease.

2.3.7. Name special stains to demonstrate hemosiderin and melanin.

PA 2.4 - Describe and discuss Cell death- types, mechanisms, necrosis, apoptosis(basic as contrast with necrosis),autolysis

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

2.4.1. Define necrosisand enumerate the different types with examples. Discuss the morphology and fate of coagulative, liquefactive and caseous necrosis.

2.4.2. Discuss the pathogenesis and morphology of fat necrosis.

2.4.3. Discuss the pathogenesis and pathology of Apoptosis.

2.4.4. Describe the clinical significance of Apoptosis and Necrosis.

2.4.5. Difference between apoptosis and necrosis.

2.4.6. Define autolysis. Explain the mechanism with example.

PA 2.5 - Describe and discuss pathologic calcifications, gangrene

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

2.5.1. Describe the pathogenesis of Fatty liver in various conditions.

2.5.2. Describe the macro and microscopic changes in Fatty liver.

2.5.3. Enumerate causes of Pathologic calcifications.

2.5.4. Differentiate between metastatic and dystrophic calcifications.

2.5.5. Recognize calcification grossly, microscopically and name special stains for calcium.

2.5.6. Enumerate several conditions associated with extracellular and intracellular protein accumulations.

2.5.7. Enumerate causes of accumulation of Glycogen and special stains used for detection of glycogen.

2.5.8. Identify the changes of fatty degeneration in Liver.

2.5.9. Identify and describe Monckeberg's medial calcification.

2.5.10. Identify the gross specimen of gangrene.

2.5.11. Enumerate the types of gangrene and discuss their pathogenesis.

PA 2.6 - Describe and discuss cellular adaptations: atrophy, hypertrophy, hyperplasia, metaplasia, dysplasia

TLM : SGD – 2 hrs

Assessment: Written, Viva voce

2.6.1. Define the term Adaptation.

2.6.2. Mention different types of Adaptation

2.6.3. Describe the pathogenesis and clinical significance of each Adaptation.

PA 2.7 - Describe and discuss the mechanisms of cellular aging and apoptosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

2.7.1. Discuss the mechanism of cellular aging

PA 2.8 - Identify and describe various forms of cell injuries, their manifestations and consequences in gross and microscopic Specimens.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

2.8.1. Identify the morphology of coagulative, liquefactive and caseous necrosis.

2.8.2. Define and morphologically identify different types of Gangrene.

2.8.3. Correlate clinical presentation and morphological changes in Necrosis and Gangrene

PA 2.0 - Cell Injury

TLM : Tutorial/ Formative assessment – 2 hrs **Assessment:**Written, Viva voce

TOPIC: AMYLOIDOSIS (PA- 3)

PA 3.1 - Describe the pathogenesis and pathology of amyloidosis

PA 3.2 - Identify and describe amyloidosis in a pathology specimen

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

3.1.1. Describe the pathogenesis and pathology of Amyloidosis.

3.1.2. Enumerate the diseases associated with amyloid deposition and name the common organs affected.

3.1.3. Enumerate the Investigations used in diagnosis of amyloidosis. 3.1.4.

Special stains used to demonstrate the amyloid

3.2.1. Identify the gross specimen of amyloid kidney/spleen. (Optional)

3.2.2. Identify the amyloid deposition microscopically.

3.2.3. Interpretation of the special stain done.

TOPIC: INFLAMMATION (PA- 4)

PA 4.1 - Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

4.1.1. Define and differentiate acute and chronic inflammation.

4.1.2. Describe the pathogenesis of acute and chronic inflammation.

4.1.3. Describe the various vascular and cellular events involved in acute inflammation.

4.1.4. Define and describe chemotaxis, phagocytosis and opsonisation.

PA 4.2 - Enumerate and describe the mediators of acute inflammation

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

4.2.1. Enumerate the chemical mediators of acute inflammation.

4.2.2. Describe the role of important mediators of acute inflammation.

4.2.3. Enumerate the sequelae of acute inflammation.

4.2.4. Describe the clinical outcome of acute inflammation.

PA 4.3 - Define and describe chronic inflammation including causes, types enumerate types, non-specific and granulomatous; and examples of each

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

4.3.1. Define the chronic inflammation

4.3.2. Enumerate types of chronic inflammation

4.3.3. Describe the pathogenesis of granuloma formation.

4.3.4. Enumerate the examples of granulomatous diseases

PA 4.4 - Identify and describe acute and chronic inflammation in gross and microscopic specimens.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

4.4.1. Identify the granulomas microscopically.

4.4.2. Identify epithelioid cell and giant cell microscopically.

4.4.3. Identify the different morphological features of chronic inflammation.

4.4.4. Recognize grossly the granulomatous inflammation of lymph node, Actinomycosis.

4.4.5. Identify and describe the specimen of acute appendicitis and pneumonia.

4.4.6. Recognize microscopic features of acute inflammation

PA4.0 - Inflammation

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: HEALING AND REPAIR (PA- 5)

PA 5.1 - Define and describe the process of repair and regeneration including wound healing and its types

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

5.1.1. Define and differentiate regeneration from repair.

5.1.2. Describe various steps in healing.

5.1.3. Differentiate primary healing from secondary healing

5.1.4. Describe various steps involved in fracture healing.

5.1.5. The classification of tissues based on the proliferative capacity of cells.

5.1.6. Complications and factors affecting wound healing.

5.1.7. Complications and factors affecting healing of fracture.

5.1.8. Mechanism of repair by connective tissue deposition

PA 5.0 - Healing and repair

TLM : Tutorial/ Formative assessment – 1 hr
Assessment: Written, Viva voce

TOPIC: HEMODYNAMIC DISORDERS (PA-6)

PA 6.1 - Define and describe edema, its types, pathogenesis and clinical correlations.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

6.1.1. Define edema and explain the fluid balance.

6.1.2. Mention the differences between transudate and exudate.

6.1.3. Enumerate the types of edema and describe their pathophysiology(Renal, Cardiac, pulmonary, cerebral, nutritional and hepatic), clinical features and consequences

PA 6.2 - Define and describe hyperemia, congestion, hemorrhage

TLM : DOAP – 1 hr
Assessment: Skill Assessment

6.2.1. Identify the difference between hyperemia, congestion and hemorrhage

6.2.2. Enumerate the causes and identify the gross and microscopy of Chronic venous congestion Lung, Liver and Spleen

6.2.3. Enumerate the consequences of congestion and haemorrhage.

PA 6.3 - Define and describe shock, its pathogenesis and its stages

TLM : Lecture – 1 hr

Assessment: Written, Viva voce

6.3.1. Define Shock and discuss the concept of adequate cardiac output and its importance

6.3.2. Enumerate the types and discuss the mechanisms of the various types of shock

6.3.3. Describe the various stages of shock with their clinical manifestations and morphological changes in various organs

PA-6.4a - Define and describe normal haemostasis

TLM : SDL – 1 hr
Assessment: Written, Viva voce

6.4a.1. Describe the role of endothelial cells, platelets and coagulation factors in maintaining hemostasis.

6.4a.2. Write the coagulation cascade

PA 6.4b - Describe the etiopathogenesis and consequences of thrombosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

6.4b.1. Define thrombosis and explain Virchow's triad

6.4b.2. Enumerate hypercoagulable states.

6.4b.3. List the types of thrombus and its morphology

6.4b.4. List the differences between a postmortem and antemortem thrombus.

6.4b.5. Fate of thrombus and its clinical consequences

6.4b.6. Difference between arterial and venous thrombus.

6.4b.7. Contribution of alteration in blood flow to thrombosis.

PA 6.5 - Define and describe embolism and its causes and common types.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

6.5.1. Define an embolism and enumerate the differences between a thrombus and an embolus.

6.5.2. Enumerate the types of embolism and describe their etiopathogenesis with examples and clinical manifestations

PA 6.6 - Define and describe Ischaemia/infarction its types, etiology, morphologic changes and clinical effects.

PA 6.7 - Identify and describe the gross and microscopic features of infarction in a pathology specimen

TLM : DOAP – 1 hrs
Assessment: Skill Assessment

6.6.1. Define infarction and enumerate the different types of infarction.

6.6.2. Describe the etiopathogenesis of infarction

6.7.1. Identify the gross features of infarction in various organs

6.7.2. Identify the microscopic features of infarction in various organs

PA6.0 - Hemodynamic Disorder

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: NEOPLASTIC DISORDERS (PA-7)

PA 7.1a - Define and classify neoplasia, biologic behavior and spread.

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.1a.1. Define and classify neoplasia

7.1a.2. For both males and females, list in descending order:
- the five most common cancers
- the five most common causes of cancer death

7.1a.3. Define and differentiate with examples: Ectopia, Heterotopia, Hamartoma, Teratoma.

7.1a.4. Outline the classification and nomenclature for benign and malignant neoplasms using appropriate prefixes and suffixes and indicating specific exceptions to rules of nomenclature.

7.1a.5. Discuss the differences between benign and malignant neoplasms.

7.1a.6. Enumerate the routes of spread. Compare and contrast the route of spread of Carcinoma versus Sarcoma with exceptions.

7.1a.7. Define metastasis and discuss the mechanism of metastasis.

7.1a.8. Define staging and grading of tumours and its clinical significance.

7.1a.9. List the most common sites of origin of: adenoma, adenocarcinoma, squamous cell carcinoma, melanoma

PA 7.1b - Describe the characteristics of neoplasia including gross, microscopy. Differentiate between benign from malignant neoplasm

TLM : DOAP – 4 hrs
Assessment: Skill Assessment

7.1b.1. Identify the gross and microscopic features of benign neoplasms.

7.1b.2. Identify the gross and microscopic features of malignant neoplasms

PA 7.2 - Describe the molecular basis of cancer.

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.2.1. Describe the cell cycle.

7.2.2. Write a note on cell signalling pathways

7.2.3. Describe role of proto-oncogenes, oncogenes and onco-proteins in carcinogenesis

7.2.4. Describe the role of important tumour suppressor genes(Rb gene, p53, APC) in carcinogenesis.

7.2.5. Enumerate and discuss the steps of multistep carcinogenesis.

PA 7.3 - Enumerate carcinogens and describe the process of carcinogenesis

TLM : Lecture – 2 hr
Assessment: Written, Viva voce

7.3.1. Define and classify carcinogens.

7.3.2. Classify and enumerate chemical carcinogens

7.3.3. Describe the mechanism of chemical carcinogenesis

7.3.4. Discuss the mechanism of Radiation carcinogenesis (UV rays and Ionizing radiation) and name the associated cancers.

7.3.5. Classify microbial carcinogens and enumerate associated neoplasms.

7.3.6. Discuss the mechanism of microbial carcinogenesis.

7.3.7. Elaborate the role of the following in the development of human cancer in relation to at least 2 specific neoplasms associated with each:

- physical agents
- chronic inflammatory conditions
- hormones

PA-7.4 - Describe the effects of tumour on the host including paraneoplastic syndrome

PA-7.5 - Describe immunology and the immune response to cancer

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

7.4.1. Discuss the local and systemic effects of tumour on the host.

7.4.2. Define and discuss Paraneoplastic syndromes.

7.4.3. Discuss the different types and clinical significance of tumour markers and their role in lab diagnosis.

7.5.1. Describe host immune response to cancer.

PA7.0 - Neoplasia

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BASIC DIAGNOSTIC CYTOLOGY (PA-8)

PA 8.1 - Describe the diagnostic role of cytology and its application in clinical care.

TLM : SGD – 2 hrs **Assessment:**Written, Viva

voce

8.1.1. Describe the procedure of FNAC, its advantages and limitations.

PA 8.2 - Describe the basis of exfoliative cytology including the technique & stains used

PA 8.3 - Observe a diagnostic cytology and its staining and interpret the specimen

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

8.2.1. Describe the sites of exfoliative cytology (PAP smear, body fluids, sputum, urine)

8.2.2. Enumerate the steps and name different stains used in pap stain. 8.3.1.

Observe and interpret the cytology reports

TOPIC: IMMUNOPATHOLOGY AND AIDS (PA-9)

PA 9.1 - Describe the principles and mechanisms involved in immunity.

TLM : SGD – 1 hr **Assessment:**Written, Viva voce

9.1.1. Define innate immunity.

9.1.2. Describe the components and mechanism of innate immunity.

9.1.3. Define and enumerate the types of Adaptive immunity.

9.1.4. Describe the cells of the immune system and their role in immunity.

9.1.5. Describe the mechanism of humoral immunity.

9.1.6. Describe the mechanism of cell mediated immunity.

9.1.7. Define and describe the mechanism of Major Histocompatibility Complex (MHC).

PA 9.2 - Describe the mechanism of hypersensitivity reactions.

TLM : SGD – 1 hr **Assessment:**Written, Viva voce

9.2.1. Define and classify Hypersensitivity reactions.

9.2.2. Describe the mechanism of Type I hypersensitivity reactions with schematic diagram with examples.

9.2.3. Describe the mechanism of Type IIhypersensitivity reactions with schematic diagram with examples

9.2.4. Describe the mechanism of Type IIIhypersensitivity reactions with schematic diagram with examples

9.2.5. Describe the mechanism of Type IV hypersensitivity reactions with schematic diagram with examples.

9.2.6. Categorize the given clinical scenarios into different types of hypersensitivity reactions.

PA 9.3 - Describe the HLA system and the immune principles involvedin transplant and mechanism of transplant rejection.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.3.1. Define HLA system and Major Histocompatibility Complex molecules.

9.3.2. Describe the function of MHC class I and class II molecules.

9.3.3. Describe the mechanism ofrecognition and rejection of allografts with schematic diagrams.

9.3.4. Describe the mechanism and morphology of rejection of Kidney grafts.

9.3.5. Describe the methods of increasing graft survival.

9.3.6. Describe the mechanism and types of Graft Versus Host Disease (GVHD)

PA 9.4 - Define autoimmunity. Enumerate autoimmune disorders.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

9.4.1. Define Autoimmune disease

9.4.2. Classify Autoimmune diseases

9.4.3. Define and enumerate the types of immunologic tolerance.

9.4.4. Describe the mechanism of central tolerance.

9.4.5. Describe the mechanism of peripheral tolerance.

9.4.6. Describe the mechanism of autoimmunity with a neat labelled schematic diagram.

9.4.7. Describe the general features associated with autoimmune diseases

PA 9.5 - Define and describe the pathogenesis of Systemic Lupus Erythematosus

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.5.1. Define SLE and enumerate and describe various types of SLE

9.5.2. Describe the revised criteria for classification of SLE

9.5.3. Enumerate and describe the spectrum of autoantibodies in SLE.

9.5.4. Describe the etiopathogenesis of SLE with a neat labelled schematic diagram.

9.5.5. Describe the morphological features in SLE.

9.5.6. Enumerate the clinical features of SLE.

PA 9.6 - Define and describe the pathogenesis and pathology of HIV and AIDS

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

9.6.1. Define AIDS and Describe the epidemiology and aetiology of AIDS.

9.6.2. Describe the structure and life cycle of HIV with a neat labelled schematic diagram.

9.6.3. Describe the pathogenesis of HIV and pathology of AIDS with schematic diagram.

9.6.4. Enumerate and describe the clinical features of AIDS.

9.6.5. Enumerate and describe AIDS defining opportunistic infections.

9.6.6. Enumerate neoplasms found in patients with HIV infections

PA 9.7 - Define and describe the pathogenesis of other common autoimmune diseases

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

9.7.1. Define Sjögren Syndrome.

9.7.2. Describe the etiopathogenesis of Sjögren syndrome.

9.7.3. Describe the clinical features of morphological findings in Sjögren syndrome.

9.7.4. Enumerate organ specific autoimmune diseases and systemic autoimmune diseases

TOPIC-INFECTIONS AND INFESTATIONS (PA-10)

PA 10.1 - Define and describe the pathogenesis and pathology of malaria.

PA 10.2 - Define and describe the pathogenesis and pathology of cysticercosis.

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

10.1.1. Enumerate parasite causing malaria

10.1.2. Describe the life cycle of malarial parasite

10.1.3. Describe morphology of malarial parasite

10.1.4. Discuss the lab diagnosis in malaria.

10.2.1. Enumerate cause of cysticercosis

10.2.2. Discuss etiopathology of cysticercosis

PA 10.3 - Define and describe the pathogenesis and pathology of leprosy

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

10.3.1. Define and Classify Leprosy

10.3.2. Discuss the pathogenesis of leprosy

10.3.3. Differentiate morphology of tuberculoid and lepromatous leprosy

PA 10.4 - Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases.

TLM : SGD – 4 hrs **Assessment:**Written, Viva voce

10.4.1. Describe general principle of microbial pathogenesis

10.4.2. Describe the aetiology, pathogenesis and organ changes in Typhoid fever.

10.4.3. Describe the aetiology, clinical features and organ changes in Bacillary dysentery.

10.4.4. Describe the clinical manifestations, mode of transmission, salient diagnostic methods of Measles, Herpes and Rabies

10.4.5. Describe the aetiology, clinical manifestations and organ changes in Amoebic dysentery and amoebic abscess

10.4.6. Describe the aetiology, clinical features, organ changes and laboratory findings in Filariasis/ Hydatid cyst

10.4.7. Describe the aetiology, pathogenesis, organ changes, clinical manifestations and laboratory diagnosis of fungal lesions(Candida, Aspergillosis, Mucormycosis, Cryptococcosis)

10.4.8. Describe the causative agent, types, clinical manifestations and laboratory diagnosis of Syphilis.

PA 10 - Study on Corona Virus

TLM : SDL – 1 hr **Assessment:**Written, Viva voce

TOPIC: GENETIC AND PAEDIATRIC DISEASES (PA-11)

PA 11.1 - Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.1.1. Define gene, mutation, the types of mutation

11.1.2. Discuss the transmission patterns of single gene disorders with examples for each

11.1.3. Describe the normal Karyotype

11.1.4. Discuss the various structural abnormalities of chromosomes

PA 11.2 - Describe the pathogenesis and pathology of tumour and tumour like conditions in infancy and childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.2.1. Describe the tumour like lesions in infancy and childhood with few examples for each.

11.2.2. Name some common benign tumours in children.

11.2.3. Discuss the morphology of common benign tumours.

11.2.4. Classify common childhood malignant tumours.

11.2.5. Discuss the molecular pathogenesis and morphology of Neuroblastoma.

11.2.6. Discuss the molecular pathogenesis and syndromes associated with Wilm's tumour.

11.2.7. Enumerate the morphology and clinical features in Wilm's tumour.

11.2.8. Discuss the molecular pathogenesis and morphology of Retinoblastoma.

PA 11.3 - Describe the pathogenesis of common storage disorders in infancy and childhood

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

11.3.1. Discuss the pathogenesis lysosomal storage diseases.

11.3.2. Name the lysosomal storage diseases and associated enzyme deficiency.

11.3.3. Describe the morphology of Niemann-Pick disease, Gaucher's disease

TOPIC: ENVIRONMENTAL AND NUTRITIONAL DISEASES (PA-12)

PA 12.1 - Enumerate and describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol.

TLM : SDL – 1 hr **Assessment:**Written, Viva voce

12.1.1. Enumerate the disorders caused by air pollution, tobacco and alcohol

12.1.2. Describe the pathogenesis of disorders caused by air pollution, tobacco and alcohol.

12.1.3. Enumerate the health effects of indoor and outdoor air pollution.

12.1.4. Describe the organ specific effects of tobacco smoke constituents.

12.1.5. Describe the acute and chronic adverse effects of alcohol abuse.

PA 12.2 - Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

12.2.1. Enumerate causes and types of Malnutrition

12.2.2. Describe the clinical features and morphology of Marasmus and Kwashiorkar

PA 12.3 - Describe the pathogenesis of obesity and its consequences

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

12.3.1. Define Obesity and describe the pathogenesis of Obesity with reference to the role of leptins, adipose tissue and gut hormones.

12.3.2. Discuss the clinical consequences of Obesity.

TOPIC: INTRODUCTION TO HAEMATOLOGY (PA-13)

PA-13.1 - Describe hematopoiesis and extramedullary hematopoiesis.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

13.1.1. Describe normal hematopoiesis

13.1.2. List sites of extra medullary hematopoiesis.

PA-13.3 - Define and classify anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

13.3.1. Define Anemia.

13.3.2. Classify anemia based on morphology and etiology

PA-13.4 - Enumerate and describe the investigation of anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

13.4.1. Write the investigations required for the laboratory diagnosis of anemia

13.4.2. What is CBC, ESR, PCV

13.4.3. Peripheral smear and bone marrow examination in the diagnosis of anemias

PA 13.2 - Describe the role of anticoagulants in hematology

PA 13.5 - Perform, Identify and describe the peripheral blood picture in anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

13.2.1. List and write the mechanism of action of anticoagulants used in hematology.

13.2.2. Discuss the appropriate use of anticoagulants in hematology and blood bank.

13.5.1. Make a peripheral blood smear and stain the smear using Leishman stain

13.5.2. Write the principle of Romanowsky stains

13.5.3. Identify blood cells in a normal peripheral blood smear.

TOPIC: MICROCYTIC ANAEMIA (PA-14)

PA-14.1 - Describe iron metabolism

PA 14.2 - Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

14.1.1. Describe iron metabolism

14.2.1. List the causes of microcytic hypochromic anemia.

14.2.2. Describe the investigations in a case of iron deficiency anemia.

14.2.3. Discuss the differential diagnosis of microcytic hypochromic anemia.

14.2.4. Write the peripheral blood and bone marrow findings in iron deficiency anemia.

PA-14.3 - Identify and describe the peripheral smear in microcytic anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

14.3.1. Identify and describe the peripheral blood picture of microcytic anemia

TOPIC: MACROCYTIC ANAEMIA (PA-15)

PA 15.1 - Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency

PA 15.2 - Describe laboratory investigations of macrocytic anemia

PA 15.4 - Enumerate the differences and describe the distinguishing features of megaloblastic and non-megaloblastic macrocytic anemia

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

15.1.1. Describe the metabolism of vitamin B12.

15.1.2. Discuss the etiology and pathogenesis of vitamin B12 deficiency.

15.2.1. List the causes of macrocytic anemia

15.2.2. Describe laboratory investigations of macrocytic anemia.

15.2.3. Describe the peripheral blood and bone marrow picture in megaloblastic anemia

15.4.1. Discuss the etiology of megaloblastic anemia

15.4.2. Describe the distinguishing features of megaloblastic and non megaloblastic macrocytic anemia.

15.4.3. Enumerate the differences between megaloblastic and non megaloblastic macrocytic anemia.

PA 15.3 - Identify and describe the peripheral smear in macrocytic anemia

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

15.3.1. Identify and describe the peripheral blood picture of macrocytic anemia

TOPIC: HEMOLYTIC ANAEMIA (PA-16)

PA-16.1 - Define and classify hemolytic anemia

PA 16.2 - Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia

PA 16.5 - Describe the peripheral blood picture in different hemolytic Anaemias

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.1.1. Define hemolytic anemia

16.1.2. List the causes of inherited and acquired hemolytic anemia by mechanisms.

16.2.1. Describe the pathogenesis of intravascular and extravascular hemolytic anemias

16.2.2. Enumerate clinical features in hemolytic anemia

16.2.3. Enumerate the laboratory investigations in haemolytic anaemia.

16.5.1. Describe the peripheral blood picture in different hemolytic anemias with respect to RBC morphology.

PA-16.3 - Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anemia and thalassemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.3.1. Describe the pathogenesis, hematologic features and laboratory diagnosis of sickle cell anemia

16.3.2. Describe the pathogenesis, hematologic features and laboratory diagnosis of thalassemia.
16.3.3. List the features to distinguish thalassemia from iron deficiency anemia.

PA-16.4a - Describe the etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired hemolytic anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

16.4a.1. Explain the etiopathogenesis of acquired hemolytic anemia.

16.4a.2. Descibe the laboratory diagnosis of acquired hemolytic anemia.

PA-16.4b - Case based discussion

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

1.Sickle cell anemia

2. Thalassemia

3. Hereditary spherocytosis

4. Autoimmune hemolytic anemia

PA-16.6 - Prepare a peripheral blood smear and identify hemolytic anaemia from it

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

16.6.1. Prepare a peripheral smear

16.6.2. Stain the smear

16.6.3. Interpret the smear findings

16.6.4. Interpret the clinical and hematological features in the chart of hemolytic anemia.

TOPIC: APLASTIC ANEMIA (PA-17)

PA-17.1 - Enumerate the etiology, pathogenesis and findings in aplastic anemia

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

17.1.1. Enumerate the causes of aplastic anemia

17.1.2. Enumerate the pathogenesis of aplastic anemia

17.1.3. Enumerate the bone marrow findings in aplastic anemia

PA-17.2 - Enumerate the indications and describe the findings in bone marrow aspiration and biopsy

17.2.1. List the types of bone marrow study

17.2.2. List the indications and contraindications for bone marrow study

17.2.3. Describe the bone marrow findings with specific examples of involvement

TOPIC: LEUKOCYTE DISORDERS (PA-18)

PA-18.1 - Enumerate and describe the causes of leucocytosis leucopenia, lymphocytosis and leukemoid reactions

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

18.1.1. List the causes for leucocytosis and leucopenia

18.1.2. Define leukemoid reaction

18.1.3. List the differences between leukemoid reaction and chronic myeloid leukemia

PA-18.2 - Describe the etiology, genetics, pathogenesis classification, features, hematologic features of acute and chronic leukemia

TLM : Lecture – 2 hrs
Assessment: Written, Viva voce

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

18.2.1. Describe the etiology, genetics, pathogenesis of acute and chronic leukemia

18.2.2. Enumerate the classification of acute and chronic leukemia (FAB and WHO)

18.2.3. Describe the hematologic features of acute and chronic leukemia

18.2.4. Briefly describe Chronic myeloproferative disorders

18.2.5. Demonstrate hematological findings and interpret charts

18.2.6. Identify the hematological findings in the smears

PA- 13, 14, 15, 16, 17, 18 - Anaemias and leucocyte disorders

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: LYMPH NODE AND SPLEEN (PA-19)

PA-19.1 - Enumerate the causes and describe the differentiating features of lymphadenopathy

PA-19.6 - Enumerate and differentiate the causes of splenomegaly.

PA-19.7 - Identify and describe the gross specimen of an enlarged spleen

TLM : SGD – 2 hrs
Assessment: Written, Viva voce/Skill assessment

19.1.1. Enumerate causes of lymphadenopathy.

19.1.2. Describe the differentiating features of lymphadenopathy

19.6.1. Categoriseand enumerate the causes of Splenomegaly

19.6.2. Discuss the differential diagnosis of an enlarged spleen in a given specimen

19.7.1. Identify Gross features of enlarged enlarged spleen in a given specimen

PA-19.2 - Describe the pathogenesis and pathology of tuberculous lymphadenitis

TLM : SGD – 2 hrs **Assessment:**Written, Viva voce

19.2.1. Describe Pathogenesis and pathology of tuberculous lymphadenitis

PA-19.3 - Identify and describe the features of tuberculous lymphadenitis in a gross and microscopic specimen

PA-19.5 - Identify and describe the features of Hodgkin's lymphoma in a gross and microscopic specimen.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

19.3.1. Identify the gross features of tuberculous lymphadenitis in a given specimen

19.3.2. Describe gross and microscopy of tuberculous lymphadenitis

19.3.3. Describe microscopy of tuberculous lymphadenitis with neat diagram

19.3.4. Mention the special stain used to demonstrate tubercle bacilli

19.5.1. Identify microscopy of Hodgkin’s Lymphoma of a given slide with neat diagram

PA-19.4 - Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

19.4.1. Classify Lymphoid neoplasm (WHO) and enumerate the clinical features of Lymphoma

19.4.2. Classify Hodgkin’s lymphoma

19.4.3. Enumerate the clinical features of Hodgkin’s Lymphoma

19.4.4. Write on etiopathogenesis of Hodgkin’s lymphoma

19.4.5. Describe the gross & microscopy of Hodgkin’s lymphoma with the help of neat labeled diagram

19.4.6.Tabulate the differences between Hodgkin's and non-Hodgkin's lymphoma

TOPIC: PLASMA CELL DISORDERS (PA-20)

PA-20.1 - Describe the features of plasma cell myeloma

TLM : SGD – 2 hrs
Assessment: Skill Assessment

20.1.1. Describe clinical features and laboratory findings in plasma cell myeloma

20.1.2. Describe the complications of plasma cell myeloma SGD (2hrs)

TOPIC: HEMORRHAGIC DISORDERS (PA-21)

PA-21.1 - Describe normal haemostasis and haemophilia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.1.1. Define haemostasis

21.1.2. Describe normal haemostasis

21.1.3. Describe the vessel wall in normal haemostasis

21.1.4. Discuss the mechanism of primary haemostasis with a flow chart

21.1.5. Discuss the mechanism of secondary haemostasis with a flow chart

21.1.6. Brief the fate of haemostatic plug

21.1.7. Discuss the extravascular factors that influence haemostasis

21.1.8. List tests for intrinsic pathway abnormalities and give the procedure and normal values

21.1.9. List tests for extrinsic pathway abnormalities and give the procedure and normal values

21.2.1.Describe the clinical findings, inheritance and lab findings in haemophilia A & B

PA 21.2 - Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.2.1. Classify bleeding disorders

21.2.2. Enumerate the causes of bleeding due to vessel wall abnormality.

21.2.3. Enumerate bleeding disorder due to platelets.

21.2.4. List causes of thrombocytopenia

21.2.5. List the laboratory investigations of platelet disorders

21.2.6. Describe the etiopathogenesis of idiopathic thrombocytopenia

21.2.7. List the laboratory investigations of idiopathic thrombocytopenia

21.2.8. Describe clinical findings, inheritance in von Willebrand disease 21.2.9.

List the laboratory findings in von Willebrand disease

PA-21.3 - Differentiate platelet from clotting disorders based on the clinical and hematologic features. Differentiate platelet from clotting disorders based on the clinical and hematologic features.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

21.3.1. Differentiate platelet and clotting disorders clinically

21.3.2. Differentiate platelet and clotting disorders hematologically.

PA 21.4 - Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of disseminated intravascular coagulation

PA 21.5 - Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of Vitamin K deficiency.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

21.4.1. Define Disseminated Intravascular Coagulation (DIC)

21.4.2. Mention the causes DIC

21.4.3. Describe pathogenesis of DIC using flow chart

21.4.4. Discuss laboratory findings in Disseminated Intravascular Coagulation

21.5.1. List Vitamin K dependent factors

21.5.2. Describe the approach to diagnosis of Vitamin K deficiency using flow chart

TOPIC: BLOOD BANKING AND TRANSFUSION (PA-22)

PA-22.1 - Classify and describe blood group systems (ABO and RH)

PA-22.2 - Enumerate the indications, describe the principles, enumerate and demonstrate the steps of compatibility testing.

PA-16.7 - Describe the correct technique to perform a cross match

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

22.1.1. Classify different blood group system.

22.1.2. Mention importance of Rh factor.

22.1.3. Describe Bombay blood group. Mention its clinical importance.

22.1.4 Describe ABO & Rh incompatibility.

22.1.5. Mention different methods of blood grouping

22.1.6. Enumerate steps of ABO grouping & Rh typing and demonstrate the same.

22.2.1. Mention indications & principles of Major and minor cross matching.

22.2.2. Describe Coombs test, its principle & usage.

22.2.3. Describe criteria for Donor selection & rejection.

22.2.4. Describe Precautions to be taken during transfusion

16.7.1. Enumerate steps of major & minor cross matching and demonstrate the same.

PA- 22.4 - Enumerate blood components and describe their clinical uses.

PA- 22.5 - Enumerate and describe infections transmitted by blood transfusion.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

22.4.1. Enumerate different blood components 22.4.2.

Mention anticoagulants used in blood banks.

22.4.3. Mention different blood bags and their uses.

22.4.4. Mention storage and shelf life of different blood components

22.4.5. Describe indications for clinical use of different blood components

22.5.1. Enumerate different infections transmitted through blood transfusion.

22.5.2. Enumerate diseases tested for before transfusion and mention the methods of testing.

PA 22.6 - Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction.

PA 22.7 - Enumerate the indications and describe the principles and procedure of autologous transfusion.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

22.6.1. Describe transfusion reactions.

22.6.2. Mention types of transfusion reactions.

22.6.3. Describe clinical features of transfusion reactions.

22.6.4. Mention immediate steps to be taken following transfusion reaction

22.6.5. Enumerate steps in investigating blood transfusion reactions including documentation check, serological investigations, tests for haemolysis and microbiological tests.

22.7.1. Define autologous blood transfusion. Enumerate advantages and indications for autologous blood transfusion.

TOPIC: CLINICAL PATHOLOGY (PA-23)

PA 23.1 - Describe abnormal urinary findings in disease states and identify and describe common urinary abnormalities in a Clinical specimen

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

23.1.1. Mention different methods of collection of urine and preservation

23.1.2. Enumerate disease conditions associated with variation in total urine volume.

23.1.3. Enumerate disease conditions associated with variation in urine pH.

23.1.4. Enumerate disease conditions associated with variation in urine colour.

23.1.5. Enumerate disease conditions associated with variation in urine odour.

23.1.6. Enumerate disease conditions associated with variation in urine clarity/appearance.

23.1.7. Enumerate disease conditions associated with variation in urine specific gravity

23.1.8. Define glycosuria. Enumerate pathological conditions associated with glycosuria. Demonstrate the test for glycosuria.

23.1.9. Define ketonuria. Enumerate pathological conditions associated with ketonuria. Demonstrate the test for ketonuria,

23.1.10. Define proteinuria. Enumerate pathological conditions associated with proteinuria. Demonstrate the test for proteinuria.

23.1.11. Define haematuria, enumerate pathological conditions associated with haematuria. Demonstrate the test for haematuria.

23.1.12. Describe principles of chemical tests and Dipsticks tests for determination of Sugar, Ketone bodies, Proteins and Blood in urine.

23.1.13. Describe urinary microscopic findings with reference to cells, crystals and casts in disease states.

23.1.14. Interpret urinary findings in Nephritic syndrome, Nephrotic syndrome, Diabetic ketoacidosis, Urinary tract infection.

PA 23.2 - Describe abnormal findings in body fluids in various disease states.

PA 23.3 - Describe and interpret the abnormalities in a panel containing semen analysis.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

23.2.1. Mention different body fluids, method of collection and preservation.

23.2.2. Mention differences between transudate and exudate.

23.2.3. Mention changes in body fluid parameters in tuberculosis
23.2.4. Mention changes in body fluid parameters in malignancy

23.2.5. Mention changes in body fluid parameters in pyogenic infections.

23.2.6. Identify etiology of pleural effusion and ascitis by interpreting given body fluid parameters.

23.3.1. Describe indications for semen analysis and interpretation of semen analysis report.

TOPIC: GASTROINTESTINAL TRACT (PA-24)

PA24.1 - Describe the etiology, pathogenesis, pathology and clinical features of oral cancers include salivary gland tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.1.1. Describe Leukoplakia and Erythroplakia.

24.1.2. Describe aetiology, pathogenesis of squamous cell carcinoma of oral cavity.

24.1.3. Describe gross and microscopic features of squamous cell carcinoma of oral cavity

24.1.4. Classify salivary gland tumours

24.1.5. Describe Morphology & clinical features of Pleomorphic adenoma, Warthin tumour & Mucoepidermoid carcinoma.

24.1.6. Barrett's oesophagus

24.1.7. Describe the aetiology, pathogenesis, types, morphological features of carcinoma oesophagus

PA-24.2 - Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.2.1. Define peptic ulcer disease.

24.2.2. Describe aetiology andpathogenesis of PUD,

24.2.3. Describe gross and microscopic features of Peptic ulcer.

24.2.4. Describe clinical features and complications of PUD.

24.2.5. Define Gastritis and discuss its types

24.2.6. Describe etiopathogenesis, morphology and clinical features of Acute Gastritis

PA- -

24.4 Describe and aetiology and pathogenesis and pathologic features of carcinoma of the stomach

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

24.4.1. Describe epidemiology, etiopathogenesis and clinical features of carcinoma stomach.

24.4.2. Describe gross andmicroscopy of Carcinoma stomach.

24.4.3. Mention gross morphological differences between benign and malignant gastric ulcers.

PA-24.6 - Describe and aetiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.6.1. Define IBD,

24.6.2. Describe epidemiology, aetiology and pathogenesis of IBD.

24.6.3. Describe gross and microscopy, clinical features and complications of Crohn's disease.

24.6.4. Describe gross and microscopy, clinical features & complications of ulcerative colitis.

24.6.5. Enumerate the differences between Ulcerative Colitis and Crohn's disease

PA-24.7 - Describe the aetiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

24.7.1. Enumerate polyps and adenomas of colon.

24.7.2. Describe Familial Adenomatous Polyposis.

24.7.3. Describe aetiology, pathogenesis of Carcinoma of colon.

24.7.4. Describe gross morphology and microscopy of Carcinoma of colon.

24.7.5. Describe clinical features, investigations, staging and prognosis of carcinoma of colon. 24.7.6.

Enumerate pre-neoplastic lesions of Intestine

PA- -

24.3 Describe and identify the microscopic features of peptic ulcer. – Include slides of Pleomorphic adenoma and specimen of Ca Stomach, Ca Colon, TB intestine, Peptic ulcer

PA 24.5 - Describe and aetiology, pathogenesis and pathologic features of Tuberculosis of the intestine

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

24.3.1. Identify microscopic features of pleomorphic adenoma.

24.3.2. Identify gross features in specimen of carcinoma ofstomach.

24.3.3. Identify gross features in specimen of carcinoma of colon.

24.3.4. Identify microscopic features of carcinoma of stomach.

24.3.5. Identify microscopic features of carcinoma of colon.

24.3.6. Identify the gross and microscopic features of peptic ulcer

24.5.1. Identify Gross features in specimen of TB intestine (Optional)

24.5.2. Identify microscopic features of Tuberculosis of intestine.(Optional)

PA-24 - Gastrointestinal system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: HEPATOBILIARY SYSTEM (PA-25)

PA-25.1 - Describe bilirubin metabolism, enumerate the aetiology and pathogenesis of jaundice, distinguish between direct and indirect hyperbilirubinemia

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

25.1.1. Describe bilirubin metabolism

25.1.2. Enumerate the etiology and pathogenesis of jaundice

25.1.3. Distinguish between direct and indirect hyperbilirubinemia

PA- -

25.2 Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences.

PA-25.3 - Describe the aetiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

25.2.1. Describe the pathophysiology, complications and clinical consequences of liver failure

25.3.1. Define hepatitis and list the causes of hepatitis

25.3.2. Describe the pathogenesis of various viral hepatitis

25.3.3. Describe the morphology of viral hepatitis

25.3.4. Enumerate the complications and discuss the clinical consequences of hepatitis.

25.3.5. Describe the etiopathogenesis of toxic hepatitis

25.3.6. Discuss the clinical findings and laboratory findings in relation to the progression of hepatitis

PA-25.4 - Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis.

PA-25.5 - Describe the aetiology, pathogenesis and complications of portal hypertension.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

25.4.1. Describe the etiopathogenesis and pathophysiology of Alcoholic liver disease

25.4.2. Describe the stages of alcoholic liver disease with progression to cirrhosis

25.4.3. Define cirrhosis

25.4.4. Describe the etiopathogenesis, classification and pathology of cirrhosis

25.4.5. Enumerate the clinical manifestations and complications of cirrhosis

25.5.1. Define portal hypertension

25.5.2. Describe the etiopathogenesis of Portal hypertension

PA- -

25.5.3. Enumerate the clinical consequences and complications of portal hypertension

25.6 Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

25.6.1. To distinguish between obstructive from non-obstructive jaundice (Charts)

25.6.2. Interpret liver function tests with viral hepatitis serology panel.

25.6.3. Identify gross and microscopic feature of cirrhosis.

25.6.4. Identify gross and microscopic feature of chronic cholecystitis.

25.6.5. Enumerate and recognise different types of gall stones.

PA-25 - Hepatobiliary system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: RESPIRATORY SYSTEM (PA-26)

PA-26.1 - Define and describe the aetiology, types, pathogenesis, stages, morphology and complications of pneumonia.

PA 26.2 - Describe the aetiology, gross and microscopic appearance and complications of lung abscess

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.1.1. Describe the etiological classification and pathogenesis of pneumonia.

26.1.2. Describe the stages of lobar pneumonia

26.1.3. Describe the morphology of Lobar and Bronchopneumonia.

26.1.4. List the complications of pneumonia

26.1.5. To list the differences between lobar and bronchopneumonia.

PA- -

26.1.6. Discuss the causes and pathology of Acute Respiratory Distress Syndrome.

26.2.1. Enlist the causes for lung abscess

26.2.2. Describe the gross and microscopy of lung abscess

26.2.3. List the complications of lung abscess

26.3 Define and describe the aetiology, types, pathogenesis, stages, morphology and complications and evaluation of Obstructive airway disease (OAD)

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

26.3.1. Define emphysema and list the types of emphysema

26.3.2. Describe the etiopathogenesis and morphology of emphysema

26.3.3. Define bronchiectasis, and describe the etiopathogenesis

26.3.4. Describe the gross morphology and microscopy of bronchiectasis

26.3.5. Describe the etiopathogenesis of Asthma

26.3.6. Enumerate the Pulmonary function test findings and list the complications of Obstructive airway disease.

PA-26.4 - Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.4.1. Define granulomatous inflammation and describe Ghon's complex

26.4.2. Describe the epidemiology, aetiology and pathogenesis of tuberculosis.

26.4.3. Differentiate between primary and secondary tuberculosis

26.4.4. Describe the natural history and spectrum of pulmonary tuberculosis

26.4.5. Discuss the spread and complications of pulmonary Tuberculosis

26.4.6. Describe gross appearance and microscopy of Pulmonary Tuberculosis. 26.4.7.

Describe the Laboratory diagnosis of Tuberculosis

PA- -

PA-26.5 - Define and describe the aetiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.5.1. Define Pneumoconiosis and list the types according to the etiological agents

26.5.2. Describe the risk factors and pathogenesis of Pneumoconiosis.

26.5.3. Describe the gross and microscopy of common pneumoconiosis

26.6 Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura.

PA-26.7 - Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology, microscopic appearance and complications of mesothelioma.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

26.6.1. Classify the histologic types of lung carcinoma. Describe the etiopathogenesis of lung carcinoma

26.6.2. Describe the risk factors of lung carcinoma

26.6.3. Describe the gross and microscopy of the main histological types

26.6.4. Enumerate the spread of lung cancer

26.6.5. Distinguish the morphology of primary carcinoma lung and metastasis to lung

26.7.1. Describe in brief the environmental influence and morphology of mesothelioma(non-core)

PA- 26 .0 Respiratory System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

26.0.1. Identify the gross morphology of Pneumonia, Bronchiectasis, Emphysema, TB lung, Carcinoma lung.

26.0.2. Identify the microscopy of lobar pneumonia and TB lung.

PA-26.0 - Respiratory System

PA- -

TLM : Tutorial/ Formative assessment – 2 hrs

Assessment: Written, Viva voce

TOPIC: CARDIOVASCULAR SYSTEM (PA-27)

PA-27.1 - Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types of arteriosclerosis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

27.1.1. Define arteriosclerosis and distinguish between the types of arteriosclerosis

27.1.2. Discuss the epidemiology and the role of risk factors in the pathogenesis of atherosclerosis

27.1.3. Describe the pathogenesis of atherosclerosis

27.1.4. Describe the morphology and microscopy of atherosclerotic plaque and the complicated plaque

27.1.5. Enumerate the clinical consequences of atherosclerosis in different organs

PA-27.5 - Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

27.5.1. Describe the epidemiology, risk factors and spectrum of IHD

27.5.2. Descibe pathogenesis and dynamic plaque changes in IHD

27.5.3. Describe the clinical presentations of IHD in relation to the plaque changes

27.5.4. Describepathogenesis and response of myocardium to ischemia

27.5.5. Describe the gross and microscopy of myocardial infarction

27.5.6. Discuss the lab diagnosis and complications of acute coronary syndromes

PA-27.2 - Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms.

PA-27.3 - Describe the etiology, types, stages pathophysiology, pathology and complications of heart failure.

PA27.10 - Describe the etiology, pathophysiology, pathology features and complications of syphilis on the cardiovascular system.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.2.1. Define aneurysm and enumerate the causes and types of aneurysms

27.2.2. Describe the dynamics and pathology of abdominal aortic aneurysm

27.2.3. Describe the clinical course and complications of aneurysms 27.2.4.

Classify and discuss the pathology of aortic dissection

27.3.1. Describe the etiology, types and stages of heart failure

27.3.2. Describe the pathology and complications of heart failure

27.10.1. Describe the pathology of Syphilitic aneurysms.(Optional)

PA-27.4 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever.

PA-27.6 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.4.1. Describe the etiopathogenesis of rheumatic fever

27.4.2. Describe the gross and microscopic features of acute rheumatic carditis

27.4.3. Describe the gross and microscopic features of rheumatic valvular disease

27.4.4. Describe the clinical criteria and complications of acute rheumatic fever.

27.6.1. Describe the etiology, pathogenesis and morphology of infective endocarditis

27.6.2. Differentiate between acute and sub-acute infective endocarditis

27.6.3. Describe and differentiate between the major forms of valvular vegetations

PA 27.7 - Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of pericarditis and pericardial effusion

PA 27.9 - Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of cardiomyopathies

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

27.7.1. Describe the etiology, types and pathology of pericarditis

27.7.2. Describe the morphological patterns of pericarditis

27.7.3. Describe the etiology and types of pericardial effusions

27.9.1. Enumerate the etiology and types of cardiomyopathies

27.9.2. Enumerate the complications of cardiomyopathies. (Optional)

PA 27.8 - Interpret abnormalities in cardiac function testing in acute coronary syndromes

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

27.8.1. Interpret abnormalities in serological cardiac function tests in acute coronary syndromes.

27.8.2. Identify gross and microscopy of Atherosclerosis and Myocardial infarction

PA-27.0 - Cardiovascular system

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: URINARY TRACT (PA-28)

PA-28.1 - Describe the normal histology of the kidney.

PA-28.5 - Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis.

PA-28.6 - Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.1.1. Recognize the normal structure of glomeruli, tubules, interstitium and blood supply of a Nephron.

28.5.1. Define glomerular diseases.

28.5.2. Classify glomerular diseases.

28.5.3. Discuss the etiopathogenesis emphasising the immune mechanism of glomerular injury.

28.5.4. Describe the morphology of Acute post infectious glomerulonephritis. 28.5.5.

Discuss the clinical features of acute post infectious glomerulonephritis.

28.5.6. Distinguish between Nephritic and Nephrotic syndrome.

28.5.7. Distinguish the morphological features in RPGN, Minimal change disease and Chronic glomerulonephritis.

28.6.1. Define IgA nephropathy

28.6.2. Discuss the etiopathogenesis of IgA nephropathy.

28.6.3. Describe the morphological features in IgA nephropathy

28.6.4. Enumerate the lab findings in IgA nephropathy.

28.6.5. Mention the complications of IgA nephropathy.

PA 28.2 - Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology, clinical and laboratory and urinary findings, complications of renal failure.

PA-28.3 - Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute renal failure.

PA-28.4 - Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

28.2.1. Define Renal Failure.

28.2.2. Classify renal failure on etiological basis.

28.3.1. Define Acute renal failure.

28.3.2. Discuss the etiopathogenesis of ARF.

28.3.3. Describe the pathology of Acute Renal failure.

28.3.4. Enumerate the laboratory findings in acute renal failure.

28.3.5. Enumerate the clinical features and complications of ARF 28.3.6.

Renal Function Tests

28.4.1. Define chronic renal failure.

28.4.2. Discuss the etiopathogenesis of CRF.

28.4.3. Describe the pathology of CRF.

28.4.4. Enumerate the laboratory findings in CRF.

28.4.5. Mention the complications of CRF.

PA 28.8 - Enumerate and classify diseases affecting the tubular Interstitium.

PA-28.9 - Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis.

PA-28.10 - Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.8.1. Enumerate the (2 major) processes of injury to the renal tubules and interstitium.

28.8.2. Discuss the etiological classification of Tubulointerstitial Nephritis.

28.9.1. Define Acute tubular necrosis.

28.9.2. Discuss the etiopathogenesis of ATN.

28.9.3. Discuss the morphological features in ATN.

28.9.4. Enumerate the laboratory findings in ATN.

28.9.5. Discuss the progression and complications of ATN

28.10.1. Discuss the etiopathogenesis of Acute pyelonephritis.

28.10.2. Describe the morphology in Acute pyelonephritis.

28.10.3. Enumerate the lab findings in Acute pyelonephritis.

28.10.4. Discuss the progression and complications of Acute pyelonephritis

28.10.5. Discuss the etiopathogenesis of Chronic pyelonephritis.

28.10.6. Describe the morphology of chronic pyelonephritis.

28.10.7. Enumerate the laboratory findings in chronic pyelonephritis.

28.10.8. List the complications of chronic pyelonephritis.

28.10.9. Enumerate the distinguishing features of acute and chronic pyelonephritis Lecture (1hr)

PA-28.7 - Enumerate and describe the findings in glomerular manifestations of systemic disease.

PA-28.11 - Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney.

PA-28.15 - Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.7.1. Enlist the important systemic diseases showing glomerular involvement.

28.7.2. Describe the morphological features in Lupus nephritis.

28.7.3. Describe the morphological findings in Diabetic nephropathy

28.11.1. Classify various vascular diseases of kidney.

28.11.2. Define Nephrosclerosis.

28.11.3. Mention types of nephrosclerosis.

28.11.4. Discuss the etiopathogenesis of benign nephrosclerosis

28.11.5. Describe the morphology in benign nephrosclerosis.

28.11.6. Enumerate the laboratory findings in benign nephrosclerosis.

28.11.7. Discuss the etiopathogenesis of Malignant nephrosclerosis.

28.11.8. Describe the morphology in malignant nephrosclerosis

28.11.9. Enumerate the laboratory findings malignant nephrosclerosis.

28.11.10. List the complications in malignant nephrosclerosis.

28.11.11. Discuss the distinguishing features of benign and malignant nephrosclerosis.

28.15.1. Describe the etiopathogenesis, and genetics of Thrombotic Microangiopathies.

28.15.2. Describe the morphology in thrombotic microangiopathies.

28.15.3. Discuss the clinical features and progression of thrombotic microangiopathies. (Optional)

PA-28.12 - Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney.

PA-28.13 - Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy

TLM : SGD – 2 hrs

Assessment: Written, Viva voce

28.12.1. Define cystic diseases of kidney
28.12.2. Classify various Cystic diseases of kidney.

28.12.3. Discuss the genetic inheritance, pathogenesis and, pathology of APKD.

28.12.4. Enumerate the laboratory and urinary findings in APKD.

28.12.5. Discuss the progression and complications of APKD 28.12.6.

Describe the genetic inheritance, pathogenesis, and pathology of CPKD.

28.12.7. Mention the complications of CPKD.

28.13.1. Define obstuctive uropathy.

28.13.2. Classify obstructive uropathy based on causes.

28.13.3. Define Hydronephrosis.

28.13.4. Describe the etiopathogenesis, of hydronephrosis.

28.13.5. Describe the morphogy in hydronephrosis

28.13.6. Enumerate the laboratory findings in hydronephrosis.

28.13.7. Discuss the progression and complications of hydronephrosis.

28.13.8. Distinguish between hydronephrosis and APKD 28.13.9.

Describe the various types of renal calculi.

28.13.10. Discuss the clinical features and complications of renal stones.

PA-28.14 - Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

28.14.1. Classify Renal tumors.

28.14.2. Discuss the etiopathogenesis and genetic abnormalities in RCC.

28.14.3. Describe the morphology of RCC.

28.14.4. Discuss the clinical features of RCC.

28.14.5. Discuss the progression and complications of RCC.

PA-28.16 - Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of Urothelial tumors.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

28.16.1. Discuss the etiopathogenesis of Urothelial tumors of urinary bladder.

28.16.2. Describe the morphology of Urothelial carcinoma of urinary bladder.

28.16.3. Discuss the clinical features and progression of Urothelial carcinoma. (Optional)

PA 28.0 - Urinary System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

28.0.1. Identify the gross and microscopic features of Chronic pyelonephritis and Renal cell carcinoma.

28.0.2. Enumerate and identify types of renal stones.

28.0.3. Identify gross morphology of Hydronephrosis.

PA 28.0- Urinary System

TLM : Tutorial/ Formative assessment – 2 hrs **Assessment:**Written, Viva voce

TOPIC: MALE GENITAL TRACT (PA-29)

PA-29.1 - Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors.

PA-29.2 - Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

29.1.1. Classify Testicular tumors

29.1.2. Describe the pathogenesis of germ cell tumors.

29.1.3. Describe the morphology of seminoma testis.

29.1.4. Discuss the presenting features, progression and spread of seminoma testis.

29.1.5. Distinguish seminoma and Non-seminomatous germ cell tumors.

29.1.6. Enumerate various bio-markers used in the diagnosis of germ cell tumors.

29.2.1. Discuss the pathogenesis of carcinoma penis.

29.2.2. Describe the morphology of carcinoma penis
29.2.3. Discuss the presenting features, progression and spread of carcinoma penis

29.2.4. Distinguish Condyloma acuminatum, Bowens disease and carcinoma penis.

PA-29.3 - Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests of benign prostatic hyperplasia.

PA-29.4 - Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate.

PA-29.5 - Describe the etiology, pathogenesis, pathology and progression of prostatitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

29.3.1. Discuss the hormonal role in the pathogenesis of BPH.

29.3.2. Describe the morphological features of BPH.

29.3.3. Discuss the presenting features and urologic findings in BPH.

29.3.4. Enumerate the diagnostic tests in BPH.

29.4.1. Discuss the pathogenesis of Adenocarcinoma prostate emphasising the role of hormones.

29.4.2. Discuss the morphological findings in adenocarcinoma prostate. 29.4.3.

Discuss the clinical features, progression and spread of adenocarcinoma prostate.

29.4.4. Enumerate the various diagnostic tests in adenocarcinoma prostate.

29.4.5. Distinguish the salient features of BPH and adenocarcinoma prostate.

29.5.1. Enumerate the causes of prostatitis.

29.5.2. Discuss the pathogenesis of chronic prostatitis (most common)

29.5.3. Describe the morphology of chronic prostatitis.

29.5.4. Discuss the progression of chronic prostatitis. (Optional)

PA29 – Male Genital Tract

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

29.0.1. Identify the gross morphology of carcinoma penis.

29.0.2. Identify the gross and microscopic features of seminoma testis.

29.0.3. Identify the microscopic features of Benign prostatic hyperplasia.

TOPIC: FEMALE GENITAL TRACT (PA-30)

PA-30.1 - Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of the Cervix.

PA-30.6 - Describe the etiology and morphologic features of cervicitis.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.1.1. Describe the epidemiology of Carcinoma Cervix.

30.1.2. List the morphological types of carcinoma cervix

30.1.3. Describe the etiopathogenesis, clinical features and morphology of Squamous cell carcinoma- cervix.

30.1.4. Describe the Progression of CIN to carcinoma cervix

30.1.5. Describe the screening methods employed in carcinoma cervix with emphasis on pap smear collections methods and salient pap smear findings of carcinoma cervix.

30.6.1. Describe the etiology and morphologic features of cervicitis. (Optional)

PA-30.2 - Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium.

PA-30.7 - Describe the etiology, hormonal dependence, features and morphology of endometriosis.

PA-30.8 - Describe the etiology and morphologic features of adenomyosis.

PA-30.9 - Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.2.1. Discuss the etiopathogenesis of carcinoma -endometrium

30.2.2. Describe the morphology of endometrial carcinoma.

30.2.3. Discuss the premalignant lesions and its progression to carcinoma endometrium

30.2.4. Describe the Clinical features and spread of carcinoma endometrium

30.7.1. Discuss the etiopathogenesis, clinical features, morphology of endometriosis. (Optional)

30.8.1. Describe the etiology and morphologic features of adenomyosis. (Optional)

30.9.1. Discuss the etiopathogenesis, clinical features, morphology of endometrial hyperplasia. (Optional)

PA-30.4 - Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.4.1. Classify ovarian tumours

30.4.2. Describe the pathogenesis, gross and microscopy of surface epithelial tumours.

30.4.3. Define and describe the pseudomyxoma peritonei.

30.4.4. Describe the classification, gross and microscopy of germ cell tumours.

30.4.5. Describe the gross and microscopy of mature cystic teratoma.

30.4.6. Describe the morphology of sex cord tumors.

30.4.7. Define and describe Krukenberg tumour and Struma ovarii.

30.4.8. Describe the clinical features, mode of spread and tumour markers used in ovarian tumour

PA-30.5 - Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

30.5.1. Define and classify the gestational trophoblastic diseases.

30.5.2. Describe the etiopathogenesis of Molar pregnancy,

30.5.3. Describe the gross and microscopy of complete/partial hydatidiform mole.

30.5.4. Describe the gross & microscopy of Invasive mole and gestational choriocarcinoma.

PA-30.3 - Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the leiomyomas and leiomyosarcomas

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

30.3.1. Describe the etiology and pathogenesis of leiomyoma -uterus

30.3.2. List the morphological types of leiomyoma

30.3.3. Describe the gross and microscopy of leiomyoma 30.3.4.

Describe the fate of leiomyoma

30.3.5. List the salient differences between leiomyoma with leiomyosarcoma uterus. 30.3.6.

Identify gross and microscopy of leiomyoma

30.4.1. Identify and differentiate between the serous and mucinous tumours by their gross and microscopic features.

30.4.2. Identify the gross and microscopy of mature cystic teratoma.

30.5.2. Identify the gross and microscopy of hydatidiform mole.

PA30.0 - Male and Female Genital System

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BREAST (PA-31)

PA-31.1 - Classify and describe the types, etiology, pathogenesis, hormonal dependency of breast pathology and benign disease.

PA-31.4 - Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

31.1.1. Classify the benign epithelial lesions of breast and discuss their clinical significance

31.1.2. Discuss etiopathogenesis and morphology of fibrocystic disease

31.1.3. Definition and classification of Proliferative breast diseases (proliferative breast disease with atypia and proliferative breast disease without atypia).

31.1.4. Enumerate and briefly discuss the morphology of proliferative breast disease without atypia (Epithelial hyperplasia, sclerosing adenosis, Radial scar, Complex fibroadenoma and Duct Papilloma)

31.1.5. Define and list proliferative breast disease with atypia (Atypical ductal hyperplasia and atypical lobular hyperplasia). Discuss their clinical significance.

31.1.6. List the fibroepithelial neoplasms, Discuss their clinical significance and morphology (fibroadenoma and phyllodes tumour)

31.4.1 Describe the etiopathogenesis and morphology of Gynaecomastia. (Optional)

PA-31.2 - Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

31.2.1. Classify Breast carcinoma

31.2.2. Discuss epidemiology and etiopathogenesis of breast carcinoma, with a note on molecular mechanisms/subtypes

31.2.3. Discuss the gross and microscopy of invasive ductal carcinoma-NST, medullary carcinoma and lobular carcinoma

31.2.4. Discuss prognostic factors of breast carcinoma

31.2.5. Describe the clinical features, staging and spread of carcinoma- Breast

31.2.6. Discuss the clinical approach to breast lump with reference to carcinoma breast

31.2.7. Discuss the clinical significance and morphology of Paget's disease of nipple

PA-31.3 - Describe and identify the morphologic and microscopic features of carcinoma of the breast.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

31.3.1. Identify and describe the gross and microscopy of Infiltrating ductal carcinoma of breast

31.3.2. Identify gross and microscopic features of Fibroadenoma. (Optional)

TOPIC: ENDOCRINE SYSTEM (PA-32)

PA 32.1 - Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

32.1.1. Describe the pathogenesis of simple and multinodular Goitre

32.1.2. Describe role of Iodine and pathology in simple and multinodular goitre

32.1.3. Classify thyroid neoplasms

32.1.4. Describe the role of iodine in papillary thyroid carcinoma
32.1.5. Describe the pathogenesis and pathology of papillary thyroid carcinoma

PA-32.2 - Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis.

PA-32.3 - Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/ hypothyroidism.

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

32.2.1. Define Thyrotoxicosis

32.2.2. Enumerate etiology of Thyrotoxicosis

32.2.3. Describe the etiopathogenesis and clinical features of Grave's disease

32.2.4. Describe role of Iodine in Thyrotoxicosis

32.2.5. Describe the Clinical Features of Thyrotoxicosis

32.2.6. Describe the laboratory and imaging features of Thyrotoxicosis

32.2.7. Describe the Clinical course of thyrotoxicosis

32.2.8. Discuss the morphological changes in Grave's disease

32.2.9. Describe the testing methods to diagnose Graves' disease

32.3.1. Define Hypothyroidism

32.3.2. Enumerate etiology of Hypothyroidism

32.3.3. Describe the pathogenesis of Hypothyroidism

32.3.4. Describe role of Iodine in Hypothyroidism

32.3.5. Describe the Clinical Features of Hypothyroidism

32.3.6. Describe the laboratory and imaging features of Hypothyroidism

32.3.7. Describe the Clinical course of Hypothyroidism

32.3.8. Describe the etiopathogenesis and pathology of Hashimoto's thyroiditis

PA-32.4 - Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

32.4.1. Define Diabetes Mellitus

32.4.2. Describe epidemiology of Diabetes Mellitus
32.4.3. Enumerate etiology of Diabetes Mellitus

32.4.4. Describe the pathogenesis of Diabetes Mellitus

32.4.5. Describe the pathology of Diabetes Mellitus

32.4.6. Describe the Clinical Features of Diabetes Mellitus

32.4.7. Describe the laboratory features of Diabetes Mellitus

32.4.8. List the complications of Diabetes Mellitus

32.4.9. Describe the Pathogenesis of complication of Diabetes Mellitus

32.4.10. Describe the Laboratory features of complications of Diabetes Mellitus 32.4.11.

Describe the Clinical course of Diabetes Mellitus

PA-32.5 - Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.5.1. Define hyperparathyroidism

32.5.2. Describe the genetics of hyperparathyroidism

32.5.3. Enumerate etiology of hyperparathyroidism

32.5.4. Describe the pathogenesis of hyperparathyroidism

32.5.5. Identify the Morphological features of hyperparathyroidism

32.5.6. Describe the Clinical Features of hyperparathyroidism

32.5.7. Interpret the laboratory features of hyperparathyroidism. (Optional)

PA-32.6 - Describe etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.6.1. Define Pancreatic Cancer

32.6.2. Enumerate etiology of Pancreatic Cancer

32.6.3. Describe the pathogenesis of Pancreatic Cancer

32.6.4. Describe the Morphological features of Pancreatic Cancer

32.6.5. Describe the Clinical Features of Pancreatic Cancer

32.6.6. Describe the laboratory features of Pancreatic Cancer

32.6.7. Describe the complications of Pancreatic Cancer
32.6.8. Describe the pathology of metastatic pancreatic Cancer (Optional)

PA-32.7 - Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency

PA-32.8 - Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features complications of Cushing's syndrome.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.7.1. Define Adrenal insufficiency

32.7.2. Enumerate etiology of Adrenal insufficiency

32.7.3. Describe the pathogenesis of Adrenal insufficiency

32.7.4. Describe the Morphological features of Adrenal insufficiency

32.7.5. Describe the Clinical Features of Adrenal insufficiency

32.7.6. Describe the Laboratory Features of Adrenal insufficiency

32.7.7. Describe the complications of Adrenal insufficiency. (Optional)

32.8.1. Define Cushing’s syndrome

32.8.2. Enumerate etiology of Cushing’s syndrome

32.8.3. Describe the pathogenesis of Cushing’s syndrome

32.8.4. Describe the morphological features of Cushing’s syndrome

32.8.5. Describe the Clinical Features of Cushing’s syndrome

32.8.6. Describe the Laboratory Features of Cushing’s syndrome

32.8.7. Describe the complications of Cushing’s syndrome. (Optional)

PA-32.9 - Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms.

TLM : SDL – 1 hr
Assessment: Written, Viva voce

32.9.1. Classify adrenal neoplasms

32.9.2. Enumerate etiology of adrenal neoplasms

32.9.3. Describe the pathogenesis of adrenal neoplasms

32.9.4. Describe the morphological features of adrenal neoplasms

32.9.5. Describe the clinical features of adrenal neoplasms

32.9.6. Describe the laboratory features of adrenal neoplasms. (Optional)

PA-32.0 - Endocrine System

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

32.0.1. Identify the gross and microscopic features of Multinodular goitre and Papillary carcinoma.

32.0.2. Identify the microscopic features of Hashimoto's thyroiditis.

PA-32.0 - Endocrine System

TLM : Tutorial/ Formative assessment – 2 hrs
Assessment: Written, Viva voce

TOPIC: BONE AND SOFT TISSUE (PA-33)

PA-33.1 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

33.1.1. Define Osteomyelitis

33.1.2. Classify Osteomyelitis

33.1.3. Enumerate etiology of Osteomyelitis

33.1.4. Describe pathogenesis of Osteomyelitis

33.1.5. Describe the Morphological features of Osteomyelitis

33.1.6. Describe the Clinical Features of Osteomyelitis

33.1.7. Describe the Radiological Features of Osteomyelitis

33.1.8. Describe the complications of Osteomyelitis

PA-33.2 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of bone tumors

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

33.2.1. Define Bone tumours

33.2.2. Classify Bone tumours

33.2.3. Enumerate etiology of Bone tumours

33.2.4. Describe pathogenesis of Bone tumours

33.2.5. Describe the morphological features of Bone tumours

33.2.6. Describe the clinical features of Bone tumours (Giant cell tumour, Osteosarcoma, Ewing's tumour)

33.2.7. Describe the radiological features of Bone tumours

33.2.8. Describe the complications of Bone tumours

33.2.9. Describe the pathology of Bone tumour metastasis

PA-33.3 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and

complications and metastases of soft tissue tumors

TLM : SGD – 2 hrs
Assessment: Written, Viva voce

33.3.1. Define soft tissue tumors.

33.3.2. Classify soft tissue tumors.

33.3.3. Enumerate etiology of soft tissue tumors.

33.3.4. Describe pathogenesis of soft tissue tumors.

33.3.5. Describe the morphological features of soft tissue tumors.

33.3.6. Describe the clinical features of soft tissue tumors.

33.3.7. Describe the radiological features of soft tissue tumors.

33.3.8. Describe the complications of soft tissue tumors.

33.3.9. Describe the pathology of soft tissue tumour metastasis

PA-33.4 - Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of Paget's disease of the bone.

PA-33.5 - Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis.

TLM : SDL – 2 hrs
Assessment: Written, Viva voce

33.4.1. Define Paget's disease of the bone

33.4.2. Enumerate etiology of Paget's disease of the bone

33.4.3. Describe pathogenesis of Paget's disease of the bone

33.4.4. Describe the Morphological features of Paget's disease of the bone

33.4.5. Describe the Clinical Features of Paget's disease of the bone

33.4.6. Describe the Radiological Features of Paget's disease of the bone

33.4.7. Describe the complications of Paget's disease of the bone. (Optional)

33.5.1. Define Rheumatoid Arthritis

33.5.2. Classify Rheumatoid Arthritis

33.5.3. Enumerate etiology of Rheumatoid Arthritis

33.5.4. Describe immunology of Rheumatoid Arthritis

33.5.5. Describe pathogenesis of Rheumatoid Arthritis

33.5.6. Describe the morphological features of Rheumatoid Arthritis

33.5.7. Describe the clinical features of Rheumatoid Arthritis

33.5.8. Describe the laboratory features of Rheumatoid Arthritis

33.5.9. Describe the radiological features of Rheumatoid Arthritis

33.5.10. Enumerate the diagnostic criteria of Rheumatoid Arthritis

33.5.11. Describe the complications of Rheumatoid Arthritis. (Optional)

PA-33.0 - Bone and Soft Tissue

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

33.0.1. Identify the gross and microscopic features of Osteoclastoma and Osteosarcoma.

TOPIC: SKIN (PA-34)

PA-34.1 - Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin.

PA-34.2 - Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin.

PA-34.3 - Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma.

TLM : Lecture – 1 hr **Assessment:**Written, Viva voce

34.1.1. Describe the risk factors of squamous cell carcinoma of the skin

34.1.2. Describe the pathogenesis of squamous cell carcinoma of the skin

34.1.3. Describe the pathology of squamous cell carcinoma of the skin

34.1.4. Describe the natural history of squamous cell carcinoma of the skin

34.2.1. Describe the risk factors of basal cell carcinoma of the skin

34.2.2. Describe the pathogenesis of basal cell carcinoma of the skin

34.2.3. Describe the pathology of basal cell carcinoma of the skin

34.2.4. Describe the natural history of basal cell carcinoma of the skin

34.3.1. Define nevus

34.3.2. Define Melanoma

34.3.3. Describe the distinguishing features between a nevus and melanoma.

34.3.4. Enumerate the etiology of melanoma

34.3.5. Describe the risk factors of melanoma

34.3.6. Describe the pathogenesis of melanoma

34.3.7. Describe the morphology of melanoma

34.3.8. Describe the clinical features of melanoma

34.3.9. Describe the pathology of metastatic melanoma.(Optional)

PA-34.4 - Identify, distinguish and describe common tumors of the skin Covered in DOAP 8

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

34.4.1. Identify Common tumours of skin

34.4.2. Distinguish the common tumors of the skin.

34.4.3. Describe the common tumors of the skin.

TOPIC: CENTRAL NERVOUS SYSTEM (PA-35)

PA-35.1 - Describe the etiology, types and pathogenesis, differentiating factors, CSF findings in meningitis.

PA 35.3 - Identify the etiology of meningitis based on given CSF parameters.

TLM : DOAP – 2 hrs
Assessment: Skill Assessment

35.1.1. Enumerate the etiology of meningitis

35.1.2. Enumerate the types of meningitis

35.1.3. Describe the pathogenesis of meningitis.

35.1.4. Describe the differentiating factors in different types of meningitis

35.1.5. Describe the CSF findings in meningitis.

35.3.1. Identify the etiology of meningitis based on given CSF parameters

PA-35.2 - Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications of CNS Tumours.

TLM : Lecture – 1 hr
Assessment: Written, Viva voce

35.2.1. Classify CNS tumours

35.2.2. Describe the etiopathogenesis of CNS tumours

35.2.3. Describe the genetics of CNS tumours

35.2.4. Describe the pathology of CNS tumours.

35.2.5. Describe the clinical features

35.2.6. Describe the sequelae of CNS tumour

35.2.7. Describe complications of CNS tumours.

PA- 19, 33, 34, 35 - Skin, Bone, CNS, Lymph node

TLM : Tutorial/ Formative assessment – 2 hrs

Assessment: Written, Viva voce

TOPIC: EYE (PA-36)

PA 36.1 - Describe the etiology, genetics, pathogenesis, pathology, presentation, sequelae and complications of retinoblastoma

To be covered with paediatric and genetic diseases

Assessment: Written, Viva voce

TOPICS FOR SELF DIRECTED LEARNING (SDL)

Sl.no	Competency	Topic	Hours
1.	**PA-6.4a**	Define and describe normal haemostasis	1
2.	**PA-12.1**	Enumerate and describe the pathogenesis of disorders caused by air pollution	1
3.	**PA-12.1**	Enumerate and describe the pathogenesis of disorders caused bytobacco and alcohol	1
4.	**PA-13.1**	Describe hematopoiesis and extramedullary hematopoiesis	1
5.	**PA-28.16**	Describe the etiology, genetics, pathogenesis, pathology,presenting features and progression of urothelial tumors**.**	1
6.	**PA-32.5**	Describe the etiology, genetics, pathogenesis, manifestations, laboratory and morphologic features of hyperparathyroidism.	1
7.	**PA-32.6**	Describe, etiology, pathogenesis, manifestations, laboratory, morphologic features, complications and metastases of pancreatic cancer	1
8.	**PA-32.7 PA-32.8**	Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of adrenal insufficiency. Describe the etiology, pathogenesis, manifestations, laboratory, morphologic features, complications of Cushing's syndrome.	1
9.	**PA-32.9**	Describe the etiology, pathogenesis, manifestations, laboratory and morphologic features of adrenal neoplasms.	1
10.	**PA-33.4**	Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features andcomplications of Paget's disease of the bone.	1
11.	**PA-33.5**	Classify and describe the etiology, immunology, pathogenesis, manifestations, radiologic and laboratory features, diagnostic criteria and complications of rheumatoid arthritis.	1
12.		Study on Corona Virus	1

CERTIFIABLE COMPETENCIES

It should be certified that the student is competent to perform the below skills independently without supervision.

SI. NO	NUMBER	COMPETENCY
1	**PA-16.6**	Prepare peripheral blood smear. Identify hemolytic anaemia
2	**PA-25.6**	Interpret liver function and viral hepatitis serology panel. Distinguish obstructive from non-obstructive jaundice based on clinical features and liver function tests
3	**PA-35.3**	Identify the etiology of meningitis based on given CSF parameters

NOTE: The evaluation of charts on certifiable competencies should be completed in formative and internal assessment and duly documented in the log book.

TIME TABLE

BLOCK 1: 15 WEEKS(OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	PH-L	OBG-L	PH-A,CM-B
Tuesday	Postings	PH-L	FM-L	FM-A,
Wednesday	Postings	MIC-L	PA-L	PA-A, MIC-B
Thursday	Postings	CM-L	PH-SGD	PA-B, MIC-A
Friday	Postings	MIC-L	PA-L	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	MIC-L	PA-SGD	PH-A,PA-B-SGD
Tuesday	Postings	PH-L	MIC-SGD	PH-SGD
Wednesday	Postings	PA-L	MIC-L	PA-A,MIC-B
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	PA-L	MIC-SGD	PA-B,MIC-A
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	PA-L	MIC-L	PH-SGD	PA-SDL
Tuesday	Postings	PA-L	MIC-L	PA-A,MIC-B	PH-SDL
Wednesday	Postings	PH-L		PH-A,PA-B SGD	MIC-SDL
Thursday	Postings	PH-L		PH-B,PA-A SGD	CM-SDL
Friday	Postings	CM-L		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	SUR-L	OBG	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	30	15	15	30	30	45	20	20	20	80	65	80
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				**AETCOM** 30						AETCOM 30		

NOTE: To be prepared at the convenience of the respective institutions.

COMPETENCY DISTRIBUTION IN EACH BLOCK

FIRST BLOCK

SI.NO		TOPIC
LECTURES TO BE COVERED IN FIRST BLOCK		
1.	PA 1	PA1.2 Enumerate common definitions and terms used in Pathology PA1.3 Describe the history and evolution of Pathology
2.	PA 2	PA2.1 Demonstrate knowledge of the causes, mechanisms, types and effects of cell injury and their clinical significance
3.	PA 2	PA2.2 Describe the etiology of cell injury. Distinguish between reversibleirreversible injury: mechanisms; morphology of cell injury
4.	PA 2	PA2.3 Intracellular accumulation of fats, proteins, carbohydrates, pigments
5.	PA 2	PA2.4 Describe and discuss Cell death- Apoptosis and autolysis
6.	PA 2	PA2.7 Describe and discuss the mechanisms of cellular aging and apoptosis
7.	PA 4	PA4.1 Define and describe the general features of acute and chronic inflammation including stimuli, vascular events
8.	PA 4	PA4.1 Define and describe the general features of acute and chronic Inflammation including stimuli, and cellular events
9.	PA 4	PA4.2 Enumerate and describe the mediators of acute inflammation
10.	PA 4	PA4.3 Define and describe chronic inflammation including causes, types enumerate types, non-specific and granulomatous; and examples of each
11.	PA 5	PA5.1 Define and describe the process of repair and regeneration including wound healing and its types
12.	PA 6	PA6.1 Define and describe edema, its types, pathogenesis and clinical correlations
13.	PA 6	PA6.3 Define and describe shock, its pathogenesis and its stages
14.	PA 6	PA6.4 Describe the etiopathogenesis and consequences of thrombosis
15.	PA 6	PA6.5 Define and describe embolism and its causes and common types
16.	PA 7	PA7.1 Define and classify neoplasia. biologic, behaviour and spread
17.	PA 7	PA7.1 Define and classify neoplasia. biologic, behaviour and spread
18.	PA 7	PA7.2 Describe the molecular basis of cancer
19.	PA 7	PA7.2 Describe the molecular basis of cancer
20.	PA 7	PA7.3 Enumerate carcinogens and describe the process of carcinogenesis
21.	PA 7	PA7.3 Enumerate carcinogens and describe the process of carcinogenesis
22.	PA 9	PA9.3 HLA system and the immune principles. Describe the involved in transplant and mechanism of transplant rejection
23.	PA 9	PA9.4 Define autoimmunity. Enumerate autoimmune disorders
24.	PA 9	PA9.5 Define and describe the pathogenesis of Systemic Lupus Erythematosus
25.	PA 9	PA9.6 Define and describe the pathogenesis and pathology of HIV and AIDS
26.	PA 9	9.7 Define and describe the pathogenesis of other common autoimmune diseases

27.	PA 10	PA10.3 Define and describe the pathogenesis and pathology of leprosy
28.	PA 13	PA13.3 Define and classify anemia
29.	PA 13	PA13.4 Enumerate and describe the investigation of anemia
30.	PA 14	PA14.1 Describe iron metabolism PA14.2 Describe the etiology, investigations and differential diagnosis of microcytic hypochromic anemia
31.	PA 15	PA15.1 Describe the metabolism of Vitamin B12 and the etiology and pathogenesis of B12 deficiency PA15.2 Describe laboratory investigations of macrocytic anemia
		PA15.4 etiology and Written/ Viva voce General Medicine distinguishing features of megaloblastic and non-megaloblasticmacrocytic anemia
32.	PA 16	PA16.1 Define and classify hemolytic anemia PA16.2 Describe the pathogenesis and clinical features and hematologic indices of hemolytic anemia PA16.5 Describe the peripheral blood picture in different hemolytic anaemias
33.	PA 16	PA16.3 Describe the pathogenesis, features, hematologic indices and peripheral blood picture of sickle cell anaemia and thalassemia
34.	PA 16	PA16.4 Describe the etiology pathogenesis, hematologic indices and peripheral blood picture of Acquired haemolytic anaemia
35.	PA 17	PA 17.1 Enumerate the etiology, pathogenesis and findings in aplastic anemia PA17.2 Enumerate the indications and describe the findings in bone marrow aspiration and biopsy

SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN FIRST BLOCK

1	PA 1.1	PA 1.1-Describe the role of a pathologist in diagnosis and management of disease
2	PA2.6	PA2.6 -Describe and discuss cellular adaptations: atrophy, Hypertrophy, hyperplasia, metaplasia, dysplasia
3	PA-3	PA 3.1-Describe the pathogenesis and pathology of amyloidosis PA 3.2-Identify and describe amyloidosis in a pathology specimen
4	PA-2	Tutorial/ Formative assessment- Cell Injury
5	PA 4	Tutorial/ Formative assessment - Inflammation
6	PA 5	Tutorial / formative assessment- Healing and repair
7	PA- 6	Tutorial/ Formative assessment – Hemodynamic Disorders
8	PA 7	PA7.4 Describe the effects of tumor on the host including paraneoplastic syndrome PA7.5 Describe immunology and the immune response to cancer
9	PA 7	Tutorial/ Formative assessment-Neoplasia.
10	PA 9.1,9.2	PA 9.1Describe the principles and mechanisms involved in immunity PA9.2 Describe the mechanism of hypersensitivity reactions
11	PA 16.4	Case based discussion of 1.Sickle cell anemia; 2. Thalassemia; 3. Hereditary spherocytosis; 4. Autoimmune hemolytic anemia

DOAP TOPICS TO BE COVERED IN FIRST BLOCK

1	PA 2.5	Degeneration Specimens-Fatty liver Slides- Fatty liver, dystrophic calcification, hyaline degeneration
2	PA 2.8	Necrosis Specimen- Gangrene Slides- Coagulative necrosis, Caseous necrosis.
3	PA 4.4	Acute Inflammation Specimen- Acute appendicitis, Lobar Pneumonia Slides- Acute appendicitis, Lobar Pneumonia
4	PA 4.4	Chronic Inflammation Specimens- TB lymph node, Madura foot Slide- Granulation tissue, TB lymph node, Actinomycosis, Rhinosporidiosis
5	PA 6.2, PA 6.7	CVC and Infarction Specimen- CVC Liver (Optional). Infarction- Spleen Slide- CVC lung, CVC liver (Optional), CVC Spleen (Optional), Infarction-Spleen
6	PA 7	Benign tumors
		Specimen - Lipoma Slide- Hemangioma, Schwannoma, Lipoma
7	PA 7	Malignant tumors Specimen- Squamous cell carcinoma, Adenocarcinoma Slide- Squamous cell carcinoma, Basal cell carcinoma, Adenocarcinoma, Transitional cell carcinoma (Optional)
8	PA 13.2 PA 13.5	Anticoagulants-Different vaccutainers OSPE-Prepare peripheral blood smear and reporting Slides- Normocytic normochromic blood picture, Eosinophilia.
9.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

SECOND BLOCK

SI NO		TOPIC
LECTURES TO BE COVERED IN SECOND BLOCK		
1.	PA 18	PA 18.2 Describe the etiology, genetics, pathogenesis classification, features, hematologic features of acute leukemia
2.	PA 18	PA 18.2 Describe the etiology, genetics, pathogenesis classification, features, hematologic features of chronic leukemia
3.	PA 19	PA19.4 Describe and discuss the pathogenesis, pathology and the differentiating features of Hodgkin's and non-Hodgkin's lymphoma
4.	PA 21	PA21.1 Describe normal hemostasis and etiology, pathogenesis and pathology haemophilias
5.	PA 21	PA21.2 Classify and describe the etiology, pathogenesis and pathology of vascular and platelet disorders including ITP

6.	PA 21	PA21.4 Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of DIC PA21.5 Define and describe disseminated intravascular coagulation, its laboratory findings and diagnosis of Vitamin K def.
7.	PA 22	PA22.4 Enumerate blood components and describe their clinical uses PA22.5 Enumerate and describe infections transmitted by blood transfusion
8.	PA 22	PA22.6 Describe transfusion reactions and enumerate the steps in the investigation of a transfusion reaction PA22.7 Enumerate the indications and describe the principles and procedure of autologous transfusion
9.	PA 11	PA11.1 Describe the pathogenesis and features of common cytogenetic abnormalities and mutations in childhood with laboratory diagnosis of Genetic disorder
10.	PA 11	PA11.2 Describe the pathogenesis and pathology of tumor and tumour like conditions in infancy and childhood (Nephroblastoma, Retinoblastoma, Neuroblastoma)
11.	PA 11	PA11.3 Describe the pathogenesis of common storage disorders in infancy and childhood
12.	PA 12	PA12.2 Describe the pathogenesis of disorders caused by protein calorie malnutrition and starvation
13.	PA 12	PA12.3 Describe the pathogenesis of obesity and its consequences
14.	PA 24	PA24.1 Describe the etiology, pathogenesis, pathology and clinical features of oral cancers include salivary gland tumors

15.	PA 24	PA24.2 Describe the etiology, pathogenesis, pathology, microbiology, clinical and microscopic features of peptic ulcer disease PA24.3 Describe and identify the microscopic features of peptic ulcer
16.	PA 24	PA24.6 Describe and etiology and pathogenesis and pathologic and distinguishing features of Inflammatory bowel disease
17.	PA 24	PA24.7 Describe the etiology, pathogenesis, pathology and distinguishing features of carcinoma of the colon
18.	PA 25	PA25.2 Describe the pathophysiology and pathologic changes seen in hepatic failure and their clinical manifestations, complications and consequences PA25.3 Describe the etiology and pathogenesis of viral and toxic hepatitis: distinguish the causes of hepatitis based on the clinical and laboratory features. Describe the pathology, complications and consequences of hepatitis
19.	PA 25	PA25.4 Describe the pathophysiology, pathology and progression of alcoholic liver disease including cirrhosis PA 25.5 Describe the etiology, pathogenesis and complications of portal hypertension
20.	PA 27	PA27.1 Distinguish arteriosclerosis from atherosclerosis. Describe the pathogenesis and pathology of various causes and types
21.	PA 27	PA27.5 Describe the epidemiology, risk factors, etiology, pathophysiology, pathology, presentations, gross and microscopic features, diagnostic tests and complications of ischemic heart disease

22.	PA 26	PA26.1 Define and describe the etiology, types, pathogenesis, stages, morphology and complications of pneumonia PA26.2 Describe the etiology, gross and microscopic appearance and complications of lung abscess
23.	PA 26	PA26.3 Define and describe the etiology, types, pathogenesis, stages, morphology and complications and evaluation of Chronic Bronchitis and Emphysema
24.	PA 26	PA26.4 Define and describe the etiology, types, pathogenesis, stages, morphology microscopic appearance and complications of tuberculosis – include other organs with Tuberculosis
25.	PA 26	PA26.5 Define and describe the etiology, types, exposure, environmental influence, pathogenesis, stages, morphology, microscopic appearance and complications of Occupational lung disease
26.	PA 26	PA26.6 Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, stages, morphology, microscopic appearance, metastases and complications of tumors of the lung and pleura PA26.7 Define and describe the etiology, types, exposure, genetics environmental influence, pathogenesis, morphology, microscopic appearance and complications of mesothelioma
SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN SECOND BLOCK		
1.	PA 18	PA18.1 Enumerate and describe the causes of leucocytosis leucopenia lymphocytosis and leukemoid reactions.
2.	PA 13	Tutorials/ Formative assessment- Anaemia And Leukemia**.**
3.	PA 8	PA8.1 Describe the diagnostic role of cytology and its application in clinical care.
4.	PA 8	PA 8.2 PAP smear, body fluid cytology
5.	PA 19	PA19.1 Enumerate the causes and describe the differentiating features of lymphadenopathy. PA19.6 Enumerate and differentiate the causes of splenomegaly PA19.7 Identify and describe the gross specimen of an enlarged spleen.
6.	PA 19	PA19.2 Describe the pathogenesis and pathology of tuberculous lymphadenitis.
7.	PA 20	PA 20.1 Myeloma - CHARTS
8.	PA 21	PA21.3 Differentiate platelet from clotting disorders based on the clinical and
		hematologic features.
9.	PA 23	PA23.2 Describe abnormal findings in body fluids in various disease States- semen analysis with transudate, exudate and cytology
10.	PA 10	PA10.1 Define and describe the pathogenesis and pathology of malaria. PA10.2 Define and describe the pathogenesis and pathology of Cysticercosis
11.	PA 10	PA10.4 Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases
12.	PA 10	PA10.4 Define and describe the pathogenesis and pathology of common bacterial, viral, protozoal and helminthic diseases
13.	PA 24	PA24.4 Describe and etiology and pathogenesis and pathologic features of carcinoma of the stomach
14.	PA 24	Tutorial- Gastrointestinal system
15.	PA 25	PA25.1 Describe bilirubin metabolism, enumerate the etiology and pathogenesis of jaundice, distinguish between direct andindirect hyperbilirubinemia

16.	PA 25	Tutorial / Formative assessment- Hepatobiliary System
17.	PA 27	PA27.7 Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications ofpericarditis and pericardial effusion PA27.9 Classify and describe the etiology, types, pathophysiology, pathology, gross and microscopic features, diagnosis andcomplications of cardiomyopathies
18.	PA 27	PA27.4 Describe the etiology, pathophysiology, pathology, gross and microscopic features, criteria and complications of rheumatic fever PA27.6 Describe the etiology, pathophysiology, pathology, gross and microscopic features, diagnosis and complications of infective endocarditis
19.	PA 27	PA27.2 Describe the etiology, dynamics, pathology types and complications of aneurysms including aortic aneurysms PA27.3 Describe the etiology, types, stages pathophysiology, pathology and complications of heart failure PA27.10 Describe the etiology, pathophysiology, pathology features and complications of syphilis on the CVS.
20.	PA 27	Tutorials/ Formative assessment- Cardiovascular system
21.	PA 26	Tutorial/ Formative assessment- Respiratory System

DOAP TOPICS TO BE COVERED IN SECOND BLOCK

1.	PA 14, 15	Anaemia Slides-Microcytic hypochromic anaemia and Dimorphic anaemia
2.	PA 16.6	Hemolytic anaemia Slides- Sickle cell anaemia/ Thalassemia/ Autoimmune haemolytic anaemia
3.	PA 18	Leukemias Slides- Chronic myeloid leukemia, Chronic lymphoid leukemia. Acute leukemia (Optional)
4.	PA 19	Lymph node / spleen Specimen- Enlarged spleen, TB lymph node Slide- TB lymph node, Hodgkin's lymphoma
5.	PA 22	Blood grouping:OSPE-Forward grouping -Slide/ tube method
6.	PA 23.1	Urine examination Physical examination Chemical examination- Introduce strip methodology. Tests for Reducing substances, Protein, Blood, Ketone bodies. Bilirubin and Bile salts (Optional).
7.	PA 24.3	Gastrointestinal system Specimen- Peptic ulcer, Gastric carcinoma, Carcinoma colon. TB intestine (Optional).
		Slide- Pleomorphic adenoma, carcinoma colon. TB intestine (Optional). Gastric carcinoma (Optional).
8.	PA 25	Hepatobiliary system Specimen-Cirrhosis, Chronic cholecystitis with Gall stones Slide- Cirrhosis, Chronic cholecystitis
9.	PA 27	Cardiovascular system Specimen- Atherosclerosis, Myocardial infarction Slide- Atherosclerosis, Myocardial infarction

10.	PA- 26	Respiratory System Specimen-Pneumonia , Bronchiectasis, Emphysema, TB lung, Carcinoma lung Slide- Pneumonia, TB lung (Optional).
11.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

THIRD BLOCK

SI NO		TOPIC
LECTURES TO BE COVERED IN THIRD BLOCK		
1.	PA 28	PA28.1 Describe the normal histology of the kidney PA28.5 Define and classify glomerular diseases. Enumerate and describe the etiology, pathogenesis, mechanisms of glomerular injury, pathology, distinguishing features and clinical manifestations of glomerulonephritis PA28.6 Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of IgA nephropathy
2.	PA 28	PA28.8 Enumerate and classify diseases affecting the tubular interstitium PA28.9 Define and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, progression and complications of acute tubular necrosis PA28.10 Describe the etiology, pathogenesis, pathology, laboratory findings, distinguishing features progression and complications of acute and chronic pyelonephritis and reflux nephropathy
3.	PA 28	PA28.7 Enumerate and describe the findings in glomerular manifestations of systemic disease PA28.11 Define classify and describe the etiology, pathogenesis pathology, laboratory, urinary findings, distinguishing features progression and complications of vascular disease of the kidney PA28.15 Describe the etiology, genetics, pathogenesis, pathology, presenting features and progression of thrombotic angiopathies
4.	PA 28	PA28.14 Classify and describe the etiology, genetics, pathogenesis, pathology, presenting features, progression and spread of renal tumors
5.	PA 29	PA29.1 Classify testicular tumors and describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of testicular tumors PA29.2 Describe the pathogenesis, pathology, presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the penis
6.	PA 29	PA29.3 Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, urologic findings & diagnostic tests of benign

		prostatic hyperplasia PA29.4 Describe the pathogenesis, pathology, hormonal dependency presenting and distinguishing features, diagnostic tests, progression and spread of carcinoma of the prostate PA29.5 Describe the etiology, pathogenesis, pathology and progression of prostatitis
7.	PA 30	PA30.1 Describe the epidemiology, pathogenesis, etiology, pathology, screening, diagnosis and progression of carcinoma of thecervix PA30.6 Describe the etiology and morphologic features of cervicitis
8.	PA 30	PA30.2 Describe the pathogenesis, etiology, pathology, diagnosis and progression and spread of carcinoma of the endometrium PA30.7 Describe the etiology, hormonal dependence, features and morphology of endometriosis PA30.8 Describe the etiology and morphologic features of adenomyosis PA30.9 Describe the etiology, hormonal dependence and morphology of endometrial hyperplasia
9.	PA 30	PA30.4 Classify and describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of ovarian tumors
10.	PA 30	PA30.5 Describe the etiology, pathogenesis, pathology, morphology, clinical course, spread and complications of gestational trophoblastic neoplasms
11.	PA 31	PA31.1 Classify and describe the types, etiology, pathogenesis, hormonal dependency of breast pathology and benign disease PA31.4 Enumerate and describe the etiology, hormonal dependency and pathogenesis of gynecomastia
12.	PA 31	PA31.2 Classify and describe the epidemiology, pathogenesis, classification, morphology, prognostic factors, hormonal dependency, staging and spread of carcinoma of the breast
13.	PA 33	PA33.1 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications of osteomyelitis
14.	PA 33	PA33.2 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of bone tumors
15.	PA 32	PA32.1 Enumerate, classify and describe the etiology, pathogenesis, pathology and iodine dependency of thyroid swellings with Thyroid neoplasms
16.	PA 32	PA32.4 Classify and describe the epidemiology, etiology, pathogenesis, pathology, clinical laboratory features, complications and progression of diabetes mellitus
17.	PA 35	PA35.2 Classify and describe the etiology, genetics, pathogenesis, pathology, presentation sequelae and complications Of CNS tumors
18.	PA 34	PA34.1 Describe the risk factors pathogenesis, pathology and natural history of squamous cell carcinoma of the skin PA34.2 Describe the risk factors pathogenesis, pathology and natural history of basal cell carcinoma of the skin PA34.3 Describe the distinguishing features between a nevus and melanoma. Describe the etiology, pathogenesis, risk factors morphology clinical features and metastases of melanoma
SMALL GROUP DISCUSSION TOPICS TO BE COVERED IN THIRD BLOCK		

1.	PA 28	PA28.2 Define, classify and distinguish the clinical syndromes and describe the etiology, pathogenesis, pathology, morphology,clinical and laboratory and urinary findings, complications of renal failure PA28.3 Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings, progression and complications of acute
		renal failure – with RFT PA28.4 Define and describe the etiology, precipitating factors, pathogenesis, pathology, laboratory urinary findings progression and complications of chronic renal failure
2.	PA 28	PA28.12 Define classify and describe the genetics, inheritance, etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features, progression and complications of cystic disease of the kidney PA28.13 Define classify and describe the etiology, pathogenesis, pathology, laboratory, urinary findings, distinguishing features progression and complications of renal stone disease and obstructive uropathy
3.	PA 28	Tutorial/ Formative assessment- Urinary System
4.	PA 29,30	Tutorial/ Formative assessment- Male Genital System And Female Genital System
5.	PA 32	PA32.2 Describe the etiology, cause, iodine dependency, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis PA32.3 Describe the etiology, pathogenesis, manifestations, laboratory and imaging features and course of thyrotoxicosis/hypothyroidism with Thyroid function test.
6.	PA 32	Tutorial/ Formative assessment- Endocrine System
7.	PA 33	PA33.3 Classify and describe the etiology, pathogenesis, manifestations, radiologic and morphologic features and complications and metastases of soft tissue tumors
8.	PA 34, 33,19,35	Tutorial/ Formative assessment- Skin, Bone, CNS, Lymph Node
DOAP TOPICS TO BE COVERED IN THIRD BLOCK		
1.	PA 28	Urinary system Specimen- Chronic pyelonephritis, Renal stones with hydronephrosis, Renal cell carcinoma Slide- Chronic pyelonephritis, Renal cell carcinoma
2.	PA 29	Male genital system Specimen- Seminoma testis, Carcinoma penis Slide-Seminoma testis, Benign prostatic hyperplasia
3.	PA 30	Female genital system Specimen-Leiomyoma, Carcinoma cervix, Benign Cystic Teratoma, Serous/Mucinous Cystadenoma. Hydatidiform mole (Optional). Slides- Leiomyoma, Serous/Mucinous Cystadenoma, Hydatidiform mole. Benign Cystic Teratoma (Optional)
4.	PA 31	Breast Specimen- Fibroadenoma. Carcinoma breast (Optional) Slide- Fibroadenoma. Carcinoma breast (Optional)
5.	PA 32	Endocrine System Specimen- Multinodular goitre, Papillary carcinoma Slide- Multinodular goitre, Hashimoto's thyroiditis, Papillary carcinoma thyroid.

6.	PA 33	Bone tumors Specimen- Osteoclastoma, Osteosarcoma Slide- Osteoclastoma. Osteosarcoma (Optional)
7.	PA 35	Central nervous system Charts- Interpretation of CSF findings in various meningitis.
8.		Revision of Slides/Specimen/Charts
9.		Revision of Slides/Specimen/Charts
10.		Revision of Slides/Specimen/Charts

Note: Optional slides/ specimens should not be part of summative evaluation.

LIST OF INSTRUEMENTS, SPECIMENS, SLIDES AND CHARTS

LIST OF INSTRUMENTS

Sl .no	**Instruments**
1.	Lumbar Puncture Needle
2.	Liver Biopsy Needle
3.	Bone marrow Aspiration Needle
4.	Wintrobe's Tube
5.	Westergren's ESR Tube
6.	Urinometer
7.	R.B.C Pipette
8.	W.B.C Pipette
9.	Sahli's Haemoglobinometer
10.	Neubauer's Counting Chamber
11.	Hb Pipette
12.	EDTA Tube
13.	Sodium Citrate Tube
14.	Plain vaccutainer
15.	Heparin tube
16.	Blood collection bag

LIST OF SPECIMENS

Sl. No.	**Gross specimens**
1.	Fatty liver
2.	Gangrene
3.	Infarct spleen
4.	TB lymph node
5.	Acute appendicitis
6.	Lobar pneumonia

7.	Madura foot
8.	CVC liver
9.	Lipoma
10.	Squamous cell carcinoma
11.	Adenocarcinoma colon
12.	Enlarged spleen
13.	Peptic ulcer
14.	Gastric carcinoma
15.	Cirrhosis
16.	Gall bladder with gall stones
17.	Bronchiectasis
18.	Emphysema
19.	Carcinoma lung
20.	Atherosclerosis
21.	Myocardial infarction
22.	Renal cell carcinoma
23.	Chronic pyelonephritis
24.	Renal stones with hydronephrosis
25.	Carcinoma Penis
26.	Seminoma testis
27.	Leiomyoma
28.	Teratoma
29.	Serous/ Mucinous cystadenoma
30.	Carcinoma Cervix
31.	Fibroadenoma
32.	Multinodular goitre
33.	Papillary carcinoma thyroid
34.	Osteoclastoma
35.	Osteosarcoma

LIST OF SLIDES

SL. NO.	Slides
1.	Fatty liver
2.	Monckeberg medial calcific sclerosis
3.	Hyaline degeneration (leiomyoma)

4.	Coagulative necrosis
5.	Caseous necrosis
6.	Acute appendicitis
7.	Lobar pneumonia
8.	Granulation tissue
9.	TB lymph node
10.	Actinomycosis
11.	Rhinosporidiosis
12.	CVC lung
13.	Lipoma
14.	Hemangioma
15.	Schwannoma
16.	Squamous cell carcinoma
17.	Basal cell carcinoma
18.	Adenocarcinoma-colon
19.	Hodgkin's lymphoma
20.	Pleomorphic adenoma
21.	Cirrhosis of Liver
22	Chronic cholecystitis
23	Atherosclerosis
24	Myocardial Infarction

25	Chronic pyelonephritis
26	Renal cell carcinoma
27	Seminoma
28	Benign prostatic hyperplasia
29	Leiomyoma
30	Hydatidiform mole
31	Serous cystadenoma/ Mucinous cystadenoma
32	Fibroadenoma
33	Osteoclastoma
34	Multinodular goitre
35	Hashimoto's thyroiditis
36	Papillary carcinoma thyroid
Hematology	
1.	Normocytic normochromic blood picture
2.	Eosinophilia
3.	Microcytic hypochromic anaemia
4.	Dimorphic anaemia
5.	Chronic lymphoid leukemia

6.	Chronic myeloid leukemia

LIST OF CHARTS

Sl. no	Charts
1.	Cytology: Malignant cells in Pap smear.
2.	Body fluids-Pleural/Ascitic (exudate/transudate)
3.	CSF analysis for Meningitis - Viral
4.	CSF analysis for Meningitis - Bacterial
5.	CSF analysis for Meningitis - Tubercular
6.	Viral hepatitis- Acute phase
7.	Viral hepatitis- Chronic phase
8.	Viral hepatitis- Convalescent and recovery phases
9.	Thyroid function test
10.	Renal Function test- Acute renal failure
11.	Renal Function test- Chronic renal failure
12.	Autoimmune Hemolytic anaemia
13.	Sickle cell anaemia
14.	Thalassemia
15.	Hereditary Spherocytosis
16.	Hematolymphoid malignancies- AML
17.	Hematolymphoid malignancies- ALL
18.	Hematolymphoid malignancies- Multiple Myeloma
19.	Lab diagnosis of Myocardial infarction.

TOPICS FOR INTEGRATION

	Pathology	**Microbiology**	**Pharmacology**	**Forensic Medicine**	**Community Medicine**	**Concerned Clinical subjects**
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia Essential medicines Shock Toxicology	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation

BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	Tuberculosis Leprosy AIDS Malaria Acid peptic disease		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI
BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Endocrines		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

NOTE - National days of importance for AIDS, Leprosy, Tuberculosis, Malaria, Mental health, Breast feeding promotion, World health day, etc. can be used to conduct full day integration sessions for students

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible within the MCI stipulations.

Minimum two of the suggested topic should be covered in each block.

DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SI NO	MODU	TOPIC	DEPARTMENT	No.	Formative assessmen	Summative

	LE		PA	MI	PH	CM	FM	of hours	t	assessment
1	2.1	Foundation of communication				✓			✓	-
2	2.2	Foundation of bioethics					✓		-	✓
3	2.3	Health care as a right				✓			-	✓
4	2.4	Working in a health care team	✓					6	✓	-
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓				✓	✓
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of lifeSupport)			✓				✓	✓
7	2.7	Bioethics- Case studies on patient autonomy and decision making (consent for surgical procedures)		✓					✓	✓
8	2.8	What does it mean to be a family member of sick patient					✓		✓	✓

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM- Forensic medicine.**

EVALUATION METHODOLOGY

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - Done once in three months preferably at the end of each block.

Theory IA can include: Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: Practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to ten(10) per cent IA Practical marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Practical record book assessment

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered.

6. Questions to be covered from the different sections of Pathology

Sl no	Nature of question	Marks
1	Long Essay (LE)	2x10=20
2	Short Essay (SE)	10x5=50
3	Short Answer (SA)	10x3=30

Marks distribution across different sections

Sl no	Section	Paper	Marks distribution	Total
1	General Pathology (40 - 60) Hematology + Clinical Pathology + Cytology (40 - 60)	I	100	200
2	Systemic Pathology	II	100	

TOPIC-WISE MARKS DISTRIBUTION FOR THEORY EXAMINATION

SI NO	TOPICS	MARKS DISTRIBUTION		
GENERAL PATHOLOGY		Minimum	Maximum	Nature of question
1.	Introduction to pathology	0	3	Only SA
2.	Cell Injury and Adaptation	3	13	LE,SE,SA
3.	Amyloidosis	0	5	SE,SA
4.	Inflammation	3	13	LE,SE,SA
5.	Healing and repair	0	5	SE,SA
6.	Hemodynamic disorders	3	13	LE,SE,SA
7.	Neoplastic disorders	3	13	LE,SE,SA

8.	**Basic diagnostic cytology**	3	5	SE,SA
9.	**Immunopathology and AIDS**	3	8	SE,SA
10.	**Infections and Infestations**	0	8	SE,SA
11.	**Genetic and paediatric diseases**	Non-Core		
12.	**Environmental and nutritional disease**	0	6	SE,SA
HEMATOLOGY AND CLINICAL PATHOLOGY				
13.	**Introduction to haematology**	3	10	LE,SE,SA
14.	**Microcytic anemia**	0	10	LE,SE,SA
15.	**Macrocytic anemia**	0	10	LE,SE,SA
16.	**Hemolytic anemia**	0	10	LE,SE,SA
17.	**Aplastic anemia**	Non-Core		
18.	**Leukocyte disorders**	0	10	LE,SE,SA
19.	**Lymph node and spleen**	0	6	SE,SA
20.	**Plasma cell disorders**	0	6	SE,SA
21.	**Hemorrhagic disorders**	0	10	LE,SE,SA
22.	**Blood banking and transfusion**	0	6	SE,SA
23.	**Clinical Pathology**	3	6	SE,SA
SYSTEMIC PATHOLOGY				
24.	**Gastrointestinal tract**	3	11	LE,SE,SA
25.	**Hepatobiliary system**	3	11	LE,SE,SA
26.	**Respiratory system**	3	11	LE,SE,SA
27.	**Cardiovascular system**	3	15	LE,SE,SA
28.	**Urinary Tract**	3	11	LE,SE,SA
29.	**Male Genital Tract**	0	6	SE,SA
30.	**Female Genital Tract**	0	10	LE,SE,SA
31.	**Breast**	0	10	LE,SE,SA
32.	**Endocrine system**	0	10	LE,SE,SA
33.	**Bone and soft tissue**	0	10	LE,SE,SA
34.	**Skin**	0	6	SE,SA
35.	**Central Nervous system**	0	6	SE,SA

36.	**Eye**	Non-Core

Note: '0' signifies there is an option of not asking any question from that particular topic

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM PRACTICALS

Total Marks – 100 (Practical: 80 + Viva voce: 20)

Exercise 1- Spotters (10 x 2marks each) – 20 marks

Time allotted: 10mins
Specimens - 4
Histopathology Slides - 3
Haematology slides - 2
Instrument -1

Note: Students need to identify the spotter and write two relevant points

Exercise 2 – **OSPE (**Objective Structured Practical Examination**)** – 5 marks **Time allotted**: 5mins, each will have to do either;

Blood group or **Preparation of peripheral smear**
Student needs to perform the following steps

Blood group		
Sl No	**Steps**	**Marks awarded**
1	Take 1 or 2 slides and mark the slides appropriately	0.5
2	Take anti-sera A, B and D and place according to the marking	1
3	Add a drop of blood to the anti-sera	0.5
4	Mix well	1
5	Look for the agglutination and interpret	2
Total		**5**

Preparation of peripheral smear		
Sl No	**Steps**	**Marks awarded**
1	Take a clean slide	0.5
2	Take a drop of blood and place it appropriately on the slide	0.5
3	The spreader slide is to be placed at an angle of 45^0 and moved back to make contact with the drop, spreading it evenly along the	2

	line of contact. Pull the spreader steadily to make a smear and label the slide	
4	Smear needs to be tongue shaped and without any windows,	2
Total		**5**

Exercise 3:
Time allotted: 20mins
Urine Analysis – 15 Marks
Physical examination + Chemical examination (Detection of 2 abnormal constituents) based on history provided

Exercise 4:
Time allotted: 20mins
Histopathology slide – 15 Marks
Identify + draw a neat labeled diagram + write points in favor of identification

Exercise 5:
Time allotted: 20mins
Peripheral Smear – 15 Marks
Identify + draw a neat labeled diagram + write points in favor of identification

Exercise 6:

Time allotted: 10mins

Chart - 10 Marks, each student is given only one chart.

Interpret the chart and answer the given questions.

NOTE: The evaluation of charts on certifiable competencies should be completed in formative and internal assessment and duly documented in the log book.

Exercise 7:
Viva Voce (20 marks)

Time allotted: 20 to 30mins (5-6mins per candidate for each examiner) Marks allotted for each examiner – 5 Subject allotted for each examiner:

1. Clinical Pathology and hematology
2. General Pathology
3. Systemic Pathology – I (CVS, RS, GIT, Hepatobiliary, Lymphoreticular and Spleen)
4. Systemic Pathology - II (Urinary system, Male and Female genital tract, Endocrines, Bone and Soft tissue, Central Nervous System,Skin)

INTERNAL ASSESSMENT

- There will be 3 internal assessment examinations in Pathology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.

- It is mandatory for the students to appear for all the internal assessment examinations.

- First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However third internal assessment has to be conducted in the same pattern of the University exam

- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

- 20% of the internal assessment marks in either Theory and Practical should be from Formative Assessment

- **Feedback in Internal Assessment -** Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

- **Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.**

- **Internal assessment should be based on competencies and skills.**

- **Criteria for appearing in University examination:** Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.

- **Average marks obtained in all three internal assessment should be calculated to 40 marks.**

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

PROPOSED MARKS ALLOCATION FOR PRACTICAL IA

Sl No	Assessment	Marks allotted		
		First IA	Second IA	Third (Final) IA
1	Spotters	05	05	10
2	Exercises (3)	12	12	15x3 = 45
3	OSPE	05	05	5
4	Charts	05	05	10
5	Formative Assessment	08	08	20
6	Record book	05	05	10
Total		**40**	**40**	**100**

NOTE:

1. The spotters, exercises and OSPE depends on the portion covered in the respective block.
2. Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

ANNEXURES

Annexure I- Log book format Annexure II- Model question paper

Annexure-I

RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES

BANGALORE, KARNATAKA

PHASE II MBBS

LOG BOOK FORMAT

DEPARTMENT OF PATHOLOGY

NAME OF THE CANDIDATE :

NAME OF THE COLLEGE :

UNIVERSITY REGISTER NUMBER:

ACADEMIC YEAR :

INDEX

BONAFIDE CERTIFICATE

This is to certify that this log book is the bonafide record of Mr/Ms…….....whose particulars along is given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of Pathology as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period …….. to……..

She / He will not be eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature with date

Head, Department of Pathology :

Signature with date

Principal/Dean :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

Date of Birth :

Father's name :

Mother's name :

Address :

Contact number :

Email ID :

Signature: .....

SUGGESTED GUIDELINES FOR LOG BOOK:
GENERAL INFORMATION:

1) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.
2) The student is responsible for getting the entries in the logbook verified by the Faculty In-charge regularly.
3) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.
4) The logbook is a record of various activities by the student like:
    a. Overall participation & performance
    b. Attendance
    c. Participation in sessions
    d. Record of completion of pre-determined activities.
    e. Acquisition of selected competencies
5) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
First Block			NA		
Second Block			NA		
Third Block			NA		
Attendance at the end of MBBS Phase II					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	*Internal Assessment*	*Date of Assessment*	*Total marks*		*Marks scored*		*Signature of student*	*Signature of teacher*
			Theory	*Practical*	*Theory*	*Practical*		
	First							
	Second							
	Third							

	Remedial							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

COMPETENCY ASSESSMENT

CERTIFIABLE SKILLS

Sl	Certifiabl	Attempt			Faculty decision		Rating				Signat	Signat
. No.	e competency	First	Repeat	Remedial	Completed	Not Completed	Below expectations C	Meets expectations B	Exceeds expectations A	Date	ure of student	ure of faculty

1.	**PA 16.6 Prepare peripheral blood smear.Identify haemolytic anaemia**											

Sl. No.	**Certifia ble compete ncy**	**Attempt**			**Faculty decision**		**Rating**			**Date**	**Signature of student**	**Signature of faculty**
		First	**Repeat**	**Remedial**	**Completed**	**Not Completed**	**Below expectations C**	**Meets expectations B**	**Exceeds expectations A**			

1.	**PA-25.6 Interpr et liver function and viral hepatiti s serology panel. Disting uish obstruct ive from nonobstruct ive jaundic e based on clinical features and function tests.**											

Sl. No.	Certifiable competency	Attempt		Faculty decision		Rating			Date	Signature of student		Signature of faculty
		First	Repeat	Remedial	Completed	Not Completed	Below expectations C	Meets expectations B	Exceeds expectations A			
3.	PA-35.3 Identify the etiology of meningitis based on given CSF parameters											

AETCOM COMPETENCY

1. Competency identified

a. AETCOM module 2.4 Working in a health care team

Competencies:

1. Demonstrate ability to work in a team of peers and superiors

2. Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers

b. Name of Activity

1. Tag along session in hospital laboratory – 2 x 2 hours = 4 hours 2. Small group discussion – 2 hours

c. Contents:

This module may be done as two interdependent sessions:

1. A "tag along" session where students spend time with health care workers including nurses, technicians and others, observe their work, their interactions, conduct a small interview with them and write a narrative based on this interview.

2. A small group discussion which is based on the students' observations, experiences, reflections and inferences and what must be done by them to work as an integral part of the health care team.

d. Criteria for successful completion of activity:

Active participation in

i. Assessment of reflections by mentors ii.

Numerical scoring for activity: Not required

iii. Documentation of activity in portfolio or

Annexure of logbook: Required. Document

reflection iv. Recommended action when

learner is unsuccessful

a. Provide feedback

b. Allow repeat and give chance to improve in subsequent sessions.

e. Any other comments Student reflections may be part of the portfolio as a record of the activity done.

AETCOM

# Competency	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of learner
2.4	**Working in a health care team**						

OTHER ACADEMIC ACTIVITIES

# Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, seminars, tutorials, projects, etc.

Vertical Integration

Sl no	Date	Topic	Attendance	Signature of faculty

NON-CERTIFIABLE (SHOWS HOW) ACTIVITIES

# Competency	**Name of Activity**	**Date completed**	**Rating** Below Expectations (C) Meets Expectations (B) Exceeds Expectations (A)	**Decision of faculty** Completed Repeat Remedial	**Initial of faculty and date**	**Feedback Receive**d Initial of Learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, seminars, tutorials, projects, etc.

Format for documentation and feedback for Self-Directed Learning

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

IX. Summary of formative assessment for the entire year

Sl. No.	*Type of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher wuth date*
2	SGD/Tutorial/Seminars/ Other Activity	10			

7	Professionalism	10			
	TOTAL	20			

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular Dress code and for of classes(5) (5) discipline(5)		*Submission records*	*Behaviour in class and presentablility(5)*	*Total (20)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

VIII. SMALL GROUP DISCUSSION/SELF DIRECTED LEARNING – ASSESSMENT AND FEEDBACK

Module #	**Name of SGD/SDL Activity**	**Date completed**	**Score**	**Initial offaculty anddate**	**Feedback Receive**d **Initial of learner**

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

Other academic/non-academic activities

CONFERENCE/CME/WORKSHOP ATTENDED

SL NO	DATE	PARTICULARS	REMARKS IF ANY	SIGNATURE OF STAFF

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF STAFF

ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

EXTRACURRICULAR ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

Annexure II -MODEL QUESTION PAPER

Subject Pathology

PAPER I LONG ESSAY

1) 47 year old farmer cuts his right thumb. Next morning the thumb is sore and the skin surrounding the cut is red. The next day the thumb is swollen, throbbing and yellowish white pus is oozing out of the injured area. He also noticed two painful small swellings in his right armpit. He then experiences a shaking chill and becomes uncomfortable. On examination at the hospital his skin was cold to touch and his extremities were cold. There was bluish discoloration of his digits and lips. His pulse was feeble with a pulse rate of 110/min and a blood pressure was 90/60 mm of Hg. a. What is your diagnosis? (2 marks)
b. What are the stages of the condition and discuss the pathophysiologic basis? (4 marks)
c. Discuss the pathologic changes in lung and kidney in the terminal stages of this condition? (4 marks)

2) Describe the role of hematology laboratory in the differential diagnosis of hemolytic anemia's. Discuss clinical clues for suspecting hemolysis. (6 + 4)

SHORT ESSAYS Marks: 10x5

3) Discuss the differences between apoptosis and necrosis with a special reference to clinical significance

4) Discuss the factors affecting wound healing

5) Describe the organ specific effects of tobacco smoke constituents

6) Discuss the sequelae of acute inflammation. Enumerate morphological types with examples

7) Define metastasis and discuss the routes of spread.

8) Enlist and write the mechanism of action of various anticoagulants used in haematology.

9) Describe the clinical picture, peripheral blood and bone marrow picture in megaloblastic anemia.

10) Define leukamoid reaction. List the differences between leukamoid reaction and chronic myeloid leukemia.

11) Describe gross and microscopic appearance of tubercular lymphadenitis.

12) List causes of thrombocytopenia. Discuss pathogenesis of idiopathic thrombocytopenic purpura.

SHORT ANSWERS Marks: 10x3

13) Classify tissues based on proliferative capacity of cells.

14) Define chemotaxis. Name some exogenous and endogenous chemo-attractants.

15) Mention one objective for pap smear screening. List the different stains used in pap stain.

16) Define paraneoplastic syndrome. Give two examples.

17) Enumerate AIDS defining opportunistic infections.

18) Classify anemia based on morphology.

19) Enumerate the causes for splenomegaly.

20) List the tests for detecting intrinsic and extrinsic coagulation pathway abnormalities. State their normal ranges.

21) List different methods of blood grouping.

22) Enumerate different infections transmitted through blood transfusion.

MODEL QUESTION PAPER

Subject Pathology Paper II

LONG ESSAY

1) 55yr male presented with hematuria and pain in the right flank since 15 days. There is also history of significant weight loss, weakness and malaise. On examination a right flank mass was palpable on bimanual examination.
    1. What is the likely diagnosis? (2 marks)
    2. Discuss paraneoplastic syndrome associated with this condition. (2 marks)
    3. Discuss the gross and microscopy of the lesion. (4 marks) 4. Enlist the various morphological types (2 marks)

2) Discuss the role of laboratory in the diagnosis of Ishemic Heart Disease. Add a note on approximate Time of Onset of Key Events in Ischemic Cardiac Myocytes (6 + 4)

SHORT ESSAY **Marks: 10x5**

3) Discuss the stages of alcoholic liver disease.

4) Discuss pathogenesis and morphology of Hashimoto thyroiditis

5) Interpret and assign to a group the following icteric patients with their urine and faecal findings. The groups to be assigned to are: pre-hepatic, hepatic and post hepatic causes of jaundice

	Patient 1	Patient 2	Patient 3
Urinary bilirubin	increased	absent	increased
Urinary urobilinogen	Low or absent	increased	decreased
Faecal colour	pale	dark	pale

6) Write the histological classification of malignant epithelial tumors of lung. Discuss in brief the etiopathogenesis of carcinoma lung.

7) Discuss the prognostic factors in carcinoma breast.

8) Describe in brief etiopathogenesis of carcinoma colon. Add a note on gross morphology of carcinoma colon.

9) Discuss pathogenesis of type II diabetes mellitus and List the complications

10) Define aneurysm. Enumerate the causes, types and complications of aneurysm.

11) Define and discuss etio-pathogenesis of bronchiectasis.

12) Discuss gross and microscopic morphology of any one benign and any one malignant bone tumors commonly arising in the metaphysis of long bones.

SHORT ANSWERS **Marks: 10x5**

13) List differences between malignantulcer and peptic ulcer in stomach.

14) List the complications of pneumonia.

15) List the risk factors for squamous cell carcinoma. Name the histological hallmark of well differentiated squamous cell carcinoma.

16) List laboratory findings in pyogenic meningitis.

17) Define and list the types of emphysema.

18) List characteristic microscopic findings of medullary carcinoma of breast.

19) Discuss the fate of a leiomyoma.(differences between leiomyoma and leiomyosarcomas)

20) List the differences between a partial and complete hydatidiform mole.

21) List six complications of osteomyelitis.

22) List premalignant lesions of penis.

Annexure III - Recommended books:

Subject Pathology

RECOMMENDED BOOKS:

1. Kumar.V, Abbar.A.K, Aster.J.C. Robbins and Cotran Pathologic basis of Disease.10th ed, c.
2. Walter.J.B & Talbot.I.C. General Pathology.7th ed, Elsevier; 1996
3. Rubin.R, Strayer.D.S.Rubin'sPathology. 6th ed, Wolters Kluwer, Lippincott Williams and Wilkins; 2012.
4. O'Dowd G, Bell S & Wright S. Wheater's Pathology. 6th ed, Elsevier; 2020.
5. Saxena.R, Pati.H.P, Mahapatra.M, Firkin.F, Chesterman.C & Ponington.D et.al. DeGruchy`s Clinical Haematology in Medical Practice. 6th ed, Wiley India; 2012.
6. Nayak.R & Rai.S. Essentials in Haematology and Clinical Pathology. Jaypee Brothers; 2017.
7. Carman. H. R. Handbook of Medical Laboratory Technology. Christian Medical Association of India. 2013.
8. Singh T. Atlas and Text of Hematology. 4th ed Avichal Publishing Company 2018.
9. Reid R, Roberts F & Macduffe. Pathology Illustrated. 7th ed Churchill Livingstone, Elsevier; 2011.
10. Curran R C, Jones E L. Gross Pathology- A Color Atlas. 4th ed. Harvey Miller Publishers. 11. Underwood's pathology: a clinical approach 7th ed,

REFERENCE BOOKS:

LEVEL 1:

1. McKenzie.S.B,Williams.J.L.Clinical laboratory Haematology.2ed, Pearson; 2009
2. Bain.J.B,Bates.I, Laffan.M.A.Dacie and Lewis PraticalHaematology, 12ed ,Elsevier; 2017
3. Damjanov.I,Linder.J.Anderson`s Pathology.10ed,Elsevier; 2019
4. McPherson.R.A.Henry`s Clinical Diagnosis and Management by Laboratory Methods. 23ed, Elsevier; 2016

LEVEL 2 :

1. Greer.J.P,Arber.D.A,Glader.B,List.A.F,Means.R.J,Paraskevas.F et.al. Wintrobe`s Clinical Haematology.13ed WoltersKluwer, Lippincott Williams and Wilkins, 2013
2. Rosai.J.Rosai and Ackerman`s Surgical Pathology. 11ed,Elsevier ; 2018

3. WHO Classification of Tumors Series
4. https://whobluebooks.iarc.fr/

MICROBIOLOGY

TABLE OF CONTENTS

I. GOALS AND OBJECTIVES

GOAL

- The broad goal of the teaching of undergraduate students in Microbiology is to provide an understanding of the natural history of infectious disease in order to deal with the etiology, pathogenesis, laboratory diagnosis, treatment and control of infections in the community.

OBJECTIVES

1. Competencies: The undergraduate learner demonstrate:
    a. Understanding of role of microbial agents in health and disease
    b. Understanding of the immunological mechanisms in health and disease

c. Ability to correlate the natural history, mechanisms and clinical manifestations of infectious diseases as they relate to the properties of microbial agents
d. Knowledge of the principles and application of infection control measures
e. An understanding of the basis of choice of laboratory diagnostic tests and their interpretation, antimicrobial therapy, control and prevention of infectious diseases.

c) INTEGRATION

- The teaching should be aligned and integrated horizontally and vertically in organ systems with emphasis on host-microbe-environment interactions and their alterations in disease and clinical correlations so as to provide an overall understanding of the etiological agents, their laboratory diagnosis and prevention.

II. TERMS AND TEACHING GUIDELINES

1. LECTURE

Is a teaching learning method which includes traditional and interactive sessions involving a large group.

2. SMALL GROUP DISCUSSION

It is an instructional method involving small groups of students in an appropriate learning context.

3. DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe demonstration assists the performer, perform in a simulated environment, perform under supervision or perform independently.

4. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning , choosing and implementing appropriate learning methods.

5. SKILL ASSESSMENT

Is a session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know).

III. MINIMUM TEACHING HOURS

MCI No	Specific Learning Objective	Number of competencies	LECTURE	TUTORIAL /SGD	Practicals	SDL
MI1	General Microbiology and Immunity	11	16	8	15	3
MI2	CVS and Blood	7	9	9	5	1
MI3	Gastrointestinal and hepatobiliary system	8	10	4	5	0
MI4	Musculoskeletal system skin and soft tissue infections	3	10	3	5	2
MI5	Central Nervous System infections	3	6	7	3	1

MI6	Respiratory tract infections	3	6	9	7	1
MI7	Genitourinary & Sexually transmitted infections	3	5	2	4	1
MI8	Zoonotic diseases and miscellaneous	16	11	13	11	1
	TOTAL	**54**	**73**	**55**	**55**	**10**
	CBME Requirement		**70**	**110**		**10**

IV . LEARNING OBJECTIVES

Learning objectives are derived as per the competency given in MCI CBME manual

The following instructions may be followed

Topics are numbed as per MCI like MI1, MI2, MI3……..MI8

Under each topic competency are numbered as per MCI MI1.1, MI1.2 ……MI8.16 Under

each competency sub competencies are numbered as MI1.1.1.MI1.1.2……..

The objectives mentioned are basic minimum to be covered under the curriculum. For students benefit covering the topic beyond the mentioned competencies is desirable

TOPIC: GENERAL BACTERIOLOGY & IMMUNOLOGY (MI1.1-1.11) No of competencies – 11 No of procedures requiring certification – 1

MI1.1 Describe the different causative agents of Infectious diseases, the methods used in their detection, and discuss the role of microbes in health and disease **MI1.1.1**Introduction to Infectious diseases

- Define: Health, Disease, infectious agents, commensalism, parasite, pathogen and opportunistic pathogen.
- Classify types of infections, Describe chain of infection
- Enumerate various types of medically important micro-organisms - bacteria, viruses, parasites, fungi
- Differentiate between pathogen, commensals, and saprophyte.

MI1.1.2 Isolation & identification of bacteria

MI1.1.2.1 Describe the classification & morphology of bacteria.
MI1.1.2.2 Describe general pathogenesis and general lab diagnosis of bacterial infections

MI1.1.2.3 Define,classify culture media, applications of **culture media**

List out and describe different **culture methods**

MI1.1.2.4 Interpretation of various biochemical reactions

MI1.1.3 Introduction to virology

- Describe the classification & morphology of virus
- Describe general pathogenesis and general lab diagnosis of viral infections **MI1.1.4** Introduction to mycology
- Describe the classification & morphology of fungi .Describe general pathogenesis and general lab diagnosis of fungal infections. **MI1.1.5** Introduction to parasitology
- Describe the classification, morphology of parasites.
- Describe general pathogenesis and general lab diagnosis of parasitic infections

MI1.2 Perform and identify the different causative agents of Infectious diseases

by Gram Stain, ZN stain and stool routine microscopy

MI1.3 Describe the **epidemiological basis** of common infectious diseases

- Define: Epidemiology, Describe the various epidemiological patterns of infectious disease.
- Discuss the various microbial factors contributing to disease.
- Discuss the various sources and reservoirs of infections.

- Describe the various modes of transmission of infections.

MI1.4 Classify and describe the different methods of **sterilization and disinfection**. Discuss the application of the different methods in the laboratory, in clinical and surgical practice

MI1.4.1 Define: Sterilization, disinfection, asepsis, antiseptics, and decontamination.

- Classify & describe various methods of sterilization methods
- Discuss various methods of disinfection
- List out Testing of disinfectants. Discuss the application of the different methods in clinical and surgical practice.

MI1.5 Choose the most appropriate method of sterilization and disinfection to be used in specific situations in the laboratory, in clinical and surgical practice

MI1.5.1 Classify the medical devices using Spaulding's classification

- Classify disinfectants
- Define & applications of Fumigation, fogging
- Describe: Plasma sterilization
- Identify the most appropriate method of sterilization / disinfection in the given cases scenario.

MI1.6 Describe the mechanisms of **drug resistance**, and the methods of antimicrobial susceptibility testing and monitoring of antimicrobial therapy

MI1.6.1 Describe the bacterial genetic structures

- Describe bacterial variation – mutation & gene transfer Describe the methods of gene transfer in bacteria Describe gene transfer by artificial methods.
- List out mechanism of action of antimicrobial agents

MI1.6.2 Define drug resistance, List out various mechanisms of antibacterial resistance. MRSA,VRE,ESBL,MBL etc

- Define: Bacteriostatic, bactericidal, pharmacodynamics, pharmacokinetics, adverse reactions.
- List out and describe different methods of antimicrobial susceptibility testing
- Discuss MIC, broth dilution, agar dilution
- Describe principles of antibiotics selection and monitoring therapy

MI1.7 Describe the **immunological mechanisms in health**

MI1.7.1 Immunity

- Define & classify Immunity. Describe in detail all types of Immunity.
- Describe the role of vaccines in Immunity

MI1.7.2 Immune system - Describe structure and functions of immune system

MI1.7.3 Antigen & Immunoglobulins

- Define& classify Antigen. Describe characteristics of Antigens Define & classify Immunoglobulins (Antibody).
- Describe in detail all types of Antibody.

MI1.7.4 Complement system

- Describe components, general properties cascade and role of Complement system in health and disease **MI1.7.5** Antigen antibody reactions

- Define & classify antigen antibody reactions
- Discuss the principles of Ag -Ab reactions
- Describe the applications of Ag-Ab reactions in the diagnosis of diseases.
- Describe the approach to interpretation of Ag-Ab reaction in the diagnosis of diseases.

MI1.8 Describe the mechanisms of **immunity and response** of the host immune system to infections

MI1.8.1 Define & classify Immune response

- Describe humoral immune response – Primary response, Secondary response, Td response, T independent response, immunomodulators, monoclonal antibodies

MI1.8.2 Describe cell mediated immune response

- cytokines, importance of CMI
- Differentiate humoral and cell mediated immune response
- Discuss the theories of immune response of humoral immunity

MI1.9 Discuss the immunological basis of **vaccines** and describe the Universal Immunisation schedule

- Classify & describe types of immunization
- Define & classify types of Vaccines
- Discuss advantages and disadvantages among different types of vaccines
- Describe National Immunization Schedule (India)
- Importance of passive immunization

MI1.10 Describe the immunological mechanisms in **immunological disorder** (hypersensitivity, autoimmune disorders and immunodeficiency states) and discuss the laboratory methods used in detection.

MI1.10.1 Hypersensitivity

- Define& classify Hypersensitivity reactions including Gel and Coombs classification
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type I hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type II hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type III hypersensitivity
- Describe the mechanism, clinical features, laboratory evaluation and prevention of type IV hypersensitivity
- Discuss tuberculin test, patch test.

MI1.10.2 Autoimmunity

- Define & Describe mechanisms of Immunological tolerance
- Define & Describe various mechanisms of autoimmunity
- Describe various clinical manifestations of common autoimmune diseases
- Describe approach for laboratory diagnosis of autoimmune diseases

MI1.10.3 Immunodeficiency

- Define & Classify immunodeficiency syndromes
- Describe various immunodeficiency syndromes.
- Discuss the laboratory methods used in detection of immunodeficiency diseases.

MI1.11 Describe the immunological mechanisms of **transplantation and tumor** immunity

Transplantation immunity

- Define & Classify transplantation,
- Define & Discuss the mechanism allograft rejection, prevention of rejection Histocompatibility antigens, MHC,
- Describe types of HLA typing
- Describe Graft – versus-host reaction Tumor immunity

- Define Tumor antigen, immunological surveillance Describe immunosuppression.
- Describe immunotherapy in cancer

TOPIC – CVS & BLOOD(MI2.1-2.7) No of competencies- 7 No of procedures requiring certification -NIL

MI2.1 Describe the etiologic agents in rheumatic fever and their diagnosis

Rheumatic fever

- Describe the immunological basis of rheumatic fever/ nonsuppurative diseases caused by streptococci
- Classify streptococcus
- Describe the morphology, pathogenesis, antigenic structures, toxin & virulence factors, clinical features, epidemiology of streptococcus pyogenes
- Discuss the serological test for diagnosis of rheumatic fever.
- Discuss the role of antibiotics in treatment and prevention of rheumatic fever.

MI2.2 Describe the classification etio-pathogenesis, clinical features and discuss the diagnostic modalities of **Infective endocarditis**

- Enumerate the organisms causing infective endocarditis
- Viridans Streptococcus, Coagulase negative Staph, HACEK group etc Describe the pathogenesis, clinical features of infective endocarditis.

- Discuss the approach to identify the causative organism.
- Discuss the importance of multiple sample collection.
- Discuss automated blood culture systems.

MI2.3 Identify the microbial agents causing Rheumatic Heart Disease & infective Endocarditis

- Identify bacteria by observing colony morphology, biochemical reactions Interpret antimicrobial susceptibility test.
- Define: Minimum Inhibitory concentration, minimum bactericidal concentration.
- Discuss other test that can be used for diagnosis.

MI2.3.1 Define sepsis, **septicemia,** bacteremia, fungemia, viremia, parasitemia

- Describe etiology, pathogenesis, clinical features, lab diagnosis including prognostic markers and treatment of septicemia

MI2.4 List the common microbial agents causing **anemia**. Describe the morphology, mode of infection and discuss the pathogenesis, clinical course, diagnosis and prevention and treatment of the common microbial agents causing Anemia

- List the common microbial agents causing anemia.
- Describe the morphology, of the common microbial agents causing anemia.
- Discuss the mode of infection, pathogenesis & clinical course of the common microbial agents causing anemia.
- Discuss the laboratory diagnosis of the common microbial agents Causing anemia Discuss the treatment & prevention of the common microbial agents causing anemia.
- infectious agents causing Iron defeciency, megaloblastic,haemolytic anaemia and anaemia of chronic infections,

MI2.5 Describe the etio- pathogenesis and discuss the clinical evolution and the laboratory diagnosis of kalaazar, malaria, filariasis and other common parasites prevalent in India

Introduction

- Classify parasites and enumerate parasites prevalent to India **MI2.5.1 Malaria**

- Describe the morphology, life cycle, pathogenesis, clinical features of malarial parasite.
- Describe the treatment and prevention of malaria.

MI2.5.2 Leishmania

- Describe the morphology, life cycle, pathogenesis, clinical features of leishmania.
- Describe the laboratory diagnosis for kalaazar
- Describe the treatment and prevention for kalaazar

MI2.5.3 Trypanosoma

- Describe the morphology, life cycle, pathogenesis, clinical features of Trypanosoma.
- Describe the laboratory diagnosis for sleeping sickness.
- Describe the treatment and prevention for sleeping sickness

MI2.5.4 Filarial worm

- Describe the morphology, life cycle, pathogenesis, clinical features of filarial worm.
- Describe the laboratory diagnosis for filarial worm.
- Describe the treatment and prevention for filarial worm.

MI2.5.5 Schistosomes

- Describe the morphology, life cycle, pathogenesis, clinical features of Schistosomes.
- Describe the laboratory diagnosis for schistosomiasis.
- Describe the treatment and prevention of schistosomiasis.

MI2.6 Identify the causative agent of malaria and filariasis

MI2.7 Describe the epidemiology, the etio- pathogenesis, evolution complications, opportunistic infections, diagnosis, prevention and the principles of management of HIV

MI2.7.1 Describe morphology, epidemiology, pathogenesis of HIV

- Describe clinical features of AIDS

MI2.7.2 Opportunistic infections in AIDS

MI2.7.3 Describe the immunological abnormalities in HIV infection

 Describe various methods of laboratory diagnosis of HIV

Discuss applications of serological tests.

- Discuss laboratory monitoring of HIV infection
- Discuss the different approaches to the treatment of AIDS

MI2.7.4 Discuss NACO guidelines, strategies, pre-test counseling, post- test counseling

- Discuss NACO guidelines for post-exposure prophylaxis

MI2.7.5 Describe various modes of transmission of HIV

MI2.7.6 Describe prophylactic measures in preventing HIV Transmission Standard precautions, spill management etc

TOPIC: GASTROINTESTINAL & HEAPATOBILIARY SYSTEM(MI3.1-3.8)

No of competencies 8 No of procedures requiring certification – NIL

MI3.1. Enumerate the microbial agents causing diarrhea and dysentery. Describe the epidemiology, morphology, pathogenesis, clinical features and diagnostic modalities of these agents.

MI3.1.1-Introduction of gastrointestinal infections

- Brief structure and immunity of GIT
- Define diarrohea, dysentery
- Enumerate the various etiological agents of diarrhoea bacterial, viral ,parasitic etc.
- Classify the etiological agents in different age groups, immunocompromised, immunocompetent individuals.
- Discuss the mode of transmission, the pathogenesis, clinical manifestation and laboratory diagnosis of diarrhoea

MI3.1.2 Epidemiology, pathogenesis, laboratory diagnosis of diarrheagenic

E.coli,

MI3.1.3 Epidemiology, pathogenesis, clinical features, complications, laboratory diagnosis,treatment & prophylaxis of Cholera **MI3.1.4 Antibiotic Associated Diarrhoea** - Clostridium difficile

MI3.1.5 Viral gastroenteritis etiological agents, epidemiology, pathogenesis, clinical features and laboratory diagnosis - Rota, Astro, Noro

MI3.1.6 Bacillary dysentery Define dysentery etiological agents, pathogenesis, clinical features and laboratory diagnosis of bacillary dysentery -Shigella.Y.enterocolitica

MI3.1.7 Amoebic dysentery Discuss the morphology, life cycle, mode of transmission, pathogenesis, clinical features, complications and laboratory diagnosis of Amoebic dysentery difference between amoebic and bacillary dysentery - E.histolytica

- Mention briefly about non pathogenic intestinal amoebae

MI3.1.8 Etiological agents, pathogenesis, clinical manifestations and laboratory diagnosis of Diarrhoea in immunocompromised host- Giardiasis Cryptosporidium, Cyclospora, Isospora, Giardia

MI3.1.9 Soil transmitted helminthic infections- Ascaris, Enterobius, Trichuris trichuira

MI3.2 Identify the common microbial agents causing diarrhoea and dysentery

MI3.3 Enteric fever Describe the enteric fever pathogens and discuss the evaluation of clinical course and the laboratory diagnosis of diseases caused by them

- Define, mention the etiological agents, epidemiology, pathogenesis, clinical manifestations, complications, laboratory diagnosis of enteric fever

MI3.4 Identify the different modalities for diagnosis of Enteric fever , choose the appropriate test related to the duration of illness .

MI3.5 Food poisoning Enumerate the causative agents of food poisoning and discuss the pathogenesis ,clinical course and laboratory diagnosis

- Definition, source, pathogenesis, classification of food poisoning etiological agents based on type of food and pathogenesis, clinical manifestation laboratory diagnosis treatment and prophylaxis of food poisoning – Staphylococcus, Bacillus cereus, Clostridium perfrinegens, Clostridium botulinum, Salmonella typhimurium, halophilic vibrios etc

MI 3.6 Acid Peptic disease Describe the etiopathogenesis of Acid peptic disease and the clinical course . Discus the diagnosis and management of the causative agent of Acid peptic disease .

- Etiopathogenesis,clinical features,complications laboratory diagnosis treatment and prophylaxis of Acid peptic disease - H.pylori

MI3.7 Viral hepatitis Describe the epidemiology, the etio- pathogenesis and discuss the viral markers in the evolution of viral hepatitis. Discuss the modalities in the diagnosis and prevention of viral hepatitis

MI 3.7.1 Discuss the pathogenesis, clinical manifestations, complications and laboratory diagnosis, treatment and prophylaxis of enterically transmitted viral hepatitis Hepatitis A & E

MI 3.7. 2 Discuss the pathogenesis, clinical features, laboratory diagnosis treatment and prophylaxis of parenteral transmitted viral hepatitis -Hepatitis B

MI 3.7. 3 Discuss the pathogenesis, clinical features, laboratory diagnosis treatment and prophylaxis of parenteral transmitted viral hepatitis C & D

- Note on national programme National Viral Hepatits Control & Prevention Programme(NVHCP)

TOPIC: INFECTIONS OF SKIN & MUSCULOSKELETAL SYSTEM (MI4.1-4.3)

No of competencies – 3 No of procedures requiring certification – NIL

MI4.1 - Enumerate the microbial agents causing anaerobic infections. Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of anaerobic infections

MI4.1.1 Introduction to anaerobic infections

- List the normal anaerobic flora of human body.
- Enumerate and classify disease causing anaerobic bacteria with disease caused by them.
- Define Anaerobiasis. Describe the types of samples and collection methods for anaerobic culture. Describe the transport of specimen and culture of clinical samples for anaerobic culture. List the antibiotics used to treat anaerobic infections
- Classify Genus Clostridium. Describe the morphology of Genus Clostridium
- Discuss the etiopathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis of **Gas gangrene**.

MI4.1.2 Discuss the pathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis of **Tetanus.**

MI4.1.3 Discuss the pathogenesis, clinical features, laboratory diagnosis and treatment of **botulism.**

MI4.1.4 Discuss the etiopathogenesis, clinical features, laboratory diagnosis and treatment of **pseudomembranous colitis**.

MI4.1.5 Classification, diseases, laboratory diagnosis & treatment of infections caused by **non sporing anaerobes**

MI4.1.6 Discuss the pathogenesis, clinical features, lab diagnosis, treatment and prophylaxis of **Actinomycosis & nocardiosis**

MI4.2 – Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of bone & joint infections

- Classify bone & joint infections
- Enumerate the microorganisms causing infections of bone & joint (infectious arthritis, osteomyelitis and orthopedic implant associated infections)

- Describe the etiopathogenesis & clinical course of bone & joint infections
- Discuss the laboratory diagnosis of bone & joint infections

MI4.3 – Describe the etiopathogenesis of infections of skin and soft tissue and discuss the clinical course and the laboratory diagnosis

MI4.3.1 Introduction to Skin & Soft Tissue Infections

- Describe the normal anatomy, innate immunity & commensals of skin
- Define folliculitis, furuncle, carbuncle, macule, papule, nodule, pustule, vesicle, scales, ulcer and bulla.
- List the various organisms causing skin and soft tissue infections - Bacteria, Viruses, Fungi, Parasites
- Describe the pathogenesis, clinical course and laboratory diagnosis of **Staphylococcus aureus**
- Enumerate the etiological agents and laboratory diagnosis of post- operative wound infections & burns wound infection

MI4.3.2

- Describe the pathogenesis, clinical course and laboratory diagnosis of **Leprosy**
- Describe the pathogenesis, clinical course and laboratory diagnosis of **Atypical mycobacterial infections**

MI4.3.3 Enumerate **viruses causing skin and soft tissue lesions**. Discuss in detail Herpes viruses,pathogenesis, clinical features, laboratory diagnosis, treatment and prophylaxis

MI4.3.3a Viral exanthematous infections - Measles, Rubella, (Coxsackie, Pox, HPV, Molluscum, Hand foot mouth Disease)

MI4.3.4 List fungi causing **superficial fungal diseases**. Describe their clinical features,laboratory diagnosis,treatment and prophylaxis - Tinea versicolor, piedra, tinea nigra, dermatophytoses, Mucocutaneous candidiasis

MI4.3.5 subcutaneous mycosis – list the fungi causing subcutaneous mycosis.Describe the clinical features, laboratory diagnosis and treatment of subcutaneous mycosis.- Sporotrichosis, Chromoblastomycoses, Rhinosporidiosis, entamophthoromycoses, mycetoma

MI4.3.6 Enumerate the tissue nematode parasites causing skin and soft tissue lesions with their clinical course and laboratory diagnosis- Filariasis, Onchocerca, Loa loa, Mansonella, Dracunculus, Trichinella and Larva migrans

MI4.3.7 Describe the pathogenesis, clinical course and laboratory diagnosis of Diabetic foot & cellulitis- Streptococcus & others

MI4.3.8 Describe the pathogenesis, clinical course and laboratory diagnosis of cutaneous Anthrax

TOPIC: CENTRAL NERVOUS SYSTEM INFECTIONS –(MI5.1-5.3) No of competencies: (3) No of procedures that require certification: NIL

MI5.1 Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of **meningitis**

MI5.1.1 Describe normal structure of CNS and normal protective mechanisms **MI5.1.2** Define meningitis

MI5.1.3 Classify meningitis based on age group and duration

MI5.1.4. Enumerate the causative agents of meningitis and classify them based on age group affected, duration of disease and immune status

MI5.1.5. Describe general pathogenesis and clinical features of meningitis

MI5.1.6. Discuss the general approach to diagnosis of meningitis

MI5.1.7. Describe pathogenesis, lab diagnosis, prevention and treatment of meningococcal meningitis

MI5.1.8. Describe pathogenesis, lab diagnosis, prevention and treatment of pneumococcal meningitis

MI5.1.9. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by *Streptococcus agalactiae*

MI5.1.10. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by *Haemophilus influenzae*

MI5.1.11. Describe pathogenesis, lab diagnosis, prevention and treatment of Listeria meningitis

MI5.1.12. Describe pathogenesis, lab diagnosis, prevention and treatment of gram negative bacterial meningitis

MI5.1.13. Describe pathogenesis, lab diagnosis, prevention and treatment of tubercular meningitis

MI5.1.14. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by spirochetes

MI5.1.15. Describe pathogenesis, lab diagnosis, prevention and treatment of viral meningitis caused by *Herpes viruses, Enteroviruses, Mumpsvirus*, etc

MI5.1.16. Describe pathogenesis, lab diagnosis, prevention and treatment of meningitis caused by fungi - *Cryptococcus neoformans, Candida Spp., Coccidioides, Histoplasma, etc* **MI5.2** Describe the etiopathogenesis, clinical course and discuss the laboratory diagnosis of **encephalitis**

MI5.2.1. Define: Encephalitis

MI5.2.2. Classify Encephalitis

MI5.2.3. Enumerate the causative agents of Encephalitis

MI5.2.4. Describe general pathogenesis of encephalitis

MI5.2.5. Describe the clinical presentation of Encephalitis

MI5.2.6. Discuss the approach to diagnosis of viral Encephalitis

MI5.2.7. Describe morphology of polio virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of poliomyelitis

MI5.2.8. Describe morphology of rabies virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of rabies

MI5.2.9. Describe etiology, pathogenesis, clinical features, lab diagnosis and prevention of slow viral infections

MI5.2.10. Discuss the etiopathogenesis, clinical features and approach to diagnosis of parasitic meningitis and Encephalitis

MI5.2.11. Discuss the etiopathogenesis, clinical features and approach to diagnosis of brain abscess
MI5.2.12. Discuss the etiopathogenesis, clinical features and approach to diagnosis of cystic brain lesion- neurocysticercosis, hydatid disease of brain

MI5.3 Identify the microbial agents causing meningitis

MI5.3.1. Analyse clinical features, interpret laboratory test results provided to diagnose the clinical condition and identify the causative microorganism.

MI5.3.2 Describe normal ranges of common CSF parameters

MI5.3.3. Interpret abnormal results of CSF analysis report provided. **MI5.3.4**

Demonstrate CSF collection in a mannequin

TOPIC: RESPIRATORY TRACT INFECTIONS MI6.1-6.3 No of Competency-3 No of procedures require Certification-2

Competency MI6.1 Describe the etio-pathogenesis, laboratory diagnosis and prevention of Infections of upper and lower respiratory tract

- **MI6.1.1** Describe the structure respiratory system and role of immunity in respiratory system
- **MI6.1.2** Discuss the etiological agents, pathogenesis, epidemiology clinical features,complications and laboratory diagnosis of rhinitis
- **MI6.1.3** Discuss the classification, etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of otitis
- **MI6.1.4** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of sinusitis
- **MI6.1.5** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of pharyngitis, tonsillitis
- **MI6.1.6** Discuss the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of laryngitis, bronchitis, bronchiolitis
- **MI6.1.7** Define & classify pneumonia. Enumerate the etiological agents of pneumonia general laboratory diagnosis and prophylaxis of pneumonia
- **MI6.1.8** Discuss pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of community acquired pneumonia- pneumococci
- **MI6.1.9** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of hospital acquired pneumonia-Klebsiella, Staphylococci, Legionella
- **MI6.1.10** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis treatment and prophylaxis of ventilator associated pneumonia- Acinetobacter
- **MI6.1.11** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of atypical pneumonia- Mycoplasma, Chlamydia
- **MI6.1.12** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of viral respiratory infections – Adeno, RSV, EBV

- **MI6.1.13** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of viral pneumonia – Influenza virus, SARS -corona
- **MI6.1.14** Enumerate the etiological agents, pathogenesis, epidemiology clinical features, complications and laboratory diagnosis of pneumonia in immunocompromised hostPneumocystis jirovecii, CMV
- **MI6.1.15** Describe the epidemiology, mode of transmission, pathogenesis, clinical features complications, laboratory diagnosis, treatment and prophylaxis of pulmonary tuberculosis
- **MI6.1.16** Discuss the importance of MDR TB, RNTCP HIV TB co-infection
- **MI6.1.17** Define and classify the atypical mycobacteria discuss the pathogenesis, clinical features, complications and treatment of pulmonary atypical mycobacterial infection
- **MI6.1.18** Discuss the general characters of dimorphic fungi. Discuss the mode of transmission, pathogenesis, clinical features, complications and laboratory diagnosis of pulmonary mycosis-Histoplasma, coccidioides, Blastomyces, Paracoccidiodies
- **MI6.1.19** Discuss mode of transmission, pathogenesis, clinical features laboratory diagnosis of aspergillosis
- **MI6.1.20** Parasites affecting lung – Paragonimus westermanii (non core), Loefflers syndrome, amoebic lung abscess
- **MI6.1.21** Discuss the immunoprophylaxis for respiratory tract infections

MI6.2 Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)

- **MI 6.2.1** Describe the method of sample collection and transportation
- **MI 6.2.2** Explain the steps of gram's staining procedure
- **MI 6.2.3** Do the grams staining procedure
- **MI 6.2.4** Observe the stained smear
- **MI 6.2.5** Interpret and Report the staining results

MI6.3 Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)

- **MI 6.3.1** Enumerate the organisms causing LRTI
- **MI 6.3.2** Describe the method of sample collection
- **MI 6.3.3** Recap the Gram's staining procedure and repetition
- **MI 6.3.4** Explain the Acidfast staining procedure
- **MI 6.3.5** Perform the Acid fast staining procedure
- **MI 6.3.6** Interpret and Report the staining results

Topic: - Genitourinary & sexually transmitted infections (MI7.1-7.3) No of competencies – 3 No of procedures requiring certification – NIL

MI 7.1 - Describe the etiopathogenesis and discuss the laboratory diagnosis of infections of genitourinary system

MI 7.1.1 Describe the normal anatomy and innate defense mechanisms in the male and female genital tract

MI 7.1.2 Enumerate the various infections of genitourinary tract

MI 7.1.3 Describe the etiology and pathogenesis of Genitourinary tract infections in general

MI 7.1.4 Discuss the clinical features, sample collection and laboratory diagnosis of genitourinary infections in general

MI 7.1.5 Discuss the effect/ complications of genitourinary infections in pregnancy (Maternal & fetal)

MI 7.2 – Describe the etiopathogenesis and discuss the laboratory diagnosis of **Sexually Transmitted Infections**. Recommend preventive measures

MI 7.2.1 Enumerate the bacterial, viral, fungal and parasitic agents causing Sexually Transmitted infections

MI 7.2.2 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of pathogens causing ulcerative lesions in the genital tract (Syphilis, Haemophilus ducreyi, LGV, Calymmatobacterium granulomatis, Herpes Virus)

MI 7.2.3 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of pathogens causing Urethral syndrome/ white discharge per vagina (Gonococci, Candida spp, Trichomonas vaginalis, Bacterial vaginosis)

MI 7.2.4 Describe the pathogenesis, clinical features, laboratory diagnosis and treatment of Mycoplasma spp

MI 7.2.5 Describe non gonococcal urethritis. Enumerate the agents causing the same

MI 7.2.6 Differentiate between bacterial vaginosis & bacterial vaginitis

MI 7.2.7 Discuss the various measure for prevention of Sexually Transmitted infections

MI 7.2.8 Discuss the importance of confidentiality in reporting Sexually transmitted diseases

MI 7.2.9 Discuss the role of counselling in management of Sexually transmitted diseases

MI 7.2.10 Enumerate the pathogens causing congenital infections. Discuss the pathogenesis, lab diagnosis, prophylaxis, prevention and treatment of these infections.

MI 7.3 – Describe the etiopathogenesis, clinical features, the appropriate method for specimen collection and discuss the laboratory diagnosis of **Urinary tract infections**

MI 7.3.1 Describe the normal anatomy, physiology and Innate defense mechanisms of the urinary tract

MI 7.3.2 Mention the types of Urinary tract infections (upper and lower)

MI 7.3.3 Mention the causative agents of urinary tract infection

MI 7.3.4 Enumerate the predisposing factors in Urinary Tract infections

MI 7.3.5 Discuss the pathogenesis of urinary tract infection

MI 7.3.6 Discuss the clinical features of Urinary tract infections (Difference between upper and lower urinary tract infections)

MI 7.3.7 Describe the methods of collection of urine from infant, adult men/women, and catheterized patients

MI 7.3.8 Discuss the concept of significant bacteriuria

MI 7.3.9 Discuss about asymptomatic bacteriuria & conditions these are seen

MI 7.3.10 Describe about sterile pyuria and enumerate the disease causing sterile pyuria

MI 7.3.11 Define Catheter associated urinary tract infection. Enumerate the predisposing factors, prevention, diagnosis and treatment of CAUTI

MI 7.3.12 Discuss the laboratory diagnosis and treatment of Urinary tract infections

TOPIC- ZOONOTIC DISEASES & MISCELLANEOUS (MI8.1-8.16) No of competencies -16 No of procedures require certification-1

MI8.1 Enumerate the microbial agents and their vectors causing **Zoonotic diseases**. Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention

Introduction -Define zoonotic infections. Enumerate organisms causing zoonotic infections in man and the mode of transmission/vectors transmitting them

MI8.1.1 Anthrax-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of Anthrax

MI8.1.2 Plague- Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention plague

MI8.1.3 Brucellosis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention brucellosis

MI8.1.4 Leptospirosis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention leptospirosis

MI 8.1.5 Rickettsia- Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention Rickettsial and miscellaneous zoonoses

MI8.1.6 Arboviral-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of Arboviral infectionsDengue,chikungunya,KFD

MI8.1.7 Toxoplasma & Balantidium-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of toxoplasmosis & balantidiasis

MI1.8.8Taeniasis-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of taeniasis

MI1.8.9 Hydatid disease-Describe the morphology, mode of transmission, pathogenesis and discuss the clinical course laboratory diagnosis and prevention of hydatid cyst disease **MI1.8.10 Rabies**-Describe morphology of Rabies virus. Describe pathogenesis, clinical features, lab diagnosis and prevention of rabies

MI8.2 Describe the etio-pathogenesis of **Opportunistic Infections** (OI) and discuss the factors contributing to the occurrence of OI, and the laboratory diagnosis

- •Define opportunistic infections
- Enumerate organisms causing opportunistic infections
- Discuss factors contributing to development of opportunistic infections **Viral agents**
- Describe pathogenesis, clinical features, laboratory diagnosis and prevention of viral opportunistic infections - Herpse group, human papilloma virus, **Fungal OI**
- Describe pathogenesis, clinical features, laboratory diagnosis and prevention of candidiasis
- Describe pathogenesis, clinical features, laboratory diagnosis and prevention of Cryptococcosis •Describe pathogenesis, clinical features, laboratory diagnosis and prevention of mucormycosis **Parasitic OI**
- •Describe pathogenesis, clinical features, laboratory diagnosis and prevention of opportunistic parasitic infections - coccidian intestinal parasitic infections, strongyloidiasis

MI8.3 Describe the role of **oncogenic viruses** in the evolution of virus associated malignancy

- Define oncogenic viruses
- Enumerate oncogenic viruses
- Describe pathogenesis of viral oncogenesis
- Describe laboratory diagnosis of oncogenic viral infections
- Describe methods of prevention of oncogenic viral infections **MI8.4** Describe the etiologic agents of **Emerging Infectious diseases.**
- Discuss the clinical course and diagnosis Define emerging infectious agents.
- Enumerate agents causing emerging infections Describe factors contributing to emerging infections.
- Discuss clinical course and laboratory diagnosis of emerging infections
- Describe the Indian scenario of emerging infectious agents

MI8.5 Define **Healthcare Associated Infections (HAI)** and enumerate the types. Discuss the factors that contribute to the development of HAI and the methods for prevention

- Define Healthcare Associated Infections (HAI)
- Enumerate the types of HAI
- Discuss the factors that contribute to the development of and methods to prevent catheter associated urinary tract infection (CAUTI)
- Discuss the factors that contribute to the development of and methods to prevent central line associated blood stream infection (CLABSI)

- Discuss the factors that contribute to the development of and methods to prevent ventilator associated pneumonia (VAP)
- Discuss the factors that contribute to the development of and methods to prevent surgical site infection (SSI)
- Describe principles and application of antibiotic stewardship

MI8.6 Describe the basics of **PANDEMIC MANAGEMENT (Infection control)**

- Define Standard precautions
- List the components of Standard precautions Describe the various transmission-based precautions.
- Describe the constitution and functions of HICC.
- Define Biomedical waste
- Classify biomedical waste and describe methods of segregation, decontamination and disposal of each type as per Biomedical waste management rule
- Describe appropriate management of needle stick injury in healthcare setting Manage bio-spill
- Describe vaccines that are useful in healthcare workers

MI8.7 Demonstrate Pandemic management (Infection control) practices and use of **Personal Protective Equipment (PPE)**

MI8.8 Describe the methods used and significance of assessing the microbial contamination of food, water and air

- Describe the methods used and significance of assessing the microbial contamination of food.
- Describe the methods used and significance of assessing the microbial contamination of water.
- Describe the methods used and significance of assessing the microbial contamination of air.

MI8.9 Discuss the appropriate method of **collection of samples** in the performance of laboratory tests in the detection of microbial agents causing Pandemic (infectious diseases)

- Discuss methods of sample collection for laboratory diagnosis of upper respiratory infections
- Discuss methods of sample collection for laboratory diagnosis of lower respiratory infections
- Discuss methods of sample collection for laboratory diagnosis of CVS and blood stream infections
- Discuss methods of sample collection for laboratory diagnosis of CNS infections
- Discuss methods of sample collection for laboratory diagnosis of gastrointestinal infections
- Discuss methods of sample collection for laboratory diagnosis of infections of skin and soft tissues
- Discuss methods of sample collection for laboratory diagnosis of musculoskeletal infections

- Discuss methods of sample collection for laboratory diagnosis of infections eye, nose and ear
- Discuss methods of sample collection for laboratory diagnosis of genitourinary infections

MI8.10 Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Pandemic (Infectious diseases)

MI8.11 Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases

MI8.12 Discuss confidentiality pertaining to patient identity in laboratory results

- Discuss the rights and responsibility of patients
- Discuss the rights and responsibility of laboratory with respect to confidentiality of laboratory results
- Discuss the ethical issues involved in confidentiality pertaining to patient identity.
- Discuss the medicolegal consequences of breach in confidentiality **MI8.13 Choose the appropriate laboratory test** in the diagnosis of the infectious disease
- Identify the clinical condition based on the history provided.
- Choose the appropriate laboratory tests in the diagnosis of given infectious disease.
- Justify why a particular laboratory test was chosen to diagnose a given infectious disease

MI8.14 Demonstrate **confidentiality** pertaining to patient identity in laboratory results

- Demonstrate the understanding of importance of confidentiality with respect to patient's laboratory test results
- Identify situations where confidentiality needs to be maintained regarding patient's laboratory test results and where it can be bypassed
- Demonstrate confidentiality pertaining to patient identity in laboratory results.
- Counsel the patient about the test results in simulated setting

MI8.15 Choose and **Interpret the results** of the laboratory tests used in diagnosis of the infectious diseases

- Choose appropriate laboratory test(s) in the diagnosis of the infectious disease based on the case scenario and the order in which they need to be performed, if applicable
- Interpret the results of the laboratory tests used in diagnosis of the given infectious disease scenario

MI8.16 Describe the **National Health Programs** in the prevention of common infectious disease (for information purpose only as taught in CM)

- Enumerate all the National Health Programs regarding common infectious diseases in India
- Describe the goals of the various National Health Programs in the prevention of common infectious disease.

- Describe laboratory diagnostic tools used in the National Programs related to infectious diseases
- Describe general immunoprphylactic and chemoprophylactic measures used in the National Programs related to infectious diseases

V. TEACHING & LEARNING METHODS

TOPIC- GENERAL BACTERIOLOGY & IMMUNOLOGY

MI 1.1-1.11

Sl.no	LECTURES (10)	TUTORIALS/SGD (8)	SDL (3)	PRACTICAL (15)
1	**MI1.1.1** Introduction to infectious diseases a nd History	Microscopy - Types of microscopes, principles and applications of each	**MI1.7.2** immune system	Simple stain exercise and hanging frop demonstration
2	**MI1.1.2** Morphology &Physiology of Bacteria	**MI1.1.2.3** Culture Media	**MI1.7.3** Antigen & immunoglobulins	**MI1.1.2.3** Culture media and methods (including anaerobic)
3	**MI1.1.3** Introduction to virology	**MI1.1.2.4** Principles of lab diagnosis of infectious diseases – identification of bacteria (including biochemical tests)	**MI1.10.4** Immunodeficiency	Identification of bacteria based on Biochemical tests
4	**MI1.1.4** Introduction to mycology	**MI1.3** Epidemiology & pathogenesis of Infectious diseases		**MI1.1.3** Demonstration of Viral Diagnostic methods - microscopy /culture/immunological/molecular
5	**MI1.1.5** Introduction to parasitology	Visit to CSSD		**MI1.1.4** Demonstration of Diagnostic methods used in Fungal infections -
				microscopy/culture/immunological/molecular

6	**MI1.4.1**Sterilization & Disinfection - Physical methods	**MI1.5.1** Sterilization & Disinfection, Spaulding's classification, chemical methods		**MI1.1.5** Demonstration of Diagnostic methods used in parasitic infections - microscopy/culture/immunological/molecular; stool examination Exercise (1)
7	**MI1.6.1** Bacterial genetics (Bacteriophage)	**MI1.6.2** Principles and types of antibiotic susceptibility testing (Introduce MRSA, ESBL, MBL, VRE)		**MI1.2** Gram staining (1)
8	**MI1.7.1** Immunity	**MI1.9** Immunological basis of vaccine & Universal Immunization Schedule		**MI1.2** Gram staining (2)
9	**MI1.7.4** Complement system			**MI1.2** Acid fast staining (1)
10	**MI1.7.5** Antigen-Antibody reactions			**MI1.2** Acid fast staining (2)
11	**MI1.8.1**Immune response - Humoral			**MI1.2** Stool examination (2)
12	**MI1.8.2** Immune response - cell mediated			**MI1.5** Physical methods of sterilization - Demo
13	**MI1.10.1** Hypersensitivity -1			**MI1.5** Identify the most appropriate method of sterilization / disinfection in the given case scenarios. Discuss the reason for choosing the method of sterilization / disinfection.
14	**MI1.10.2** Hypersensitivity - 2			**MI1.6.2** Antimicrobial susceptibility testing and interpretation – Disk diffusion Demo
15	**MI1.10.3** Autoimmunity			**MI1.7.5** Demonstration of types of Antigen Antibody reactions

16	**MI1.11** Immunology of transplantation & tumour immunity			

TOPIC – CVS & BLOOD MI 2.1-2.7

SL.NO	LECTURE-9	TUTORIALS/SGD-9	SDL-2	PRACTICAL (5)
1	**MI2.1** Rheumatic fever -Microbial agent and pathogenesis, Lab diagnosis and management - Streptococcus pyogenes	**MI2.4** Anaemia(1)	Diphyllobothrium latum and Mansonella	**MI2.1 AE** Rheumatic fever - Streptococci - ASLO
2	**MI2.2** Infective endocarditis	Case discussion- Hookworms,pathogenesis, clinical course,lab diagnosis, treatment and prevention	**MI2.5.4** Filarial worm	**MI2.3.1 AE** Sepsis markers - CRP, Procalcitonin Applied exercise

3	**MI2.3.1** Septicemia	Case discussion- Malaria with complication and reinforce life cycle, Babesiosis		**MI2.2 AE** Infective endocarditis- (Viridans Streptococci, Coagulase negative Staphylococci)
4	**MI2.5** Parasites endemic to India- Classification, distribution and	**MI2.5.3** Trypanasomes		**MI2.4** stool examination (3)
	diseases burden			(Hookworm)
5	**MI2.5.1** Malaria, mode of infection, pathogenesis, clinical course, lab diagnosis, treatment and prevention	**MI2.5.5** Schistosomes		**MI2.6 Demonstration** of blood parasites - Plasmodia, Microfilaria (smear)
6	**MI2.5.2** Leishmania pathogenesis, clinical course, lab diagnosis, treatment and prevention	**MI2.7.2** Opportunistic infections - relevant to HIV/AIDS		**MI2.5.2,3 Demonstration** of blood parasites - Leishmania, Trypanosomes (smear/picture
7	**MI2.7.1** HIV I	**MI2.7.4** NACO guidelines, strategies, pre-test counseling, post- test counseling		**MI2.7.3 AE** Serological diagnosis of HIV - ICT, ELISA, PCR
8	**MI2.7.3** HIV 2	**MI2.7.5** Modes of transmission,prevention		**MI2.7.3** Pre & Posttest counselling, Confidentaility (AETCOM - OSPE)

TOPIC: GASTROINTESTINAL & HEAPATOBILIARY SYSTEM

MI3.1-3.8

SL.NO	LECTURES (10)	TUTORIALS/SGD (4)	SDL(0)	PRACTICAL (6)
1	**MI3.1.1** Introduction to gastrointestinal infections	**MI3.1.2** Diarrheagenic E.coli	**MI3.1.4** Antibiotic associated diarrohea	**MI3.1.2 ,3,5** **AE** -3 Diarrheagenic E.coli, cholera, food poisoning Hanging drop preperation
2	**MI3.1.3** Cholera	**MI3.1.5** Viral diarhhea		**MI3.1.7 ,8,9** DOAP: Stool examination (3,4,5); Demonstration - Enatamoeba Giardia,Coccidia
3	**MI3.1.6** Bacillary dysentery	**MI3.1.9** Soil transmitted helminthic infections		**MI3.1.6 AE** Bacillary dysentery
4	**MI3.1.7** Parasitic dysentery E.histolytica Balantidium coli	**MI 3.6** Overview of Acid peptic disorder		**MI3.4** **AE** – Lab diagnosis of Enteric fever 1st week- blood culture 2nd week widal test
5	**MI3.1.8**Parasitic Diarrhea in immunocompetent and immunocompromised			**MI3.7** **AE** Seromarkers of Hepatitis B, Hepatitis C
6	**MI3.3** Enteric fever			Applied bacteriology, virology and parasitology exercises in GIT

7	**MI3.5** Food poisoning			
8	**MI 3.7. 1** Enterically transmitted Viral hepatitis - Hepatitis A and E			
9	**MI 3.7. 2** - Hepatitis B			
10	**MI 3.7. 3** Hepatitis C and D			

TOPIC: INFECTIONS OF SKIN & MUSCULOSKELETAL SYSTEM MI 4.1-4.3

SL.NO	LECTURE (10)	TUTORIAL/SGD (3)	SDL (1)	PRACTICAL (4)
1	**MI4.1.1** Introduction to anaerobic infections	**MI4.1.6** Actinomycosis, Nocardia	**MI4.3.3a** Pox virus	**MI4.3.1** Gram stain exercise Gram stain of Cl.tetaniDemo) Demonstration of sample collection – (collection of pus)
				AE 3- 1.Cellulitis (Streptococcus pyogenes), 2.Surgical site infection, 3.Burns wound infection (Pseudomonas**)**
2	**MI4.1.2** Tetanus	**MI4.3.7** Cellulitis including diabetic foot		**MI4.2** AE 1.Osteomyelitis 2. Infective arthritis
3	**MI4.1.5** Infections of Nonsporing anaerobes	**MI4.3.6** Tissue nematode infections of skin and soft-tissue		**MI4.3.2** ZN staining - Demonstration of slides of 1. M Leprae, preparation of Slit Skin Smear demo (video)

4	**MI4.2** Bone & joint infections			**MI4.3.4,5 AE** Dermatophytoses & Mycetoma collection of sample KOH mount, culture, Side culture; LPCB mount
5	**MI4.3** Introduction to skin and soft tissue infections			**MI4.3.3** AE - Viral exanthematous fever
6	**MI4.3.2** Leprosy, (Atypical mycobacteria affecting skin			
7	**MI4.3.3-** Herpes viruses			
8	**MI4.3.3a** Viral exanthematous infections			
9	**MI4.3.4** Superficial mycoses			
10	**MI4.3.5** Subcutaneous			

	mycoses			

TOPIC: CENTRAL NERVOUS SYSTEM INFECTIONS
MI5.1-5.3

SL.NO	LECTURES (6)	TUTORIALS/SGD (7)	SDL (2)	PRACTICAL (3)

1	**MI5.1.1** Introduction to CNS infections	**MI5.1.2a** Pyogenic meningitis	Prevention of Polio and rabies	**MI5.2.7,8** Spotter - Polio vaccine,hydatid cyst **MI5.2.8** AE 1.Rabies - using Negri body slide/photograph **MI5.2.12** 2.- hydatid cyst, 3.Neurocysticercosis (specimen/CT scan picture) 4.cerebral malaria - peripheral smear- Pl.falciparum or ICT
2	**MI5.1.2** Pyogenic meningitis	**MI5.1.3** Chronic meningitis		**MI5.1.8,9,10** **AE.Pyogenic meningitis-** Sample collection - CSF (Manequin) 1.Meningococcus, H.influenzae 2. Neonatal meningitis Streptococcus agalctiae
3	**MI5.1.5** Fungal meningitis	**MI5.1.4** Aseptic meningitis - Viral causes		**MI5.1.13** **AE-** 3.Tubercular meningitis **MI5.1.16. AE** 4.Cryptococcal meningitis **MI5.2.11** **AE - cerebral**
				abscess - Anaerobes/ Staphylococcus/ Nocardia/

4	**MI5.2.1** Viral encephalitis	**MI5.2.4** Slow viral infections		
5	**MI5.2.2** Polio	**MI5.2.5** Parasitic meningitis and encephalitis Toxoplasmosis, cerebral malaria		
6	**MI5.2.3** Rabies	**MI5.2.5** Parasitic meningitis and encephalitis Primary amoebic encephalitis		
7		**MI5.2.6** Infectious space occupying lesions of CNS		

TOPIC: RESPIRATORY TRACT INFECTIONS
MI6.1-6.3

Sl.no	LECTURE (6)	TUTORIALS/SGD (9)	SDL (1)	PRACTICAL (7)
1	**MI6.1-6.4** Introduction to URTI - normal structure & protective mechanisms, etiology, pathogenesis, general lab diagnosis, treatment	**MI6.1.7&8** Community acquired pneumonia - Pneumococcus, H.influenzae	**MI6.1.9** HAP- staph, Legionella	**MI6.1.3 &4** **AE** otitis Proteus, Aspergillus
2	**MI6.1.5** Diphtheria	**MI6.1.6** Whooping cough and croup B.pertusis, Parainfluenza		**MI6.1.5** **AE**-white patch in oral cavity - Albert stain,
3	**MI6.1.13** Viral pneumonia - Influenza viruses	**MI6.1.12** Viral lower respiratory infections - Adeno, RSV, EBV		**AE- CAP** S.pneumo,

	(Corona)			H.influenzae, K.pneumoniae **VAP** Acinetobacter
4	**MI6.1.15** Mycobacterium tuberculosis- class 1	**MI6.1.11** Atypical Pneumonia - Mycoplasma, Chlamydia, viral		**MI 6.2** AE Gram's staining - with history - otitis media, sinusitis
5	**MI6.1.16** Mycobacterium tuberculosis- class 2	Tb- lab diagnosis with diagnostic algorithm and treatment - integrated with Path, Pharmac		**MI 6.3.1,2,3 AE** Gram's staining - sputum (pneumococcus, Klebsiella, quality of sample)
6	**MI6.1.18 & 19** Fungal infections of lower respiratory tract	**MI6.1.17** Atypical Myco bacteria		**MI6.3.4** Acid fast staining (4)
7		**MI6.1.21** Immunoprophylaxis of Respiratory infection		**MI6.3.4** Acid fast staining (5)
8		**MI6.1.20** General diagnosis of pulmonary parasitic infections- Lung flukes, Paragonimus		
9		**MI6.1.14** Pneumonia in immunocompromised		

TOPIC: GENITOURINARY & SEXUALLY TRANSMITTED INFECTIONS (MI7.1-7.3)

Sl.no	LECTURE (5)	TUTORIALS/SGD (2)	SDL (1)	PRACTICAL (4)

1	**MI 7.1** Normal anatomy & infections of Genito urinary system- pathogenesis, general lab diagnosis	**MI 7.2.7** Prevention measures in STD	**MI 7.2.4** Nongonococcal urethritis including mycoplasma, Ureaplasma, Chlamydia	**MI 7.2.3 AE** Discharge per vagina (differnce between bacterial vaginosis& bacterial vaginitis),
				Urethral syndrome
2	**MI 7.2.1& 2.2** Pathogens causing ulcerative Lesions in the genital tract 1- Syphilis	**MI 7.2.10** Congenital infections		**MI 7.2.2 AE-** ulcerative lesions in the external genitalia
3	**MI 7.2.2** Pathogens causing ulcerative Lesions in the genital tract 2 (Haemophilus ducreyi, LGV Calymmatobacterium granulomatis, Herpes Virus)			**MI 7.3** **AE** - UTI sample collection
4	**MI 7.2.3** Pathogens causing urethral discharge/ white discharge per vagina (Gonnorhoea, Candida, Trichomonas vaginalis, Bacterial vaginosis)			**MI 7.3.11 AE** CAUTI
5	**MI 7.3** Urinary tract infections - E.coli, Klebsiella, Proteus, Enterococcus, others			

TOPIC- ZOONOTIC DISEASES & MISCELLANEOUS (MI8.1-8.16)

SL.NO	LECTURE (6)	TUTORIALS/SGD (9)	SDL (1)	PRACTICAL (11)

1	**MI8.1&1.1** Introduction to zoonotic infections, Anthrax	**MI8.1.2** Plague	Zoonotic TB,cat scratch disease, rat bite fever	**MI 8.1.3,4,5 AE- PUO** Brucellosis leptospirosis **SEROLOGY** Brucella Agg Leptospirosis Weil Felix
2	**MI8.1.3** Brucellosis	**MI8.1.6** Viral hemorrhagic fevers - Yellow fever,		**MI8.1.6 AE-**Lab diagnosis of dengue,
		Ebola, Roboviruses (Hanta, Arena), Lassa, Marburg		chikungunya
3	**MI8.1.4** Leptospirosis , Borreliosis	**MI8.1.8** Taeniasis, (Cysticercosis, partly covered in CNS) and (Hymenolepiasis)		**Mi8.1.8&9 Stool Examination** (5)-larva of Strongyloides **Demonstration** of specimen Taenia adult worms,hydatid cyst & slide of hydatid cyst
4	**MI8.1.5** Rickettsial infections, Other zoonoses (Nontyphoidal Salmonellosis, Prions, Zoonotic mycoses)	**MI8.2** Introduction to opportunistic infections & viral opportunistic infections, candidiasis (Also covered in HIV-CVS MI2.7)		**MI8.2 AE** Candidiasis Mucromycosis

5	**MI8.1.6** Arboviral infections- Classification, Spotted fever group, Dengue, Chukungunya, KFD, Gen Lab diagnosis; (Zikavirus)	**MI8.2** Opportunistic Intestinal parasitic infections - Cystisosporiasis, Cryptosporidiasis, Cyclosporiasis, Microsporidiasis and Strongyloidiasis, Giardia - (covered in GIT 3.3)		**MI8.7** Donning & doffing of PPE for a given situation - 1
6	**MI8.1.9** Hydatid cyst disease	**MI8.4** Emerging infections and bioterrorism		**MI8.7** Donning & doffing of PPE for a given situation - 2
7	**MI8.2** Zygomycosis	**MI8.5** Hospital Associated Infections (seminar)		**MI8.7** Donning & doffing of PPE for a given situation - 3
8	**MI8.3** Oncogenic viruses -HPV, HTLV (HBV, HDV,,EBV etc)	**MI8.6** Biomedical waste management		**MI8.6** 1.How to **manage bio-spill** in a simulated setting (AETCOM) 2.Advice a **HCW with needle stick** injury in complete and correct sequence in a simulated setting AETCOM 3.Segregate **biomedical waste** as per BMW2016 rules

9	**MI8.6** Antibiotic stewardship	**MI8.8** Food, water and air microbiology		**MI8.9** Collection of throat swab, nasopharyngeal swab peripheral venous blood for culture in simulated situation
10	**MI8.6** Infection control in hospitals- Principles, components and application; surveillance - standard & transmission based precautions, HICC	**MI8.9,10&11** Sample collection and transportation - (T/L opportunities - General micro/Individual systems/Together at the end as applied Micro practical classes)		**MI8.9** collection of wound swab and pus sample in simulated situation Instruct sample collection procedure (sputum, urine, stool,for culture)
11	**MI8.16** National health programs on infectious diseases - Integrated with PSM	**MI8.12** Discuss with help of case scenarios or role plays or videos : a. Request form or container with incomplete or wrong information		**MI8.9** skin scraping, hair clippings and nail samples) collection procedure independently
		b. Lost CSF sample c. Contaminated blood for culture d. Delayed submission of urine sample for culture e. Salivary sample for ZN stain		in a simulated setting (covered in skin) Demonstrating respect to patient samples -OSPE (AETCOM)
12		**MI8.14** Interaction with ICTC staff - AETCOM		

13		**MI8.15** Case based discussion - reflection confidentiality- Pt identity, lab results) - AETCOM		

VI. CERTIFIABLE COMPETENCIES

It should be certified that the student is competent to perform the below skills independently without supervision.

SI. NO	NUMBER	COMPETENCY	Number required to certify
1	MI1.2	Perform and identify the different causative agents of Infectious diseases by Gram Stain, ZN stain and stool routine microscopy	**5**
2	MI6.2	Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)	**3**
3	MI6.3	Identify the common etiologic agents of lower respiratory tract infections (Gram Stain & Acid fast stain)	**3**
4	MI8.7	Demonstrate Infection control practices and use of Personal Protective Equipment (PPE)	**3 each in (Hand hygiene & PPE)**

VII. TIME TABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	PH-L	OBG-L	PH-A,CM-B
Tuesday	Postings	PH-L	FM-L	FM-A,
Wednesday	Postings	MIC-L	PA-L	PA-A, MIC-B
Thursday	Postings	CM-L	PH-SGD	PA-B, MIC-A
Friday	Postings	MIC-L	PA-L	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	MIC-L	PA-SGD	PH-A, PA-B-SGD
Tuesday	Postings	PH-L	MIC-SGD	PH-SGD
Wednesday	Postings	PA-L	MIC-L	PA-A, MIC-B
Thursday	Postings	PH-L		PH-B, PA-A SGD
Friday	Postings	PA-L	MIC-SGD	PA-B, MIC-A
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

	8-11	11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	PA-L	MIC-L	PH-SGD	PA-SDL
Tuesday	Postings	PA-L	MIC-L	PA-A,MIC-B	PH-SDL
Wednesday	Postings	PH-L		PH-A,PA-B SGD	MIC-SDL
Thursday	Postings	PH-L		PH-B,PA-A SGD	CM-SDL
Friday	Postings	CM-L		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	SUR-L	OBG	G.M-L	

VIII. COMP ETENCY DISTRIBUTION IN EACH BLOCK

MCI No	BLOCK WISE COURSE	Competencies	LECTURE	TUTORIAL/SGD	Practical	SDL
MI1	IST BLOCK	General Microbiology and Immunoly	16	8	15	3
MI2	OCT 2020 to JAN 2021	CVS and Blood	9	9	5	1
MI3	IInd BLOCK FEB 2021 to MAY 2021	Gastrointestinal and hepatobiliary system	10	4	5	0
MI4		Musculoskeletal system skin and soft tissue infections	10	3	5	2
MI5		Central Nervous System infections	6	7	3	1
MI6		Respiratory tract infections	6	9	7	1
MI7		Genitourinary & Sexually transmitted infections	5	2	4	1
MI8	IIIrd BLOCK JUN 2021 to AUG 2021	Zoonotic diseases and miscellaneous	11	13	11	1

			73	**55**	**55**	**10**
		CBME Requirement	**70**	**110**		**10**

IX. TOPICS FOR INTEGRATION

	Pathology	**Microbiology**	**Pharmacology**	**Forensic Medicine**	**Community Medicine**	**Concerned Clinical subjects**
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia Essential medicines Shock Toxicology	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation
BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	Tuberculosis Leprosy AIDS Malaria Acid peptic disease		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI
BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Endocrines		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible

Minimum two of the suggested topics should be covered in each block

X. DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SI NO	MODULE	TOPIC	DEPARTMENT					No. of hours	Formative assessment	Summative assessment
			PA	MI	PH	CM	FM			
1	2.1	Foundation of communication				✓		5	✓	-
2	2.2	Foundation of bioethics					✓	2	-	✓
3	2.3	Health care as a right				✓		2	-	✓
4	2.4	Working in a health care team	✓					6	✓	-
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓			6	✓	✓
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of lifeSupport)			✓			5	✓	✓
7	2.7	Bioethics- Case studies on patient		✓				5	✓	✓
		autonomy and decision making (consent for surgical procedures)								
8	2.8	What does it mean to be a family member of sick patient					✓	6	✓	✓

ASSESSMENT

Three types of assessment to be carried out

1. **FORMATIVE ASSESSMENT** - continuous assessment during the tutorials/SGD/SDL and practical classes. AETCOM punctuality etc to be considered for evaluation .this needs to be done at the end of each competency .Assessment method to be adopted can be MCQ/written/oral examination the part of the marks scored will be considered for Internal assessment

2.**INTERNAL ASSESSMENT** - at the end of each block and assessment pattern is mentioned in the table below

3. **SUMMATIVE ASSESSMENT**- conducted by university at the end of the course both in theory and practical. The distribution of marks for the different topics are mentioned in the table

FORMATIVE ASSESSMENT and INTERNAL ASSESSMENT

Internal Assessment-

- There will be 3 internal assessment examinations in Microbiology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.

- It is mandatory for the students to appear for all the internal assessment examinations.

- First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However third internal assessment has to be conducted in the same pattern of the University exam

- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

- 20% of the internal assessment marks in either Theory and Practical should be from Formative Assessment

- **Feedback in Internal Assessment -** Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

- **Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.**

- **Internal assessment should be based on competencies and skills.**

- **Criteria for appearing in University examination:** Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.

- **Average marks obtained in all three internal assessment should be calculated to 40 marks.**

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

THEORY

Sl. No.	Assessment	Schedule	Tools used	Feedback	Whether added to internal marks	Weightage, added to the internal marks
1	MCQs based Quiz	End of each month	Online MCQs	Feed back at the end of the quiz	Yes	10 marks

2	Class test	Once in 3 months. (No MCQ based quiz during that month)	Written exam for 30 marks (1MQ, 1SE,5 SA) 1 hr	Feedback will be provided by assigned faculty mentor after evaluation	Yes	10 marks
3	Internal theory exams	3 in the year	Long Essays, Short essays and short answers	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	80 marks
					TOTAL	**100 marks**

PRACTICAL

Sl. No.	Assessment	Schedule	Tools used	Feedback	Whether added to internal marks	Weightage, added to the internal marks
1	Internal practical examinations	3 in the year	Spotters, Staining Exercises, Case history-based exercises, Stool examination, viva-voce, OSPE.	Group feedback provided to entire class after the internal examination	Yes	80 marks
2	Small group discussions and record books/log books during practical sessions	Every such session	Rubric for SGD (case based discussion) and record books	At the end of each session	Yes	10 marks
3	Professionalism	Students will be observed throughout the semester Scores will be	Professionalism rubric	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	10 marks

		assigned during every small group discussion.				
					TOTAL	**100 marks**

NOTE:

- The spotters, exercises and OSPE depends on the portion covered in the respective block.
- Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

SUMMATIVE ASSESSMENT OR UNIVERSITY EXAMS

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered.
6. Questions to be covered from the different sections of Microbiology
7. Main question needs to be structured questions with clinical history with marks allotted to each
8. As far as possible clinically oriented application-based questions to be framed

DISTRIBUTION OF TOPICS IN DIFFERENT PAPERS

Theory	Topics	Questions	Marks allotment
PAPER I	1.General microbiology & Immunology 2.CVS & Blood 3.Gastrointestinal & hepatobiliary system 4.Musculoskeletal system, Skin & soft tissue infections	Main Questions(MQ) Short Notes (SN) Short answers(SA) Total	2x10=20 10x5=50 10x3=30 100
PAPER II	5.Central Nervous system 6.Respiratory System 7.Genitourinary & Sexually Transmitted infections 8.Zoonotic diseases and Miscellaneous	Main Questions(MQ) Short Notes (SN) Short answers(SA) Total	2x10=20 10x5=50 10x3=30 100

PAPER 1

DISTRIBUTION OF MARKS FOR THE DIFFERENT TOPICS

Topics	**MQ**	**SN**	**SA**	**Marks**
General microbiology		2	1	**13**
Immunology		2	2	**16**
CVS & Blood	1 (only if no MQ from Skin)	1 **OR** 3 (if MQ is from skin)	2	**21**
GIT& hepatobiliary	1	2	3	**29**
Skin & soft tissue	1(only if no MQ from CVS)	1 **OR** 3(if MQ is from CVS)	2	**21**
	2	**10**	**10**	**100**

DISTRIBUTION FOR THE SECTIONS IN PAPER I

Topic	Main Question	Short Notes	Short Answers	Total marks
General microbiology	-	2	1	13
Immunology	-	2	2	16
Bacteriology	1	2	2	26
Virology	1(only if no MQ from parasitology)	**If MQ** then **NIL No MQ** then **2**	2	16

Parasitology	1(only if no MQ from Virology)	**If MQ** then **NIL No MQ** then **2**	2	16
Mycology	Nil	2	1	13

	2	**10**	**10**	**100**

PAPER II

DISTRIBUTION OF MARKS FOR THE DIFFERENT TOPICS II

Topics	MQ	SN	SA	**Marks**
CNS 6.1-6.3	1(if not from genitourinary)	1 or 3(if MQ from genitourinary)	2	**21**
Respiratory system 7.1-7.3	1 (only if no MQ from zoonotic)	2 **OR** 4(**if MQ is from zoonotic)**	2	**26**
Genito Urinary Tract 7.1-7.3	1(only if no MQ from CNS)	1 or 3(if MQ from CNS)	2	**21**
Zoonotic 8.1	1(only if no MQ from RS)	1 **OR** 3(if MQ is from RS)	2	**21**
Miscellaneous 8.2 – 8.6	-	1	2	**11**
	2	**10**	**10**	**100**

DISTRIBUTION OF MARKS FOR DIFFERENT SECTIONS IN PAPER II

Topic	Main Question	Short Notes	Short Answers	Total marks
Bacteriology	1	4	3	**39**
Virology	1	4	2	**36**
Parasitology	NIL	1	3	**14**
Mycology	NIL	1	2	**11**
	2	**10**	**10**	**100**

TOTAL DISTRIBUTION FOR DIFFERENT SECTIONS IN BOTH PAPERS

SECTION	PAPER I	PAPER II	MARKS
GEN.BACT	13	-	**13**
IMMUNOLOGY	16	-	**16**
BACTERIOLOGY	26	39	**65**
VIROLOGY	16	36	**52**
MYCOLOGY	13	11	**24**
PARASITOLOGY	16	14	**30**
	100	100	**200**

PRACTICAL ASSESSMENT

LIST OF INSTRUMENTS, SPECIMENS, SLIDES AND CHARTS

A .**SLIDES**

a. BACTERIOLOGY

1. Staphylococci
2. Streptococci
3. Pneumococci
4. Gonococci
5. Corynebacterium diphtheriae
6. Bacillus
7. Clostridium tetani
8. Mycobacterium tuberculosis
9. Mycobacterium leprae
10. Actinomyces

b. PARASITOLOGY

1. Plasmodium – ring form
2. Plasmodium – gametocyte form
3. Leishmania
4. Scolex of tape worm
5. Egg of tape worm
6. Egg of Ascaris
7. Egg of Ancylostoma

8. Larva of Strongyloides
9. Adult worm Enterobius vermicularis
10. Microfilaria
11. Hydatid cyst

c. MYCOLOGY

1. Candida
2. Cryptococcus
3. Aspergillus
4. Penicillium
5. Rhizopus /mucor
6. Dermatophytes
7. Mycetoma
8. Rhinosporidiosis

d. VIROLOGY

1. Polio vaccine
2. Negri body

B. MEDIA

1. Nutrient agar
2. Mac conkey agar
3. Blood agar
4. Chocolate agar
5. LJ media
6. Loefflers serum slope
7. Potassium tellurite
8. TCBS
9. Wilson & Blair
10. Urease test
11. Indole test

12. Citrate test
13. Antibiotic susceptibility test - KB method
14. RCMB
15. Thioglycollate

C. INSTRUMENT

1. Anaerobic jar
2. Sterile swab
3. Filters

D. SPECIMENS

1. Round worm
2. Hook worm
3. Taenia
4. Hydatid cyst

E. CLINICAL MICROBIOLOGY (Charts with case scenarios)

CASE SCENARIO- GENERAL INSTRUCTIONS

- The exercise should be associated with clinical history
- It should be designed and evaluated in such a way that the student will be able to discuss about the sample collection, interpretation of results & management of cases
- The organism needs to be emphasized in the particular exercise to be decided after referring the **SLO** table
- Case related slides, culture, AST, serological tests, photos, specimens should be displayed in the particular exercise so that student will have comprehensive approach to the clinical case

1. **TOPIC- CVS & BLOOD**
   - Rheumatic fever
   - Sepsis – role of sepsis markers
   - Infective endocarditis
   - HIV - serodiagnosis
2. **TOPIC- GIT & HEPATOBILIARY**
   - Diarrhoeal disease – cholera,diarroheogenic E.coli,diarrhoea in immunocmpromised host, Food poisoning
   - Dysentery – bacillary
   - Viral gastro enteritis

- Lab diagnosis of Enteric fever (pathogen isolation)
- Lab diagnosis of Enteric fever (serological diagnosis)
- Virology exercise Seromarkers of Hepatitis B, Hepatitis C

3.TOPIC – SKIN & SOFT TISSUE INFECTIONS

- Cellulitis (Streptococcus pyogenes)
- Surgical site infection
- Burns wound infection (Pseudomonas)
- Osteomyelitis & Infective arthritis
- Dermatophytoses - tineacorporis, tineacapitis, onchycomycosis
- Viral exanthematous fever
- Mycetoma

4.TOPIC-CNS INFECTIONS

- Rabies
- Hydatid cyst, Neurocysticercosis
- Cerebral malaria Meningitis -.

i)Pyogenic meningitis

ii) Neonatal meningitis

iii)Tubercular meningitis

iv) Cryptococcal meningitis

- Cerebral abscess

5.TOPIC- RESPIRATORY SYSTEM INFECTIONS

- Otitis media -Proteus, aspergillus
- White patch in oral cavity
- Influenza
- Pul. Aspergillosis
- Pneumonia –

i. Community Acquired Pneumonia

ii. Hospital Acquired pneumonia iii. Ventilator Associated Pneumonia

6. TOPIC-GENITO URINARY SYSTEM INFECTIONS

- **STI**

i. Ulcerative lesions in the external genitalia

ii. Discharge per vagina

- **UTI**
- **CAUTI**

7. TOPIC- ZOONOTIC & MISCELLANEOUS

- PUO – serological diagnosis
    i. Brucellosis
    ii. Leptospirosis
    iii. Typhus fever
- Dengue, Chikungunya
- Candidiasis
- Mucromycosis

8. OSPE

- Hand hygiene and selection; Donning & doffing of PPE for a given 3 different situation (thrice)
- Segregate biomedical waste as per BMW2016 rules
- Collection of throat swab, nasopharyngeal swab in simulated situation
- Collection of peripheral venous blood for culture in simulated situation
- Collection of wound swab and pus sample in simulated situation
- Instruct sample collection procedure (sputum, urine, stool,for culture)
- skin scraping, hair clippings and nail samples) collection procedure independently in a simulated setting

AETCOM

- Demonstrating respect to patient samples -OSPE (AETCOM)
- Advice a HCW with needle stick injury in complete and correct sequence in a simulated setting - AETCOM
- Instruct a wardboy - how to manage bio-spill in a simulated setting (AETCOM)

PRACTICAL ASSESSMENT

As per MCI 100 marks with viva

- Practical – 80
- Viva – 20

DISTRIBUTION OF MARKS FOR DIFFERENT EXERCISES

Exercise	Number	Marks
Spotters	10	10
Gram's stain	1	10
ZN/Alberts stain	1	10
Stool examination	1	10

Case scenario	1 Bacteriology/ Virology 1 Parasitology/Mycology	15 15
OSPE & AETCOM	1+1	10
VIVA		20
TOTAL		**100**

SPOTTERS DISTRIBUTION

Section	Number
General microbiology	2
Immunology	1
Bacteriology	2
Virology	1
parasitology	2
Mycology	2
TOTAL	10

II. **STAINING**

1. Gram's

2. ZN/Alberts

3. Stool examination

III. **CLINICAL BACTERIOLOGY/VIROLOGY**

CASE SCENARIO- GENERAL INSTRUCTIONS

- The exercise should be associated with clinical history
- The history should be provided with relevant tests which will help the student to arrive at diagnosis
- It should be designed and evaluated in such a way that the student will be able to discuss about the sample collection, interpretation of results & management of cases

BACTERIOLOGY	**VIROLOGY**
Cardio vascular system & blood Rheumatic fever,endocarditis,sepsis	HIV

GIT & HB Diarrhoea- cholera, food poisoning Dysentery – bacillary Enteric fever- culture based, serological	Hepatitis A, Hepatitis B, hepatitis C
Skin & soft tissue infections-cellutitis,SSI, burns wound infection, bone and joint infection	Viral exanthematous fever- Measles, Zoster, Dengue, chikungunya
CNS- meningitis- pyogenic, tubercular, neonatal Cerebral abcess	Rabies,
RS- otitis media,white patch in the oral cavity Pneumonia- community acquired,hospital acquired	Inflenza.corona
UTI & genitourinary STI- ulcerative , discharge UTI- community Acquired, Catheter associated	HSV, HPV
Zoonotic – PUO- brucella,Leptospira,Rickettssia	

MYCOLOGY & PARASITOLOGY

Mycology	**Parasitology**
Dermatophytosis-corporis, capitis, onychomycosis	Amoebic dysentery
Candida- mucocutaneous/systemic	Malaria – vivax,falciparum
Cryptococcus-meningitis	Intestinal helminthiasis- Ascaris,Ancyloastoma,Enterobius etc
Mycetoma	Intestinal protozoan – diarrohea in immunocompromised
Pulmonary aspergillosis	Neurocysticercosis
Mucoromycosis	Filariasis
Pneumocystis pneumonia	

IV .OSPE

- Hand hygiene and selection; Donning & doffing of PPE for a given 3 different situations
- Segregate biomedical waste as per BMW2016 rules
- Collection of throat swab, nasopharyngeal swab in simulated situation
- Collection of peripheral venous blood for culture in simulated situation
- Collection of wound swab and pus sample in simulated situation
- Instruct sample collection procedure (sputum, urine, stool,for culture)

- Skin scraping, hair clippings and nail samples) collection procedure independently in a simulated setting

AETCOM

- Demonstrating respect to patient samples -OSPE (AETCOM)
- Advice a HCW with needle stick injury in complete and correct sequence in a simulated setting (Remove from HIV, CVS) - AETCOM
- Instruct a wardboy - how to manage bio-spill in a simulated setting (AETCOM)

LOG BOOK- MICROBIOLOGY

The following document is only a format/ guideline for the Log book to be prepared by each institution

It includes the assessment for certifiable skills and the ones which are marked as 'SH(Shows how)' and 'P(Performs)' competencies as mandated by MCI.

All the practical class exercises which form a part of teaching learning methods in the curriculum/ syllabus are not included here and may be added if considered necessary by individual institutions.

The points included for assessments are not exhaustive and could be modified as considered necessary by individual institutions..

RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES

BANGALORE, KARNATAKA

PHASE II MBBS

LOG BOOK FORMAT

DEPARTMENT OF MICROBIOLOGY

NAME OF THE CANDIDATE :

NAME OF THE COLLEGE :

UNIVERSITY REGISTER NUMBER:

ACADEMIC YEAR :

I. INDEX

XIV	SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUTREACH ACTIVITIES	
XV	ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES	
XVI	EXTRACURRICULAR ACTIVITIES	

II. NAME OF THE COLLEGE WITH EMBLEM

STUDENT PARTICULARS

Name of the student:

Date of admission to MBBS Course:

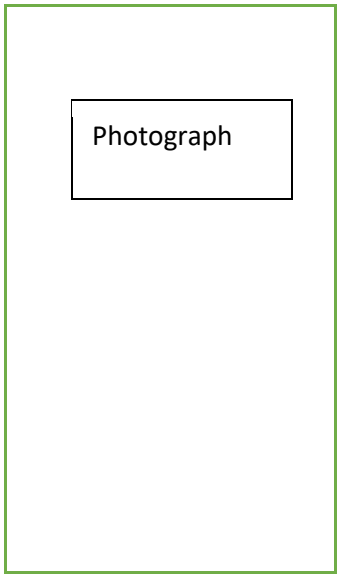
Date of beginning of the current Phase:

Reg: No. (College ID) Reg. No. (University ID)

Permanent Address:

E mail ID: (optional)

Mobile Number: (optional)



III. LOGBOOK

CERTIFICATE

This is to certify that the candidate Mr/ Ms ……,Univ. Reg No. ……., admitted in the year ……in ---------- Medical College, ---------- has/has not satisfactorily completed assignments /requirements mentioned in this logbook for second year MBBBS course in the subject(s) of Microbiology/ AETCOM during the period from …… to…… . She / He, is / is not eligible to appear for the summative (University) assessment as on the date given below.

Signature of Faculty

Name and Designation

Countersigned by Head of the Department

Principal/Dean of the College

Place:

Date:

IV. GENERAL INSTRUCTIONS

1) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.

2) The student is responsible for getting the entries in the logbook verified by the Faculty in charge regularly.

3) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.

4) The logbook is a record of various activities by the student like:

- Overall participation & performance
- Attendance
- Participation in sessions
- Record of completion of pre-determined activities. • Acquisition of selected competencies

5) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

V. SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
Attendance at the end of 1st IA			Not applicable		

Attendance at the end of 2nd IA			Not applicable		
Attendance at the end of 3rd IA			Not applicable		
Cumulative attendance for the year					

VI. FORMATIVE ASSESSMENT

Scheme of Formative assessments

THEORY						
Sl. No.	**Assessment**	**Schedule**	**Tools used**	**Feedback**	**Whether added to internal marks**	**Weightage, added to the internal marks**

1	MCQs based Quiz	End of each month	Online MCQs	Feed back at the end of the quiz	Yes	10 marks
2	Class test	Once in 3 months. (No MCQ based quiz during that month)	Written exam for 30 marks (1long essay, 1short essays,5 short answers) 1 hr	Feedback will be provided by assigned faculty mentor after evaluation	Yes	10 marks
4	Internal theory exams	3 in the year	Long Essays, Short essays and short answers	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	80 marks
	TOTAL					100 marks
PRACTICALS						
Sl. No.	**Assessment**	**Schedule**	**Tools used**	**Feedback**	**Whether added to internal marks**	**Weightage, if added to the internal marks**
1	Internal practical	3 in the year	Spotters, Staining	Group feedback provided to	Yes	80 marks
	examinations		Exercises, Case history based exercises, Stool examination,viva-voce, OSPE.	entire class after the internal examination		
2	Small group discussions and record books/log books during practical sessions	Every such session	Rubric for SGD (case based discussion) and record books	At the end of each session	Yes	10 marks

3	Professionalism	Students will be observed throughout the semester Scores will be assigned during every small group discussion.	Professionalism rubric	Feedback will be provided by assigned faculty mentor after the internal examination	Yes	10 marks
	TOTAL					100 marks

VII a. FEEDBACK for Class tests and MCQ/Quiz

Assessment	**Marks scored**	**Total marks**	**Student's signature**	**Faculty signature**
CLASS TESTS				
1				
2				
3				
MCQ/QUIZ				
1				
2				
4				
5				
6				
7				
8				
9				
10				

VII b. FEEDBACK FOR INTERNAL ASSESSMENT

Assessment	Percentage Marks	*Feedback	**Rating	Problem areas	Student's signature	Faculty signature

		Given by the students	**B**	**M**	**E**	**identified and comments for improvement by the faculty**		
		First internal assessmnet						
Theory								
Practical								
		Second internal assessment						
Theory								
Practical								
		Third internal assessment						
Theory								
Practical								

*The feedback given by the student will be the actual feedback regarding the Internal assessment evaluation, whether doubts clarified, problems faced for understanding particular topics, language problem, availability of the faculty for discussions.

****Rating**
Below expectation(B)
Expectations(M);
Exceed Expectations(E)

VIII. SMALL GROUP DISCUSSION/SELF DIRECTED LEARNING – ASSESSMENT AND FEEDBACK

Module #	**Name of SGD/SDL Activity**	**Date completed**	Score	**Initial offaculty anddate**	**Feedback Receive**d Initial of learner

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.

4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

IX. Summary of formative assessment for the entire year

Sl. No.	*Type of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher wuth date*
1	Internal assessment marks theory (average)	80			
2	MCQ Quiz test (average)	10			
3	Class tests (average)	10			
4	TOTAL	100			

5	Internal assessment marks (Practicals)	80			
6	Small group discussions and Records	10			
7	Professionalism	10			
	TOTAL	100			

Note: Learners must secure at least 50% marks of the total marks (combined in theory and practical / clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in a particular subject in order to be eligible for appearing at the final University examination of that subject. Internal assessment marks will reflect as separate head of passing at the summative examination.

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular Dress code for of (5) classes (5) and (5) discipline	*code and records*	*in class*	*Submission Behaviour preventability* (5)	*Total (20)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

X. COMPETENCY ASSESSMENT – CERTIFIABLE SKILLS

All these skills are to be "PERFORMED" by the student

Competency number	Name of the competency	Number of times to perform required to certify
MI 1.2 (a)	Perform and identify the different causative agents of Infectious diseases by Gram Stain	5
MI 1.2 (b)	Perform and identify the different causative agents of Infectious diseases by ZN stain	5
MI 1.2 (c)	Perform and identify the different causative agents of Infectious diseases by stool routine Microscopy	5
MI 6.2	Identify the common etiologic agents of upper respiratory tract infections (Gram Stain)	3
MI 6.3 (a)	Identify the common etiologic agents of lower respiratory tract infections by Gram Stain	3
MI 6.3 (b)	Identify the common etiologic agents of lower respiratory tract infections by acid fast stain	3
MI 8.7 (a)	Demonstrate Infection control practices Hand hygiene	3
MI 8.7 (b)	Use of Personal Protective Equipments (PPE)	3

The staining procedures could be assessed during different practical classes when the students perform the procedure.

ASSESSMENT OF INDIVIDUAL COMPETENCIES:
(To be done similarly for each competency)

1) Competency identified**: MI 1.2 (a)**
2) Name of the activity: **Perform and identify the different causative agents of Infectious diseases by Gram Stain**
3) Components of the activity:
a) Practical session to demonstrate the procedure for stain.
b) Performing the procedure by the student and focussing the slide.
c) Recording the observation and the inference with a neat labelled diagram.
d) Feedback given on the session.
4) Criteria for successful completion: The student has to perform the activity 5 times and score more than 5/10 in each attempt

Attempt Number	Date of performing the activity	**Marks scored out of 10**	**Rating** BelowExpectations(B); Meets Expectations(M); Exceeds Expectations(E)	Signature of faculty	Signature of student
1					
2					
3					
4					
5					

5) Numerical scoring :
The steps of the staining procedure and interpretation are scored as follows

Step performed	Marks allotted
Performing the stain following all the steps (1 mark each) - Primary stain -Decolourisation -Secondary stain	3
Focusing the stained slide with appropriate adjustments of the Microscope	2
Identifying the structures under the Microscope/Observation and inference	3
Diagram and writing the report	2

Total	10

6) Documentation of activity (diagram and observation and inference) – to be written in the Record book.

7) Recommended action when unsuccessful : Repeat after discussion

8) Any other comments

Module #	**Name of Activity**	**Date completed**	**Rating** BelowExpectations(B); Meets Expectations (M); Exceeds Expectations (E)	**Initial Of faculty And date**	**Feedback Receive**d Initial of learner

XI. COMPETENCY ASSESSMENT – NON CERTIFIABLE SKILLS

These skills are to be "SHOWS HOW".

Competency number	Name of the competency	Method
MI 2.3 (a)	Identify the microbial agents causing Rheumatic Heart Disease	Case based exercise or OSPE
MI 2.3 (b)	Identify the microbial agents causing infective Endocarditis	Case based exercise or OSPE
MI 2.6 (a)	Identify the causative agent of malaria	Case based exercise/Peripheral blood smear examination
MI 2.6 (b)	Identify the causative agent of filariasis	Case based exercise/Peripheral blood smear examination
MI 3.2 (a)	Identify the common etiologic agents of diarrhea	Case based exercise (Bacterial agents) or Hanging drop examination/OSPE
MI 3.2 (b)	Identify the common etiologic agents of dysentery	Case based exercise (Bacterial agents) or Stool examination for ova and cysts/OSPE
MI 5.3	Identify the microbial agents causing meningitis	Case based exercise or OSPE

MI 8.10	Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Infectious diseases	OSPE – collection of pus swab, throat swab, dermatology samples
MI 8.11	Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases	Case based OSPE
MI 8.15	Choose and Interpret the results of the laboratory tests used in diagnosis of the infectious disease	Case based exercises to interpret

MI 2.3 (a)	Identify the microbial agents causing Rheumatic Heart Disease				
MI 2.3 (b)	Identify the microbial agents causing infective Endocarditis				
MI 2.6(a)	Identify the causative agent of malaria				
MI 2.6(b)	Identify the causative agent of filariasis				
MI 3.2 (a)	Identify the common etiologic agents of diarrhea				
MI 3.2 (b)	Identify the common etiologic agents of dysentery				
MI 5.3	Identify the microbial agents causing meningitis				
MI 8.10	Demonstrate the appropriate method of collection of samples in the performance of laboratory tests in the detection of microbial agents causing Infectious diseases				

MI 8.11	Demonstrate respect for patient samples sent to the laboratory for performance of laboratory tests in the detection of microbial agents causing Infectious diseases				
MI 8.15	Choose and Interpret the results of the laboratory tests used in diagnosis of the infectious disease				

XII. AETCOM MODULE– ASSESSMENT AND FEEDBACK

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt atactivity** First (F); Repeat (R); Remedial (Re)	**Rating** BelowExpectations(B); Meets Expectations(M); Exceeds Expectations(E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial Of faculty And date**	**Feedback Received** Initial of learner
MI 8.14	Demonstrate confidentiality pertaining to patient identity in laboratory results						

AETCOM FORMAT:

Competency identified: MI 8.14

Name of the activity: Demonstrate confidentiality pertaining to patient identity in laboratory results.

Counsel patient with HIV/ STD before or after the test in simulated setting.

Components of the activity:

a. Small group discussion with the faculty member regarding the pre and post test counselling for HIV. Interpretation of test report, confidentiality to be maintained and counselling.
b. Students will be paired in teams of two and one asked to be the doctor and the other the patient. The counselling session is enacted out and assessed by the faculty.
c. Feedback given on the session – discussion about the do's and dont's.

Criteria for successful completion: Active participation and assessment of reflections.

Numerical scoring : Not required

Documentation of activity in the log book : Reflections to be done by the student

XIII. CONFERENCE/CME/WORKSHOP ATTENDED

Sl no	Date	Particulars	Signature of the faculty

XIV. SCIENTIFIC PROJECTS/PRESENTATIONS/OUTREACH ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

XV. ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

XVI. EXTRACURRICULAR ACTIVITIES

Sl no	Date	Particulars	Signature of the faculty

LIST OF BOOKS

1. Apurba Sastry and Sandhya Bhat; Essentials of Medical Microbiology,3rd Edition,2021
2. Lippincott Illustrated Reviews Microbiology,South Asian Edition by Cynthia Nau Cornelissen ,Marcia Metzgar Hobbs SAE editors Sumathi Muralidharan & Rohith Chawla As per CBME
3. Ananthnaryan & Panikar's Text Book of Microbiology 11th Edition. edited by Reba Kanungo
4. Basic Medical Microbiology Patric R Murray
5. Roitt's Essential Immunology Peter J ,Delves Seamus J. Martin Dennis R Burton Ivan M Roitt
6. Apurba Sastry and Sandhya Bhat; Essentials of Practical Microbiology,3rd Edition,2021
7. K D Chatterjee Parasitology Protoazoology and Helminthology 13th edition 2019
8. C K Jayaram Panicker Panicker's text Book of Medical Parasitology 8Th edition
9. Text book of Medical parasitology by Subhash Chandra Parija

REFERENCE BOOKS

1. Apurba Sastry and Sandhya Bhat; Essentials of hospital infection control 1st Edition,2019
2. Mandell, Douglas,and Bennett's Principles and practice of Infectious diseases
3. Harrison's principles of internal Medicine

4. Essentials of clinical infectious diseases William F Wright

APIC text book of Infection Control and Epidemiolog

PHARMACOLOGY

Preamble:

Pharmacology is about treating the patients with the required medications, at the right dose, for the right duration and at an appropriate cost. The knowledge of the molecular basis of drug action, the adverse effects caused by the medications, its prevention and treatment and the effects of administering two or more drugs to a patient will be learnt in the context of its clinical application and not just as facts. The emphasis is on clinical relevance of pharmacological knowledge.

INDEX

Goals and Departmental objectives for the undergraduate MBBS curriculum in Pharmacology

Goals:

The broad goal of Pharmacology curriculum is to equip the Indian Medical Graduate (IMG) with the knowledge of scientific basis of therapeutics and the skills of rational prescribing during the second year of MBBS.

Objectives:

Knowledge:

At the end of the course the student should be able to:

1. Describe the pharmacokinetics and Pharmacodynamics of essential and commonly used drugs
2. Apply the knowledge of indications, contraindications, interactions and adverse reactions of commonly used drugs in therapeutics
3. Describe the principles of prescribing and calculate the dosage in special medical situations such as pregnancy, lactation, children, elderly and patients with renal dysfunction
4. Describe the basis of Evidence Based Medicine
5. Apply the concept of rational drug therapy and P drugs in clinical pharmacology
6. Describe the clinical presentation, diagnosis and management of common poisonings, insecticides, common sting and bites
7. Describe drugs of abuse and the process of de-addiction
8. Describe the phases and the regulations involved in the development and introduction of new drugs
9. Explain the concepts and clinical relevance of Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines, dietary supplements and nutraceuticals
10. Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents **Skills:**

At the end of the course the student should be able to:

1. Write a rational prescription for a given condition and communicate the same to the patient
2. Recognise and report an adverse drug reaction of commonly used medications
3. Demonstrate the effects of drugs on blood pressure through computer aided learning and interpret the graph
4. Perform a critical evaluation of the drug promotional literature
5. Administer drugs through various routes in a simulated environment

Ethics, Attitude and communication:

At the end of the course the student should be able to:

1. Communicate effectively with the patient with regards storage and use of common medications
2. Explain to the patients the right way to use the various drug formulations
3. Communicate the importance of adherence to medications and motivate the patients
4. Demonstrate an understanding of the legal and regulatory aspects of prescribing medications.
5. Understand and follow the ethical principles involved in prescribing medications.

EXPLANATION OF TERMS USED IN THE MANUAL

LECTURE

Any instructional large group method including traditional lecture and interactive lecture. **SMALL**

GROUP DISCUSSION

Any instructional method involving small groups of students in an appropriate learning context.

DOAP (Demonstration- Observation - Assistance - Performance)

A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.

SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning, choosing and implementing appropriate learning methods.

SKILL ASSESSMENT

A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients as the context demands.

CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know

SUGGESTED GUIDELINES FOR THE TEACHING AND LEARNING METHODS

LECTURE: Suggested topics for didactic and interactive lectures have been included along with specific learning objectives linked to each competency. Lectures should cover the core competencies with appropriate pictures, charts or diagrams.

SMALL GROUP DISCUSSION: Topics for small group discussion have suggested. These topics included are those where more intensive and interactive learning sessions are required.

SELF DIRECTED LEARNING: Non-core competencies are suggested to be taken as topics for self-directed learning. At the end of the session, the teacher moderates the discussion and the learning is recorded in the log book.

DOAP (Demonstration- Observation - Assistance - Performance)

Practicals are in the form of Demonstration- Observation – Assistance - Performance)

All sessions will have specific learning objectives which are linked to the relevant competencies and are assessed as described in the Assessment module.

All sessions will be done with the faculty as facilitator.

The students will be encouraged to observe the demonstrations and perform the requisite skills either independently or with assistance as required.
Emphasis will be on acquiring clinically relevant skills. Thus, case-based learning and discussions will be encouraged.

MINIMUM TEACHING HOURS

Lectures: 80hrs

Small group learning (tutorials/seminars): 138hours- **Practical**: 80 hours & **SGD**: 58 hours

Self-directed learning: 12 hours

Total: 230 hours

THEORY:

Sl no	Topic	Competency	Theory	SGD	SDL	Procedures requiring certification
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12 1	6	0		Nil
2	Autonomic Nervous System	PH 1.13 to PH1.14	9	2	0	Nil
3	Autacoids	PH1.16	3	2	1	Nil
4	Drugs in anaesthetic practice	PH 1.15, PH1.17 to PH 1.18	4	0	0	Nil
5	Central Nervous System	PH 1.19 to PH 1.23	8	4	0	Nil
6	Diuretics	PH 1.24	3	1	1	Nil
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35	3	2	2	Nil
8	Cardiovascular System	PH 1.26 to PH 1.31	9	2	3	Nil
9	Respiratory System:	PH 1.32 to PH 1.33	2	1	0	Nil
10	Gastrointestinal System	PH 1.34	1	2	1	Nil

11	Endocrine System	PH 1.36 to PH 1.41	8	4	1	Nil
12	Chemotherapy	PH 1.42 to PH 1.49	17	5	0	Nil
13	Miscellaneous	PH 1.50 to PH 1.64	3	5	3	Nil
	CBME requirement		**80 hours**	**36 hours**	**12 hours**	Nil

PRACTICAL					
Topic	**Competency**	**Description**	**Practical hours**	**Competencies**	**Certification**
Clinical Pharmacy	PH 2.1	Demonstrate understanding of the use of various dosage forms **(oral/local/parenteral; solid/liquid)**	14 hours		
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use	4 hours		
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.	4 hours		
	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations	4 hours		
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient	6 hours	5	Certification
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription	6 hours	3	Log book & Certification
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature	6 hours	3	Log book & Certification

	PH 3.4- **L**	To recognise and report an adverse drug reaction	4 hours		Log book
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition	6 hours	3	Log book & Certification
	PH 3.6-**L**	Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs	2 hours		Log book
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility	4 hours		Log book
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication	4 hours		
Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins	10 hours		
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso- depressors with appropriate blockers) using CAL	6 hours		
Communication	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use	SGD 2 hours		
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines	SGD 4 hours		
	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider	SGD 4 hours		
	PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance	SGD 2 hours		
	PH5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management	SGD 4 hours		
	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs	SGD 4 hours		

	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs	SGD 2 hours		
CBME requirement			**Practicals - 80 hours SGD-22 hours**		

C- Needs certification- 4 no

L- Needs Maintenance of a log book- 3 no.

Note: Spotters can be done concomitantly during the teaching hours.

Model Time table for Phase II MBBS

TIME TABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

	8-11	11.30-12.30	12.30-1.30	2-4
Monday	Postings	**PH-L**	**OBG-L**	PH-A,CM-B
Tuesday	Postings	**PH-L**	**FM-L**	FM-A,
Wednesday	Postings	**MIC-L**	**PA-L**	PA-A, MIC-B
Thursday	Postings	**CM-L**	PH-SGD	PA-B, MIC-A
Friday	Postings	**MIC-L**	**PA-L**	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

	8-11	11.30-12.30	12.30-1.30	2-4

Monday	Postings	**MIC-L**	**PA-SGD**	**PH-A,PA-B-SGD**
Tuesday	Postings	**PH-L**	**MIC-SGD**	**PH-SGD**
Wednesday	Postings	**PA-L**	**MIC-L**	**PA-A,MIC-B**
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	**PA-L**	**MIC-SGD**	**PA-B,MIC-A**
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

	8-11	11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	PA-SDL
Tuesday	Postings	**PA-L**	MIC-L	**PA-A,MIC-B**	PH-SDL
Wednesday	Postings	**PH-L**		**PH- A,PA-B SGD**	MIC-SDL
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	CM-SDL
Friday	Postings	**CM-L**		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	30	15	15	30	30	45	20	20	20	80	65	80
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30

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G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				**AETCOM** 30						AETCOM		30

NOTE: To be prepared at the convenience of the respective institutions.

THEORY

(Competency no-1.1 to 1.64)

General pharmacological Principles

Lecture - 1 Hour

Assessment: Written, Viva voce

PH 1.1 Define and describe the principles of pharmacology and pharmacotherapeutics

1.1.1 Define a drug
1.1.2 Explain the terms Pharmacology, clinical pharmacology & therapeutics
1.1.3 Enlist and explain about various branches of Pharmacology
1.1.4 List out sources of drugs with examples
1.1.5 List out sources of drug information &Explain each source briefly
1.1.6 Recognize the importance of Clinical pharmacology towards rational approach to prescribing medicine
1.1.7 Explain the evolution of Pharmacology from medieval to contemporary times

SGD - 1 Hour

Assessment: Written, Viva voce **PH 1.2 Describe the basis of Evidence based medicine and Therapeutic drug monitoring Evidence based Medicine**

1.2.1 Identify reliable sources for research evidence
1.2.2 Understand research study designs and the hierarchy for research evidence
1.2.3 Ascertain strength of evidence for treatments and understand guidelines in different therapeutic areas

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1.2.4 Explain the importance of keeping prescribing practice up to date with advances in medical knowledge

Therapeutic Drug Monitoring

1.2.5 Understand the purpose of TDM
1.2.6 Explain the methods in therapeutic drug monitoring
1.2.7 Enlist the drugs that require TDM
1.2.8 Understand the purpose for and methods in therapeutic drug monitoring *TDM to be covered after PK/PD

SGD/Practical - 1 Hour
Assessment: Written, Viva voce

PH 1.3 Enumerate and identify drug formulations and drug delivery systems

1.3.1 Define dosage form, formulation and excipient
1.3.2 List out different drug formulations with an example of each.
1.3.3 Choose appropriate formulation based on clinical need
1.3.4 Explain the advantages and disadvantages of different drug delivery systems
1.3.5 Enlist the new drug delivery system and discuss their utility

Lecture - 5 Hours

Assessment: Written, Viva voce

PH 1.4 Describe absorption, distribution, metabolism & excretion of drugs

Pharmacokinetics (PK)

1.4.1 Explain the term Pharmacokinetics
1.4.2 Explain the four phases of PK
1.4.3 Explain why the understanding of PK is relevant to prescribers

Drug Absorption

1.4.4 Explain the principles involved in drug absorption
1.4.5 Explain the concept of bioavailability and describe the factors affecting bioavailability
1.4.6 Describe the importance of bioequivalence

Drug Distribution

1.4.7 Explain the distribution of drugs across body compartments
1.4.8 Define apparent volume of distribution
1.4.9 Explain the clinical significance of drug distribution
1.4.10 Explain the clinical significance of plasma protein binding of drugs
1.4.11 Describe redistribution of drugs with clinical application

Biotransformation

1.4.12 Define biotransformation
1.4.13 Describe first pass metabolism and its importance
1.4.14 Describe phase 1 and phase 2 reactions
1.4.15 Explain factors affecting biotransformation
1.4.16 Explain the clinical significance of enzyme induction and inhibition

Drug Excretion

1.4.17 Describe the various routes of excretion of drugs
1.4.18 Explain factors affecting renal excretion
1.4.19 Explain plasma half-life and its clinical significance
1.4.20 Explain steady state concentration and its significance
1.4.21 Explain the different kinetics of elimination and their clinical significance
1.4.22 Apply the knowledge of clearance, loading dose and maintenance dose in calculating the dose for a patient
1.4.23 Explain various methods of prolonging drug action
1.4.24 Explain the PK factors that determine the choice of dose, route, and frequency of Drug administration.

Lecture/SGD - 4 Hours

Assessment: Written, Viva voce

PH 1.5 Describe general principles of mechanism of

drug action Pharmacodynamics

1.5.1 State different mechanisms by which a drug acts giving an example of each
1.5.2 Enlist different types of receptors giving examples of drugs acting through them
1.5.3 Explain the terms – 'up regulation' and 'down regulation' of receptors
1.5.4 Explain the terms –affinity, efficacy, intrinsic activity & potency
1.5.5 Define the terms –agonist, antagonist, partial agonist & inverse agonist. Give examples of drugs for each
1.5.6 Describe dose-response relationship and interpret dose- response curves
1.5.7 Explain drug synergism with examples
1.5.8 Describe the different types of drug antagonism with examples
1.5.9 Describe factors modifying drug action and its clinical implications
1.5.10 Explain therapeutic index and therapeutic range with clinical significance

SGD/ Practical - 1 Hour

Assessment: Written, Viva voce

PH 1.6 Describe principles of Pharmacovigilance & ADR reporting systems

1.6.1 Define the basic terminologies (ADR, Serious ADR, AE, Toxicity, Pharmacovigilance and Causality assessment)
1.6.2 Explain the history, need and principles of pharmacovigilance
1.6.3 Discuss various methods/systems of ADR reporting
1.6.4 Discuss Pharmacovigilance program of India
1.6.5 Report ADRs to a Pharmacovigilance Centre by filling the ADR reporting form
1.6.6 Discuss the importance of prescriber's responsibility in Pharmacovigilance

SGD - 1 Hour

Assessment: Written, Viva voce

PH 1.7 Define, identify and describe the management of adverse drug reactions (ADR)

1.7.1 Define an ADR
1.7.2 Explain the frequency of ADRs and their impact on public health 1.7.3 Describe the common classification of ADRs with examples
1.7.4 Describe the management of ADRs.
1.7.5 Describe the important risk factors that predict susceptibility to ADRs.
1.7.6 Explain the importance of monitoring in prevention of ADRs.

SGD - 1 Hour

Assessment: Written, Viva voce

PH 1.8 Identify and describe the management of drug interactions

1.8.1 Define Drug interactions.
1.8.2 Describe the types of Drug interactions as In vivo, In vitro & PK and PD with suitable examples
1.8.3 Describe the useful and harmful drug interactions with suitable examples
1.8.4 Describe Drug–drug; drug-food; Drug-alcohol; drug–tobacco; Drug- complementary/alternative medicine interactions with examples
1.8.5 Explain how to predict and avoid harmful drug interactions in clinical practice
1.8.6 Management of DI.
1.8.7 Identify the sources of information about DI to inform prescribing

SGD - 1 Hour

Assessment: Written, Viva voce

PH 1.9 Describe nomenclature of drugs i.e. generic, branded drugs

1.9.1 Describe the chemical name, non-proprietary and Proprietary name of a drug
1.9.2 Discuss the importance of using non-proprietary name in prescribing.

SGD - 1 Hour

Assessment: Written, Viva voce

PH 1.10 Describe parts of a correct, complete and legible generic prescription. Identify errors in prescription and correct appropriately

1.10.1 Define a prescription along with the importance of each part of prescription
1.10.2 Describe the format of prescription as per MCI model.
1.10.3 Write an unambiguous, legible, complete and legally valid prescription
1.10.4 Identify and correct prescription writing errors
1.10.5 Describe the importance of maintaining records of prescriptions.

SGD - 1 Hour

Assessment**:** Written, Viva voce

PH 1.11 Describe various routes of drug administration, eg: oral, SC, IV, IM, SL

1.11.1 List the various routes of drug administration-oral, parenteral and topical with examples
1.11.2 Describe the merits and de-merits of each route
1.11.3 Choose the correct route of drug administration in a given clinical scenario

SGD/Practical - 1 Hour

Assessment: Written, Viva voce

PH 1.12 Calculate the dosage of drugs using appropriate formulae for an individual patient, including children, elderly and patient with renal dysfunction

1.12.1 Calculate appropriate doses for individual patients based on age, body weight, and surface area.
1.12.2 Calculate the dose of drug using appropriate formulae in a given clinical case in children
1.12.3 Calculate the dose of drug using appropriate formulae in a given clinical case in elderly
1.12.4 Calculate the dose of drug using appropriate formulae in a given clinical case in patients with renal dysfunction and other pathological conditions like CCF, Liver disease.

Drugs acting on Autonomic Nervous system

Lecture/SGD- 6/3 Hours
Assessment: Written, Viva voce

PH 1.13 Describe mechanism of action, types, doses, side effects, indications and contraindications of adrenergic and anti- adrenergic drugs

1.13.1 Describe the organization of autonomic nervous system
1.13.2 Describe the steps involved in neurotransmission
1.13.3 Describe the synthesis, storage, release and fate of adrenergic transmitters
1.13.4 Classify adrenergic receptors with respect to their structure, localization and second messenger system

Adrenergic drugs

1.13.5 Classify adrenergic agonists based on their therapeutic uses and actions.
1.13.6 Describe the pharmacological effects of adrenaline and correlate the effects of their therapeutic uses and adverse effects
1.13.7 State the salient Pharmaco-kinetic features of adrenaline
1.13.8 Differentiate between adrenaline, nor-adrenaline, isoprenaline and dopamine with respect to pharmacological effects, adverse effects and therapeutic uses. (Enumerate the Adverse effects, therapeutic uses and contraindication of most commonly used Adrenergic Drugs in therapy.)
1.13.9 Compare and contrast directly and indirectly acting sympathomimetics with examples
1.13.10 State the therapeutic uses and ADRs of indirectly acting sympathomimetics 1.13.11 State the precautions and contraindications of sympathomimetics

Antiadrenergic drugs

1.13.12 Classify alpha-adrenergic receptor antagonists, and compare and contrast selective alpha1 antagonists with non-selective alpha antagonists
1.13.13 Describe the pharmacological effects and applied pharmacokinetics, ADRs, precautions and therapeutic uses of prazosin
1.13.14 State the advantages of other selective alpha1 antagonists over prazosin, corelating the same with their therapeutic use
1.13.15 Classify beta-adrenergic receptor antagonists with examples
1.13.16 Describe the pharmacological effects, pharmacokinetics, ADRs, precautions and contra- indications of beta-adrenergic receptor antagonists
1.13.17 State the therapeutic uses of beta- blockers giving pharmacological basis for their use
1.13.18 State the advantages of selective beta1 antagonists over non selective beta antagonists corelating the same with their therapeutic uses and ADRs
1.13.19 Mention the beta blockers with (ISA) intrinsic sympathomimetic activity giving their advantages and indications
1.13.20 Mention the beta blocker of choice with rationale for the following clinical conditions- Glaucoma, CHF, angina, hypertension, thyrotoxicosis, pheochromocytoma, arrhythmias
1.13.21 List the various preparations of beta blockers with their routes of administration. (State the beta-blockers that can be given by IV route)

Lecture - 3 Hours
Assessment: Written, Viva voce

PH 1.14 Describe mechanism of action, types, doses, side effects, indications and contraindications of cholinergic and anticholinergic drugs

Cholinergic transmission and Cholinergic drugs

1.14.1 Describe the synthesis, storage, release and fate of cholinergic transmitters
1.14.2 List the sites where acetylcholine is released

1.14.3 Classify cholinergic receptors with their structure, localization and second messenger system
1.14.4 Classify cholinomimetic drugs
1.14.5 Describe the pharmacological effects of directly acting cholinomimetic drugs
1.14.6 Compare the effects of muscarinic agonists on the basis of selectivity and therapeutic uses, adverse effects and contraindications
1.14.7 Describe the metabolism of acetyl choline
1.14.8 Classify anti-cholinesterase agents
1.14.9 Compare the various reversible anti-cholinesterases with respect to their pharmacological properties and therapeutic uses
1.14.10 Outline the management of myasthenia gravis
1.14.11 State the signs and symptoms of organophosphate compound poisoning
1.14.12 Outline the treatment of organophosphorus poisoning with rationale
1.14.13 Explain the term enzyme aging and its clinical significance
1.14.14 Explain how the treatment of organochlorine compound poisoning differs from that of organophosphate compound poisoning

Anticholinergic drugs

1.14.15 Classify cholinergic receptor antagonists giving examples of muscarinic and nicotinic (Nn: ganglion, Nm: Neuromuscular) blockers
1.14.16 List the anticholinergic side effects
1.14.17 Compare and contrast atropine and hyoscine
1.14.18 State the salient pharmacokinetic features of atropine and its Substitutes
1.14.19 List the adverse drug reactions of anticholinergic drugs
1.14.20 List the contraindications to anticholinergic drugs
1.14.21 State the advantages of atropine substitutes over atropine and state their clinical uses giving suitable examples
1.14.22 List the major clinical indications of atropine

Skeletal Muscle Relaxants

Lecture - 1 Hour

Assessment: Written / Viva voce

PH 1.15 Describe mechanism/ s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants

1.15.1 Define skeletal muscle relaxant.
1.15.2 Classify skeletal muscle relaxants.
1.15.3 Explain mechanisms of action of skeletal muscle relaxants
1.15.4 Compare and contrast (competitive) non-depolarizing blockers and persistent depolarizing blockers.
1.15.5 Describe the pharmacokinetics of skeletal muscle relaxants.
1.15.6 Uses of skeletal muscle relaxants.
1.15.7 Describe the important drug interactions and adverse effects that occur with skeletal muscle relaxants.
1.15.8 Discuss the advantages of newer neuromuscular blockers over the older ones.
1.15.9 Compare centrally and peripherally acting skeletal muscle relaxants.

Autocoids and related Drugs

Lecture/SGD/SDL - 3/4/1 Hour
Assessment: Written / Viva voce

PH 1.16 Describe mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids, including: anti-histaminic, 5-HT modulating drugs, NSAIDs, drugs for gout, anti-rheumatic drugs, drugs for migraine

Histamine and Antihistaminics

1.16.1 Understand the role of histamine and bradykinin in various physiological and pathophysiological processes.
1.16.2 Understand the mechanisms of action of drugs that act as antagonists of the H1 receptor.
1.16.3 Know the therapeutic utility of H1-receptor antagonists, alone and in combination with other agents.
1.16.4 Know the important adverse effects of H1-receptor antagonists, and the difference between first- and second-generation H1 antihistamines with regard to adverse effects.
1.16.5 Outline the treatment of Vertigo.

5-Hydroxytryptamine, its Antagonists and Drug Therapy of Migraine

1.16.6 Describe the synthesis, storage and destruction of 5-Hydoxytryptamine.
1.16.7 Name and describe the salient features of important 5-HT receptor sub types.
1.16.8 Describe the pharmacological actions and pathophysiological roles of 5Hydroxytryptamine
1.16.9 Describe drugs affecting 5HT system.
1.16.10 Describe mechanism of action, therapeutic uses and side effects of 5HT modulating drugs. 1.16.11 Understand the pathophysiology of migraine.
1.16.12 Describe the mechanism of action, adverse effects, contraindications and important drug interactions of anti-migraine drugs
1.16.13 Describe the management of migraine and the drugs used for prophylaxis of migraine

NonsteroidalAntiinflammatory Drugs and Antipyretic-Analgesics

1.16.14 Classify Non-steroidal Anti-inflammatory drugs based on selectivity of COX enzyme.
1.16.15 Explain mechanisms of action of NSAIDs.
1.16.16 Compare and contrast features of nonselective COX inhibitors and selective COX -2 inhibitors and enumerate the concerns with selective COX 2 inhibitors.
1.16.17 Describe pharmacokinetics and pharmacological actions of NSAIDs.
1.16.18 Describe the therapeutic uses of NSAIDs and enumerate doses of most commonly used NSAIDs.
1.16.19 List out the adverse effects, drug interactions and necessary precautions and contraindications to be followed with NSAIDs.
1.16.20 Outline the management of Salicylate poisoning and Paracetamol poisoning.
1.16.21 Describe guidelines for choice of non-steroidal anti-inflammatory drugs.
1.16.22 Enumerate the analgesic combinations in common use and discuss about topical NSAIDS.

1.16.23 Discuss the rationality of analgesic combinations and topical NSAIDs.

Antirheumatoid and Antigout Drugs

1.16.24 Explain pathophysiology of rheumatoid arthritis and understand the goals of drug therapy in rheumatoid arthritis.
1.16.25 Classify drugs used in rheumatoid arthritis.
1.16.26 Describe the mechanism of action and pharmacological actions of antirheumatic drugs
1.16.27 Describe the adverse effects of antirheumatic drugs and enumerate the doses of commonly used antirheumatic drugs.
1.16.28 Explain the pathophysiology of Gout.
1.16.29 Classify drugs used for Gout.
1.16.30 Describe mechanism of action and pharmacological actions of drugs used for Gout.
1.16.31 Describe the therapeutic uses of drugs used for Gout and enumerate the doses of commonly used drugs for Gout.
1.16.32 Discuss the adverse effects, precautions and contraindications of drugs used for Gout.
1.16.33 Explain the management of Gout.

Local Anaesthetics

Lecture - 1 Hour

Assessment: Written / Viva voce

PH 1.17 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of local anesthetics

1.17.1 Define local anaesthetics.
1.17.2 Classify local anaesthetics.
1.17.3 Distinguish between the comparative features of general and local anaesthesia.
1.17.4 Compare features of amide linked local anaesthetics and ester linked local anaesthetics.
1.17.5 Describe mechanism of action, local and systemic actions of local anaesthetics.
1.17.6 Describe pharmacokinetics and enumerate the doses of commonly used local anaesthetics.
1.17.7 Describe the adverse effects, precautions and drug interactions with local anaesthetics.
1.17.8 Describe the indications for local anaesthetics and various dosage forms of lignocaine.
1.17.9 Describe the techniques of administration of local anaesthetics and their relevance in clinical practice.
1.17.10 Explain the complications of spinal anaesthesia.
1.17.11 Explain rationale of combining local anesthetics with adrenaline and clinical significance

General Anaesthetics

Lecture - 2 Hours
Assessment: Written / Viva voce

PH 1.18 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of general anesthetics, and pre-anesthetic medications

1.18.1 Define general anaesthesia and explain stages of General Anaesthesia.
1.18.2 Describe the mechanisms of action of general anaesthetics.
1.18.3 Enumerate the properties of ideal general anaesthetics
1.18.4 Classify general anaesthetics
1.18.5 Explain the pharmacokinetics of general anaesthetics.
1.18.6 Describe the pharmacological actions and important adverse effects of general anaesthetics.
1.18.7 Enumerate the complications and the important drug interactions with general anaesthetics.
1.18.8 Define preanesthetic medication with the aims of preanesthetic medication and rationality of use of drugs as preanesthetic medication.
1.18.9 What is balanced anaesthesia and components
1.18.10 Compare and contrast nitrous oxide and halothane
1.18.11 Enumerate intravenous anaesthetic agents

Central Nervous System

Lecture/SGD: 8/1 Hours

Assessment: Written / Viva voce

PH 1.19 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, anti- psychotic, anti- depressant drugs, anti-manic, opioid agonists and antagonists, drugs used for neurodegenerative disorders, anti- epileptics drugs)

Sedatives – hypnotics/ Anxiolytic drugs

1.19.1 Define Sedatives and Hypnotics.
1.19.2 Describe the different phases of Sleep.
1.19.3 Classify Sedative and Hypnotics.
1.19.4 Describe the mechanism of action, pharmacokinetics and pharmacological actions of Sedative hypnotics.
1.19.5 Describe adverse effects and precautions with long term use and important drug interactions with Sedative and Hypnotics.
1.19.6 Describe therapeutic uses of Sedative and Hypnotics.
1.19.7 Describe the management of different types of Insomnia.
1.19.8 Describe the management of Sedative and Hypnotic overdose.
1.19.9 Discuss the use of melatonin for disturbed biorhythms and sleep disorders.
1.19.10 Define Anxiety and Anxiolytics.
1.19.11 Classify Anxiolytics.
1.19.12 Describe pharmacological actions of Anxiolytics.
1.19.13 Describe the management of Anxiety
1.19.14 Enumerate doses of commonly used sedative hypnotics & anxiolytics.

Antipsychotic drugs

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1.19.15 Define Psychosis. And enumerate the different types of Psychiatric illness.
1.19.16 Explain the pathophysiology of Psychoses.
1.19.17 Classify Psychotropic drugs and Antipsychotic drugs.
1.19.18 Describe the pharmacokinetics, mechanism of action and pharmacological actions of Antipsychotic drugs.
1.19.19 Describe the adverse effects and drug interactions of Antipsychotic drugs.
1.19.20 Describe the therapeutic uses of Antipsychotic drugs.
1.19.21 Explain the advantages of second-generation Antipsychotics over conventional drugs.

Anti-depressants and Antimanic Drugs

1.19.22 Define Depression.
1.19.23 Explain the pathophysiology of Depression.
1.19.24 Classify Antidepressant drugs.
1.19.25 Describe the mechanism of Antidepressant action.
1.19.26 Describe the pharmacokinetics and pharmacological actions of Antidepressants.
1.19.27 Describe the adverse effects and drug interactions with Antidepressants.
1.19.28 Outline the management of acute poisoning with tricyclic antidepressants.
1.19.29 Describe therapeutic uses of Antidepressants including those other than depression.
1.19.30 Define Mania.
1.19.31 Explain the pathophysiology of Mania.
1.19.32 Classify Antimanic drugs.
1.19.33 Describe mechanisms of action of Lithium.
1.19.34 Describe the pharmacokinetics and pharmacological actions of Lithium.
1.19.35 Describe the adverse effects and drug interactionsof Lithium.
1.19.36 Describe the therapeutic uses of Lithium and newer drugs used for mania with their status in management of mania
1.19.37 Describe Psychotomimetic drugs.

Opioid Analgesics and Antagonists

1.19.38 Define Algesia (Pain). classify pain, Explain the pain pathway and WHO pain ladder.
1.19.39 Define and Classify Analgesics.
1.19.40 Classify Opioid Agonists and Antagonists.
1.19.41 Describe mechanism of action of Opioid Analgesics.
1.19.42 Describe pharmacokinetics and pharmacological actions of Opioid Analgesics.
1.19.43 Describe adverse effects, precautions and contraindications with Opioid analgesics.
1.19.44 Describe types of Opioid receptors.
1.19.45 Explain about complex action Opioids-Nalorphine, Pentazocine, Butorphanol, Nalbuphine, Buprenorphine.
1.19.46 Describe pure Opioid antagonists and their therapeutics uses.
1.19.47 Enumerate endogenous Opioid peptides.
1.19.48 Discuss opioid deaddiction
1.19.49 Explain treatment of morphine poisoning

Anti-epileptic drugs

1.19.50 Describe Epilepsy and the types of Epilepsy.
1.19.51 Classify Antiepileptic drugs.
1.19.52 Explain the pathophysiology of Epilepsy.
1.19.53 Describe mechanism of action and pharmacological actions of Antiepileptic drugs.
1.19.54 Describe the adverse effects and important drug interactions of Antiepileptic drugs.
1.19.55 Explain the management of different types of Epilepsy including Status Epilepticus.
1.19.56 Enumerate the doses of commonly used Antiepileptic drugs.
1.19.57 Mention the non-epileptic uses of anti-epileptic drugs

Drugs for Neurodegenerative disorders – Antiparkinsonian drugs and Cognition enhancers

1.19.58 Describe Parkinsonism and its pathophysiology.
1.19.59 Classify Antiparkinsonian drugs.
1.19.60 Describe mechanism of action of Antiparkinsonian drugs.
1.19.61 Describe pharmacokinetics and pharmacological actions of Antiparkinsonian drugs.
1.19.62 Describe the adverse effects and their management, important drug interactions of Levodopa
1.19.63 Describe Alzheimer's disease and its pathophysiology.
1.19.64 Classify Cognition enhancers.
1.19.65 Describe drugs used in Alzheimer's disease

Alcohol

SGD - 1 Hour
Assessment: Written / Viva voce

PH 1.20 Describe the effects of acute and chronic ethanol intake

1.20.1 Classify alcoholic beverages based on their alcohol content
1.20.2 Describe pharmacological effects of acute and chronic ethanol intake.
1.20.3 Describe the pharmacokinetics of ethanol.
1.20.4 Describe the important drug interactions with ethanol principles of alcohol de addiction.
1.20.5 Describe drugs used in alcohol deaddiction
1.20.6 Explain the therapeutic uses of alcohol.

Methanol and Ethanol poisoning

SGD - 1 Hour
Assessment: Written / Viva voce

PH 1.21 Describe the symptoms and management of methanol and ethanol poisonings

1.21.1 Describe the symptoms of methanol poisoning.
1.21.2 Explain the mechanism of methanol poisoning.
1.21.3 Describe the management of methanol poisoning.
1.21.4 Describe the symptoms of ethanol poisoning.
1.21.5 Explain the mechanism of ethanol poisoning.

1.21.6 Describe the management of ethanol poisoning.

Drugs of Abuse

SGD - 1 Hour

Assessment: Written / Viva voce

PH 1.22 Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)

1.22.1 Define drug addiction and drug dependence.
1.22.2 List the pharmacological classes of drugs of abuse.
1.22.3 Classify the drugs of abuse based on the CNS effects (stimulants, depressants, hallucinogens) with examples.
1.22.4 Give examples of hallucinogens.
1.22.5 Describe the source, pharmacological effects. withdrawal symptoms and the management of cocaine addiction.
1.22.6 Describe the source, pharmacological effects. withdrawal symptoms and the management of barbiturate addiction.
1.22.7 Describe the source, signs and symptoms and withdrawal symptoms of morphine addiction and its management.
1.22.8 Describe the source, signs and symptoms of addiction to and withdrawal symptoms and management of cannabis addiction.
1.22.9 Enumerate the drugs of abuse associated with criminal offences.
1.22.10 Enumerate club drugs, the signs and symptoms of their addiction, withdrawal symptoms and management of their addiction.

SGD - 1 Hour

Assessment: Written / Viva voce

PH 1.23 Describe the process and mechanism of drug deaddiction

1.23.1 Outline the general principles and steps in the management of drug deaddiction 1.23.2 Explain the mechanism of action of the drugs used in drug deaddiction.

Drugs acting on Kidney

Lecture/ SDL – 3/1 Hours
Assessment: Written, Viva voce

PH 1.24 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs affecting renal systems including diuretics, antidiuretic s- vasopressin and analogues 1.24.1 Explain the transport of electrolytes at proximal convoluted tubule, loop of Henle, distal convoluted tubule and the collecting duct.

1.24.2 Classify diuretics based on their efficacy with examples.

1.24.3 Indicate the site of action of all classes of diuretics.
1.24.4 Explain the mechanism of action, pharmacological actions and adverse effects of Thiazide diuretics.
1.24.5 Explain the mechanism of action, pharmacological actions and adverse effects of Loop diuretics
1.24.6 Explain the mechanism of action and pharmacological actions and adverse effects of potassium sparing diuretics.
1.24.7 Explain the mechanism of action and pharmacological actions and adverse effects of osmotic diuretics.
1.24.8 Describe the therapeutic uses of diuretics with their rationale.

1.24.9 Briefly describe the carbonic anhydrase inhibitors and their current uses.
1.24.10 Enumerate doses, routes of administration and preparations of hydrochlorothiazide, furosemide, amiloride, eplerenone, triamterene
1.24.11 Classify vasopressin receptors
1.24.12 Describe the physiological actions of Vasopressin
1.24.13 Classify anti-diuretic drugs
1.24.14 Enumerate the vasopressin analogues
1.24.15 Describe the adverse effects of Vasopressin.
1.24.16 Describe the therapeutic uses of Vasopressin and its analogues explaining the rationale behind their use
1.24.17 Mention vasopressin antagonist and its clinical uses

Drugs affecting Blood

Lecture/ SDL – 3/ 1 Hours
Assessment: Written, Viva voce

PH 1.25 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders

Coagulants and Anti-coagulants

1.25.1 Describe the coagulation cascade
1.25.2 Define the role of coagulants with examples
1.25.3 Enumerate the coagulants used clinically
1.25.4 Explain the mechanism of anti-coagulant action, adverse effects and therapeutic uses of Vitamin K.
1.25.5 Classify anti-coagulants based on their mechanism of action with examples.
1.25.6 Describe the pharmacological actions, pharmacokinetics and adverse effects of Heparin
1.25.7 Explain the therapeutic uses and contraindications to Heparin.
1.25.8 Describe the advantages and disadvantages of low molecular weight heparin.
1.25.9 Enumerate the preparations, routes and dose of Heparin.
1.25.10 Describe the treatment of Heparin overdose
1.25.11 Compare the anticoagulant actions of Heparin with fondaparinux.
1.25.12 Describe the mechanism of action, pharmacokinetics and actions of Warfarin

1.25.13 Describe the adverse effects and therapeutic uses of Warfarin.
1.25.14 Explain the dose regulation and monitoring of patients while on anti-coagulants with reference to parameters such as INR and APTT.
1.25.15 Explain the Drug interactions of warfarin
1.25.16 Give examples of Direct factor Xa inhibitor and explain their advantages over Warfarin.
1.25.17 Explain the advantages and disadvantages of dabigatran over warfarin as anti-coagulant
1.25.18 Describe how anticoagulant therapy is monitored

Fibrinolytic and Antifibrinolytic drugs

1.25.19 Define fibrinolysis and its mechanisms
1.25.20 Enumerate fibrinolytics
1.25.21 Describe the actions, adverse effects and advantages of alteplase over streptokinase
1.25.22 Describe the therapeutic uses of fibrinolytics
1.25.23 Describe the contra-indications to fibrinolytics
1.25.24 Describe antifibrinolytics and its application
1.25.25 Explain the mechanism of action, indications and therapeutic uses of Tranexamic acid

Antiplatelets

1.25.26 Define the functions of platelets in cardiovascular diseases
1.25.27 Classify anti-platelet drugs based on their mechanisms of action with examples
1.25.28 Compare aspirin, dipyridamole and clopidogrel as anti-platelet agents
1.25.29 Describe the therapeutic uses of anti-platelet agents with the rationale for their use in the conditions mentioned
1.25.30 Describe the indications for the use of newer antiplatelet agents
1.25.31 Compare the newer anti-platelet drugs with aspirin

Plasma Expanders

1.25.32 Define plasma expanders
1.25.33 Classify plasma expanders with examples
1.25.34 Describe the mechanism of actions of crystalloids and colloids
1.25.35 Explain the detailed composition of crystalloids
1.25.36 Compare crystalloids and colloids
1.25.37 Describe the adverse effects and precautions while using plasma expanders
1.25.38 Describe the therapeutic uses of plasma expanders

Drugs affecting Renin Angiotension and Aldosterone system

Lecture/ SDL – 1/ 2 Hours
Assessment: Written, Viva voce

PH 1.26 Describe mechanism of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin- angiotensin and aldosterone system

1.

1.26.1 Explain the physiology of renin angiotensin system
1.26.2 Describe the patho-physiological actions of Angiotensin-II with reference to the location of its receptors
1.26.3 Enumerate the drugs that modulate Renin angiotensin system
1.26.4 Enumerate the Angiotensin converting enzyme inhibitors (ACEIs)
1.26.5 Describe the mechanism of action and pharmacological actions of Angiotensin converting enzyme inhibitors
1.26.6 Describe the adverse effects and therapeutic uses of ACE inhibitors explaining the rationale for their uses
1.26.7 Indicate the route, dose and preparations of enalapril, Lisinopril
1.26.8 Enumerate Angiotensin receptor blockers (ARBs) used clinically
1.26.9 Describe the pharmacological actions, adverse effects, and therapeutic uses of ARBs
1.26.10 Describe the advantages of ARBs over ACEIs
1.26.11 Explain the mechanism of action, pharmacokinetics therapeutic uses and adverse effects of Aliskiren

Antihypertensive Drugs and drugs used in Shock

Lecture/ SGD – 1/ 2 Hours
Assessment: Written, Viva voce

PH 1.27 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of antihypertensive drugs and drugs used in shock

1.27.1 Define the categories of hypertension as per JNC 7 and JNC 8 criteria
1.27.2 Describe the pathophysiology of hypertension
1.27.3 Classify anti-hypertensives with examples
1.27.4 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects and drug interactions dose, routes of administration and uses of Diuretics in hypertension
1.27.5 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose, routes of administration and uses of ACE inhibitors in hypertension
1.27.6 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes of administration and uses of calcium channel blockers in hypertension
1.27.7 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes of administration and uses of beta blockers in hypertension
1.27.8 Enumerate the sympatholytic used in the management of hypertension
1.27.9 Explain the mechanism of action, adverse effects and indications for the use of sympatholytic.
1.27.10 Explain the management of hypertensive crisis
1.27.11 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, and use of alpha blockers in hypertension.
1.27.12 Describe the mechanism of antihypertensive action, anti-hypertensive effects, adverse effects, drug interactions, dose routes and uses of Vasodilators in hypertension

1.27.13 Discuss which drugs are used in combination in the management of Hypertension.

1.27.14 Describe which drugs are most effective in treating individual hypertensive patients with specific comorbidities, including diabetes mellitus, congestive heart failure, and renal disease.

1.27.15 Pharmacotherapy of Pulmonary Hypertension and Orthostatic hypotension.

1.27.16 Management of Hypertension during pregnancy.

Pharmacotherapy of Shock

1.27.17 Define shock

1.27.18 Enumerate the types of shock

1.27.19 Explain the pathophysiology of shock

1.27.20 Describe the pharmacological management of anaphylacticshock explaining the rationale for the use of drugs used in the management

1.27.21 Describe the pharmacological management of hypovolemic shock explaining the rationale for the use of drugs used in the management

1.27.22 Describe the pharmacological management of cardiogenic shock explaining the rationale for the use of drugs used in the management.

Pharmacotherapy of Angina pectoris, Acute MI and PVD

Lecture/ SGD – 2/ 1 Hours

Assessment: Written, Viva voce

PH 1.28 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in ischemic heart disease (stable, unstable angina and myocardial infarction), peripheral vascular disease

1.28.1 Define angina pectoris

1.28.2 Explain the various types of angina pectoris describing their underlying pathology

1.28.3 Classify anti-anginal drugs

1.28.4 Describe the mechanism of action, pharmacological actions, adverse effects and therapeutic uses of nitrates

1.28.5 Describe the routes of administration, doses and preparations of Nitrates

1.28.6 Classify Calcium channel blockers.

1.28.7 Describe the mechanism of action, pharmacological actions, adverse effects and therapeutic uses of calcium channel blockers

1.28.8 Mention the routes of administration, doses and preparations of Nifedipine and amlodipine

1.28.9 Mention the unique features of Felodipine, Nitrendipine, Cilnidipine, Nicardipine and Nimodipine

1.28.10 Compare Dihydropyridines with Phenylalkylamines

1.28.11 Describe the anti-anginal actions, adverse effects and contra-indications to beta blockers

1.28.12 Describe the mechanism of action, anti-anginal actions, adverse effects and the indication for the use of potassium channel openers (nicorandil) in angina pectoris

1.28.13 Describe the anti-anginal actions and indications for the use of Trimetazidine in angina pectoris

1.28.14 Describe the anti-anginal actions and indications for the use of Ranolazine in angina pectoris

1.28.15 Describe the anti-anginal actions and indications for the use of Ivabradine in angina pectoris

1.28.16 Explain the pathophysiology of myocardial infarction

1.28.17 Explain the steps in the use of drugs in myocardial infarction with the rationale for using them

1.28.18 Describe the pathophysiology of peripheral vascular disease (PVD)

1.28.19 Classify the drugs used in PVD

1.28.20 Describe the mechanism of action, pharmacological actions, adverse effects, dose and uses of Pentoxyphylline.

1.28.21 Describe the mechanism of action,pharmacological actions,adverse effects, dose and uses of Cilostazol.

Pharmacotherapy of Heart Failure

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.29 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in congestive heart failure

1.29.1 Describe the stages of heart failure and the treatments that are recommended at each stage.

1.29.2 Describe the rationale for the use of drugs that prevent and slow the progression of heart failure

1.29.3 Describe the mechanism of action of inotropic drugs and how they are used to maintain left ventricular function.

1.29.4 Identify the major side effects and adverse drug reactions of the drugs used to treat heart failure.

1.29.5 Describe the Management of Digitalis Toxicity

Pharmacotherapy of Cardiac Arrhythmias (Non Core)

SDL/ Lecture – 1/ 1 Hour

Assessment: Written, Viva voce

PH 1.30 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the antiarrhythmics

1.30.1 Describe the principles of cardiac electrophysiology especially the ion channels, exchangers, and pumps that are targets of antiarrhythmic drugs.

1.30.2 Describe the mechanisms that cause cardiac arrhythmias.

1.30.3 Describe the common and important tachyarrhythmias and their mechanisms.

1.30.4 Describe the mechanisms and classification of antiarrhythmic drugs.

1.30.5 Describe the principles of antiarrhythmic drug pharmacotherapy

1.30.6 Describe the pharmacological, pharmacokinetic, and adverse effects of specific antiarrhythmic agents.

Hypolipdaemic drugs

Lecture / SDL– 1/ 1 Hour

Assessment: Written, Viva voce

PH 1.31 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used in the management of dyslipidemias

1.31.1 Describe lipid metabolism, different classes of lipoproteins and their formation
1.31.2 Describe the pathophysiology of primary and secondary hyperlipidaemias
1.31.3 Mention the classification of hypolipidemic drugs based on mechanism of action
1.31.4 Describe the mechanism of action, pleiotropic effects, indications adverse effects, drug interactions of statins
1.31.5 Compare the features of all statins
1.31.6 Describe the mechanism of action, indications adverse effects, drug interactions of Resins, ezetimibe, niacin, fibric acid derivatives
1.31.7 Describe the combination therapy in dyslipidaemia
1.31.8 Discuss which patients with dyslipidaemias should be treated and when treatment should be initiated.
1.31.9 Discuss which drugs are most effective in treating patients with different dyslipidaemias.
1.31.10 Describe the non-pharmacological treatment including natural agents

Drugs used in Bronchial Asthma and COPD

Lecture - 2 Hours
Assessment: Written, Viva voce

PH- 1.32 Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD

1.32.1 Describe the patho-physiology of Bronchial Asthma and COPD
1.32.2 Classification of anti-asthmatic drugs
1.32.3 Discuss the mechanism of action, pharmacokinetics, Adverse effects, status, merits and demerits of beta2 agonists, methyl xanthines, corticosteroids, anti-cholinergics, mast cell stabilizers, leukotriene antagonists, anti IgE antibodies in asthma.
1.32.4 Discuss inhaled medication in bronchial asthma
1.32.5 Describe the step wise management of Bronchial asthma (GINA guidelines)
1.32.6 Describe the management of acute severe asthma with the help of a case scenario
1.32.7 Enumerate the various inhalational devices available in India
1.32.8 Describe the advantages and disadvantages of MDI, rotahaler, use of spacer, nebulizer

Pharmacotherapy of cough

SGD - 1 Hour
Assessment: Written/ Viva voce

PH- 1.33 Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussive s, expectorant s/ mucolytics)

1.33.1 Explain the cough pathway.
1.33.2 Enumerate various causes of cough
1.33.3 State the various causes of cough
1.33.4 Classify the drugs used in cough
1.33.5 Explain the mechanism of action, indications and adverse effects of pharyngeal demulcents, expectorants, mucolytics and anti-tussive with examples
1.33.6 List the drugs that induce cough and bronchospasm
1.33.7 Comment on the preparations available in Indian market for cough

Drugs used in Disorders of Gastrointestinal Tract

Lecture/ SGD/ SDL - 1/ 3/1 Hours Assessment: Written/ Viva voce

PH- 1.34- Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs used as below:

1. Acid- peptic disease and GERD
2. **Antiemetics and prokinetics**
3. Antidiarrhoeals
4. **Laxatives**
5. Inflammatory Bowel Disease
6. **Irritable Bowel disorders, Biliary and Pancreatic disorders.**

1.34.1 Explain the physiology of vomiting and role of various neurotransmitters
1.34.2 Classification of anti-emetics based on mechanism of action
1.34.3 Describe the mechanism of action, pharmacological effects, adverse effects and indications of antidopaminergics, antihistaminic, anticholinergics, 5HT3 antagonists, NK1 antagonists, cannabinoid receptor antagonists, steroids which are used as antiemetics
1.34.4 Enumerate the drug of choice for various clinical scenarios, such as postoperative vomiting, cancer chemotherapy induced vomiting etc 1.34.5 Enumerate drugs used in vomiting during pregnancy
1.34.6 Enumerate the drugs that cause emesis.
1.34.7 Compare and contrast Metoclopramide and Domperidone
1.34.8 Pathophysiology of gastric acid secretion
1.34.9 Identify the sites in the gastric parietal cell where drugs act to suppress acid secretion.
1.34.10 Describe the mechanism of action of proton pump inhibitors, H2 receptor antagonists, and prostaglandin analogs to suppress gastric acid secretion.
1.34.11 Describe the limitations to the use of H2 receptor antagonists in chronic acid suppression.
1.34.12 Identify potential drug interactions with proton pump inhibitors and H2 receptor antagonists
1.34.13 Describe the mechanism of action of drugs that enhance gastric cytoprotection.
1.34.14 Describe the recommendations for therapy of gastroesophageal reflux disease (GERD)
1.34.15 Explain the pathophysiology of constipation
1.34.16 Classify laxatives/purgatives
1.34.17 Explain the mechanism of action, indications, contra-indications and adverse effects of bulk laxatives, stool softener, stimulant purgative, osmotic purgative and 5HT4 agonists

1.34.18 Mention the laxative of choice in bedridden patients, pregnancy, postoperative, functional constipation
1.34.19 Classify antidiarrheal agents.
1.34.20 Enumerate the principles of management of Diarrhea with rationale for its composition
1.34.21 Discuss the advantages of New formula WHO-ORS versus the older composition.
1.34.22 Explain the role of Zinc in pediatric diarrhea
1.34.23 Explain the mechanism of action, indications, contra-indications and adverse effects of opioids, anticholinergics, PG inhibitors, chloride channel inhibitor, racecadotril and probiotics
1.34.24 Explain the pathophysiology and pharmacotherapy of Irritable bowel syndrome
1.34.25 Explain the pathophysiology and pharmacotherapy of Inflammatory bowel disorder, Acute pancreatitis
1.34.26 Explain the pancreatic enzyme replacements and drugs that inhibit formation of gall stones

Drugs affecting Blood Formation

SDL/ SGD - 1/2 Hours
Assessment: Written/ Viva voce

PH 1.35 - Describe the mechanism/ s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like:

1. Drugs used in anemias
2. **Colony Stimulating factors**

1.35.1 Define anaemias and describe the types and causes of anaemia
1.35.2 State the role of iron, its sources, requirements, iron absorption, factors that reduce and enhance iron absorption
1.35.3 List the oral and parenteral iron preparations with merits and demerits and specific indications
1.35.4 Define megaloblastic anaemia
1.35.5 State the role of vitamin B12, Folic acid, along with sources and daily requirements
1.35.6 State the vitamin B12 preparations
1.35.7 State the indications for use of erythropoietin
1.35.8 Describe the various types of colony stimulating factors with their approved indications (Cancer chemotherapy)

Drugs used in Endocrine Disorders

Lecture/ SDL/ SGD - 3/1/1 Hours Assessment: Written/ Viva voce

PH 1.36 - Describe the mechanism of action, types, doses, side effects indications and contraindications of drugs used in endocrine disorders (diabetes mellitus, thyroid disorders and osteoporosis)

Diabetes Mellitus

1.

1.36.1 Describe the mechanisms of action of insulin and the oral antidiabetic drugs.
1.36.2 Describe the components for management of the diabetic patient including the goals of therapy.
1.36.3 Describe the pharmacotherapeutic options for the treatment of patients with type 1 or type 2 diabetes.
1.36.4 Describe the adverse effects of insulin and the oral antidiabetic drugs.
1.36.5 Describe the treatment of hypoglycemia.
1.36.6 Discuss the management of diabetic ketoacidosis and hyperosmolar (nonketotic) coma

Thyroid disorders

1.36.7 Discuss the principles of thyroid hormone regulation.
1.36.8 Describe the diagnosis and treatment of hypothyroidism and hyperthyroidism, including during pregnancy.
1.36.9 Describe the treatment options for well-differentiated thyroid cancer.

Osteoporosis

1.36.10 Describe calcium and phosphorous homeostasis.
1.36.11 Describe the roles of PTH, calcitonin, and vitamin D in calcium homeostasis.
1.36.12 Understand the concept of bone resorption and bone formation.
1.36.13 Describe the mechanism of action and untoward effects of bisphosphonates.
1.36.14 Describe the role of bisphosphonates in the prevention and treatment of osteoporosis.
1.36.15 Describe the pharmacological management of hypocalcemia and hypercalcemia.

Lecture/SGD- 2/2 hours

Assessment: Written/ Viva voce

PH 1.37 Describe the mechanism s of action, types, doses, side effects, indications and contraindications of the drugs used as sex hormones, their analogues and anterior Pituitary hormones

Pituitary Hormones

1.37.1 Describe the functioning of the hypothalamic-pituitary axis 1.37.2 Describe the pharmacotherapy of GH excess and GH deficiency.
1.37.3 Develop knowledge of the clinical uses of gonadotropin-releasing hormone (GnRH) and its analogs.

Androgens and antiandrogens

1.37.4 Describe physiological secretion and regulation of androgens (natural and synthetic)
1.37.5 Describe mechanism of action, uses and adverse effects of different preparations of testosterone

1.37.6 Explain mechanism of action, uses and adverse effects of anabolic steroids and antiandrogens

1.37.7 Describe drug therapy of erectile dysfunction

Estrogens and Progestins

1.37.8 Describe physiological secretion and regulation of estrogen and progesterone

1.37.9 Describe the therapeutic uses and ADRs of postmenopausal hormonal replacement therapy

1.37.10 Describe mechanism of action, uses and adverse effects of selective estrogen receptor modulators, anti-estrogens and aromatase inhibitors

1.37.11 Describe mechanism of action, uses, adverse effects and contraindications of anti progestins

1.37.12 Explain various drugs used in treatment of infertility

Lecture - 1 Hour

Assessment: Written/ Viva voce

PH 1.38 Describe the mechanism of action, types, doses, side effects, indications and contraindications of corticosteroids

1.38.1 Explain physiology of biosynthesis, actions, hypo and hyper secretion of corticosteroids

1.38.2 Classify corticosteroid preparations

1.38.3 Describe distinctive features, uses, adverse effects and contraindications of various corticosteroid preparations

1.38.4 Understand the effect of abrupt cessation of glucocorticoid therapy.

SGD - 2 Hours

Assessment: Written/ Viva voce

PH 1.39 Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for contraception

1.39.1 Classify female contraceptives preparations

1.39.2 Explain all types with mechanism of action, uses adverse effects, contraindications and practical considerations of female contraceptives.

Lecture – 2 Hours

Assessment: Written/ Viva voce

PH 1.40 Describe mechanism of action, types, doses, side effects, indications and contraindications of

1. Drugs used in the treatment of infertility, and
2. **Drugs used in erectile dysfunction**

1.40.1 Describe the causes of infertility
1.40.2 Enumerate drugs used in the treatment of infertility
1.40.3 Describe the mechanism of action of drugs used in the treatment of infertility
1.40.4 Describe the therapeutic uses of drugs used in the treatment of infertility
1.40.5 Describe the precautions and contraindications of drugs used in the treatment of infertility
1.40.6 Describe the adverse effects of drugs used in the treatment of infertility
1.40.7 Describe the drug interactions of drugs used in the treatment of infertility
1.40.8 Describe the causes of erectile dysfunction
1.40.9 Enumerate drugs used in erectile dysfunction
1.40.10 Describe the mechanism of action of drugs used in erectile dysfunction
1.40.11 Describe the therapeutic uses of drugs used in erectile dysfunction

SGD - 1 Hour

Assessment: Written/ Viva voce

PH 1.41 Describe the mechanisms of action, types, doses, side effects, indications and contraindications of uterine relaxants and stimulants

1.41.1 Classify uterine stimulants
1.41.2 Explain mechanism of action, uses, adverse effects and contraindications of each group
1.41.3 Classify uterine relaxants.
1.41.4 Explain mechanism of action, uses, adverse effects and contraindications of each group

Chemotherapy

Lecture/SGD- 2/2 hours

Assessment: Written/ Viva voce

PH 1.42 Describe general principles of chemotherapy

General Principals

1.42.1 Classify the chemotherapeutic agents based on chemical structure, mechanism of action, source
1.42.2 Describe common problems encountered with use of chemotherapeutic agents
1.42.3 Describe anti-microbial resistance and discuss monitoring of antimicrobial therapy
1.42.4 Enumerate the factors to be considered for choosing an antimicrobial agent
1.42.5 Mention the advantages and disadvantages of antimicrobial combination with examples

Sulfonamides & Quinolones

1.42.6 Explain the mechanism of action of sulfonamides drugs.
1.42.7 Explain the various sulfonamide drugs and categorize them according to their absorption from the gastrointestinal (GI) tract.

1.42.8 Explain the therapeutic uses and untoward effects of sulfonamide drugs including trimethoprim-sulfamethoxazole.

1.42.9 Describe the therapeutic uses, mechanisms of action, and toxicities of quinolone antibiotic drugs.

Beta lactams

1.42.10 Explain the mechanisms of action of the penicillins, cephalosporins, and other β-lactam antibiotics.

1.42.11 Explain the mechanisms of resistance of the penicillins, cephalosporins, and other β-lactam antibiotics.

1.42.12 Describe the therapeutic effects of the penicillins, cephalosporins, and other β-lactam antibiotics.

1.42.13 Describe the untoward effects and contraindications of the penicillins, cephalosporins, and other β-lactam antibiotics.

Aminoglycosides

1.42.14 Explain aminoglycoside mechanisms of action and resistance.

1.42.15 Describe the advantages and disadvantages of multiple daily dosing versus once daily extended-interval dosing regimens for aminoglycosides.

1.42.16 Describe the rationale and the methods of plasma concentration monitoring of aminoglycoside therapy.

1.42.17 Describe the causes and clinical signs of aminoglycoside ototoxicity and nephrotoxicity and the best means of monitoring therapy to avoid these serious toxicities.

1.42.18 Explain the unique clinical differences among the aminoglycosides.

1.42.19 Describe the mechanisms of action and resistance of tetracyclines, macrolides, vancomycin, linezolid, daptomycin, and quinupristin/dalfopristin

1.42.20 Describe the unique toxicities of antibiotics that are inhibitors of bacterial protein synthesis

1.42.21 Describe the uses and untoward reactions of vancomycin

1.42.22 Explain the drug–drug interactions that occur with some of these antibiotics

1.42.23 Explain how linezolid, daptomycin, and quinupristin/dalfopristin are used to treat methicillin- resistant and vancomycin-resistant organisms

SGD – 4 Hour

Assessment: Written, Viva voce

PH 1.43 - Describe and discuss the rational use of antimicrobials including antibiotic stewardship program

1.43.1 Enumerate the factors influencing the antimicrobial selection, duration and dose

1.43.2 Define appropriate empiric antimicrobial prescribing

1.43.3 Highlight mechanisms by which microorganisms develop antimicrobial resistance

1.43.4 Understand the impact of pharmacodynamics, pharmacokinetics, bioavailability on development of antimicrobial resistance with examples

1.43.5 Understand the principles of antimicrobial selection for a specific infectious condition

1.43.6 Enumerate basic steps of prevention of antimicrobial resistance

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.44 - Describe the first line anti tubercular dugs, their mechanisms of action, side effects and doses

1.44.1 Discuss pathophysiology of tuberculosis.

1.44.2 Enumerate various anti- tubercular drugs.

1.44.3 Describe the mechanism of action and resistance to anti tubercular drugs.

1.44.4 Describe the adverse effects and drug interactions commonly associated with anti-TB drugs.

1.44.5 Understand the rationale for combination drug therapy in the treatment of tuberculosis

1.44.6 Describe and discuss the salient features, diagnostic criteria and guidelines for treatment of tuberculosis under NTEP

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.45 - Describe the drugs used in MDR and XDR Tuberculosis

1.45.1 Define MDR and XDR TB

1.45.2 List drugs, mechanism of action, indications, contraindications and adverse effects of drugs used in MDR and XDR Tuberculosis.

1.45.3 Explain the regimen for MDR and XDR tuberculosis

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.46 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs

1.46.1 Describe the principles of anti-leprosy therapy.

1.46.2 Describe the mechanism of action, ADE, DI of antileprotic drugs

1.46.3 Discuss the management of leprosy and treatment of Lepra reactions

Lecture/ SGD – 4/2 Hours

Assessment: Written, Viva voce

PH 1.47 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in malaria, KALAAZAR, amebiasis and intestinal helminthiasis

1.47.1 Describe the stages of the malaria parasite in the human body.
1.47.2 Classify antimalarial drugs into those that are effective against only the blood stages of the parasite, those that are effective against both the blood and liver stages, and those that are effective against only the liver stages of the parasite.
1.47.3 Explain the use of antimalarial drugs in clinical context, particularly with regard to their mechanism of action, therapeutic uses, and toxicities.
1.47.4 Describe the principles and guidelines for the chemoprophylaxis and treatment of malaria.
1.47.5 Define KALA-AZAR
1.47.6 Discuss pathophysiology of KALA-AZAR
1.47.7 Enumerate drugs used in KALA-AZAR
1.47.8 Describe the mechanism of action of drugs used in KALA-AZAR
1.47.9 Describe the therapeutic uses of drugs used in KALA-AZAR
1.47.10 Describe the precautions and contraindications of drugs used in KALA-AZAR
1.47.11 Describe the adverse effects of drugs used in KALA-AZAR
1.47.12 Describe the drug interactions of drugs used in KALA-AZAR
1.47.13 Describe the management of KALA-AZAR
1.47.14 Define amoebiasis
1.47.15 Discuss pathophysiology of amoebiasis
1.47.16 Enumerate drugs used for amoebiasis
1.47.17 Describe the mechanism of action of drugs used for amoebiasis
1.47.18 Describe the therapeutic uses of drugs used for amoebiasis
1.47.19 Describe the precautions and contraindications of drugs used for amoebiasis
1.47.20 Describe the adverse effects of drugs used for amoebiasis
1.47.21 Describe the drug interactions of drugs used for amoebiasis
1.47.22 Describe the management of amoebiasis
1.47.23 Describe the common helminth infections, the clinical symptoms, and the mainstays of therapy.
1.47.24 Describe the therapeutic uses of anthelmintic drugs.
1.47.25 Explain the mechanisms of actions of anthelmintic drugs.
1.47.26 Describe the toxicities and contraindications of anthelmintic drugs

Lecture/ SGD – 3/2 Hours
Assessment: Written, Viva voce

PH 1.48 - Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in UTI/ STD and viral diseases including HIV &Antifungal drugs

1.48.1 Define UTI
1.48.2 Discuss pathophysiology of UTI
1.48.3 Enumerate drugs used for UTI
1.48.4 Describe the mechanism of action of drugs used for UTI

1.48.5 Describe the therapeutic uses of drugs used for UTI
1.48.6 Describe the precautions and contraindications of drugs used for UTI
1.48.7 Describe the adverse effects of drugs used for UTI
1.48.8 Describe the drug interactions of drugs used for UTI
1.48.9 Describe the management of UTI
1.48.10 Define STD
1.48.11 Enumerate common STDs
1.48.12 Enumerate drugs used in STDs
1.48.13 Describe the mechanism of action of drugs used in STD
1.48.14 Describe the precautions and contraindications of drugs used in STD
1.48.15 Describe the adverse effects of drugs used in STD
1.48.16 Describe the drug interactions of drugs used in STD
1.48.17 Describe the management of STD
1.48.18 Describe the mechanisms of action and resistance of antifungal agents.
1.48.19 Describe the therapeutic uses of antifungal agents in the context of treatment for fungal diseases
1.48.20 Develop knowledge of the common and unique toxicities of antifungal agents.
1.48.21 Explain the drug–drug interactions that can occur with the use of azole antifungal agents
1.48.22 Explain the treatment of herpes virus infections and the use of anti-herpes drugs
1.48.23 Discuss the treatment strategies for chronic hepatitis B and C infections
1.48.24 Explain the mechanisms of action and resistance, and the therapeutic use of the anti-influenza agents
1.48.25 Discuss the principles of HIV chemotherapy as per National guidelines including HAART regimen
1.48.26 Describe the mechanisms of action and resistance, the untoward effects and the therapeutic uses of the drugs used to treat HIV infections

Anticancer drugs

Lecture – 2 Hours

Assessment: Written, Viva voce

PH 1.49 Describe mechanism of action, classes, side effects, indications and contraindications of anticancer drug

1.49.1 Discuss the general principles in chemotherapy of Cancer
1.49.2 Classify anticancer drugs
1.49.3 Describe the mechanism of action of Anticancer drugs
1.49.4 Describe the mechanisms of toxicity of cytotoxic antineoplastic agents on normal cells and strategies for reducing toxic effects
1.49.5 Enumerate the classes of agents are typically used in treating specific cancers

Immunomomodulators

Lecture – 1 Hour
Assessment: Written, Viva voce

PH 1.50 Describe mechanisms of action, types, doses, side effects, indications and contraindications of immunomodulators and management of organ transplant rejection

1.50.1 Differentiate between Immuno-suppressants and immuno-stimulants
1.50.2 Define immunosuppressants & Classify immuno-suppressants
1.50.3 Describe the mechanisms of action of Calcineurin inhibitors
1.50.4 Enlist m-Tor inhibitors and antiproliferative agents used as immunosuppressants
1.50.5 Enlist Biological agents used as immunosuppressants
1.50.6 Enumerate the adverse effects of immunosuppressants
1.50.7 Enlist clinical uses of immunosuppressants

Occupational and Environmental Pesticides, Food Adulterants, Pollutants and Insect Repellents

SDL – 1 Hour

Assessment: Written, Viva voce

PH- 1.51 Describe occupational and environmental pesticides, food adulterants, pollutants and insect repellents

1.51.1 Define the various toxicology terms
1.51.2 Define occupational pesticides and enlist them
1.51.3 Explain environmental pesticide and its management
1.51.4 Enlist food adulterants
1.51.5 Enlist insect repellents

Pharmacotherapy of Poisoning

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.52- Describe management of common poisoning, insecticides, common sting and bites

1.52.1 Explain the general management of common poisoning
1.52.2 Enlist the specific antidotes used in treatment of common poisons
1.52.3 Explain the method of enhancing elimination of toxin using examples
1.52.4 Explain the management of Bee sting bite, Scorpion bite and Snake bite

Chelating agents

SGD – 1 Hour

Assessment: Written, Viva voce

PH 1.53 - Describe heavy metal poisoning and chelating agents

1.53.1 Define Chelating agents and enlist Chelating agents used in Heavy metal poisoning
1.53.2 Describe the mechanism of action of Chelating agents
1.53.3 Name the Chelating agents used in the management of Iron, Lead, Copper, and Arsenic intoxication
1.53.4 Enlist the clinical uses of penicillamine

Vaccines and Antisera

SGD – 1 Hour
Assessment: Written, Viva voce

PH 1.54 - Describe vaccines and their uses

1.54.1 Define Vaccines and classify vaccines
1.54.2 Enlist the bacterial vaccines
1.54.3 Enlist the viral vaccines
1.54.4 Enlist Toxoids and Mixed Toxoids
1.54.5 Enlist antisera and immunoglobulins
1.54.6 Discuss the routine immunization schedule for infants and children as per IAP guidelines

National Health Programme

SGD – 2 Hours
Assessment: Written, Viva voce

PH 1.55 - Describe and discuss the following National Health Programme including Immunization, Tuberculosis, Leprosy, Malaria, HIV, Filaria, Kala Azar, Diarrhoeal diseases, Anaemia& nutritional disorders, Blindness, Noncommunicable diseases, cancer and Iodine deficiency

1.55.1 Explain the universal immunization programme in India
1.55.2 Explain Revised National Tuberculosis Elimination Programme
1.55.3 Explain National Leprosy Eradication Programme
1.55.4 Enlist National Vector Borne Disease Control Programmes
1.55.5 Explain National AIDS Control Programme
1.55.6 Describe National programme for prevention and control of cancer, diabetes, cardiovascular diseases and stroke
1.55.7 Describe National Programme for Control of Blindness & Visual Impairment
1.55.8 Describe National Programme For Prevention and Control Of cancer
1.55.9 Discuss about the Diarrhoeal Disease Control Programme
1.55.10 Describe iodine deficiency disorders control programme

Geriatric and Pediatric pharmacology

Lecture – 1 Hour

Assessment: Written, Viva voce

PH 1.56 - Describe basic aspects of Geriatric and Pediatric pharmacology

1.56.1 Describe physiological changes in Children and Elderly patients that influence the pharmacokinetic and Pharmacodynamic parameters of medications.
1.56.2 Discuss the common drugs to which children/elderly are likely to respond differently
1.56.3 Explain the principles that underlie the prescribing in children/elderly

Pharmacotherapy of Skin disorder

SDL – 1 hr

Assessment: Written, Viva voce

PH 1.57- Describe drugs used in skin disorders

1.57.1 Discuss how drugs are absorbed through the skin.
1.57.2 Define demulcents, emollients, adsorbents& protectants, astringents, irritantsand counter irritants and keratolytic, Melanising agents with examples, their uses and adverse reactions.
1.57.3 Describe the mechanism of action, therapeutic uses, and toxicities of topical and systemic drugs used to treat common dermatological disorders like seborrheic dermatitis, Vitiligo, Psoriasis and Acne vulgaris.
1.57.4 Discuss the science behind use of sunscreen agents.
1.57.5 List the topical glucocorticoids, explain the rationale for use of glucocorticoids in skin disorders and their adverse effects.

Ocular Pharmacology

SGD – 1 Hour

Assessment: Written, Viva voce

PH 1.58 - Describe drugs used in Ocular disorders

1.58.1 Understand the principles of using drugs to treat ophthalmic disorders.
1.58.2 Describe the ocular toxicities of systemic drugs.

1.58.3 Explain the mechanisms of action, clinical uses, and toxicities of ophthalmic drugs.
1.58.4 Describe how ophthalmic drugs administered topically can cause systemic sideeffects.
1.58.5 Understand the pathophysiology of glaucoma and the role of pharmacotherapy in its management.

Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines

SGD– 2 Hours
Assessment: Written, Viva voce

PH 1.59- Describe and discuss the following: Essential medicines, Fixed dose combinations, Over the counter drugs, Herbal medicines

1.59.1 Define Essential medicines concept.
1.59.2 Discuss the criteria to prepare list of essential medicines for your community PHC.
1.59.3 Define fixed dose combination, advantages and disadvantages of FDC.
1.59.4 Describe the pharmacokinetic and pharmacodynamics parameters to be considered to combine two drugs in a FDC.
1.59.5 Discuss Rational and irrational prescribing drugs with examples.
1.59.6 Define over the counter medicines and prescription medicines.
1.59.7 Enumerate the similarities and differences between OTC medicines and prescription medicines.
1.59.8 Summarize how to responsibly use OTC medicines and prevent misuse.
1.59.9 List 10 Herbal medicines used in allopathic practice.
1.59.10 Enumerate advantages and disadvantages of Herbal medicines

Pharmacogenomics and Pharmacoeconomics

SGD - 1 Hour
Assessment: Written, Viva voce

PH 1.60- Describe and discuss Pharmacogenomics and Pharmacoeconomics

1.60.1 Define Pharmacogenomics and Pharmacogenetics and Pharmacoeconomics with examples
1.60.2 Describe different types of pharmacoeconomic models with examples
1.60.3 Discuss the role of Pharmacogenomics and Pharmacoeconomics in modern therapeutics.

Dietary Supplements and Nutraceuticals

SDL – 1 Hours
Assessment: Written, Viva voce

PH 1.61 - Describe and discuss dietary supplements and nutraceuticals

1.61.1 Describe the role of common vitamins and minerals in normal physiology and diseases.
1.61.2 Identify the potential toxic effects of vitamins and minerals.
1.61.3 List the fat soluble and water-soluble vitamins, and identify examples of how solubility affects the absorption, transport, storage and excretion of each type.
1.61.4 Describe how B vitamins assist with energy metabolism
1.61.5 Justify the statement "It is better to get vitamins from food than from supplements"
1.61.6 Enumerate anti-oxidant vitamins, list the food source and their functions
1.61.7 Analyze from the below list, valid reasons that some individuals require vitamin supplements
a. women in childbearing age
b. Pregnant and lactating women
c. Vitamins of AIDS or other wasting illness
d. Addicted to drugs or alcohol
e. Strict vegetarians
f. Eecovering from surgery, burns and injury.

Antiseptics and Disinfectants

SGD – 2 Hours

Assessment: Written, Viva voce

PH 1.62 Describe and discuss antiseptics and disinfectants

1.62.1 Describe antiseptics and their use in wound care with examples
1.62.2 Describe disinfectants and their use in infection control with examples
1.62.3 Summarize the adverse effects of antiseptics and disinfectants
1.62.4 Describe Ecto-parasiticides with examples, use and adverse effects
1.62.5 Discuss hand hygiene using soap as per WHO guidelines
1.62.6 Information on hand sanitizers

Drug Regulation

SGD – 1 hr

Assessment: Written, Viva voce

PH 1.63 Describe Drug Regulations, acts and other legal aspects

1.63.1 Explain why drugs needs to be regulated
1.63.2 Identify the major regulatory authorities in India
1.63.3 Describe the approval process for New Drugs in simple terms.
1.63.4 Discuss the major legislation pertaining to drugs

Drug development and GCP

SGD – 1hrs

Assessment: Written, Viva voce

PH 1.64 - Describe overview of drug development, Phases of clinical trials and Good Clinical Practice

1.64.1 Enlist the stages in new drug development
1.64.2 Explain the approaches to drug discovery /invention
1.64.3 Discuss about the preclinical studies
1.64.4 Describe the phases of clinical trials
1.64.5 Describe the Principles Good Clinical Practice

PANDEMIC MODULE 2.5

Therapeutic strategies including new drug development

Theory – 1 hour **Assessmen**t: Written, Viva voce

PH 2.5 - Describe stages of new drug development and clinical trial during a pandemic.

- Enlist the stages in new drug development during a pandemic.
- Describe drug repurposing with its importance and benefits.
- What is off -label drug use? Risks, benefits and implications examples
- Describe the clinical trial conduct during a pandemic.

SGD – 2 hours **Assessmen**t: Written, Viva voce

- New drug development – Challenges and solutions
- Urgency in procedures
- Need for monitoring – Pharmacovigilance activities of drugs approved for emergency use/clinical trials during Pandemic

PRACTICAL

Specific Learning Objectives in Pharmacology

(Skills and communication: Competency no-2.1 to 5.7)

Practical DOAP – 14 Hours Assessment: Skill Assessment

PH 2.1Demonstrate understanding of the use of various dosage forms (oral/ local/ parenteral; solid/liquid)

2.1.1 Identify various dosage forms – solid, liquid, topical dosage forms

2.1.2 Describe the various types of solid dosage form in the given samples with merits and demerits of each
2.1.3 Describe the various types of liquid dosage form in the given samples with merits and demerits of each
2.1.4 Describe the various types of topical dosage form in the given samples with merits and demerits of each
2.1.5 Describe all the components of commercial label of the given dosage form and its importance

Practical DOAP – 4Hours

Assessment: Skill Assessment

PH 2.2 Prepare oral rehydration solution from ORS packet and explain its use

2.2.1 Define and enumerate causes of dehydration
2.2.2 Describe the clinical assessment of dehydration
2.2.3 Enumerate the different types of ORS along with their composition with actions of each ingredient
2.2.4 Choose the appropriate type of ORS for a given condition/patient
2.2.5 Calculate the quantity of ORS required to correct / prevent dehydration
2.2.6 Demonstrate preparation of ORS from sachet
2.2.7 Enumerate non-diarrheal uses of ORS

Practical DOAP – 4 Hours Assessment: Skill Assessment

PH 2.3 Demonstrate the appropriate setting up of an intravenous drip in a simulated environment

2.3.1 Open the infusion set following aseptic technique 2.3.2
Appropriately position the patient and select a vein.
2.3.3 Prepare the overlying skin with aseptic care.
2.3.4 Demonstrate correct IV injection technique and strap the cannula in place.
2.3.5 Identify any visible impurities if present in the IV fluids.
2.3.6 Adjust the flow rate according to the requirement
2.3.7 Routinely check patient's ID, drug name, date of expiry etc before injecting.
2.3.8 Monitor a patient on an IV drip and identify any reactions to it.

Practical DOAP – 4 Hours Assessment: Skill Assessment

PH 2.4 Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations (integratation with General medicine, Paediatrics)

2.4.1 Calculate appropriate doses for individual patients based on age, body weight, and surface area
2.4.2 Demonstrate the correct method of calculation of drug dosage in paediatric patients
2.4.3 Demonstrate the iv drip rate calculation & infusion time
2.4.4 Demonstrate the correct method of calculation of drug dosage in patient suffering from renal disease

2.4.5 Demonstrate the correct method of calculation of drug dosage in patient suffering from hepatic disease

Skill station – 6 Hours

Assessment: Skill Assessment and Certification

PH 3.1Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient (integratation with General medicine)

3.1.1 Establish therapeutic goal/s, based on a diagnosis following standard treatment guidelines (STG)

3.1.2 Choose the appropriate drug/s for the given clinical condition

3.1.3 Choose the appropriate dose, route, frequency and duration of therapy for the chosen drug/s

3.1.4 Write a legible prescription as per MCI format

3.1.5 Provide appropriate information to the patient regarding the prescription 3.1.6 Review/alter prescription in the light of further investigation 3.1.7 Explain the legality (legal implications) of prescriptions.

Examples of 5 Exercises

1. Iron deficiency anemia due to hook worm infestation
2. Acute attack of Migraine
3. Newly diagnosed obese type 2 DM with Hypertension
4. UTI in pregnancy
5. Typhoid fever in a child

Skill Lab – 6 Hours

Assessment: Skill Assessment and Certification

PH 3.2 Perform and interpret a critical appraisal (audit) of a given prescription – 3 no.s

3.2.1 Demonstrate the understanding of importance of completeness of prescription

3.2.2 Demonstrate the understanding of clinical diagnosis for which drugs are prescribed

3.2.3 Demonstrate the understanding of MCI format of prescription

3.2.4 Identify and comment on any discrepancies in the completeness and legibility of the prescription

3.2.5 Identify and comment on any discrepancies in the selection of drug, drug form, dose, frequency, duration of the treatment, instructions according to STG

3.2.6 Re-Write the prescription correcting all the discrepancies identified

Skill Lab – 6 Hours

Assessment: Skill Assessment and Certification

PH 3.3 Perform a critical evaluation of the drug promotional Literature - Brainstorming followed by demonstration – 3 no.s (integratation with General medicine)

1.

3.3.1 Discuss the various types of sources of drug information
3.3.2 Demonstrate understanding of importance of critical evaluation of drug promotional liliterature
3.3.3 Critically evaluate the given drug promotional literature based on WHO criteria
a. Appropriateness of illustration
b. Relevance of references cited
c. Content of scientific information

Skill station – 4 Hours

Assessment: Skill Assessment – Log book

PH 3.4 To recognize and report an adverse drug reaction

3.4.1 Recognise an adverse drug reaction (ADR) in the given case
3.4.2 Perform causality assessment of the identified ADR using WHO & Naranjo's Scale
3.4.3 Fill the ADR reporting form (CDSCO from)
3.4.4 Explain the management of the ADR
3.4.5 Explain the methods to prevent the occurrence of the ADR
3.4.6 Report the ADR to the pharmacovigilance centre
3.4.7 Describe the Importance of reporting ADRs
3.4.8 Describe the various levels of reporting ADRs national and international centres Example of 3 cases:
1. Warfarin induced Bleeding
2. Aspirin (NSAID) induced Peptic Ulcer
3. Carbamazepine induced Steven Johnson Syndrome

Skill Station – 6 Hours

Assessment: Skill Assessment and Certification

PH 3.5 To prepare and explain a list of P- drugs for a given case/ condition – 3 no.s (integratation with General medicine)

3.5.1 Define the diagnosis
3.5.2 Specify the therapeutic objective
3.5.3 Make an inventory of effective groups of drugs
3.5.4 Choose an effective group of drug according to efficacy, safety and suitability criteria
3.5.5 Choose the P-Drug for the given clinical condition

Example of 3 Exercises
1. Angina Pectoris
2. Amoebic Dysentry
3. Anxiety

Skill Station – 2 Hours

Assessment: Skill Assessment – Log book

PH 3.6 Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs

1.

3.6.1 Enumerate the key elements in the WHO guidelines on Ethical criteria for medicinal drug promotion.

3.6.2 Direct the discussion with pharmaceutical representative so as to get the information he needs about the drug effectively.

3.6.3 Collect a copy of data sheet of the product under discussion.

3.6.4 Compare the verbal statements with those in the official text during presentation effectively.

3.6.5 Perform a prior literature search and check quality of research methodology of the drug under discussion including cost comparison.

3.6.6 Decide effectively whether to include the drug in personal formulary with regard to efficacy, safety and cost-effectiveness of medicines

Skill Station – 4 Hours Assessment: Skill Assessment – Log book

PH 3.7 Prepare a list of essential medicine for a health care facility

3.7.1 Understand the concept of Essential Medicines List for the nation/state/ health care facility

3.7.2 Identify the factors that determine the choice of drugs in an Essential Medicines List.

3.7.3 Prepare a list of essential medicines for a healthcare facility, with justification in a given scenario

Skill Lab – 4 Hours

Assessment: Skill Assessment

PH 3.8 Communicate effectively with a patient on proper use of prescribe medication

1. **Insulins**
2. Proton pump inhibitors
3. **Statins**
4. Ferrous sulphate tablets
5. **Co-Amoxiclav or Cotrimoxazole**

3.8.1 Communicate about the effects of the prescribed drug with regards to the following

a. Why the drug is needed
b. Which symptoms will disappear, and which will not
c. When the effect is expected to start
d. When the effect is expected to start

3.8.2 Communicate about the adverse effects of the prescribed drug with regards to the following

a. Which side effects may occur
b. How to recognize them
c. How long they will continue
d. How serious they are
e. What action to take

3.8.3 Communicate about the instructions of drug use as following:

a. How the drug should be taken
b. When it should be taken
c. How long the treatment should continue
d. How the drug should be stored

e. What to do with left-over drugs

3.8.4 Communicate about the warnings of the prescribed drug with regards to the following

a. When the drug should not be taken
b. What is the maximum dose
c. Why the full treatment course should be taken

3.8.5 Communicate about the future consultations with regards to the following:

a. When to come back (or not)
b. In what circumstances to come earlier
c. What information the doctor will need at the next appointment 3.8.6 Conclude the consultation by asking the following questions:

a. Ask the patient whether everything is understood
b. Ask the patient to repeat the most important information
c. Ask whether the patient has any more questions

DOAP sessions – 10 Hours Assessment: Skill Assessment

PH 4.1 Administer drugs through various routes in a simulated environment using mannequins

USE CHECKLIST FOR ASSESSMENT (refer WHO prescribing book)

Enteral

Oral route

4.1.1 Identify the different dosage forms administered through the Oral route and instructions given to the patient for administering it.
4.1.2 Present the merits and demerits of Oral route of drug administration.
4.1.3 Demonstrate the administration of the drugs through oral route.
4.1.4 Identify the different equipment required for Nasogastric tube (NGT) insertion 4.1.5 Demonstrate the Nasogastric tube insertion and present the purpose.
4.1.6 Demonstrate the positioning of the patient during NGT insertion.
4.1.7 Demonstrate the preparation of the feeds for NG feeding.

Sublingual/ Buccal

4.1.8 Demonstrate the administration of the drugs through Sublingual and Buccal route.
4.1.9 Present the instructions for administering the same and how to terminate the action of the drug.
4.1.10 Present the different examples with dosage forms for the same.

Transrectal 4.1.11 Identify the devices used to administer dosage forms through transrectal route.

4.1.12 Present the instructions to the patient before administering dosage forms through transcutaneous route.
4.1.13 Demonstrate the administration of suppositories by rectal route.
4.1.14 Demonstrate the administration of enema (Evacuant/ Retention) by rectal route.

Transvaginal

4.1.15 Identify the devices used to administer dosage forms through transvaginal route.
4.1.16 Present the instructions to the patient before administering dosage forms through transvaginal route.
4.1.17 Demonstrate the administration of pessary, creams and foams by vaginal route.
4.1.18 Demonstrate the administration of douche by vaginal route.
4.1.19 Identify different types of Intrauterine contraception
4.1.20 Present the instructions/counseling to the patients on intrauterine contraception.
4.1.21 Demonstrate the placement of intrauterine contraception using the stimulation setting

Parenteral

Intra Muscular injection

4.1.22 Identify the devices required for IM injection
4.1.23 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.24 Present instructions to the patient about the injection procedure.
4.1.25 Identify the sites of IM injection on mannequin and present merits and demerits of each site.
4.1.26 Demonstrate the proper technique for IM injection.

Intravenous injection

4.1.27 Identify the devices required for IV injection
4.1.28 Demonstrate the prerequisite preparations for injection along with aseptic precautions
4.1.29 Present instructions to the patient about the injection procedure.
4.1.30 Identify the sites of IV injection on mannequin
4.1.31 Demonstrate the proper technique for IV injection.

Subcutaneous injection

4.1.32 Identify the devices required for SC injection.
4.1.33 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.34 Present instructions to the patient about the injection procedure.
4.1.35 Identify the sites of SC injection on mannequin.
4.1.36 Demonstrate the proper technique for SC injection.

Intradermal injection

4.1.37 Identify the devices required for Intradermal injection.
4.1.38 Demonstrate the prerequisite preparations for injection along with aseptic precautions.
4.1.39 Present instructions to the patient about the injection procedure.
4.1.40 Demonstrate the proper technique for Intradermal injection.

Intracardiac injection

4.1.41 Demonstrate a proper technique for Intracardiac injection.
4.1.42 Demonstrate the prerequisite preparations for injection along with aseptic precautions.

Local/ Topical application

Transcutaneous – Iontophoresis, Inunction, Jet Injection, Transdermal delivery system 4.1.43 Identify the devices used to administer dosage forms through transcutaneous route.

4.1.44 Present the instructions to the patient before administering dosage forms through transcutaneous route.
4.1.45 Demonstrate the administration of dosage forms by Iontophoresis method.
4.1.46 Demonstrate the administration of dosage forms by Inunction method.
4.1.47 Demonstrate the administration of dosage forms by Jet Injection method.
4.1.48 Demonstrate the administration of Transdermal patches.

Transmucosal/ Inhalational

4.1.49 Document the inhalational devices used to administer inhalational dosage forms. 4.1.50 Present the merits and demerits of inhalational devices over one another
4.1.51 Present the instructions to the patient before using inhalational devices.
4.1.52 Demonstrate the administration of inhalational dosage forms.
4.1.53 Identify the different types of airway masks and intubation tubes. Present a method for selection of intubation tubes.
4.1.54 Demonstrate the administration of anesthetic/ therapeutic gases through airway masks and intubation tubes

Transnasal

4.1.55 Identify dosage forms administered transnasally.
4.1.56 Identify the devices used for administering dosage forms transnasally.
4.1.57 Present the merits and demerits of Transnasal route of drug administration.
4.1.58 Present the instructions to the patient before administering dosage forms by transnasal route.

Ophthalmic/ Ear route 4.1.59 Identify dosage forms administered by ophthalmic/ ear route.

4.1.60 Present the instructions to the patient before administering dosage forms by ophthalmic/ ear route.

Skill Lab – 6 Hours
Assessment: Skill Assessment

PH 4.2 Demonstrate the effects of drugs on blood pressure (vasopressor and vasodepressors with appropriate blockers) using computer aided learning

4.2.1 Choose the appropriate animal experiment to study the effects of drugs on blood pressure
4.2.2 Explain the differences in actions of different vasopressor (adrenaline, noradrenaline)
4.2.3 Explain the differences in actions of different vasodepressors (ACh, alpha blockers, histamine)
4.2.4 Analyse and interpret the graph obtained accurately on application of various drugs
4.2.5 Enumerate the therapeutic uses of vasopressors and vasodepressors

SGD – 2 Hours **Assessment: Skill Assessment**

PH 5.1 Communicate with the patient with empathy and ethics on all aspects of drug use (integration with General medicine)

5.1.1 Describe what information should be given to patients to allow them to make informed decisions
5.1.2 Communicate treatment plan and instructions to patient, at a suitable level of information
5.1.3 Engage in shared decision making where appropriate

SGD – 4 Hours

Assessment: Skill Assessment

PH 5.2 Communicate with the patient regarding optimal use of

1.Drug therapy
2.Devices 3. Storage s Drug

Therapy

5.2.1 Communicate about the effects of the prescribed drug with regards to the following:
i. Why the drug is needed
ii. Which symptoms will disappear, and which will not?
iii. When the effect is expected to start
iv. What will happen if the drug is taken incorrectly or not at all

5.2.2 Communicate about the adverse effects of the prescribed drug with regards to the following:
i. Which side effects may occur? ii. How to recognize them
iii. How long they will continue
iv. How serious they are
v. What action to take

5.2.3 Communicate about the instructions of drug use as following:
i. How the drug should be taken
ii. When it should be taken
iii. How long the treatment should continue
iv. How the drug should be stored
v. What to do with left-over drugs

5.2.4 Communicate about the warnings of the prescribed drug with regards to the following:

i. When the drug should not be taken
ii. What is the maximum dose?
iii. Why the full treatment course should be taken?

5.2.5 Communicate about the future consultations with regards to the following:

i. When to come back (or not)
ii. In what circumstances to come earlier
iii. What information the doctor will need at the next appointment

5.2.6 Conclude the consultation by asking the following questions:

i. Ask the patient whether everything is understood
ii. Ask the patient to repeat the most important information

Devices

5.2.7 The student should be able to communicate to patients on

i. Step wise points or instructions on use of device
ii. Communicate list of do's and don'ts on the device
iii. Demonstrate the proper use of device and ask the patient to show the same. iv. Methods on handling, cleaning and storage of device
v. Dangers of use of device on other persons, without the prescription of doctor
vi. Importance of keeping the device away from reach of the children vii. Contact number of manufacturers to be communicated on trouble shooting

Storage of Medicines

5.2.8 The student should be able to communicate to patients on

i. Ideal storage condition of a pharmaceutical product as per product label
ii. Ideal storage condition of a pharmaceutical product as per product label
iii. Effect of storage condition on potency and efficacy of the drug
iv. ill effects of improper storage condition on human consumption
v. Factors to be taken in to consideration for drug storage like sanitation, temperature, light, moisture, ventilation and segregation.
vi. Importance of storage of medicines away from reach of the children vii. Disposal of expired drugs

SGD – 4 Hours Assessment: Skill Assessment/ Short note

PH 5.3 Motivate patients with chronic diseases to adhere to the prescribed management by health care provider

5.3.1 Explain the term medication adherence
5.3.2 Explain the consequences of non-adherence in chronic diseases
5.3.3 Explain the methods to measure the medication adherence
5.3.4 Elicit the barriers affecting medication adherence

5.3.5 Explains the measures to be taken to motivate the patient to adhere to medications in chronic diseases

SGD – 2 Hours Assessment: Shortnote/ Viva Voce

PH 5.4 Explain to the patient the relationship between cost of treatment and patient compliance

5.4.1 Assess the cost of the treatment
5.4.2 Enumerate various factors influencing patient compliance (patient related, disease condition related, therapy related and health system related factors).
5.4.3 Explain the consequences of medication non-compliance in terms of cost to the patient
5.4.4 Communicate clearly to the patient about relationship between cost of treatment and compliance

SGD – 4 Hours
Assessment: Short Note, Viva voce

PH 5.5 Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management (integrate with Psychiatry)

5.5.1 Describe the term drug dependence
5.5.2 Enumerate the drugs that produce dependence
5.5.3 Describe the Legality involved in prescribing drugs likely to produce dependence (Drugs and Cosmetics Act, 1940; Pharmacy Act, 1948; Narcotic Drugs and Psychotropic substances Act, 1985)
5.5.4 Describe the clinical including psychosocial assessment of the patient before prescribing
5.5.5 Describe the importance of documentation of prescribing process
5.5.6 Describe the importance of periodic review of prescriptions
5.5.7 7. Describe the basic treatment regimens for various addictions and withdrawal states along with psycho-social rehabilitation

SGD – 4 hrs (Practical)
Assessment: Short notice, Viva voce

PH 5.6- Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs (integrate with Psychiatry)

5.6.1 The importance of complying with the doctor's instructions
5.6.2 The demerits of self-prescription
5.6.3 The importance of identifying and reporting ADRs to concerned authorities
5.6.4 Caution be taken while using drugs causing dependence
5.6.5 Safe use of OTC

SGD – 2 Hours

Assessment: Short notice, Viva voce

PH 5.7 Demonstrate an understanding of the legal and ethical aspects of prescribing drugs (integrate with Forensic Medicine)

Legal aspects

5.7.1 Explain who is entitled to prescribe medicines and the legal requirements involved
5.7.2 Describe the legal requirements associated with prescribing controlled drugs
5.7.3 Describe the legal implications of irrational prescription that could endanger the life of patients

Ethical aspects

5.7.4 Describe the importance of rational prescription
5.7.5 Explain the responsibilities of prescribing in a resource limited setting
5.7.6 Describe what information should be given to patients to allow them to make informed decisions
5.7.7 Explain why it is important to recognize limits of competence and to ask for help when needed
5.7.8 Explain the responsibility of all prescribers to update knowledge
5.7.9 Describe the importance of following clinical guidelines, protocols and formularies are appropriate

PANDEMIC MODULE 2.5

Therapeutic strategies including new drug development

SGD – 2 Hours Assessment: Short notice, Viva voce

PH 5.8 Demonstrate the use of drugs during a pandemic. (Integrate with General Medicine)

- Prepare a plan for evaluation of off-label use of a drug – repurposing
- Emergency use authorization – Compliance with regulatory authorities
- CDSCO/DCGI and US FDA
- Pharmacovigilance during a pandemic
- Ethical aspects of clinical trials in pandemic
- Visit to a pharmaceutical firm/ pharmacy lab to show various stages of drug development or an ADR monitoring exercise in clinical wards

DISTRIBUTON OF ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM) MODULE

SINO	MODULE	TOPIC	DEPARTMENT					No. of hours	Formative assessment	Summative assessment
			PA	MI	PH	CM	FM			
1	2.1	Foundation of communication						5	✓	-
2	2.2	Foundation of bioethics						2	-	✓
3	2.3	Health care as a right						2	-	✓
4	2.4	Working in a health care team						6	✓	-

5	**2.5**	**Bioethics-case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)**						**6**		
6	**2.6**	**BioethicsCase studies on patient autonomy and decision making (refusal of care including do not resuscitate and**						**5**		
		withdrawal of life Support)								
7	**2.7**	**Bioethics-Case studies on patient autonomy and decision making (consent for surgical procedures)**						**5**		

8	**2.8**	**What does it mean to be a family member of sick patient**						**6**		

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM- Forensic medicine.**

CERTIFIABLE COMPETENCIES

Competencies in knowledge domain

Sl no	Topic	Competency
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12
2	Autonomic Nervous System	PH 1.13 to PH 1.14
3	Autacoids	PH1.16
4	Drugs in anaesthetic practice:	PH 1.15, PH1.17 to PH 1.18
5	Central Nervous System	PH 1.19 to PH 1.23
6	Diuretics	PH 1.24
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35
8	Cardiovascular System	PH 1.26 to PH 1.31
9	Respiratory System:	PH 1.32 to PH 1.33
10	Gastrointestinal System	PH 1.34
11	Endocrine System	PH 1.36 to PH 1.41
12	Chemotherapy	PH 1.42 to PH 1.49
13	Miscellaneous	PH 1.50 to PH 1.64

Competencies in Skills:

There are **21** competencies in this domain. These include clinical pharmacy (04), Clinical Pharmacology (8), Experimental Pharmacology (2) and Communication (7) as given below.

Topic	Competency	Description
Clinical Pharmacy	PH 2.1	Demonstrate understanding of the use of various dosage forms **(oral/local/parenteral; solid/liquid)**
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.
	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature
	PH 3.4- **L**	To recognise and report an adverse drug reaction
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition
	PH 3.6-**L**	Demonstrate how to optimize interaction with pharmaceutical representative to get authentic information on drugs
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication
Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso- depressors with appropriate blockers) using CAL
Communication	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines
	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider
	PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance
	H5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management

	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs
	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs

C- Needs certification: 4 no.

L Needs Maintenance of a log book: 3 no.

CERTIFIABLE SKILLS

Certifiable skill - 1

Skill: PH 3.1 Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient. Student has to perform this activity 5 times to be certified

Certifiable skill - 2

Skill: PH 3.2 Perform and interpret a critical appraisal (audit) of a given prescription. Student has to perform this activity 3 times to be certified

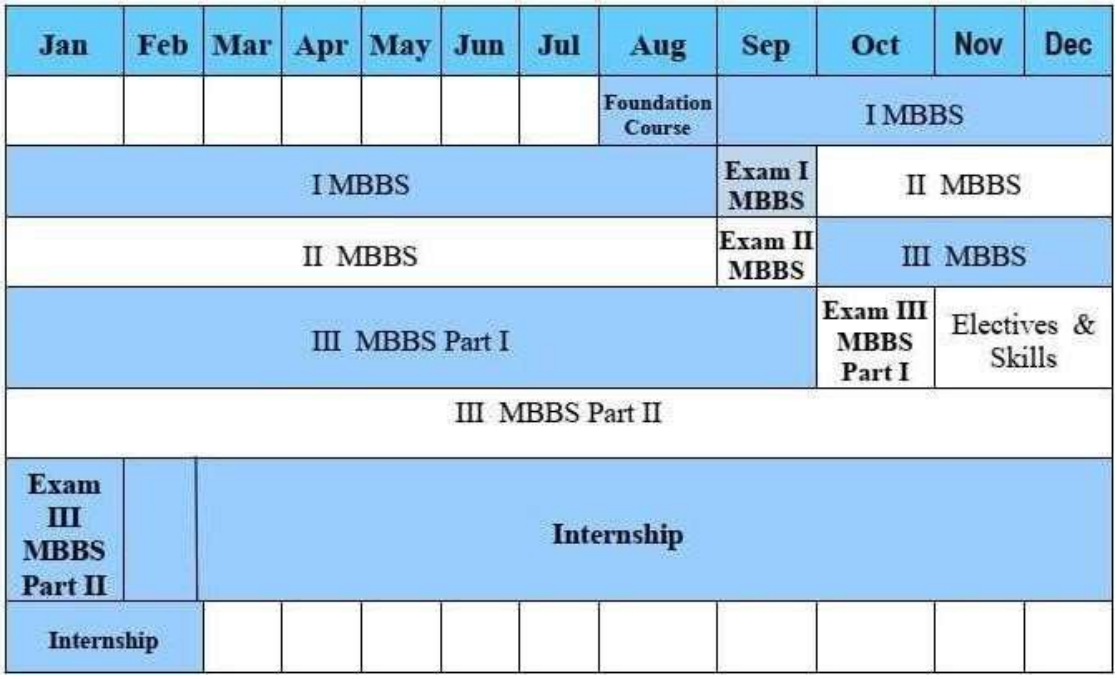
Certifiable skill - 3

Skill: PH 3.3 Perform a critical evaluation of the drug promotional literature. Student has to perform this activity 3 times to be certified

Certifiable skill - 4

Skill: PH 3.5 To prepare and explain a list of P-drugs for a given case/condition. Student has to perform this activity 3 times to be certified

EXAMINATION SCHEDULE



Competencies to be covered in each block

BLOCK I		BLOCK II		BLOCK III	
Competency	**Topics**	**Competency**	**Topics**	**Competency**	**Topic s**
PH 1.1-1.12, 1.52, 1.59, 1.60, 1.64	General Pharmacology Clinical Pharmacology And Toxicology	PH 1.26 - 1.31	Cardiovascular System	PH 1.36 – 1.41	Endocrine
PH 1.13-1.14	Autonomic Nervous System	PH 1.24	Diuretics	PH 1.42 - 1.48	Chemotherapy
PH 1.18-1.23	Central Nervous System	PH 1.32 - 1.33	Respiratory System	PH 1.49	Anti-Cancer Drugs
PH 1.15, 1.17	Peripheral Nervous System	PH 1.34	Gastrointestinal Tract	PH 1.50	Immunomodulators
PH 1.16	Autacoids	PH 1.57, 1.58	Drugs Used In Skin Diseases & Ocular Diseases		

PH 1.25 & 1.35	Blood And Blood Products & Anaemia	PH 1.51,1.53, 1.54,1.55, 1.62, 1.63	Miscellaneous (Vaccines Etc..,)		

TOPICS FOR HORIZONTAL INTEGRATION

	Pathology	**Microbiology**	**Pharmacology**	**Forensic Medicine**	**Commnity Medicine**	**Concerned Clinical subjects**
BLOCK 1	Immunology Anaemia Wound healing Shock	Immunology Anaemia Shock Surgical practice Infective endocarditis & Rheumatic heart disease Immunisation	Immunology Anaemia & anticoagulants Essential medicines Shock Toxicology Drugs of abuse (FM) ANTIBIOTIC STEWARDSHIP PROG (Micro+ Gen med+ Paed)	Wound healing Toxicology	Essential medicines	Shock Surgical practice Toxicology Infective endocarditis & Rheumatic heart disease Immunisation

BLOCK 2	Infective endocarditis & Rheumatic heart disease (Nesting) Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria	Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI	IHD (Path + Gen med) CHF (Path) Br Asthma COPD (Path+Pul med) PUD- (Physio + Gen med +Path) IBD &IBS (Path) Tuberculosis Leprosy (Micro + Dermat) AIDS Malaria		Tuberculosis Leprosy AIDS Malaria	Myocardial infarction Atherosclerosis Tuberculosis Leprosy AIDS Malaria Enteric fever Viral hepatitis Acid peptic disease Bone & Joint infection Meningitis Encephalitis STI

BLOCK 3	Diabetes mellitus Hepatitis (Sharing / Nesting)	Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Endocrines Thyroid, DM, Osteoporosis (Path) Malaria, Kala azar, Ameobiasis, Helminthiasis (Gen Med+Micro) HIV, UTI, STD (Micro) NHP (CM)		Diabetes mellitus Zoonotic disease Hospital acquired infection National health programs of communicable diseases	Diabetes mellitus Zoonotic disease Hospital acquired infection Endocrines

NOTE - National days of importance for AIDS, Leprosy, Tuberculosis, Malaria, Mental health, Breast feeding promotion, World health day, etc. can be used to conduct full day integration sessions for students

Beyond these topics, Institutions are free to integrate topics with concerned departments, wherever feasible within the MCI stipulations.

Minimum two of the suggested topics should be covered in each block.

1.

TOPICS FOR VERTICAL INTEGRATION

	COMPETENCY	
Number	The student should be able to	Vertical Integration
PH 1.15	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of skeletal muscle relaxants	Anesthesiology, Physiology
PH 1.16	Describe mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act by modulating autacoids, including: anti-histaminic, 5-HT modulating drugs, NSAIDs, drugs for gout, anti-rheumatic drugs, drugs for migraine	General Medicine
PH 1.17	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of local anesthetics	Anesthesiology
PH1.18	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of general anaesthetics, and pre- anesthetic medications	Anesthesiology
PH1.19	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs which act on CNS, (including anxiolytics, sedatives & hypnotics, anti-psychotic, anti- depressant drugs, antimaniacs, opioid agonists and antagonists, drugs used for neurodegenerative disorders, anti-epileptics drugs)	Psychiatry, Physiology
PH1.20	Describe the effects of acute and chronic ethanol intake	Psychiatry
PH1.21	Describe the symptoms and management of methanol and ethanol poisonings	General Medicine
PH1.22	Describe drugs of abuse (dependence, addiction, stimulants, depressants, psychedelics, drugs used for criminal offences)	Psychiatry
PH1.23	Describe the process and mechanism of drug deaddiction	Psychiatry

PH1.25	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs acting on blood, like anticoagulants, antiplatelets, fibrinolytics, plasma expanders	Physiology, General Medicine
PH1.26	Describe mechanisms of action, types, doses, side effects, indications and contraindications of the drugs modulating the renin- angiotensin and aldosterone system	Physiology, General Medicine
PH1.27	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antihypertensive drugs and drugs used in shock	General Medicine
PH1.28	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in ischemic heart disease (stable, unstable angina and myocardial infarction), peripheral vascular disease	General Medicine
PH1.29	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in congestive heart failure	General Medicine
PH1.30	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the antiarrhythmics	General Medicine

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PH1.31	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in the management of dyslipidemias	General Medicine
PH1.32	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in bronchial asthma and COPD	Respiratory Medicine

PH1.33	Describe the mechanism of action, types, doses, side effects, indications and contraindications of the drugs used in cough (antitussives, expectorants/ mucolytics)	Respiratory Medicine
PH1.34	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of the drugs used as below:	General Medicine
	1. Acid-peptic disease and GERD	
	2. Antiemetics and prokinetics	
	3. Antidiarrhoeals	
	4. Laxatives	
	5. Inflammatory Bowel Disease	
	6. Irritable Bowel Disorders, biliary and pancreatic diseases	
PH1.35	Describe the mechanism/s of action, types, doses, side effects, indications and contraindications of drugs used in hematological disorders like:	General

	1. Drugs used in anemias 2. Colony Stimulating factors	Medicine, Physiology
PH1.36	Describe the mechanism of action, types, doses, side effects, indications and contraindications of drugs used in endocrine disorders (diabetes mellitus, thyroid disorders and osteoporosis)	General Medicine
PH1.39	Describe mechanism of action, types, doses, side effects, indications and contraindications the drugs used for contraception	Obstetrics & Gynaecology
PH1.40	Describe mechanism of action, types, doses, side effects, indications and contraindications of 1. Drugs used in the treatment of infertility, and 2. Drugs used in erectile dysfunction	Obstetrics & Gynaecology
PH1.41	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of uterine relaxants and stimulants	Obstetrics & Gynaecology
PH1.43	Describe and discuss the rational use of antimicrobials including antibiotic stewardship program	General Medicine, Pediatrics
PH1.44	Describe the first line antitubercular dugs, their mechanisms of action, side effects and doses.	Respiratory Medicine
PH1.45	Describe the drugs used in MDR and XDR Tuberculosis	Respiratory Medicine

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PH1.46	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of antileprotic drugs	Dermatology, Venereology & Leprosy
PH1.47	Describe the mechanisms of action, types, doses, side effects, indications and contraindications of the drugs used in malaria, KALA- AZAR, amebiasis and intestinal helminthiasis	General Medicine
PH1.52	Describe management of common poisoning, insecticides, common sting and bites	General Medicine
PH1.56	Describe basic aspects of Geriatric and Pediatric pharmacology	Pediatrics
PH1.57	Describe drugs used in skin disorders	Dermatology, Venereology & Leprosy
PH1.58	Describe drugs used in Ocular disorders	Ophthalmology

PH2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations	Pediatrics, General Medicine
PH3.1	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient	General Medicine
PH3.3	Perform a critical evaluation of the drug promotional literature	General Medicine
PH3.5	To prepare and explain a list of P-drugs for a given case/condition	General Medicine

1.

PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use	General Medicine
PH5.4	Explain to the patient the relationship between cost of treatment and patient compliance	General Medicine
PH5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management	Psychiatry
PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs	Psychiatry

Column C: K- Knowledge, S – Skill, A - Attitude / professionalism, C- Communication.

Column D: K – Knows, KH - Knows How, SH - Shows how,

P- performs independently,

Column F: DOAP session – Demonstrate, Observe, Assess, Perform.

Column H: If entry is P: indicate how many procedures must be done independently for certification/ graduation

1.

EVALUATION METHODOLOGY

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - Done once in three months preferably at the end of each block.

Theory IA can include: Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: Practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to ten (10) per cent IA Practical marks should be for Practical record book assessment0

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

INTERNAL ASSESSMENT

1.

1. There will be 3 internal assessment examinations in Pharmacology. The structure of the internal assessment examinations should be preferably similar to the structure of University examinations.

2. It is mandatory for the students to appear for all the internal assessment examinations.

3. First internal assessment examination will be held after 3 months, second internal assessment examination will be held after six months and third internal assessment examination will be held after 9 months of Phase II curriculum.

4. Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment has to be conducted in the same pattern of the University exam

5. Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.

6. Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.

7. 20% of the internal assessment marks should be from Formative Assessment in both Theory and Practical

8. Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

9. The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

10. It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

11. Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

12. Internal assessment should be based on competencies and skills.

13. Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.

1.

14. **Average marks obtained in all three internal assessments should be calculated to 40 marks**.

15. A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

1.

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

THEORY

GENERAL INSTRUCTIONS

1. The topics for the two papers are distributed
2. Questions in each paper will be as per distribution
3. The SLO needs to be referred while setting the question paper
4. Repetition of questions from the same SLO to be avoided
5. The marks allotted to the different topics & sections to be adhered
6. Questions to be covered from the different sections of Pharmacology

THEORY EXAMINATION-2 PAPERS OF 100 MARKS EACH
Distribution of marks:

Sl no. *T*	*ype of questions*	*Marks per questio n*	*Number of question s*	*Total marks*
1	**Long Essay (LE)**	**10**	**2**	**20**
2	**Short Essay (SE)**	**5**	**10**	**50**
3	**Short Answer (SA)**	**3**	**10**	**30**

Long essay

The question should pose a clinical/practical problem to the students and require them to apply knowledge and integrate it with disciplines. Avoid giving one liners as questions. The question stem should be structured and marking distribution should be provided. Use action verbs from higher domains as given in this document. Please avoid simple recall based questions. What is asked in the examination generally sets the agenda of what and how the students learn.

Short essay: These provide opportunity to sample a wider content, albeit in a short time. The questions should be task oriented rather than Write a short note on xxx
Short answer: Question based on applied aspect

1.

SUMMATIVE ASSESSMENT/ UNIVERSITY EXAM

PRACTICALS

Total Marks – 100 (Practical: 80 + Viva voce: 20)

Sl. No.	Competency	Topics	Teaching hours	For university exams	Max. marks in exams
1	PH 2.1	Dosage forms	14 hours	TABLE VIVA	10 marks
2	PH 2.2	ORS	4 hours	Correction only	10 marks
3	PH 2.3	I.V Drip	4 hours	DEMO only	
4	PH 2.4	Drug Dose Calculation	4 hours	Correction only	10marks
5	PH 3.1	Prescription Writing	6 hours	Correction only	10 marks
6	PH 3.2	Prescription Audit / CCR	6 hours	LOG BOOK	
7	PH 3.3	Drug Promotional Literature(DPL)	6 hours	TABLE VIVA with 2.2	Alternate with ORS for 10 marks
8	PH 3.4	ADR	4 hours	TABLE VIVA	10 marks
9	PH 3.5	P Drugs	6hours	LOG BOOK	
10	PH 3.6	Interaction with Pharma Representative	2 hours	Role play, LOG BOOK	
11	PH 3.7	Essential Medicines	4 hours	LOG BOOK	
12	PH 3.8	Drug Counseling	4 hours	TABLE VIVA	10marks
13	PH 4.1	Routes in Manequins	10 hours	DEMO only	
14	PH 4.2	Computer Aided Learning CAL	6 hours	Correction / TABLE VIVA	10 marks
15	PH 5.1	Empathy, ethics	SGD 2 hours	TABLE VIVA with 3.8	10 marks

16	PH 5.2	Drug therapy storage	SGD 4 hours	TABLE VIVA with 3.8	10 marks
17	PH 5.3	Adherence	SGD 4 hours	Short notetheory	
18	PH 5.4	Cost & compliance	SGD 2 hours	Short notetheory	
19	PH 5.5	Dependence	SGD 4 hours	Short notetheory	
20	PH 5.6	OTC	SGD 4 hours	TABLE VIVA Along with 3.4	10 marks
21	PH 5.7	Legal, ethical aspects	SGD 2 hours	Short notetheory	
		Total hours	Practical 80 hours + SGD 22 hours		

University exams (total 80 marks) Each exercise 10 marks

Examiner	**1st**	**2nd**	**3rd**	**4th**
Correction only	Drug dose calculation 2.4/ OTC 5.6 **10 marks**	ORS/ DPL 2.2/3.3 **10 marks**	Prescription 3.1 **10 marks**	Spotters **10 marks**
Table Viva	Dosage form 2.1 **10 marks**	CAL Graph 4.2 **10 marks**	ADR 3.4 **10 marks**	Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **10 marks**

PROPOSED MARKS ALLOCATION FOR PRACTICAL INTERNAL ASSESSMENT

Sl No	**Assessment**	**Marks allotted**		
		First IA	**Second IA**	**Third (Final) IA**
1	Spotters	**10 Marks**	**10 Marks**	**10 Marks**

2	Exercises - Writing	**10 Marks** • ORS 2.2 / Drug promotional literature 3.3 (5 marks) • Drug dose calculation2.4/OTC 5.6 (5 marks)	**10 Marks** Prescription writing 3.1	**10x3 = 30 Marks** • Drug dose calculation 2.4/ OTC 5.6 (10 marks) • ORS 2.2/ Drug promotional literature 3.3 (10 marks) • Prescription writing 3.1 (10 marks)
3	OSPE-Table viva	**15 Marks** Dosage form 2.1 (10 marks) Graph-CAL 4.2 (5marks)	**15 Marks** ADR 3.4 (10 marks) Drug therapy/Empathy/ Counselling 3.8, 5.1, 5.2 (5Marks)	**10x4= 40 Marks** • Dosage form 2.1 **(10 marks)** • CAL Graph 4.2 **(10marks)** • ADR 3.4 **(10 marks)** • Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **(10marks)**
4	Record Assessment	**05 Marks 05 Marks 20**	**Marks**	
Total		**40**	**40**	**100**

Note: Certifiable competencies/AETCOM should be completed in Formative/Internal assessment

BLUE- PRINT FOR THEORY PAPER – PHARMACOLOGY

Weightage matrix determines the weightage given to a particular topic. The weightage was calculated based on Perceived impact / importance of a topic - impact on health (I) and frequency (F) of occurrence of a particular disease or health problem.

Overall weight for a topic/system is the product of Impact and

Frequency (I x F) t = Total weights

Weightage for each topic: W = I x F/t

Number of marks allocated in exams N = W x

T Where T is the total marks in university

examination.

Sl no.	PAPER I- Topics	Competencies	Impact	Frequency	Weightage	Marks	Nature of Questions
1	General Pharmacology- Sources, Routes, PK, PD, ADR+ Clinical pharmacology- TDM, Factors	PH 1.1 TO PH 1.12.	2	2	0.18 18		LE, SE, SA
2	Autonomic nervous systemAdrenergic, cholinergics and their agonists & Antagonists	PH 1.13 TO PH 1.14	2 2 0.18	18			LE, SE, SA
3	Central nervous system- GA, including substances of abuse &Opioids	PH 1.18 TO PH 1.23	2 3 0.2	27 7			LE, SE, SA
4	Peripheral nervous system (Local anaesthetics, skeletal muscle relaxants)	PH 1.15, PH 1.17					SE, SA

5	Autacoids (Prostaglandins, histamine and antihistamines, Treatment of migraine) & NSAIDS & Drugs used in the treatment of gout and rheumatoid arthritis	PH 1.16	1 2 0.	0 9 9			SE, SA
6	Respiratory system	PH 1.32, PH 1.33	1 2 0.	09 9			SE, SA
7	Gastrointesti nal system	PH 1.34	1 2 0.	09 9			SE, SA

8	Occupational and environmental pesticides, food adulterants, Pollutants & insect repellents, Common poisoning, insecticides, stings & bites, **Chelating agents**, EDL, FDC, OTC, Herbal medicines, Pharmacogenomics, Pharmacoeconomics, Drug therapy in special population, Geriatric &Pediatric pharmacology, Drug regulations, Phases of clinical trial, GCP, Drug development Pharmacovigilance	PH 1.51, PH 1.52, **PH 1.53,** PH 1.59, PH 1.60, PH 1.56, PH 1.63, PH 1.64	2 1 0.0	9 9			SE, SA
	Total				**99**		

∑I X F = 22 = t

Justification:

- **General pharmacology** deals with the principles of drug action. It explains the pharmacological basis for the use of a specific drug in a disease condition. The

student should be assessed with regards to the various concepts in general pharmacology and its clinical application. Hence 20 marks is allocated to this topic.

- **Autonomic nervous system:** There are a number of drugs acting through this system with clinical application in diseases affecting different organ systems. Hence 20 marks is allocated to this system.

- **Central nervous system:** 9.2% of 55.4% Disability Adjusted Life Years (DALY) for non- communicable diseases was from neurological, mental and substance abuse related disorders

  a

  s per a study in 2016 [1]. Hence 25 marks is allocated to CNS and peripheral nervous system.

- **Autacoids, drugs for rheumatoid arthritis and gout:** Around 4% of the patients had arthritis/joint pain as diagnosed by primary health care (PHC) physicians in India [2]. Hence 10 marks has been allocated to this topic.

- **Gastrointestinal system:** Gastrointestinal symptoms were the second most common cause of a visit to a health-care practitioner 25% in Poseidon study [2].

- **Respiratory system:** Symptoms related to respiratory system were the main cause of a visit to a health-care practitioner (50.6%) in Poseidon study[2]. Hence 10 marks allocated to assess this system.

- **Miscellaneous topics** have been allocated 5 marks

BLUE- PRINT FOR THEORY PAPER – II

Sl no.	PAPER II- Topics	Competencies I	act Fr	frequency Weigh	tage Marks		Nature of questions
1	Endocrines including Hormonal contraceptives+ **Drugs acting on uterus**	PH 1.36 To PH1.41	2	3	0.24	24	LE, SE, SA
2	Drugs acting on blood- Anticoagulants, Antiplatelets, Fibrinolytics, Plasma expanders, Anemia, CSF	PH 1.25, PH 1.35	3	3	0.36	36	SE, SA
3	Diuretics and antidiuretics	PH 1.24					SE, SA
4	Cardiovascular system + treatment of shock Dyslipidemia	PH1.42 To PH 1.48, PH 1.50					LE, SE, SA
5	Chemotherapy	PH 1.49	2	0.24	24		LE,SE, SA
6	Anti cancer agents& Immunomodulators	PH 1.26 To PH1.31	1	0.08	8		SE, SA
7	Drugs to treat skin disorders, Drugs to treat ocular diseases,	PH 1.57, PH 1.58,	1	0.04	4		SE, SA
8	Vitamins, Vaccines, NHP, Nutraceuticals, Antiseptics and disinfectants,	PH 1.54, PH 1.55, PH 1.61, PH 1.62	1	0.04	4		SE, SA
	Total					**100**	

Justification:

- **Endocrines:** Diabetes and hypothyroidism are common endocrine conditions that a PHC physician will encounter. Approximately 9% of the patients who came to PHC were found to be diabetic [2]. Hence 25 marks is allocated to endocrinology.

- **Cardiovascular system including blood and diuretics:** Incidence of noncommunicable diseases are on the rise in India. Cardiovascular diseases contributed to 14% of the DALYs [1] and hypertension, ischemic heart disease, cardiac failure, obesity and cerebrovascular accidents together contributed to around 20% of the patients seen by a PHC physician [2]. The student needs to be assessed in all these topics and hence 30 marks have been allocated.
- **Chemotherapy:** Antibiotics form the main stay of treatment for infectious diseases. Infections like tuberculosis (TB) and malaria being endemic in India, assessing its treatment becomes important. Also, with antibiotic resistance emerging as a major health care problem, knowledge about the indications, adverse drug reactions and rational use of antibiotics is imperative. Hence 30 marks have been allocated to this topic.

- **Immunomodulators, anti-cancer agents, vaccines, vitamins etc.:** The student should be aware of these drugs and have basic knowledge about these topics. Hence 15 marks have been allocated to these topics.

References:

1. Indian Council of Medical Research, Public Health Foundation of India, and Institute for Health Metrics and Evaluation. India: Health of the Nation's States — The India State-Level Disease Burden Initiative. New Delhi, India: ICMR, PHFI, and IHME; 2017.
2. Sundeep Salvi, Komalkirti Apte, Sapna Madas, Monica Barne, Sushmeeta Chhowala, Tavpritesh Sethi, Kunal Aggarwal, Anurag Agrawal, Jaideep Gogtay. Symptoms and medical conditions in 204 912 patientsvisiting primary health-care practitioners in India: a 1-daypoint prevalence study (the POSEIDON study) Lancet Glob Health 2015;3: e776–84

PRACTICAL EXAMINATION- BLUE PRINT- Final University exams

Exercise 1: Drug dose calculation or OTC- Marks: 10, Duration: 15 minutes

Student will be given a problem statement and asked to calculate the appropriate

dose of drug/s. OR Student will be given a set of questions to evaluate the

understanding of OTC Drugs

Evaluation is by the correction of the problem and OTC questions.

Exercise 2: Oral rehydration solution or critical evaluation of drug promotional literature Marks: 10, Duration: 30 minutes

ORS: A clinical scenario will be given to the student and asked to answer a set of questions related to scenario OR

DPL: Hard copy of one drug promotional literature will be given to the student and asked to evaluate according to the WHO criteria

Evaluation based on checklist.

Exercise 3: Prescription writing, Marks: 10, Duration: 15 minutes

A clinical case scenario is given to the student and asked to write appropriate prescription for the given clinical scenario.

Evaluation will be based on the checklist.

Exercise 4: Spotters, Marks: 10, Duration: 15 minutes

Questions based on all practical exercises, one mark each, one minute for each question, total of 10 questions will be given

Evaluation based on correction.

Exercise 5: Dosage form, Marks: 10, Duration: 30 minutes (Competency 2.1)

A clinical scenario is given to the student. The student will be asked to answer a set of questions related to scenario.

Evaluation based on checklist.

Exercise 6: Graph interpretation based on computer assisted learning, Marks: 10, Duration: 15 minutes

A graph will be given to the student.

The student will be asked to interpret and draw inference from

the graph Evaluation based on checklist.

Exercise 7: Adverse drug reactions, Marks: 10, Duration: 30 minutes

A clinical scenario will be given to the student. The student will be asked to answer a set of questions related to ADR scenario.

Evaluation based on checklist.

Exercise 8: Drug counselling and communication, & Drug therapy & storage Empathy & ethics - Marks: 10, Duration: 30 minutes

A clinical scenario will be given to the student. The student will be asked to answer a set of questions related to scenario.

Evaluation based on checklist

PRACTICAL BLUE PRINT-University exams (Total 80 marks) Each exercise 10 marks

Examiner	**1st**	**2nd**	**3rd**	**4th**
For Correction	Drug dose calculation 2.4/ OTC 5.6 **10 marks**	ORS 2.2/ DPL 3.3 **10 marks**	Prescription 3.1 **10 marks**	Spotters **10 marks**
For OSCE/Table Viva	Dosage form 2.1 **10 marks**	CAL Graph 4.2 **10 marks**	ADR 3.4 **10 marks**	Drug counselling 3.8 / Drug therapy & storage 5.2 / Empathy & ethics 5.1 **10 marks**

MODEL QUESTION PAPERS

Paper I

QP Code-

***Answer ALL questions. Draw diagrams wherever* necessary**

Time: 3 Hours Maximum Marks: 100

Long Essay(2 X10 Marks =20 Marks)

1. A 30 year old lady was brought to the Neurology OPD with history of three episodes of fits in the last 10 days. She gave a history of head injury six month back following a car accident. Neurological examination revealed no abnormality. Awake EEG of the patient and the MRI scan of the brain were normal. Based on the typical description of the fit, the neurologist made a diagnosis of Generalized Tonic Clonic Seizures (GTCS) and antiepileptic medications were started.
    1.1 Which are the antiepileptic drugs appropriate for this patient? [1 Marks]
    1.2 Explain the mechanism of action of any one of them [4 Marks]
    1.3 Discuss its adverse effects? [2 Marks]
    1.4 What are the advantages of newer antiepileptic drugs compared to the conventional drugs in this patient? [3 Marks]
2. 2.1 Enlist different types of receptors with examples of drugs acting through them [2+2 Marks]
   2.2 Describe the factors modifying drug action and their clinical significance [3+3 Marks]

Short Essays [10X5 Marks=50 Marks]

3. What is bioavailability? Explain the clinical significance. [3+2 marks]
4. Compare and contrast Nitrous oxide and halothane [2.5+2.5 marks]
5. Discuss the treatment of organophosphorus (OP) poisoning with rationale [2+3]
6. Describe the therapeutic uses and adverse effects of beta blockers[2.5+2.5 marks]
7. A 30-year-old man presented with progressive worsening of shortness of breath. He was exposed to dust while cleaning his office room and gave past history of severe asthma and multiple hospitalizations. His peak flow rates are decreased by nearly 50% from baseline and was diagnosed with *acute severe asthma*.
    7.1 Discuss the pharmacological management of this patient [3 Marks]
    7.2 Which are the drugs used in combination therapy and give the rationale[2 marks]
8. Discuss the pharmacological management of a patient with *Helicobacter pylori* infection [5 Marks]
9. Rationale for the use of succinylcholine during intubation and discuss its adverse effects [2+3 Marks]
10. Describe the uses and adverse effects of Aspirin [3+2 Marks]
11. Why is allopurinol used in chronic gout? What are it adverse effects [3+ 2

Marks]

12. Discuss the uses and adverse effects of metoclopramide [3+2 Marks]

Short Answers: [10X3 Marks=30Marks]

13. What is the rationale for prescribing terazosin in Benign Prostatic Hypertrophy?
14. Explain the role of prostaglandin analogues in the management of glaucoma
15. Why is glycopyrrolate used as a preanesthetic medication?
16. Explain the clinical significance of redistribution with a suitable example
17. Write the advantages and disadvantages of sublingual route of administration of drugs
18. Rationale for combining Levodopa with Carbidopa in the treatment of parkinsonism
19. Whys is morphine given in acute left ventricular failure?
20. Explain the role of inhaled corticosteroids [ICS] in Bronchial asthma
21. Why is deferoxamine used in iron poisoning?
22. What is the rationale for the use of Nicotine replacement therapy in smoking cessation?

Paper II

QP Code-

Answer ALL questions. Draw diagrams wherever necessary

Time: 3 Hours **Maximum Marks: 100**

Long Essay (10 Marks X 2=20 marks)

1. A14-year-old boy presented with polyuria, polydipsia and weight loss of about 6 kg in last 3 months. His biochemical evaluation showed FBS 280mg/dl; PPBS 370mg/dl; HbA1c 10.4%. After assessment, his diagnosis was Type 1 Diabetes mellitus

1.1 Discuss the pharmacological management of this patient [5 marks]

1.2 What are the expected adverse effects of the medications? [3 marks]

1.3 Explain the precautions to be taken to prevent the adverse effects? [2 marks]

2. 2.1 Enumerate the first line drugs used in the treatment of tuberculosis [2 Marks]

2.2 Discuss the mechanism of action and adverse effects of any one of them [2.5+ 2.5 Marks]

2.3 Explain the regimen for the treatment of Multi-Drug Resistant (MDR) tuberculosis [3 marks]

Short Essays [5 Marks X10=50 Marks]

3. Describe the uses and adverse effects of Corticosteroids [2.5+2.5 marks]
4. Explain the mechanism of action and adverse effects of aminoglycosides [2.5 +2.5 marks]

5. Discuss the Mechanism of action, adverse effects and uses of Clomiphene Citrate [2+ 1+ 2 marks]
6. Explain the therapeutic uses and adverse effects of Zidovudine [3+2 marks]
7. Describe the mechanism of action and therapeutic use of Bisphosphonates [3+2 marks]
8. Describe the uses and adverse effects of Heparin [2+3]
9. Explain the mechanism of action and therapeutic uses of Angiotensin Converting Enzyme Inhibitors [2.5+2.5 marks]
10. What is role of calcium channel blockers in treatment hypertension? Discuss their adverse effects [3+2 marks]
11. A patient is being discharged from hospital after treatment of an otherwise uneventful acute myocardial infarction (MI). He is a known hypertensive and was found to have elevated LDL during this admission. His blood sugars are normal.
    11.1 Discuss the drug treatment for secondary prevention of MI in this patient [2 marks]
    11.2 Discuss the mechanism of action and adverse effects of statins [2+1 marks]
12. Explain the uses and adverse effects of Vinca alkaloids

Short Answers: [3 Marks X10=30 Marks]

13. Enlist plasma expanders and explain their adverse effects [2+1]
14. Why is prolonged use of chloroquine NOT preferred in patients with visual problems?
15. Why is tetracycline NOT preferred in children?
16. What is the rationale for the use of Coal tar in Psoriasis?
17. Explain the uses of clindamycin
18. Why are diuretics NOT preferred in pregnancy induced hypertension?
19. Why is penicillin combined with Cilastatin?
20. Why is Nimodipine prescribed in subarachnoid haemorrhage?
21. Explain the rationale for combining a beta blocker and long acting nitrate is in classical angina?
22. Explain the role of folinic acid in minimizing methotrexate toxicity.

7. The topics for the two papers are distributed
8. Questions in each paper will be as per distribution
9. The SLO needs to be referred while setting the question paper
10. Repetition of questions from the same SLO to be avoided
11. The marks allotted to the different topics & sections to be adhered.
12. Questions to be covered from the different sections of Pathology

Competenies for Skill Communication (No. 2.1 to 5.7)

PH 2.1	**Demonstrate understanding of the use of various dosage forms**	**Marks**
1	Chooses the appropriate dosage form for given clinical scenario	1
2	Describes the reason for choosing the particular dosage form	2
3	Provides the appropriate instructions to be followed for administering the chosen dosage form	4
4	Describes the merits and demerits of the given dosage form	1
5	Explains the components of the commercial label	2
	Total	**10**

PH 2.2	**Prepare oral rehydration solution from ORS packet and explain its use**	**Marks**
1	Describes the causes and clinical assessment of dehydration	1
2	Enumerate the different types of ORS along with their composition with actions of each ingredient	2
3	Choose the appropriate type of ORS for a given condition/patient	1
4	Calculate the quantity of ORS required to correct / prevent dehydration	1
5	Demonstrate preparation of ORS from sachet	4
6	Enumerate non-diarrheal uses of ORS	1
	Total	**10**

PH 3.1	**Check list for Prescription writing**	**Marks**
1	Particulars of Prescriber: Name, qualification, registration number, address, contact details	0.5
2	Date	0.5
3	Particulars of patient: Name, Address, age, gender, height, weight, LMP if applicable	1
4	Clinical details: Chief complaints, history, examination/lab diagnosis, Diagnosis	1
5	Generic name with capital	1
6	Drug form	1
7	Dose	1
8	Frequency	1
9	Duration	1
10	Label: instructions, warnings	1
11	Signature of prescriber	1

	TOTAL	**10 MARKS**

PH 3.3	**Perform a critical evaluation of the drug promotional Literature**	**Marks**
1	Discuss the various types of sources of drug information	2
2	Demonstrate understanding of importance of critical evaluation of drug promotional literature	2
3	Critically evaluate the given drug promotional literature based on WHO criteria	
	▫ Appropriateness of illustration	2
	▫ Relevance of references cited	2
	▫ Content of scientific information	2
	TOTAL	**10**

PH 3.4	**To recognize and report an adverse drug reaction**	**Marks**
1	Describes the drug therapy of the given case and explains the rationality of prescription	1
2	Recognise an adverse drug reaction (ADR) in the given case	1
3	Perform causality assessment of the identified ADR using WHO & Naranjo's Scale	2
4	Fill the ADR reporting form (CDSCO from)	2
5	Explain the management of the ADR	1
6	Explain the methods to prevent the occurrence of the ADR	1
7	Report the ADR to the pharmacovigilance centre	1
8	Describe the Importance of reporting ADRs and pharmacovigilance	1
	Total	**10**

PH 4.2	**Graph interpretation from CAL**	**Marks**
1	Describes the Graph (Observation)	2
2	Interprets the graph (Pharmacological actions, receptors, any phenomenon etc)	4
3	Describes the inference drawn from graph	2
4	Implication of the graph	2
	Total	**10**

PH 3.8, 5.1, 5.2, 5.6	Communicate with the patient on all aspects of drug use	Marks
1	Describes and comment appropriately on the drug therapy	2
2	Demonstrates effective clinical communication skills	4
3	Describes the ethical/ legal considerations around the case appropriately	2
4	Demonstrates empathy effectively	2
	Total	**10**

Linker cases:

Case 1: Drugs used for criminal offences (Pharmacology

+ Forensic medicine) Case 2: Bronchial asthma

(Pharmacology+ Respiratory medicine)

Case 3: Antibiotic stewardship programme (Pharmacology+ Microbiology+ General medicine+ Paediatrics)

Case 4: Renin angiotensin system

(Pharmacology+ Physiology) Case 5: Oral contraceptive

pills (Pharmacology+ OBG)

Case 6: Anaemia (Pharmacology+ Physiology+ Pathology+ General

medicine+ Paediatrics) Case 7: National programmes of TB,

Malaria etc (Pharmacology+PSM)

BOOKS

Recommended Books: (Latest editions are recommended)

- Basic references

1. KD Tripathi, Essentials of Medical Pharmacology, 8 th Edition.
2. Padmaja Udaykumar, Medical Pharmacology, 6 th (CBME) Edition
3. HL Sharma and KK Sharma, Principles of Pharmacology, 3 rd Edition.
4. RS Satoskar, Nirmala N Rege, Raakhi K Tripathi, S D Bhandarkar. Pharmacology and Pharmacotherapeutics, 25thEdition.

Reference Books: (Latest editions -recommended)

- Advanced references (may also include journals/ web/ other electronic sources).

1. Goodman & Gilman's -The Pharmacological Basis of Therapeutics, ed. Laurence L Brunton, Bruce A. Chabner, Bjorn Knollman.13th Edition.
2. Lippincott Illustrated Reviews: Pharmacology ed. Karen Whalen
3. Bertram G. Katzung and Anthony J. Trevor, Basic and Clinical Pharmacology,14 th

   Edition
4. David E Golan, Ehrin J Armstrong, April W Armstrong, Principles of Pharmacology –

   The Pathophysiologic basis of Drug therapy,4th Edition.
5. Indian Journal of Pharmacology
6. Indian journal of physiology and pharmacology

Rajiv Gandhi University of Health Sciences

Bangalore, Karnataka

PHARMACOLOGY

LOGBOOK

FOR

PHASE II MBBS AS

PER

Competency-Based Medical Education Curriculum

College Emblem

Stamp size photo

Name and address of the college

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Pharmacology

Logbook

Name of the student:

Contact Number:

Email id:

Date of admission to MBBS course:

Date of beginning of the current phase:

Reg. No. (College ID):

Reg. No. (University ID):

INDEX

BONAFIDE CERTIFICATE

(INDIVIDUAL COLLEGE NAME)

This is to certify that the candidate ……

Reg No……..... has satisfactorily completed all requirements mentioned in this Logbook for Phase II MBBS in PHARMACOLOGY including related AETCOM modules as per the Competency-Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019 during the period from ……... …….to ……...

He/ She is eligible to appear for the summative (University) assessment.

Faculty Mentor: **Head of Department:**

Name: **Name:**

Signature: **Signature:**

Place:

Date:

PREFACE

This logbook is designed to follow and record your academic journey through the Pharmacology course. The skills you acquire in order to be a clinician will be certified and documented in this book. The logbook has **six sections**.

Section1 contains the **CBME Pharmacology curriculum**. It includes the topics that would be covered during the course.

Section 2 provides your participation in **Attitude, Ethics and Communication (AETCOM)** modules related to Pharmacology.

Section 3 consists of the **scheme and summary of formative assessments** in Pharmacology, including the internal assessments.

Section 4 documents (4.1) the **procedures that require certification** and (4.2) **those do not require certification** but **only the maintenance of a logbook**. These skills that require certification include prescribing medications, ability to identify and prescribe P drugs and critically evaluate a drug promotional literature etc.

Section 5 is the documentation of the periodic **feedback** that you have received through the course.

Section 6 documents **additional-curricular activities** (Seminars, conference, workshops attended, scientific project presentations, outreach activities, etc.) and **extracurricular activities.**

We hope that this logbook serves as a guide and facilitates your progress through the year.

GENERAL INSTRUCTIONS

1. This logbook is a record of the academic/co-curricular activities in Pharmacology of the designated student.
2. The student is responsible for getting the entries in the logbook verified by the faculty in-charge regularly
3. Entries in the Logbook will reflect the activities undertaken in the department of Pharmacology during your course

4. The student has to get this logbook verified by the mentor and the Head of the department before submitting the application of the University examination.

SUMMARY OF ATTENDANCE

Block/Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
First Block			NA		
Second Block			NA		
Third Block			NA		

Attendance at the end of MBBS Phase II					

SUMMARY OF INTERNAL ASSESSMENT (IA)

Sl. No.	*Internal Assessment*	*Date of Assessment*	*Total marks*		*Marks scored*		*Signature of student*	*Signature of teacher*
			Theory	*Practical*	*Theory*	*Practical*		
	First							
	Second							
	Third							
	Remedial							

Note: A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/she successfully completes the same, he/she is eligible to appear for University Examinations. The remedial assessment shall be completed before submitting the internal assessment marks online to the University.

SECTION: 1

Competencies in Pharmacology

Competency-Based Medical Education (CBME) curriculum in Pharmacology

Pharmacology provides the backbone of therapeutics. Undergraduate (MBBS) students completing the course in Pharmacology should be able to understand the general principles of drug action and handling of the drug by the body. They should be able to select and prescribe the right drug according to the patient's need for prevention, diagnosis and treatment of common diseases and be able to recognize the side effects and adverse effects of the commonly used drugs.

Competencies in Pharmacology:

There are **85** competencies in Pharmacology that have been listed in the CBME curriculum by the MCI. They can be categorized into knowledge and skills domains as given below. There are **64** competencies in the knowledge domain

1.A Competencies in the knowledge domain

Sl no	Topic	Competency
1	General Pharmacology Toxicology Clinical Pharmacology and rational drug use	PH 1.1 to PH 1.12
2	Autonomic Nervous System	PH 1.13 to PH 1.14
3	Autocoids	PH1.16
4	Drugs in anaesthetic practise:	PH 1.15, PH1.17 to PH 1.18
5	Central Nervous System	PH 1.19 to PH 1.23
6	Diuretics	PH 1.24
7	Drugs affecting blood and blood formation	PH 1.25, PH 1.35
8	Cardiovascular System	PH 1.26 to PH 1.31
9	Respiratory System:	PH 1.32 to PH 1.33
10	Gastrointestinal System	PH 1.34
11	Endocrine System	PH 1.36 to PH 1.41
12	Chemotherapy	PH 1.42 to PH 1.49
13	Miscellaneous	PH 1.50 to PH 1.64

Competencies in Skills: There are **21** competencies in this domain. These include clinical pharmacy
(04), Clinical Pharmacology (08), Experimental Pharmacology (02) and Communication (07) as given below.

1.B Competencies in Skills

Topic	Competency	Description
Clinical Pharmacy	PH 2.1	Demonstrate an understanding of the use of various dosage forms (oral/local/parenteral; solid/liquid)
	PH 2.2	Prepare oral rehydration solution from ORS packet and explain its use
	PH 2.3	Demonstrate the appropriate setting up of an intravenous drip in a simulated environment.

	PH 2.4	Demonstrate the correct method of calculation of drug dosage in patients including those used in special situations
Clinical Pharmacology	PH 3.1-**C**	Write a rational, correct and legible generic prescription for a given condition and communicate the same to the patient
	PH 3.2-**C**	Perform and interpret a critical appraisal (audit) of a given prescription
	PH 3.3-**C**	Perform a critical evaluation of the drug promotional literature
	PH 3.4- **L**	To recognize and report an adverse drug reaction
	PH 3.5-**C**	To prepare and explain a list of P-drugs for a given case/condition
	PH 3.6-**L**	Demonstrate how to optimize interaction with a pharmaceutical representative to get authentic information on drugs
	PH 3.7-**L**	Prepare a list of essential medicines for a healthcare facility
	PH 3.8	Communicate effectively with a patient on the proper use of prescribed medication
Experimental Pharmacology	PH 4.1	Administer drugs through various routes in a simulated environment using mannequins
	PH4.2	Demonstrate the effects of drugs on blood pressure (vasopressor and vaso-depressors with appropriate blockers) using CAL
	PH5.1	Communicate with the patient with empathy and ethics on all aspects of drug use
	PH5.2	Communicate with the patient regarding optimal use of a) drug therapy, b) devices and c) storage of medicines
Communication	PH5.3	Motivate patients with chronic diseases to adhere to the prescribed management by the health care provider
	PH5.4	Explain to the patient the relationship between the cost of treatment and patient compliance
	H5.5	Demonstrate an understanding of the caution in prescribing drugs likely to produce dependence and recommend the line of management
	PH5.6	Demonstrate ability to educate public & patients about various aspects of drug use including drug dependence and OTC drugs
	PH5.7	Demonstrate an understanding of the legal and ethical aspects of prescribing drugs

C- Needs certification: L Needs Maintenance of a logbook

SECTION 2:

FORMAT OF AETCOM Modules

AETCOM Module Number:

Date:

Topic:

Competencies:

1.

2

3.

Reflections (100 words):

1. What did you learn from this AETCOM session based on the objectives?
2. What change did this session make in your learning?
3. How will you apply this knowledge in future?

Remarks by Facilitator Signature by facilitator

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

SECTION: 3

Formative Assessment 3.A Scheme of Formative assessments

Formative assessment Theory	**Marks**	**Formative assessment Practical**	**Marks**
Internal assessments (3)	30	Internal assessments (3)	35
Tests (3)	10	Practical record	05
Total	40	Total	40

3.B summary of formative assessment

Sl. No.	***Type of Assessment***	***Date of Assessment***	***Total marks***	***Marks scored***	***Signature of student***	***Signature of teacher***

Rubric for assessing the professionalism

Phase	*Areas assessed*					*Signature of student*	*Signature of teacher*
	Regular for classes (5marks)	*Submission of records (5marks)*	*Behaviour in class and discipline (5marks)*	*Dress code and presentation (5marks)*	*Total (20 marks)*		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

Note: Parameters will be assessed at the Departmental level to consider eligibility (Minimum of 50% at the end of the year) of the candidate to appear for the university examination. Not considered for internal assessment marks.

Section 4

Certifiable skills

&

Non-certifiable skills requiring log book maintenance

Attempt at activity	First or Only (F) Repeat (R) Remedial (Re)
Rating	Below (B) expectations Meets (M) expectations Exceeds (E) expectations

4.1 Certifiable skills

Certifiable skill- 1

Skill: PH 3.1 Write a rational, correct and legible **generic prescription** for a given condition and communicate the same to the patient

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **five** times to be certified

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall remarks:

HOD signature:

Certifiable skill- 2

Skill: PH 3.2 Perform and interpret a **critical appraisal (audit)** of a given prescription

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall remarks:

HOD signature:

Skill: PH 3.3 Perform a **critical evaluation of the drug promotional literature**

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Certifiable skill- 3

Overall remarks:

HOD signature:

Skill: PH 3.5 To prepare and explain a list of **P-drug**s for a given case/condition

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this activity **three** times to be certified

Certifiable skill- 4

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall remarks:

HOD signature:

4.2 Non-certifiable Skills requiring maintenance of a logbook

Non-certifiable Skill-1

Skill: PH: 3.4 To recognize and report an **adverse drug reaction**

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to recognize and report 3 cases of ADR based on the SLOs

Exercise name	**Date**	**Attempt**			**Faculty decision**		**Rating**		
		First F	**Repeat R**	**Remedial Re**	**Completed**	**Not Completed**	**Below expectations B**	**Meets expectations M**	**Exceeds expectations E**

Overall Remarks:

Signature of HOD

Non-certifiable Skill-2

Skill: PH: 3.6 Demonstrate how to optimize **interaction with a pharmaceutical representative** to get authentic information on drugs

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform this exercise on three products based on the SLOs

Overall Remarks:

Signature of HOD

Non-certifiable Skill-3

Skill: PH: 3.7 Prepare a list **of essential medicine** for a health care facility.

Domain: Skills
Level of competency: Perform
Core: Yes

The student has to perform the exercise once as per the SLOs

Exercise name	Date	Attempt			Faculty decision		Rating		
		First F	Repeat R	Remedial Re	Completed	Not Completed	Below expectations B	Meets expectations M	Exceeds expectations E

Overall Remarks:

Signature of HOD

Section 5: Feedback

5.1 Academic performance and feedback provided
5.2 Feedback on AETCOM activity
5.3 Feedback on self-directed learning (SDL)

Section 5: Feedback

5.1 Academic performance and feedback provided

Assessment	Marks	Feedback		Student's signature	Faculty signature
I test		**Should retain**	**Could improve**		
I Internal Assessment Theory					
I Internal assessment Practicals					
II Test					

II Internal Assessment Theory					
II Internal Assessment Practicals					
III Test					
III Internal Assessment Theory					
III Internal Assessment Practicals					

5.2 Feedback on AETCOM activity

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations(B); Meets Expectations(M); Exceeds Expectations(E)	**Decision of faculty** Completed (C); Repeat(R); Remedial(Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

5.3 Feedback on self-directed learning (SDL)- 12 hours

Sl no.	**Date**	Topic of SDL	**Feedback**	**Signature of faculty/mentor**

1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

Section 6: Additional Curricular and extracurricular Activities

6.1 Additional curricular activities

(Seminar, conferences, outreach activities, Workshops etc.)

Sl no	Date	Particulars	Signature of the faculty

6.2 Extracurricular activities

Sl no	Date	Particulars	Signature of the faculty

6.3 Achievements/awards

Sl no	Date	Particulars	Signature of the faculty

Final Summary

Sl no.	Description	Dates		Attendance in percentage	Status *	Signature of the teacher
		From	To			
1	Certifiable skills					
2	Non certifiable skills					
3	AETCOM Modules					
4	Internal assessment Marks					

* Status: Complete/Incomplete: For skills and AETCOM modules

Eligible/Ineligible: For Internal marks

FORENSIC MEDICINE &TOXICOLOGY

GOAL:

The aim of teaching the undergraduate student in Forensic Medicine is to impart such knowledge and skills that may enable him to manage common medico-legal problems in day to day practice. He/she shall acquire competence for post mortem diagnosis based on history, physical examination and relevant observations during autopsy.

COMPETENCIES:

Period of Training – Phase II MBBS & Phase III part 1 MBBS

The learner must demonstrate:

- Understanding of medico-legal responsibilities of physicians in primary and secondary care settings,
- Understanding of the rational approach to the investigation of crime, based on scientific and legal principles,
- Ability to manage medical and legal issues in cases of poisoning / overdose,
- Understanding the medico-legal framework of medical practice and medical negligence,
- Understanding of codes of conduct and medical ethics.

Period of Training – Internship

A. An intern must perform or assist in:

- Identifying and documenting medico-legal problems in a hospital and general practice,
- Identifying the medico-legal responsibilities of a medical practitioner in various hospital situations,
- Diagnosing and managing with competence basic poisoning conditions in the community,
- Diagnosing and managing with competence and documentation in cases of Rape /Sexual assault,

- Preparing medico-legal reports in various medico legal situations.

B. An intern must have observed or preferably assisted at the following operations/ procedures:

- Various medico legal / post-mortem procedures and formalities during their performance by police.

Certifiable Procedural skills desirable of Indian Medical Graduate in Forensic Medicine & Toxicology

- Documentation and certification of trauma (I)
- Diagnosis and certification of death (D)
- Legal documentation related to emergency cases (D)
- Certification of medico-legal cases e.g. Age estimation, Sexual Violence etc. (D)
- Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)

I- Independently performed on patients,
O- Observed in patients or on simulations,
D- Demonstration on patients or simulations and performance under supervision in patients

Competencies in Phase II MBBS and Phase III part 1 MBBS			
No.	**Topic**	**Competencies**	**Procedures requiring certification**
1	General information	11	Nil
2	Forensic Pathology	35	Nil
3	Clinical Forensic Medicine	33	Nil
4	Medical jurisprudence (Medical Law & Ethics)	30	Nil
5	Forensic Psychiatry	06	Nil
6	Forensic laboratory investigation in medicolegal practice	03	Nil
7	Emerging technologies in Forensic Medicine	01	Nil
8	General Toxicology	10	Nil
9	Chemical Toxicology	06	Nil
10	Pharmaceutical Toxicology	01	Nil
11	Biotoxicology	01	Nil

12	Sociomedical Toxicology	01	Nil
13	Environmental Toxicology	02	Nil
14	Skills in Forensic Medicine & Toxicology	22	Nil
	TOTAL	**162**	**Nil**

Competencies in Internship			
Sl no	**Topic**	**Competencies**	**Procedures requiring certification**
1	Documentation and certification of trauma (I)	**1**	**1**
2	Diagnosis and certification of death (D)	**1**	**1**
3	Legal documentation related to emergency cases (D)	**1**	**1**
4	Certification of medico-legal cases e.g. Age estimation, Sexual Violence etc. (D)	**3**	**3**
5	Establishing communication in medico-legal cases with police, public health authorities, other concerned departments, etc (D)	**3**	**3**
	Total	**9**	**9**

Minimum Teaching Hours in MBBS Phase II & Phase III part 1

Forensic Medicine & Toxicology	**Lectures (hours)**	**Small group learning (Tutorials / Seminars) /Integrated learning (hours)**	**Self - Directed Learning (hours)**	**Total (hours)**
Phase II	15	30	05	50
Phase III part 1	25	45	05	75
Total	**40**	**75**	**10**	**125**

AETCOM	Lectures (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Self - Directed Learning (hours)	Total (hours)
Phase II	00	29	08	37
Phase III part 1	00	19	06	25
Total	**00**	**48**	**14**	**62**

Minimum Teaching Hours in Internship

Subject	Period of posting
Forensic Medicine & Toxicology	**7 days**

Model Time table for Phase II MBBS

BLOCK 1 : 15 WEEKS(OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	PH-L	OBG-L	PH-A,CM-B
Tuesday	Postings	PH-L	FM-L	FM-A,
Wednesday	Postings	MIC-L	PA-L	PA-A, MIC-B
Thursday	Postings	CM-L	PH-SGD	PA-B, MIC-A
Friday	Postings	MIC-L	PA-L	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

2ND BLOCK 15 WEEKS(FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	MIC-L	PA-SGD	PH-A,PA-B-SGD
Tuesday	Postings	PH-L	MIC-SGD	PH-SGD
Wednesday	Postings	PA-L	MIC-L	PA-A,MIC-B
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	PA-L	MIC-SGD	PA-B,MIC-A
Saturday	Clinical training and Skills	AETCOM	AETCOM	

3RD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	PA-L	MIC-L	PH-SGD	PA-SDL
Tuesday	Postings	PA-L	MIC-L	PA-A,MIC-B	PH-SDL
Wednesday	Postings	PH-L		PH-A,PA-B SGD	MIC-SDL
Thursday	Postings	PH-L		PH-B,PA-A SGD	CM-SDL
Friday	Postings	CM-L		PA-B,MIC-A	AETCOM-SDL
Saturday	Clinical training and Skills	SUR-L	OBG	G.M-L	

	TERM-1-OCT-JAN(15 WK)			TERM-2-FEB-MAY(15 WK)			TERM-3- JUN-AUG(10 WK)			TOTAL		
	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL	THEORY	PRACT	SGT/ TUTORIAL
PATH	30	30	0	30	30	45	20	20	20	80	80	65
PHARM	30	30	15	30	30	30	20	20	20	80	80	65
MICRO	30	30	0	30	30	30	20	20	0	80	80	30
CM	15	0	30	0	0	0	10	0	0	25	0	30
FM	15	0	30	0	0	0	0	0	0	15	0	30
G.MED	15	0	0	0	0	0	10	0	0	25	0	0
G.SUR	15	0	0	0	0	0	10	0	0	25	0	0
OBG	15	0	0	0	0	0	10	0	0	25	0	0
AETCOM				AETCOM 30						AETCOM		30

List of Competencies and SLOs to be covered in Phase II MBBS

General Information

- **Lecture – 1 hr (Orientation class)**
- **Assessment:** No assessment

FM1.1 - Demonstrate knowledge of basics of Forensic Medicine like definitions of Forensic medicine, Clinical Forensic Medicine, Forensic Pathology, State Medicine, Legal Medicine and Medical Jurisprudence

1.1.1: Define Forensic Medicine and Medical Jurisprudence.
1.1.2: Describe different branches of Forensic medicine like Clinical Forensic Medicine, Forensic Pathology, Forensic Odontology and Forensic Psychiatry.
1.1.3: Discuss on Forensic Medicine practice in different parts of the world.

FM1.2 -Describe history of Forensic Medicine 1.2.1:
Describe the etymology of Forensic Medicine.
1.2.2: Describe how knowledge of medicine was applied to aid in the administration of justice from ancient time and its evolution to the recent times.
1.2.3: Enumerate the important people and events related to Forensic Medicine.

Forensic Pathology

 Lecture – 1 hr (Interactive) **Assessment:** Written, Viva voce

FM2.1 - Define, describe and discuss death and its types including somatic/clinical/cellular, molecular and brain-death, Cortical Death and Brainstem Death

2.1.1: Define death.
2.1.2: Describe the types of death (somatic, molecular, brain-death, cortical death and brainstem death).
2.1.3: Describe the procedure of declaring death with specific reference to brain stem death.

FM2.2 - Describe and discuss natural and unnatural deaths

2.2.1: Describe the manner of death and cause of death

FM2.3 - Describe and discuss issues related to sudden natural deaths

2.3.1: Define sudden natural death.
2.3.2: Enumerate the causes for sudden natural death.
2.3.3: Describe the medicolegal importance of sudden natural death.
2.3.4: Discuss the autopsy procedure in case of sudden natural death.

 SDL – 1 hr (Followed by reflective writing) **Assessment:** Written, Viva voce

FM2.4 - Describe salient features of the Organ Transplantation and The Human Organ Transplant (Amendment) Act 2011 and discuss ethical issues regarding organ donation

2.4.1: Discuss the ethical and legal issues related to organ donation and transplantation. 2.4.2: Describe the salient features of The Human Organ Transplant Act, 1994 with amendments till date.

 Lecture – 1 hr (Interactive) **Assessment:** Written, Viva voce

FM2.5 - Discuss moment of death, modes of death - coma, asphyxia and syncope

2.5.1: Describe the modes of death (coma, syncope, asphyxia).

FM2.6 - Discuss presumption of death and survivorship

2.6.1: Discuss the importance of presumption of death (Sec. 107 & 108 IEA).

FM2.7 - Describe and discuss suspended animation

2.7.1: Define suspended animation.
2.7.2: Enumerate the causes for suspended animation.
2.7.3: Discuss the medicolegal importance of suspended animation.

 SGD – 2 hrs **Assessment:** Written, Viva voce

FM2.10 - Discuss estimation of time since death

2.10.1: Enumerate the various factors which help in determination of time since death.
2.10.2: Discuss on Forensic entomology.

FM2.8 - Describe and discuss postmortem changes including signs of death, cooling of body, post-mortem lividity, rigor mortis, cadaveric spasm, cold stiffening and heat stiffening

2.8.1: Classify post-mortem changes (immediate, early, late).
2.8.2: Describe postmortem cooling and its medicolegal importance.
2.8.3: Define postmortem lividity.
2.8.4: Describe postmortem lividity and its medico legal importance.
2.8.5: Define rigor mortis.
2.8.6: Describe rigor mortis and its medico legal importance.
2.8.7: Enumerate the conditions simulating rigor mortis.
2.8.8: Define cadaveric spasm.
2.8.9: Differentiate between cadaveric spasm and rigor mortis.
2.8.10: Discuss on cold stiffening, heat stiffening, chemical stiffening and gas stiffening.

 SGD – 1 hr **Assessment:** Written, Viva voce

FM2.9 - Describe putrefaction, mummification, adipocere and maceration

2.9.1: Describe the various changes seen in the body due to putrefaction.
2.9.2: Define adipocere.
2.9.3: Describe adipocere and its medico legal importance.
2.9.4: Define mummification.
2.9.5: Describe mummification and its medico legal importance.

 Lecture – 1 hr **Assessment:** Written, Viva voce

FM2.11 - Describe and discuss autopsy procedures including post-mortem examination, different types of autopsies, aims and objectives of post-mortem examination

2.11.1: Describe the types of autopsy.
2.11.2: Enumerate the objectives of medicolegal autopsy.
2.11.3: Enumerate the objectives of foetal autopsy.
2.11.4: Enumerate the objectives of skeletal remains examination.

FM2.14 - Describe and discuss examination of clothing, preservation of viscera on postmortem examination for chemical analysis and other medico-legal purposes, postmortem artefacts

2.14.1: Describe the method of preservation and dispatch of viscera and body fluids for chemical analysis.
2.14.2: Describe the method of preservation and dispatch of viscera and body fluids for histopathology and microbiological investigations.
2.14.3: Describe the method of preservation and dispatch of clothes in a medicolegal case.
2.14.4: Discuss on postmortem artefacts and their medicolegal importance

***FM8.5 - Describe Medico-legal autopsy in cases of poisoning including preservation and dispatch of viscera for chemical analysis**

8.5.1: Explain the procedure of medico-legal autopsy in a suspected case of poisoning.
8.5.2: Describe the method of preserving the various viscera in a case of poisoning.
8.5.3: Describe the procedure for dispatch of viscera for chemical analysis in a case of poisoning.

***FM8.9 - Describe the procedure of intimation of suspicious cases or actual cases of foul play to the police, maintenance of records, preservation and dispatch of relevant samples for laboratory analysis.**

8.9.1: Describe the procedure of intimation of suspicious cases or actual cases of foul play to the police

- S. 39 CrPC, S. 40 CrPC, S. 175 CrPC.
- S. 166 (B) IPC, S. 176 IPC, S. 177 IPC, S. 201 IPC, S. 202 IPC.

8.9.2: Describe the procedure of record maintenance in a case of poisoning.
8.9.3: Describe the procedure of collection and dispatch of viscera for chemical analysis in a case of poisoning.

Lecture – 1 hr **Assessment:** Written, Viva voce

FM2.12 - Describe the legal requirements to conduct post-mortem examination and procedures to conduct medico-legal post-mortem examination

2.12.1: Describe the rules for conducting medicolegal autopsy.
2.12.2: Enumerate the skin incisions in medicolegal autopsy.
2.12.3: Enumerate the methods of evisceration in medicolegal autopsy.
2.12.4: Describe the external and internal examination in medicolegal autopsy.
2.12.5: Explain the special techniques used in medicolegal autopsy (demonstration of pneumothorax, air embolism, etc).

FM2.13 - Describe and discuss obscure autopsy

2.13.1: Discuss on obscure autopsy with examples.
2.13.2: Discuss on negative autopsy with examples.

FM2.17 - Describe and discuss exhumation

2.17.1: Define exhumation.
2.17.2: Enumerate the objectives of exhumation.
2.17.3: Describe the rules and procedure of exhumation.

SGD – 4 hrs (Practical) **Assessment:** Written, Viva voce, OSPE, Practical book, Log book

FM2.16 - Describe and discuss examination of mutilated bodies or fragments, charred bones and bundle of bones

2.16.1: Describe the procedure of examination of mutilated bodies / fragments.
2.16.2: Describe the procedure of examination of skeletal remains (including charred bones).
***FM14.9 - Demonstrate examination of & present an opinion after examination of skeletal remains in a simulated/ supervised environment**

14.9.1: Enumerate the objectives of skeletal remains examination.
14.9.2: Demonstrate the procedure of examination of skeletal remains in a simulated/ supervised environment.
14.9.3: Draft a medicolegal report and opinion after examination of skeletal remains.

 SGD – 1 hr **Assessment:** Written, Viva voce

FM2.18 - Crime Scene Investigation: -

Describe and discuss the objectives of crime scene visit, the duties & responsibilities of doctors on crime scene and the reconstruction of sequence of events after crime scene investigation

2.18.1: Enumerate the objectives of crime scene visit by an autopsy surgeon.
2.18.2: Describe the procedure of examination of crime scene and preservation of evidentiary material.
2.18.3: Explain the reconstruction of a case after the crime scene visit.

 SGD – 1 hr **Assessment:** Viva voce

FM2.31 - Demonstrate ability to work in a team for conduction of medico-legal autopsies in cases of death following alleged medical negligence, dowry death, death in custody or following violation of human rights as per National Human Rights Commission Guidelines on exhumation

2.31.1: Demonstrate the benefit of team work in a medicolegal autopsy of alleged medical negligence.
2.31.2: Demonstrate the benefit of team work in a medicolegal autopsy of alleged dowry death.
2.31.3: Demonstrate the benefit of team work in a medicolegal autopsy of alleged custodial death.
2.31.4: Demonstrate the benefit of team work in a medicolegal autopsy of death due to violation of human rights.
2.31.5: Demonstrate the benefit of team work in exhumation.

 SDL – 1 hr **Assessment:** Written, Viva voce

FM2.19 - Investigation of anaesthetic, operative deaths: Describe and discuss special protocols for conduction of autopsy and for collection, preservation and dispatch of related material evidences
2.19.1: Explain the significance of autopsy in operative deaths.
2.19.2: Describe the procedure of autopsy in operative deaths.
2.19.3: Describe the procedure of preservation and dispatch of evidentiary material for investigation in deaths associated with anaesthesia and surgery

 SDL – 1 hr **Assessment:** Written, Viva voce

FM2.15 - Describe special protocols for conduction of medico-legal autopsies in cases of death in custody or following violation of human rights as per National Human Rights Commission Guidelines

2.15.1: Describe the National Human Rights Commission guidelines for conduction of medicolegal autopsy in cases of death in custody or violation of human rights.

 SGD – 1 hr **Assessment:** OSPE, Written, Viva voce

FM2.32 - Demonstrate ability to exchange information by verbal or nonverbal communication to the peers, family members, law enforcing agency and judiciary

2.32.1: Demonstrate the skills of communication by a doctor with the peers.
2.32.2: Demonstrate the skills of communication by a doctor with the patient's family members in MLC works at casualty.
2.32.3: Demonstrate the skills of communication by a doctor with the deceased family members during medicolegal autopsy.
2.32.4: Demonstrate the skills of communication by a doctor with the law enforcing agency/ judiciary in medicolegal practices.

FM2.33 & FM2.34 - Demonstrate ability to use local resources whenever required like in mass disaster situations

2.33.1: Define Mass disaster
2.33.2: Enumerate the types of Mass disaster.
2.33.3: List the objectives of forensic investigation in mass disasters.
2.33.4: Describe the procedure of examination at disaster site and autopsy.
2.33.5: Describe the evidentiary materials to be preserved in mass disasters.
2.33.6: Demonstrate the importance of team work in Mass Disasters.

FM2.35 - Demonstrate professionalism while conducting autopsy in medicolegal situations, interpretation of findings and making inference/opinion, collection, preservation and dispatch of biological or trace evidences

2.35.1: Demonstrate the professionalism of a doctor during conduction of medicolegal autopsies (such as interaction with investigating officer/relatives of deceased, receiving inquest form, maintaining confidentiality, etc).
2.35.2: Demonstrate the professionalism in preservation and dispatching evidentiary materials to FSL (such as proper method of preservation and dispatch of materials with necessary forms and maintaining confidentiality).
2.35.3: Demonstrate the professionalism in preservation and dispatching evidentiary materials to histopathology and microbiology investigations (such as proper method of preservation and dispatch of materials with necessary forms and maintaining confidentiality). 2.35.4: Demonstrate the professionalism while giving opinion in medicolegal cases (such as honesty with unbiased inferences).

Clinical Forensic Medicine

 SGD – 2 hrs **Assessment:** Written, Viva voce

FM3.1 - IDENTIFICATION

Define and describe Corpus Delicti, establishment of identity of living persons including race, Sex, religion, complexion, Stature, age determination using morphology, teetheruption, decay, bite marks, bones-ossification centres, medicolegal aspects of age

3.1.1: Define Corpus delicti

3.1.2: Describe the importance of corpus delicti in establishing the crime.
3.1.3: List the various means of identification in living and dead persons.
3.1.4: Explain the role of hand writing analysis, gait, speech, photography and facial description as a tool of identification.
3.1.5: Describe the methods of determination of race.
3.1.6: Describe the methods of sex determination in a living person.
3.1.7: Describe the methods of sex determination in a dead person.
3.1.8: Define intersex.
3.1.9: Describe the types of intersex and its medicolegal importance.
3.1.10: Describe the methods of age determination in a living person.
3.1.11: Describe the methods of age determination in a dead person. 3.1.12:
Explain the method of age estimation using Gustafson's technique.
3.1.13: Discuss the forensic aspects related to teeth.
3.1.14: Describe the methods of determination of stature.

 SGD – 1 hr **Assessment:** Written, Viva voce

FM3.2 - IDENTIFICATION
Describe and discuss identification of criminals, unknown persons, dead bodies from the remains-hairs, fibres, teeth, anthropometry, dactylography, foot prints, scars, tattoos, poroscopy & superimposition
3.2.1: Explain the role of hair in the identification of an individual.
3.2.2: Describe the medicolegal importance of hair.
3.2.3: Describe the dyes used, methods of erasure and medicolegal importance of a tattoo.
3.2.4: Describe the medicolegal importance of the scar.
3.2.5: Define anthropometry.
3.2.6: Describe various data included in anthropometry and its importance in identification.
3.2.7: Define dactylography.
3.2.8: Describe the types, method of collection and medicolegal importance of dactylography.
3.2.9: Discuss the role of poroscopy, cheiloscopy and rugoscopy in identification.
3.2.10: Describe the role of foot prints in establishing the identity.
3.2.11: Describe the role of facial reconstruction in establishing the identity.
3.2.12: Discuss the role of superimposition in establishing the identity.

 SGD – 2 hrs (Practical) **Assessment:** OSPE, Practical book, Log book

***FM14.6 - Demonstrate and interpret medico-legal aspects from examination of hair (human & animal) fibre, semen & other biological fluids**
14.6.1: Identify hair (human/ animal), other fibres by physical and microscopic examination and describe its medicolegal importance.

14.6.2: Identify the **semen** by physical and microscopic examination and describe its medicolegal importance**.**

***FM14.7 - Demonstrate & identify that a particular stain is blood and identify the species of its origin**

14.7.1: Identify the blood by physical and microscopic examination.
14.7.2: Explain the various medicolegal conclusions by examining the blood stains.
14.7.3: Explain the method of identifying the species of origin of the blood stain.

***FM14.8 - Demonstrate the correct technique to perform and identify ABO & RH blood group of a person**

14.8.1: Perform the technique of identifying the ABO blood group of a person.
14.8.2: Perform the technique of identifying the Rh blood group of a person.

Toxicology: General Toxicology

 SDL – 1 hr **Assessment:** Written, Viva Voce

FM8.1 - Describe the history of Toxicology

8.1.1: Describe the history of Toxicology.

 Lecture – 1 hr **Assessment:** Written, Viva Voce

FM8.2 - Define the terms Toxicology, Forensic Toxicology, Clinical Toxicology and poison

8.2.1: Define Toxicology, Forensic Toxicology, Clinical Toxicology and Poison

FM8.3 - Describe the various types of poisons, Toxicokinetics, and Toxicodynamics and diagnosis of poisoning in living and dead

8.3.1: Classify poisons in respect to mode of action and mode of usage. 8.3.2:
Describe pharmacokinetics & pharmacodynamics of the poisons.
8.3.3: Explain the diagnosis of poisoning in the living individual.
8.3.4: Explain the diagnosis of poisoning in the dead individual

FM8.4 - Describe the Laws in relations to poisons including NDPS Act, Medico-legal aspects of poisons

8.4.1: Describe the legal sections related to poisoning in India.

- ✓ S. 85 IPC, S. 86 IPC, S. 274 IPC, S. 284 IPC, S. 299 IPC, S. 300 IPC, S. 304 (A) IPC, S. 375 IPC
- ✓ S. 324 IPC, S. 325 IPC, S. 326 IPC, S. 326A IPC, S. 326B IPC, S. 328 IPC
- ✓ S. 357C CrPC
- ✓ S. 185 IMV Act, S. 203 IMV Act, S. 204 IMV Act

8.4.2: Describe Narcotic Drugs and Psychotropic Substances Act, 1985.
8.4.3: Describe Karnataka Poisons (Possession and Sale) Rules, 2015.
8.4.4: Describe the legal responsibilities of a doctor in a case of poisoning

FM8.6 - Describe the general symptoms, principles of diagnosis and management of common poisons encountered in India

8.6.1: Describe the general symptoms and signs of the common poisons encountered in India.
8.6.2: Describe the general principles of diagnosis of the common poisons encountered in India.
8.6.3: Enumerate the line of management of the common poisons encountered in India.

 Lecture – 1 hr **Assessment:** Written, Viva Voce

FM8.8 - Describe basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination 8.8.1: List the general treatment procedure in case of poisoning.
8.8.2: Explain the procedure of Gastric lavage.
8.8.3: Enumerate the indications and contraindications for Gastric lavage.
8.8.4: Define antidote.
8.8.5: Describe the various types of antidotes.
8.8.6: Explain Chelation therapy.
8.8.7: Describe the methods for hastening elimination of absorbed poison.

 Lecture – 1 hr **Assessment:** Written, Viva Voce

FM8.10 - Describe the general principles of Analytical Toxicology and give a brief description of analytical methods available for toxicological analysis: Chromatography – Thin Layer Chromatography, Gas Chromatography, Liquid Chromatography and Atomic Absorption Spectroscopy
8.10.1: List the various analytical methods used in Toxicology.
8.10.2: Describe the general principle of Thin Layer Chromatography.
8.10.3: Describe the basic principle and uses of Gas Chromatography.
8.10.4: Describe the basic principle and uses of Liquid Chromatography.
8.10.5: Describe the basic principle and uses of Atomic Absorption Spectroscopy.
8.10.6: Describe the basic principle and uses of Mass Spectrometry.
8.10.7: Describe the basic principle and uses of Radioimmuno Assay

 SGD – 2 hrs (Practical/ Skills lab) **Assessment:**
OSPE, Written, Viva Voce

***FM14.2 - Demonstrate the correct technique of clinical examination in a suspected case of poisoning & prepare medico-legal report in a simulated/ supervised environment**
14.2.1: Take an informed consent from the Patient / Guardian after explaining the importance of MLC registration in Poisoning cases.
14.2.2: Perform the clinical examination (history taking, general physical examination, systemic examination, laboratory investigations, differential diagnosis) in poisoning cases in a simulated/ supervised environment.
14.2.3: Prepare the medicolegal certificate after documenting the clinical findings.
14.2.4: Prepare the police intimation.

***FM14.3 - Assist and demonstrate the proper technique in collecting, preserving and dispatch of the exhibits in a suspected case of poisoning, along with clinical examination**
14.3.1: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **ingested poisoning**.
14.3.2: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **inhalation poisoning** along with clinical examination.
14.3.3: Demonstrate the process of collecting, preserving and dispatch of the materials/ exhibits in a suspected case of **injected poisoning** along with clinical examination.

FM8.7 - Describe simple Bedside clinic tests to detect poison/drug in a patient's body fluids

8.7.1: Describe the bedside clinic tests for Hydrochloric acid poisoning (Ammonia test, Litmus paper test, Silver nitrate test).
8.7.2: Describe the bedside clinic tests for Nitric acid poisoning (Ferrous Sulphate test).
8.7.3: Describe the bedside clinic tests for Sulphuric acid poisoning (Litmus paper test).
8.7.4: Describe the bedside clinic tests for Oxalic acid poisoning (Barium nitrate test).
8.7.5: Describe the bedside clinic tests for Caustic alkalis poisoning (Litmus paper test).
8.7.6: Describe the bedside clinic tests for Phenol (Folin Ciocaltaeu reagent test). 8.7.7: Describe the bedside clinic tests for Salicylates (Trinder's reagent test).

Toxicology : Chemical Toxicology

 SGD – 2 hrs **Assessment:** Written, Viva voce

FM9.1 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to: Caustics Inorganic – sulphuric, nitric, and hydrochloric acids; Organic-Carbolic Acid (phenol), Oxalic and acetylsalicylic acids

9.1.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Sulphuric acid poisoning.
9.1.2: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Nitric acid poisoning.
9.1.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Hydrochloric acid poisoning.
9.1.4: Discuss on Vitriolage.
9.1.5: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Carbolic acid poisoning.
9.1.6: Discuss on Carboluria.
9.1.7: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Oxalic acid poisoning.
9.1.8: Discuss on Oxaluria.
9.1.9: Describe the characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Acetylsalicylic acid poisoning.

 Lecture – 1 hr **Assessment:** Written, Viva voce

FM9.2 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Phosphorus, Iodine, Barium

9.2.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Phosphorus poisoning.

9.2.2: Discuss on Phossy jaw.
9.2.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Iodine poisoning.
9.2.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Barium poisoning.

 Lecture – 2 hrs **Assessment:** Written, Viva voce

FM9.3 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Arsenic, lead, mercury, copper, iron, cadmium and thallium

9.3.1: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Arsenic poisoning.
9.3.2: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Lead poisoning.
9.3.3: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Mercury poisoning.
9.3.4: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Copper poisoning.
9.3.5: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Iron poisoning.
9.3.6: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Thallium poisoning.
9.3.7: Describe the characteristics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Cadmium poisoning.
9.3.8: Describe the causes, clinical features and treatment of Metallic fume fever.

 Lecture – 2 hrs **Assessment:** Written, Viva voce

FM9.4 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ethanol, methanol, ethylene glycol

9.4.1: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of ethanol intoxication.
9.4.2: Define drunkenness.
9.4.3: Describe the methods of detection of drunken person in legal situations.
9.4.4: Describe clinical features, treatment and medicolegal aspects of chronic alcoholism.
9.4.5: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects in a case of methanol poisoning.
9.4.6: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment and medicolegal aspects of ethylene glycol poisoning.

 SGD – 2 hrs (Integration – Pharmacology) **Assessment:** Written, Viva Voce

FM9.5 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Organophosphates, Carbamates, Organochlorines, Pyrethroids, Paraquat, Aluminium and Zinc phosphide 9.5.1: Classify agricultural poisons.

9.5.2: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Organo-phosphorous poisoning.
9.5.3: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Carbamate poisoning.
9.5.4: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Organo-chlorine poisoning.
9.5.5: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Paraquat poisoning.
9.5.6: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Pyrethroid poisoning.
9.5.7: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Aluminum and Zinc phosphide poisoning.

 SGD – 1 hr **Assessment:** Written, Viva Voce

FM9.6 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to Ammonia, carbon monoxide, hydrogen cyanide & derivatives, methyl isocyanate, tear (riot control) gases

9.6.1: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Ammonia poisoning.
9.6.2: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings & medicolegal aspects of Carbon monoxide poisoning.
9.6.3: Describe physical/chemical characteristics, pharmacokinetics, mechanism of action, fatal dose, fatal period, clinical features, treatment, postmortem findings and medicolegal aspects of Cyanide poisoning.
9.6.4: Describe physical/chemical characteristics, mechanism of action, clinical features, treatment, postmortem findings and medicolegal aspects of Methyl Isocyanate poisoning.
9.6.5: Describe clinical features, treatment and medicolegal aspects of exposure to tear gas (in riot control).

Toxicology : Pharmaceutical Toxicology

 SDL – 1 hr (Integration – Pharmacology)
Assessment: Written, Viva Voce

FM10.1 - Describe General Principles and basic methodologies in treatment of poisoning: decontamination, supportive therapy, antidote therapy, procedures of enhanced elimination with regard to:

i. **Antipyretics – Paracetamol, Salicylates**
ii. **Anti-Infectives (Common antibiotics – an overview)**
iii. **Neuropsychotoxicology Barbiturates, benzodiazepins, phenytoin, lithium, haloperidol, neuroleptics, tricyclics**
iv. **Narcotic Analgesics, Anaesthetics, and Muscle Relaxants**
v. **Gastro-Intestinal and Endocrinal Drugs – Insulin**

10.1.1: Describe clinical features, treatment and medico-legal aspects of poisoning due to Antipyretics (such as Paracetamol and Salicylates).
10.1.2: Describe clinical features, treatment and medico-legal aspects of poisoning due to Anti-Infective overdose (common antibiotics).
10.1.3: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Barbiturate poisoning.
10.1.4: Describe clinical features, treatment and medico-legal aspects of Benzodiazepine poisoning.
10.1.5: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of opium and its alkaloids.
10.1.6: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of poisoning due to Gastro-Intestinal and Endocrinal Drugs (e.g., Insulin).

 Lecture – 1 hr **Assessment:** Written, Viva voce

FM10.1 vi - Cardiovascular Toxicology Cardiotoxic plants – oleander, odollam, aconite, digitalis

10.1.7: Enumerate the cardiotoxic plants.
10.1.8: Describe the active principles, mechanism of action, fatal dose, fatal period, clinical features, treatment, post-mortem findings and medico-legal aspects of poisoning due to cardiotoxic plants.

Toxicology : Biotoxicology

 SGD – 2 hrs **Assessment:** Written, Viva Voce

FM11.1 - Describe features and management of Snake bite, scorpion sting, bee and wasp sting and spider bite

11.1.1: Differentiate poisonous and non-poisonous snakes.
11.1.2: Classify poisonous snakes.
11.1.3: Identify the common poisonous and non-poisonous snakes in India.
11.1.4: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of snake bite (Ophitoxaemia).
11.1.5: Identify the common scorpions seen in India.
11.1.6: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of scorpion sting.
11.1.7: Describe mechanism of action, clinical features, management, postmortem findings and medicolegal aspects of bee and wasp sting, and spider bite.

Toxicology : Environmental Toxicology

 Lecture – 1 hr **Assessment:** Written, Viva voce

FM13.1 - Describe toxic pollution of environment, its medico-legal aspects & toxic hazards of occupation and industry

13.1.1: Enumerate the causes for environmental pollution.

13.1.2: Describe the health effects of environmental pollution due to toxic substances.

13.1.3: Describe the medico-legal aspects of toxic hazards on employees of an industry

FM13.2 - Describe medico-legal aspects of poisoning in Workman's Compensation Act

13.2.1: Describe the medico-legal issues arising out of effects of poisoning due to occupational exposure as per Workman's Compensation Act.

13.2.2: Discuss the role of physician in cases of poisoning due to occupational exposure.

Toxicology : Sociomedical Toxicology

 Lecture – 2 hrs **Assessment:** Written, Viva voce

FM12.1 - Describe features and management of abuse/ poisoning with following chemicals: Tobacco, cannabis, amphetamines, cocaine, hallucinogens, designer drugs & solvent

12.1.1: Define drug abuse, drug addiction, drug habituation and drug dependence.

12.1.2: List the drugs of abuse.

12.1.3: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic tobacco poisoning.

12.1.4: Enumerate the active principles and various preparations of cannabis.

12.1.5: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic cannabis poisoning.

12.1.6: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of acute and chronic cocaine poisoning.

12.1.7: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of amphetamine poisoning.

12.1.8: Enlist hallucinogenic substances.

12.1.9: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Lysergic acid diethylamide poisoning.

12.1.10: Define 'Designer drug'.

12.1.11: Describe the clinical features and management of common designer drugs. 12.1.12: Define 'Solvent abuse'.

12.1.13: Describe clinical features, treatment, post-mortem findings and medico-legal aspects of Solvent abuse.

12.1.14: Discuss on Body packer's syndrome.

Skills in Forensic Medicine & Toxicology

 SGD – 2 hrs (Practical) **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.17 - To identify & draw medico-legal inference from common poisons e.g. dhatura, castor, cannabis, opium, aconite copper sulphate, pesticides compounds, marking nut,

oleander, Nux vomica, abrus seeds, Snakes, capsicum, calotropis, lead compounds & tobacco.

14.17.1: Identify with physical and /or chemical characteristics of the common poisons e.g. dhatura, castor, cannabis, opium, aconite, copper sulphate, pesticide compounds, marking nut, oleander, Nux vomica, abrus seeds, snakes, capsicum, calotropis, lead compounds & tobacco. *(regional / local poisons)*

14.17.2: Draw the medico-legal inferences with the use of the common poisons.

 SGD – 5 hrs (Practical – 5 cases) **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.5 - Conduct & prepare post-mortem examination report of varied aetiologies (at least 15) in a simulated/ supervised environment

14.5.1: Describe the techniques of conducting a medicolegal autopsy.

14.5.2: Describe the postmortem findings (external and internal) in a medicolegal autopsy.

14.5.3: Enumerate the ancillary investigations required (along with appropriate materials for such investigations) in a medicolegal autopsy.

14.5.4: Draft the postmortem report after a medicolegal autopsy.

Medicolegal autopsies may be a case of unnatural death, natural death, custodial death, alleged medical negligence, decomposed body, mutilated body.

 SGD – 1 hr (Practical) Integration Pathology **Assessment:** OSPE, Practical book, Log book, Viva Voce

FM14.19* - To identify & prepare medico-legal inference from histo-pathological slides of Myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, Pulmonary oedema, *(remaining slides will be covered in phase 3 MBBS)*

14.19.1: List the microscopic identifying features after examining the histopathological slides of myocardial Infarction, pneumonitis, tuberculosis, brain infarct, liver cirrhosis, pulmonary oedema.

14.19.2: Describe the medico-legal inferences after examining the above-mentioned histopathological slides.

Summary of TL methods and list of competencies to be covered in Phase II MBBS and Assessment methods

Sl. No.	Teaching hours and type	Competency numbers	Assessment methods
1.	Lecture – 1 hr (Orientation class)	1.1, 1.2	No assessment
2.	Lecture – 1 hr (Interactive)	2.1, 2.2, 2.3	Written, Viva voce
3.	SDL – 1 hr (Followed by reflective writing)	2.4	Written, Viva voce
4.	Lecture – 1 hr (Interactive)	2.5, 2.6, 2.7	Written, Viva voce
5.	SGD – 2 hrs	2.10, 2.8	Written, Viva voce

6.	SGD – 1 hr	2.9	Written, Viva voce
7.	Lecture – 1 hr	2.11, 2,14, 8.5, 8.9	Written, Viva voce
8.	Lecture – 1 hr	2.12, 2.13, 2.17	Written, Viva voce
9.	SGD – 4 hrs (Practical)	2.16, 14.9	Written, Viva voce, OSPE, Practical book, Log book
10.	SGD – 1 hr	2.18	Written, Viva voce
11.	SGD – 1 hr	2.31	Viva voce
12.	SDL – 1 hr	2.19	Written, Viva voce
13.	SDL – 1 hr	2.15	Written, Viva voce
14.	SGD – 1 hr	2.32, 2.33, 2.34, 2.35	OSPE, Written, Viva voce
15.	SGD – 2 hrs	3.1	Written, Viva voce
16.	SGD – 1 hr	3.2	Written, Viva voce
17.	SGD – 2 hrs (Practical)	14.6. 14.7, 14.8	OSPE, Practical book, Log book
18.	SDL – 1 hr	8.1	Written, Viva voce
19.	Lecture – 1 hr	8.2, 8.3, 8.4, 8.6	Written, Viva voce
20.	Lecture – 1 hr	8.8	Written, Viva voce
21.	Lecture – 1 hr	8.10	Written, Viva voce
22.	SGD – 2 hrs (Practical/ Skills lab)	14.2, 14.3, 8.7	OSPE, Written, Viva Voce
23.	SGD – 2 hrs	9.1	Written, Viva voce
24.	Lecture – 1 hr	9.2	Written, Viva voce
25.	Lecture – 2 hrs	9.3	Written, Viva voce
26.	Lecture – 2 hrs	9.4	Written, Viva voce
27.	SGD – 2 hrs (Integration – Pharmacology)	9.5	Written, Viva voce
28.	SGD – 1 hr	9.6	Written, Viva voce
29.	SDL – 1 hr (Integration – Pharmacology)	10.1 (i-v)	Written, Viva voce
30.	Lecture – 1 hr	10.1 (vi)	Written, Viva voce
31.	SGD – 2 hrs	11.1	Written, Viva voce
32.	Lecture – 1 hr	13.1, 13.2	Written, Viva voce
33.	Lecture – 2 hrs	12.1	Written, Viva voce
34.	SGD – 2 hrs (Practical)	14.17	OSPE, Practical book, Log book, Viva Voce
35.	SGD – 5 hrs (5 cases)	14.5	OSPE, Practical book, Log book, Viva Voce
36.	SGD – 1 hr (Practical) Integration Pathology	14.19	OSPE, Practical book, Log book, Viva Voce

Assessment in Forensic Medicine & Toxicology

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal Assessment - Range of assessments conducted by the teachers teaching a particular subject with the purpose of knowing what is learnt and how it is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - In Phase II MBBS there will be ONE Internal assessment in theory and practicals. -
In Phase III part 1 MBBS there will be two Internal assessments in theory and practicals. One of the test should be prelim or similar to university examination.

Theory IA can include: Theory tests, seminars, quizzes, interest in subject, scientific attitude etc. Written tests should have essay questions, short notes and creative writing experiences.

Practical IA can include: practical tests, Objective Structured Practical Examination (OSPE), Directly Observed Procedural Skills (DOPS), records maintenance and attitudinal assessment.

Assessment of Log-book- Log book should record all activities like seminar, symposia, quizzes and other academic activities. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Theory marks should be for Log book assessment.

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Up to twenty per cent IA Practical marks should be for Log book assessment

Internal Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences.

- OSCE based clinical scenarios and/or viva voce. Skill competencies acquired during the Professional Development Programme (AETCOM) must be tested during the practical and viva voce.

Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.

Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.

Internal assessment should be based on competencies and skills.

Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination

SCHEME OF EXAMINATION

Internal assessment

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

Theory (Maximum marks)		**Practical (Maximum marks)**	
Theory papers	30*	Practical exercises	30**
Professionalism	5	Level of participation in AETCOM activities	5
Part completion tests	5	Practical record book	5
TOTAL	40	TOTAL	40
Please note: '*the marks for each of the three internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks. '** the marks for each of the three internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks. 'Only the final marks out of 40 (as in the table) needs to be submitted to the University, separately for theory and practical for each internal assessment.			

- Internal assessment should be based on competencies and skills.
- Regular periodic examinations shall be conducted throughout the course. There shall be three internal assessment examinations
- An average of the marks scored in the three internal assessment examinations will be considered as the final internal assessment marks.
- At least 50% marks of the total marks combined in theory and practicals /clinical assigned for internal assessment is to be obtained in a particular subject to be eligible to appear for university examinations. A candidate who has not secured requisite aggregate in the internal assessment may be permitted to appear for another internal examination as a remedial measure. If he/she successfully completes the remediation measures prescribed by the Institution / University as the case may be, only then he/she is eligible to appear for University Examination.

- Students must secure at least 50% marks of the total marks (combined in theory and practical) assigned for internal assessment to be declared successful at the final university examination of that subject.
- The third internal examination is the examination to be conducted on the lines of the university examination.
- The students should be made aware of the results of internal assessment.
- Internal assessment marks will reflect as a separate head of passing at the university examination.
- The internal examination marks for the 1st, 2^{nd} & 3^{rd} internal examinations shall be submitted to the University on or before dates mentioned in University calendar.
- Professionalism (punctuality, respect for teachers, communication with peers, timely completion and submission of record books and participation / presents in SGD) must be assessed and form a component of the marks given for internal assessment as shown in the table above.
- A suggested format for assessing professionalism is shown below
- A proportion of marks from part completion tests must be added to the internal assessment marks as shown in the table above.
- Practical records must be assessed and contribute to the internal assessment marks as shown in the table above.
- Level of participation in AETCOM Activities must be assessed and contribute to the practical component as shown in the table above.
- The scheme for calculation of the internal examination marks is given the table above.
- A clear record of all components that add to the internal assessment marks needs to be maintained by the institution and retained by them for at least 2 years after completion of the examination. Institutions may be asked to provide these details by the University as and when required.
- The internal and formative assessments provide ideal opportunities for students and teachers to identify learning gaps. Teachers should provide high quality feedback to each student to enable them to bridge these learning gaps.
- Formative assessments also enable the early identification of students who are struggling to achieve the intended learning outcomes. Early and appropriate targeted remediation must be planned for such students.
- Internal assessment marks (theory/practicals) will contribute for the eligibility criteria for university exam. However, it will not contribute for the pass criteria in university exam. Internal assessment marks will reflect under separate head in the marks card of the university examination.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.

- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Suggested format for assessing professionalism

Semester	Overall Attendance (5)	Timely submission of record books (5)	Takes the Trouble to Complete the Record book well (5)	Behaves respectfully with peers and teachers (5)	Participation in SGD (5)	Total (25)	Date	Signature of student	Signature of Teacher
1									
2									
3									
4									

Guidelines for scoring (to be shown to the student and discussed with them)
Attendance – 95-100% - 5; 90-94% - 4; 85-89% - 3; 80-84% - 2; 79-75% - 1
Timely submission of records – Always submits the record on time – 5; Often submits the record on time – 4; Sometimes submits the record on time – 3; Rarely submits the record on time – 2; Never submits the record on time – 1
Puts the efforts to complete the record well – Diagrams are neatly drawn with complete labelling &/or excellent writing of exercises – 5; Diagrams are of above average quality with nearly complete labelling &/or good writing of exercises – 4; Diagrams are of average quality with partial labelling &/or complete writing of exercises - 3; Diagrams are of below average quality with inadequate labelling &/or incomplete writing of exercises – 2; Diagrams are of unacceptable standard with grossly inadequate labelling &/or poor writing of exercises – 1
Behaves respectfully with peers and teachers – Always speaks politely and demonstrates the appropriate body language with peers and teachers – 5; Often speaks politely and demonstrates the appropriate body language with peers and teachers – 4; Sometimes speaks politely and demonstrates the appropriate body language with peers and teachers – 3; Rarely speaks politely and demonstrates the appropriate body language with peers and teachers – 2; Never speaks politely & demonstrates the appropriate body language with peers & teachers -1

Participation in SGD (Small Group Discussion)- Always participates / presents in SGD -5; Often participates / presents in SGD -4; Sometimes participates / presents in SGD -3; Rarely participates / presents in SGD -2; Never participates / presents in SGD -1

Annexure Teaching Learning Methods

Teaching Learning Methods

- Didactic lectures should be made more interactive by encouraging the more involvement of the students. In the present digital era, student's involvement is more with usage of technology. For examples, many polling sessions, quizzes etc can be done using google slides and other apps like Kahoot, Socrative, menti.com etc.
- Small group discussion (SGD) should be planned properly and discussed among the faculty members before taking the class. As for as possible, uniformity should be maintained in the SGD by various facilitators. Case based learning (CBL) and problem-based learning (PBL) may be used to make the learner understand and learn about the various aspects in order to achieve the particular competency.
- Encourage the students learn themselves through self-directed learning (SDL). SDL sessions may be planned with objectives in order to cover the particular competency. These sessions may be conducted by providing learning material (research articles, public news, videos, etc) by a teacher and ask the students to search on a particular topic. Students should learn themselves by going through available resources and come back to classes allotted for SDL sessions where teacher able to connect the learning of students in order to achieve the competency.
- Integrated classes should be planned in order to cover the competency involving the topics from different subjects. These classes can be taken using Nesting, Temporal Coordination or Sharing. Case linkers may be used to link the topic/subject area among different subjects/ departments.
- Skills should be taught using the clinical cases at hospital wards/casualty/EMD, simulation in skills labs and/or departmental demonstration rooms. Case scenarios may be developed while teaching at skills lab and/or demonstration rooms.

Example for teaching the clinical examination in poisoning:

- **Case scenario:** A farmer working in a field was brought with history of breathlessness, vomiting, excessive sweating and muscle twitching. On examination, the pupils were constricted and heart rate was decreased. He had defecated in his cloths. Smell of kerosene was present in his breath. Even the cloths were soiled smelling kerosene.
- **Demonstration of clinical examination:** Mannequins or standardised patients in the skills lab may be used for examination and recording of vital parameters like pulse, BP, RR, SPO2 and state of pupils. Also, response to treatment can be.
- **Diagnosis and management:** Discuss the differential diagnosis, investigations and definitive diagnosis. Discuss the various treatment modalities. The response to drugs used for treatment can be demonstrated using high fidelity mannequins.
- **Medicolegal responsibilities:** The medicolegal responsibilities such as preservation of gastric lavage material, medicolegal documentation, and police intimation should be demonstrated in a simulated environment and using standard formats.

Example for teaching the topic Injuries/ Trauma with integration:

Linker Case: A 30-year-old male while travelling in a motor bike met with an accident with a car coming from opposite side. As a result of this, he sustained multiple injuries (can be displayed in the form of photographs). He was brought by his friend to the hospital. On reaching the hospital, patient was in semiconscious state with difficulty in breathing.

Subjects for integration: Forensic Medicine, General Surgery.

- Forensic Medicine: Topics covered in this subject include different types of mechanical injuries possible in such accidents and other relevant topics related to mechanical injuries. [Competencies to be covered: FM 3.3, 3.4, 3.8]
- General Surgery: First aid treatment, Basic life support, Transportation of patient, Basic management of injuries at hospital. [Competencies to be covered: SU 17.1, 17.2, 17.3]

Type of Integration:

- Horizontal: Temporal coordination can be done if is done in the same phase. Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, internal injuries, postmortem findings etc).
- Case details may be introduced step by step in order to involve students in discussion.

Example for teaching the topic Drugs / Substances of abuse with integration:

Linker Case: A 15-year-old student was brought by his parents to the hospital with a history of addiction to drugs and behavioral changes since 6 months. On examination, the patient was anxious, restless and was hesitant to talk.

Subjects for integration: Pharmacology, Forensic Medicine, Psychiatry.

- Pharmacology: Topics covered in this subject include Definitions, List of drugs of abuse, Mechanism of drug addiction. [Competencies to be covered: PH 1.22, 1.23]
- Forensic Medicine: Description of features and management of drugs/substances of abuse. [Competencies to be covered: FM 12.1]
- Psychiatry: Etiology, clinical features, treatment of drugs/substances of abuse. [Competencies to be covered: PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Type of Integration:

- Horizontal: Temporal coordination/ Sharing can be done if is done in the same phase.
- Vertical: Nesting can be used if it is done in two different phases.

Additional details to case scenario:

- In addition to linker case, case details need to be added by respective departments depending on the progression of the class (such as clinical features, behavioral changes, complications, legal problems etc).
- Case details may be introduced step by step in order to involve students in discussion.

Annexure

Integration topics

Integration: The teaching should be aligned and integrated horizontally and vertically recognizing the importance of medico-legal, ethical and toxicological issues as they relate to the practice of medicine.

Integration of Forensic Medicine with Other departments:

The suggested topics, competencies and the subjects/departments for integrated teaching are shown in below table.

Sl. No.	*Topic for integration*	*Subject [Competencies]*
1	Wound healing	General Surgery [SU 5.1, 5.2, 5.3, 5.4] Pathology [PA 5.1] **Forensic Medicine [FM 3.6]**
2	General toxicology	**Forensic Medicine [FM 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8]** Pharmacology [PH 1.4, 1.5, 1.11] General Medicine [IM 21.1, 21.5, 21.6, 21.7, 21.8]
3	Insecticides	**Forensic Medicine [FM 8.6]** Pharmacology [PH 1.52] Community Medicine [CM 3.8]
4	Corrosives	**Forensic Medicine [FM 9.1]** General Medicine [IM 21.3]
5	Heavy metal poisoning	**Forensic Medicine [FM 9.2, 9.3**] Pharmacology [PH 1.53]
6	Plant poisons	General Medicine [IM 21.2] **Forensic Medicine [FM 10.1]**
7	Snake, scorpion, insect bites	**Forensic Medicine [FM 11.1]** General Medicine [IM 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.8, 20.9]

8	Alcohol disorders	Pharmacology [PH 1.20, 1.21] Pathology [PA 12.1, 25.4] General Medicine [IM 5.5] **Forensic Medicine [FM 9.4]**
9	Drugs of abuse	Pharmacology [PH 1.22, 1.23] **Forensic Medicine [FM 12.1]** Psychiatry [PS 4.1, 4.2, 4.3, 4.4, 4.6, 4.7]

Annexure

Reference Books and Journals

Suggested references (as per Vancouver style): (Specification mentioned such as edition – subject to change with newer edition)

- **Basic references**

1) Reddy KSN, Murthy OP. The Essentials of Forensic Medicine and Toxicology. 34th edition, 2017. Jaypee Brothers Medical Publishers, New Delhi.
2) Pillay VV. Textbook of Forensic Medicine and Toxicology, 19th edition, 2019, Paras Medical Publishers, Hyderabad.
3) Karmakar RN. Forensic Medicine and Toxicology: Theory, Oral and Practical, 5th edition, 2015. Academic Publishers, Kolkata.
4) Nandy A. Principles of Forensic Medicine including Toxicology, 3rd edition, 2010, New Central Book Agency.
5) Subrahmanyam BV. Parikh's Textbook of Medical Jurisprudence, Forensic Medicine and Toxicology, 8th edition, 2019, CBS Publishers.
6) Guharaj PV, Gupta SK. Forensic Medicine and Toxicology, 3rd edition, 2019, Universities Press (India) Private Ltd., Hyderabad.
7) Bardale R. Principles of Forensic Medicine & Toxicology, 2nd edition, 2016, Jaypee Brothers Medical Publishers, New Delhi.
8) Biswas G. Review of Forensic Medicine & Toxicology, 3rd edition, 2015, Jaypee Brothers Medical Publishers, New Delhi.
9) Vij K. Textbook of Forensic Medicine and Toxicology: Principles and Practice, 6th edition, 2014, Elsevier Ltd.
10) Ignatius PC. Forensic Medicine and Toxicology, 4th edition, 2019, Elsevier India.
11) Pillay VV. NACPFMT's Practical Medicolegal Manual: Medical Ethics, Clinical Forensics & Toxicology, 1st edition, 2019, Paras Medical Publishers, Hyderabad.
12) Bakkannavar SM. Forensic Medicine and Toxicology: Practical manual, 1st edition, 2018, Elsevier India.
13) Borah. Medical Ethics for Students and Doctors, 1st edition, 2014, Ahuja Publishers.

- **Advanced references (may also include journals/ web/ other electronic sources).**

1) Kannan K. Modi's Medical Jurisprudence and Toxicology, 26th edition, 2019, LexisNexis.
2) Karmakar RN. JB Mukherjee's Forensic Medicine and Toxicology, 2007, Academic Publishers.
3) Dogra TD, Rudra A. Lyon's Medical Jurisprudence and Toxicology. 11th edition (reprint), 2018. Delhi Law House, Delhi.
4) Saukko P, Knight B. Knight's Forensic Pathology. 4th edition. 2015, CRC Press
5) Pillay VV. Modern Medical Toxicology, 4th edition, 2013, Jaypee Brothers Medical Publishers Ltd., New Delhi.
6) Journal of Karnataka Medico-Legal Society.
7) Journal of South India Medico-Legal Association.
8) Journal of Indian Academy of Forensic Medicine.
9) Journal of Indian Society of Toxicology
10) Journal of Forensic and Legal Medicine
11) Journal of Forensic Sciences 12) Indian Journal of Medical Ethics

Annexure

Log Book Format

RAJIV GANDHI UNIVERSITY OF HEALTH SCIENCES

BANGALORE, KARNATAKA

PHASE 2 MBBS, PHASE 3 MBBS part 1 & INTERNSHIP

LOG BOOK FORMAT

DEPARTMENT OF FORENSIC MEDICINE AND TOXICOLOGY

NAME OF THE CANDIDATE :

NAME OF THE COLLEGE :

UNIVERSITY REGISTER NUMBER :

ACADEMIC YEAR :

INDEX

15.	**ATTENDANCE EXTRACT / FORMATIVE ASSESSMENTS**	
16.	**INTERNAL ASSESSMENTS**	
17.	**COMPETENCY ASSESSMENT**	
18.	**SELF DIRECTED LEARNING FORMAT**	
19.	**AETCOM MODULE FORMAT**	
20.	**AUTOPSY CASE ATTENDANCE FORMAT**	
21.	**COMPETENCY ASSESSMENT IN INTERNSHIIP**	
22.	**CONFERENCE/CME/WORKSHOP ATTENDED**	
23.	**SCIENTIFIC PROJECT LIKE ICMR/ PRESENTATIONS/ OUTREACH ACTIVITIES**	
24.	**ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES**	
25.	**EXTRACURRICULAR ACTIVITIES**	

BONAFIDE CERTIFICATE

This is to certify that this log book is the bonafide record of Mr./Ms…….....whose particulars along is given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of Forensic Medicine and Toxicology including related AETCOM modules as per

the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period …….. to……..

She / He is not eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature with date

Head, Department of Forensic Medicine and Toxicology :

Signature with date

Principal/Dean :

BASIC PROFORMA OF THE STUDENT

Photo

PARTICULARS OF THE STUDENT:

Name of the student :

Date of Birth :

Father's name :

Mother's name :

Address :

Contact no s :

Email id :

Signature: .....

SUGGESTED GUIDELINES FOR LOG BOOK:
GENERAL INFORMATION:

6) The logbook is a record of the academic / co-curricular activities of the designated student, who would be responsible for maintaining his/her logbook.

7) The student is responsible for getting the entries in the logbook verified by the Faculty in charge regularly.

8) Entries in the logbook will reflect the activities undertaken in the department & have to be scrutinized by the Head of the concerned department.

9) The logbook is a record of various activities by the student like:

    f. Overall participation & performance

    g. Attendance

    h. Participation in sessions

    i. Record of completion of pre-determined activities.

    j. Acquisition of selected competencies

10) The logbook is the record of work done by the candidate in that department / specialty and should be verified by the college before submitting the application of the students for the University examination.

SUMMARY OF ATTENDANCE

Phase	*Percentage of classes attended*		*Eligible for University examination (Yes / No)*	*Signature of student*	*Signature of teacher*
	Theory	*Practical*			
Attendance at the end of MBBS Phase II			Not applicable		
Attendance at the end of MBBS Phase III (Part I)					

SUMMARY OF FORMATIVE ASSESSMENT (FA) &

INTERNAL ASSESSMENT (IA)

Sl. No.	*Type of Assessment*	*Date of Assessment*	*Total marks*	*Marks scored*	*Signature of student*	*Signature of teacher*

Suggested format for monitoring academic performance and providing feedback

Sl. No.	**Marks obtained**		**Feedback provided**		**Date**	**Signature of student**	**Signature of mentor**
			Positive	**Could be improved**			
1.	**1st Internal Examination**						
	Theory						
	Practical						
2.	**2nd Internal Examination**						
	Theory						
	Practical						

3.	**3rd Internal Examination**						
	Theory						
	Practical						
4	**4th Internal Examination (Preliminary)**						
	Theory						
	Practical						

ACTIVITIES DONE IN MBBS PHASE II

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, practical exercises, museum sessions, postmortems, seminars, tutorials, projects, case discussion, Self-directed learning etc.

ACTIVITIES DONE IN MBBS PHASE III (PART I)

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

- Duplicate of this template shall be made depending on the activities planned.
- Activities may be skill sessions, practical exercises, museum sessions, postmortems, seminars, tutorials, projects, case discussion, Self-directed learning etc.

Suggested format for documentation and feedback for Self-Directed Learning

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor

SUGGESTED FORMAT FOR AETCOM SESSIONS Name of the Facilitator: Date:

AETCOM module Number:

AETCOM Topic:

Competencies / Objectives:

1.

2.

3.

1. Briefly describe what you learnt from this AETCOM session in relation to the objectives. (in 100-150 words)

2. Apart from the above learning, what did you observe that influenced (Positive/negative) you during this session? (in 100-150 words)

Remarks by Facilitator:

Signature of Facilitator:

Module #	**Name of AETCOM Activity**	**Date completed**	**Attempt at activity** First or Only (F); Repeat (R); Remedial (Re)	**Rating** Below Expectations (B); Meets Expectations (M); Exceeds Expectations (E)	**Decision of faculty** Completed (C); Repeat (R); Remedial (Re)	**Initial of faculty and date**	**Feedback Receive**d Initial of learner

Suggested format for monitoring the attendance at mortuary

(Minimum of 15 cases)

Sl no	PM NO	DATE	CASE OF	COMPETANCY ADRESSED	SIGN OF TEACHER

Suggested format for assessment of competencies in internship

Sl no	Competency	Number of times done	Assessment done by	Sign of Teacher/Doctor
1	document and certification of trauma			

2	diagnosis and certification of death			
3	the legal documentation related to emergency care in a medicolegal register / accident register maintained at casualty / EMD			
4	certification in a medicolegal case of age estimation			
5	certification in a medicolegal case of victim of Sexual violence			
6	certification in a medicolegal case of accused of Sexual violence			
7	communication in medicolegal cases with police			
8	communication in medicolegal cases with public health authorities			
9	communication in medicolegal cases with Radiology / Pathology / Microbiology / FSL departments			

Other academic/non-academic activities

CONFERENCE/CME/WORKSHOP ATTENDED

SL NO	DATE	PARTICULARS	REMARKS IF ANY	SIGNATURE OF STAFF

SCIENTIFIC PROJECT PRESENTATIONS/REPORTS/ OUTREACH ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF STAFF

ACHIEVEMENTS/ AWARDS /ANY OTHER ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

EXTRACURRICULAR ACTIVITIES

SL NO	DATE	PARTICULARS	SIGNATURE OF FACULTY

Annexure

AETCOM Modules covered

Annexure

Model Question papers

COMMUNITY MEDICINE

PREAMBLE

Community Medicine plays a key role in the making of an Indian Medical Graduate going by the goals and role attributes envisaged by Medical Council of India. The sheet anchor nature of this speciality in moulding the IMG across the MBBS course provides scope and

opportunity for us to train the student in preventive, promotive, curative, and rehabilitative aspects with seamless integration with other disciplines.

Community medicine is the umbrella of medicine which connects the dots together. It is the enterprise of responsibility, a living embodiment of what it means to be human and watch the true face of human suffering in all its fullness. This branch has evolved to a great extent with the addition of many interdisciplinary components and is now conferred the status of 'clinical speciality' by medical council of India which was long overdue.

Community medicine equips the IMG in 'community-oriented health care' encompassing community education, networking, advocacy, policy, research, and of course clinical care at primary and secondary level. This myriad nature of our speciality requires holistic training at the undergraduate level. With more specific and objective training in community medicine as per competency framework will bolster the philosophy and practice of 'holistic care' which will help bridge the changing paradigm of 'health for all' to 'universal health coverage'.

The new Graduate Medical Education Regulations provides for an outcome driven undergraduate curriculum, to provide the orientation and the skills necessary for life-long learning, to enable proper care of the patient. The undergraduate medical curriculum has thus evolved from being teacher-centered to student centered, from discipline-based to integrated core and options-based and from passive acquisition of knowledge imparted by teachers to active problem-based learning. Skill acquisition is an indispensable component of the learning process in modern medicine. However, the need for development of professional attitude, behaviour and communication skills befitting a medical practitioner is well perceived and emphasized by the new curriculum with incorporation of AETCOM sessions.

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3	**Minimum teaching hours for 1ST Year**
4	**SLOs and Case scenarios for 1ST Year**
5	**Minimum teaching hours for 2nd & 3rd Year**
6	**Model Time Table**
8	**Integration of Topics**
9	**Competencies & Specific learning Objectives aligned with Teaching learning methods and Assessment methods, Certifiable Skills & Case Scenarios**
10	**Assessment in Community Medicine**
11	**AETCOM Module**
12	**Family study/ clinical posting**
13	**Reference Books**
14	**Logbook format (given separately)**

GOALS AND OBJECTIVES

i) **GOAL:** The broad goal of the teaching of undergraduate students in Community Medicine is to prepare them to function as community and first level physicians in accordance with the institutional goals.

ii) **OBJECTIVES**

a) KNOWLEDGE

At the end of the course, the student should be able to: -

(1) Describe the health care delivery system including rehabilitation of the disabled in the country;
(2) Describe the National Health Programmes with particular emphasis on maternal and child health programmes, family welfare planning and population control.
(3) List epidemiological methods and describe their application to communicable and non-communicable diseases in the community or hospital situation.
(4) Apply bio-statistical methods and techniques.
(5) Outline the demographic pattern of the country and appreciate the roles of the individual, family, community and socio-cultural milieu in health and disease.
(6) Describe the health information systems.
(7) Enunciate the principles and components of primary health care and the national health policies to achieve the goal of 'Health for All'.
(8) Identify the environmental and occupational hazards and their control.
(9) Describe the importance of water and sanitation in human health.
(10) To understand the principles of health economics, health administration, health education in relation to community.

b) SKILLS At the end of the course, the student should be able to: -

(1)Use epidemiology as a scientific tool to make rational decisions relevant to community and individual patient intervention.

(2)Collect, analyse, interpret, and present simple community and hospital-based data.

(3)Diagnose and manage common health problems and emergencies at the individual, family and community levels keeping in mind the existing health care resources and in the context of the prevailing socio-cultural beliefs.

(4). Diagnose and manage maternal and child health problems and advise a couple and the community on the family planning methods available in the context of the national priorities.

(5)Diagnose and manage common nutritional problems at the individual and community level.

(6)Plan, implement and evaluate a health education programme with the skill to use simple audio-visual aids.

(7)Interact with other members of the health care team and participate in the organisation of health care services and implementations of national health programmes.

C) ETHICS, ATTITUDE AND COMMUNICATION:

1) Demonstrate ability to communicate and counsel patients and their families in a patient, respectful, nonthreatening, non- judgmental and empathetic manner
2) Apply fundamental principles of bioethics such as beneficence, nonmaleficence and justice in patient care and community development
3) Promote autonomy and shared responsibility as a guiding principle in health seeking and patient care especially in reproductive health, family planning and management of diseases
4) Demonstrate justice as a guiding principle in encounters with patients and their families especially in mental illnesses, socially isolated communities and diseases such as HIV, leprosy and others.
5) Demonstrate respect in relationship with patients, fellow team members, superiors and other health care workers
6) Demonstrate empathy for patients.
7) Demonstrate an understanding of the implications and the appropriate procedure and response to be followed in the event of medical errors such as adverse events following immunization, improper bio-medical waste management.
8) Appropriately address queries of patients and their families attending a health facility regarding disease control measures and national health schemes
9) Administer informed consent and ensure confidentiality in patient care and health related research
10) Demonstrates ability to maintain required documentation in health care (including correct use of medical records)

d). INTEGRATION:

Develop capabilities of synthesis between cause of illness in the environment or community and individual health and respond with leadership qualities to institute remedial measures for this.

EXPLANATION OF TERMS USED IN THE MANUAL

1. LECTURE

Any instructional large group method including traditional lecture and interactive lecture.

2. SMALL GROUP DISCUSSION

Any instructional method involving small groups of students in an appropriate learning context.

3. SELF DIRECTED LEARNING

A process in which individuals take the initiative, with or without the help of others in diagnosing their learning needs, formulating learning goals, identifying human and material sources for learning, choosing and implementing appropriate learning methods.

4. FIELD VISIST

Any visit to an organization of public health importance to observe its functioning. It may also include visits to community for family study / clinic-social case discussion.

5.SKILL ASSESSMENT

A session that assesses the skill of the student including those in the practical laboratory, skills lab, skills station that uses mannequins/ paper case/simulated patients/real patients or **in the community/ field** as the context demands.

6. CORE

A competency that is necessary in order to complete the requirements of the subject (traditional must know)

7. NON – CORE

A competency that is optional in order to complete the requirements of the subject (traditional nice (good) to know/ desirable to know

SUGGESTED GUIDELINES FOR THE TEACHING AND LEARNING METHODS

LECTURE: Suggested topics for didactic and interactive lectures have been included along with specific learning objectives linked to each competency. Lectures should cover the core competencies with appropriate pictures, charts, or diagrams.

SMALL GROUP DISCUSSION: The topics for small group discussion that have been suggested, these topics included are those where more intensive and interactive learning sessions are required.

SELF DIRECTED LEARNING: Non-core competencies are suggested to be taken as topics for self-directed learning. At the end of the session, the teacher moderates the discussion and the learning is recorded in the logbook.

PRACTICAL DEMONSTRATION

Practical classes will include demonstration and discussion on topics of public health importance. All sessions will have specific learning objectives which are linked to the relevant competencies and are assessed as described in the assessment module.

All sessions will be done with the faculty as facilitator.

The students will be encouraged to observe the demonstrations and perform the requisite skills either independently or with assistance as required. Emphasis will be on acquiring relevant skills at the field level and clinically. Thus,case-based learning and discussions will be encouraged.

FIELD VISIST

Any visit to an organization of public health importance to observe its functioning. These may include visit to PHC, Anganwadi, DOTS Centre, Hospital Waste Management Facility,

Water Treatment Plant, ART / ICTC Centre

It may also include visits to community for family study / clinic social case discussion.

BEDSIDE CLINICO SOCIAL CASE DISCUSSIONS:

Is teaching clinico-social aspects of disease and communication skills in the presence of a patient.

FAMILY STUDY:

Students visit families in the community to understand the association of various environmental factors, socio-economic factors and the psychological or emotional factors with the health and disease of the family.

DOAP:

A practical session that allows the student to observe a demonstration, assist the performer, perform in a simulated environment, perform under supervision or perform independently.

RESEARCH PROJECT:

This teaching-learning method involves eight steps: question, hypothesis, objectives, review of literature, methodology, results (data and analysis), discussion, and conclusion

MINIMUM TEACHING HOURS IN 1st PROFESSION YEAR

Sl No	Number	Topic	Competencies	Lecture	SGD/ Tutorial DOAP	SDL	Total Hrs
1	CM 1	**Concept of Health and Disease**	10	8	6	2	16
2	CM 2	**Relationship of social and behavioural to health and disease**	5	4	3	1	08
3	CM 5	**Nutrition**	8	3	14	1	18
4	CM 9	**Demography and vital statistics**	7	5	4	1	10
		Total	**30**	**20**	**27**	**5**	**52**
		AETCOM Module 1.3		8			

To be noted:

- The number of hours mentioned above are rough guidelines that can be modified to suit the specific requirements of a medical college.
- It is recommended that didactic teaching be restricted to less than one third of the total time allotted for that discipline.
- Greater emphasis is to be laid on hands-on training, symposia, seminars, small group discussions, problem-oriented and problem-based discussions and self- directed learning.
- Students must be encouraged to take active part in and shared responsibility for their Learning.

Competencies to be covered in 1st Professional year with Specific Learning Objectives

Sl. No.	Number	Topic	lecture	Practical/ SGD/ Tutorial DOAP	Total hours

	CM 1	**Concept of Health and Disease** • Define Public Health, rise of public health. • Describe the changing concepts in Public Health • Define health, describe the changing concept of health, describe the concept of holistic and spiritual health, and describe the relative concept of health. Describe the concept of well-being, standard of living, quality of life – Physical quality of life index, Human development index. • Determinants of health- Enumerate and describe • Describe the characteristics of agent, host and environmental factors in health and disease. • Describe the concept of causation. Describe the germ theory of disease. • Describe the multi factorial etiology of disease • Describe and discuss the natural history of disease • Prevention – Concept, Levels of prevention, application of interventions at various levels of prevention. • Health promotion and Education - concepts, principles, • IEC and Behavioral change communication (BCC) - concept and examples. • Enumerate and describe health indicators • Describe the Demographic profile of India and its impact on health. • Describe communication skills in health.	8	8	16
2	CM 2	Relationship of social and behavioural to health and disease			

		• Describe the socio-cultural factors, Types of family, its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status. • Describe social psychology, community behaviour and community relationship with health and disease • Describe poverty and social security measures and its relationship to health and disease	4	4	8
3	**CM 5**	**NUTRITION**			
		• Describe the common sources of various nutrients, Demonstrate: food we eat and their nutritive value (Integrated session with Bio chemistry) special nutritional requirements according to age, sex, activity, physiological Conditions. • Describe and demonstrate the correct method of performing a nutritional assessment using the appropriate method (Integrated session with paediatrics /General medicine) nutritional assessment of individuals, nutritional assessment of families and nutritional assessment of the community. • Define common nutrition related health disorders (Integrated session with paediatrics /General medicine) (Including macro-PEM, Micro-iron, Zn, iodine, Vit. A, endemic fluorosis) • Describe the epidemiology of common nutrition related health disorders. Describe their control and management.	5	5	10
4	**CM 9**	**Demography and vital statistics**			
		□ Define and describe the principles of Demography, Demographic cycle, Vital statistics	3	15	18

		• Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates • Enumerate and describe the causes of declining sex ratio and its social and health implications • Enumerate and describe the causes and consequences of population explosion and population dynamics of India.			

CASE SCENARIOS FOR FIRST YEAR PROFESSIONALS

1. Concept of health and disease

1.3.Define health, Describe the concept of holistic and spiritual health, Describe the relative concept of health. Describe the concept of wellbeing, standard of living, quality of life – Physical quality of life index, Human development index (PBL).

a. Calculate the HDI for a hypothetical nation having average expectancy of life at birth as 65 years, Adult literacy rate of 55%, Combined gross enrolment ratio of 60% and with a GDP of 2000 US dollars per capita per year. (log10 2000 is 3.301).

1.12. Enumerate and describe health indicators

a. In a community development block area with population of one lac, there were 500 cases of TB and 5 cases of rabies during 2019. During the same year there were a total of 250 deaths, out of which 5 were due to rabies and 50 were due to TB. Calculate the CDR. Also calculate, separately for TB and rabies, the cause-specific mortality rate (CSMR), CFR and PMR.

b. In a township with population of 1 lac, the following are the statistics for the year 2019. From the table, calculate the CBR, GFR, ASFRs for the 6 age groups, TFR and GRR (all rates to be calculated per 1000).

Age Group	Mid-year population of females	Births in year	
		Total Live Births	***Total female live births***
15-19	5000	400	192
20-24	5000	700	347
25-29	4000	700	331
30-34	4000	500	240
35-39	4000	400	189
40-44	3000	300	151
Total	25000	3000	1450

1.11. IEC and Behavioural change communication (BCC) - concept and examples.

a. Mr X, a 40-year male leading an active life. He is an avid tennis player and loves to travel to exotic countries. Lately, Mr X complains of feeling uncharacteristically tired, so he scheduled an appointment with his doctor for an evaluation. That is when he was diagnosed with HIV. The health educator was informed about the same. Health educator knew that Mr X had multiple sexual practices, hence advised him for the use of condom but Mr X denied. Develop behaviour change communication strategy for promotion and adherence to condom.

b. In a PHC catering a population of 34000. Birth rate was 28/1000 live births. Unmet need of family planning was 48%. The percentage of use of oral contraceptive pills in the community was 0.8%. As a medical officer develop steps for BCC to increase awareness and promote the use of oral contraceptive pills.

SHORT GROUP DISCUSSION:

1. **Describe the concept of causation. Describe the germ theory of disease.** 15 Min: Video/ Lecture on concept of causation.

   Later divide the students into groups and discuss on concept of causation

		Communicable diseases	Non-Communicable diseases	RTI/STI	Others
Example	1	Acute GE	Diabetes	AIDS	Genetic disease
	2	Chicken Pox	Hypertension	Herpes	
	3	Polio	CHD	Candidiasis	
	4	Tuberculosis	Lung cancer	Trichomonas Vaginalis	

	5	Dengue	Mental illness	Syphilis	
Concept of causation		Supernatural theory, Miasmatic theory, Contagious theory, Germ theory, Epidemiological triad, Advanced epidemiological triad, BEINGS model	Multifactorial causation, Web of causation, Epidemiological wheel theory	Supernatural theory, Multifactorial causation, Epidemiological triad	Epidemiological wheel theory

2. **Prevention – Concept, Levels of prevention, application of interventions at various levels of prevention. (2 HOURS)** Class I: lecture on levels of prevention.
   Class II: Divide the class into 4 groups and dictate the scenarios. Help them in identification of levels of prevention.

   Scenario1: A 40-year male came to a medical centre with complaints of weakness and lethargy along with the history of increased thirst and appetite during the day and night. He told the doctor that his sleep is disturbed during the night due to increase in frequency of micturition (2 to 3 visits to toilet). He further said to the doctor that his father is 72 year and has been suffering from diabetes and hypertension.

   a. What level of prevention is applicable for this specific scenario?
   b. What measures are required to protective from further disability?
   c. How could the patient have prevented from the occurrence of this disease?

   Scenario 2: A 35-year married female comes to the clinic with complain of pain and 2cm lump in the right breast. She has three children and has breastfed all of them for two years each. Her menstrual cycles are regular. She has a history of breast cancer from the maternal side.

   a. What level of prevention can be applied at this stage?
   b. What primary preventive measures would she have applied?

   Scenario 3: Youth movement NGO has introduced a **"Subsidized fitness programmes at selected centres"**to make it more affordable to the youths thus helping to make younger generation to be active and emphasising the need for exercise as a norm in community and reducing the development of risk factors for coronary heart disease.

   a. What level of prevention is applicable for the above scenario?

3. Describe the socio-cultural factors, Types of family, its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status.

1. Scenario

Mangappa a 34-year-old male working as a carpenter and is an illiterate. He owns a semi-pucca house containing two rooms, 1 kitchen, 1 bathroom in V V puram, Bengaluru. Family is Hindu by religion and belongs to SC/ST community. He has five daughters and one son, with a gap of 1.5 to 2 years between them. His son is the youngest among all aged 7 years. Currently 6 members reside in the house – Mangappa, his wife, son and two daughters. Mangappa earns around 3000 per month. His wife working as maid in households earns 4000 per month. His son aarya accompanies him to workplace daily except weekends. Mangappa was little tensed on the day health worker Gayatri visited his home. On enquiring he told his son was suffering from amma, he had to take his son to anamma temple daily and hence had no earnings since a week.

a) Comment on the socio-economic status of the family.
b) List various socio-cultural factors and their impact on health. Add a comment on the socio-cultural factors prevalent in the current family
c) Enumerate and define different types of family and the role of family in health and disease.
d) You are the in charge medical officer of V V Puram, and while on routine field visit, you came across this family. what would be your approach to educate the family?

PHASE II MBBS, PART 1

MINIMUM TEACHING HOURS IN 2nd Year

Sl No	Topic	Number of competencies	Lecture	SGD/ Tutorial DOAP	SDL	Total Hrs
6	Epidemiology	9 (47 SLOs)	9	8	2	19
7	Occupational Health	5 (19 SLOs)	3	1	1	5
8	**Nutrition**	5 (16 SLOs)	2	4	1	7
9	Disaster Management	4 (10 SLOs)	2	0	2	4
10	International Health	2	2	0	0	2
11	Environmental Health Problems	8 (55 SLOs)	2	14	2	18
12	Mental Health	3 (6 SLOs)	0	2	1	3
13	Essential Medicines	3 (12 SLOs)	0	1	1	2
	Total	39	**20**	**30**	**10**	**60**
14	AETCOM Module 2.1&2.3		8			

3RD PROFESSIONAL YEAR

Sl No	Number	TOPIC	COMPETENCIES	LECTURE	PRACTICAL	SDL	TOTAL HOURS
1	CM 6	Basic statistics and its applications	9	0	12	0	12
2	CM 8	Epidemiology of communicable and non-communicable diseases	7	16	30	1	47
3	CM 10	Reproductive maternal and child health	9	12	10	1	23
4	CM 12	Geriatric services	4	1	2	0	3
5	CM 14	Hospital waste management	3	1	2	1	4
6	CM 16	Health planning and management	4	2	2	0	4
7	CM 17	Health care of the communtiy	5	6	0	1	7

8	CM 20	Recent advances in Community Medicine	4	2	2	1	5
		TOTAL HOURS		40	60	5	105
		ACTUAL HOURS		104	208		
			AETCOM - MODULE 3.1 AND 3.3 FOUNDATION OF COMMUNICATION 3 & 4				**10 HOURS**

Model Time table for Phase II MBBS

SAMPLE TIMETABLE

BLOCK 1: 15 WEEKS (OCT-JAN)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	**PH-L**	**OBG-L**	PH-A,CM-B
Tuesday	Postings	**PH-L**	**FM-L**	FM-A,
Wednesday	Postings	**MIC-L**	**PA-L**	PA-A, MIC-B
Thursday	Postings	**CM-L**	PH-SGD	PA-B, MIC-A
Friday	Postings	**MIC-L**	**PA-L**	PH-B,CM-A
Saturday	Clinical training and Skills	G.MED-L	SUR-L	FM-B,

SECOND BLOCK 15 WEEKS (FEB-MAY)

8-11		11.30-12.30	12.30-1.30	2-4
Monday	Postings	**MIC-L**	**PA-SGD**	**PH-A, PA-BSGD**
Tuesday	Postings	**PH-L**	**MIC-SGD**	**PH-SGD**
Wednesday	Postings	**PA-L**	**MIC-L**	**PA-A, MIC-B**
Thursday	Postings	PH-L		PH-B,PA-A SGD
Friday	Postings	**PA-L**	**MIC-SGD**	**PA-B,MIC-A**
Saturday	Clinical training and Skills	AETCOM	AETCOM	

THIRD BLOCK 10 WEEKS (JUN-AUG)

8-11		11.30-12.30	12.30-1.30	2-4	4-5
Monday	Postings	**PA-L**	MIC-L	**PH-SGD**	PA-SDL
Tuesday	Postings	**PA-L**	MIC-L	**PA-A, MIC-B**	PH-SDL

Wednesday	Postings	**PH-L**		**PH-A,PA-B SGD**	MIC-SDL
Thursday	Postings	**PH-L**		PH-B,PA-A SGD	CM-SDL
Friday	Postings	**CM-L**		PA-B, MIC-A	AETCOMSDL
Saturday	Clinical training and Skills	**SUR-L**	**OBG**	G.M-L	

Timetable for Second Professional Year

	TERM-1-OCT-JAN (15 WK)			TERM-2-FEB-MAY (15 WK)			TERM-3- JUN-AUG (10 WK)			TOTAL		
	THEORY	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**	**THEORY**	**PRACT**	**SGT/ TUTORIAL**
PATH	**30**	**30**	**0**	**30**	**30**	**45**	**20**	**20**	**20**	**80**	**80**	**65**
PHARM	**30**	**30**	**15**	**30**	**30**	**30**	**20**	**20**	**20**	**80**	**80**	**65**
MICRO	**30**	**30**	**0**	**30**	**30**	**30**	**20**	**20**	**0**	**80**	**80**	**30**
CM	**15**	**0**	**30**	**0**	**0**	**0**	**15**	**0**	**0**	**30**	**0**	**30**
FM	**15**	**0**	**30**	**0**	**0**	**0**	**0**	**0**	**0**	**15**	**0**	**30**
G.MED	**15**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**25**	**0**	**0**
G.SUR	**15**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**25**	**0**	**0**
OBG	**15**	**0**	**0**	**0**	**0**	**0**	**10**	**0**	**0**	**25**	**0**	**0**
AETCOM				**AETCOM** 30						AETCOM 30		

NOTE: Can be prepared at the convenience of the respective institutions

INTEGRATION CLASSES – SECOND PROFESSIONAL YEAR

TOPIC	TOPIC CODE	VERTICAL INTEGRATION	HORIZONTAL INTEGRATION	TOT
Epidemiology				
Define Epidemiology and describe and enumerate the principles, concepts, and uses	CM7.1	GENERAL MEDICINE		8
Enumerate, describe, and discuss the modes of transmission andmeasures for prevention and control of communicable and non-communicablediseases	CM 7.2			
Enumerate, describe, and discuss the sources of epidemiologicaldata	CM 7.3			
Define, calculate, and interpret morbidity and mortality indicatorsbased on given set of data	CM 7.4			
Enumerate, define, describe, and discuss epidemiological studydesigns	CM 7.5			
Enumerate and evaluate the need of screening tests	CM 7.6			
Describe and demonstrate the steps in the Investigation of anepidemic of communicable disease and describe the Principles ofcontrol measures	CM 7.7		MICRO	
Describe the principles of association, causation, and biases inepidemiological studies	CM 7.8			
Environmental Health Problems				
Describe the health hazards of air, water, noise, radiation, andpollution	CM 3.1	GM, ENT		5
Describe the aetiology and basis of water borne diseases /jaundice/hepatitis/ diarrheal diseases	CM 3.3	MICRO, GM, PAED		
Describe the role of vectors in the causation of diseases. Alsodiscuss National Vector Borne Disease Control Program	CM 3.6	MICRO		
Identify and describe the identifying features and life cycles ofvectors of Public Health importance and their control measures	CM 3.7	MICRO		
Describe the mode of action, application cycle of commonly usedinsecticides and rodenticides	CM 3.8	PHARMA		
Nutrition				
Describe the common sources of various nutrients and specialnutritional requirements according to age, sex, activity, physiologicalconditions	CM5.1	General Medicine, Pediatrics		
Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method	CM5.2	General Medicine, Pediatrics		

Define and describe common nutrition related health disorders (including macro-PEM, Micro-iron, Zn, iodine, Vit. A), their control and management	CM5.3	General Medicine, Pediatrics		
Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment	CM5.4	General Medicine, Pediatrics		
Describe the methods of nutritional surveillance, principles of nutritional education and rehabilitation in the context of socioculturalfactors.	CM5.5	General Medicine, Paediatrics		
Enumerate and discuss the National Nutrition Policy, important national nutritional Programs including the Integrated Child Development Services Scheme (ICDS) etc	CM5.6	Paediatrics		
Describe food hygiene	CM5.7		Microbiology	
Describe and discuss the importance and methods of foodfortification and effects of additives and adulteration	CM5.8	Paediatrics		
Disaster Management				
Define and describe the concept of Disaster management	CM13.1	GEN MED & GEN SURG		4
Describe disaster management cycle	CM13.2			
Describe man-made disasters in the world and in India	CM13.3			
Describe the details of the National Disaster management Authority	CM13.4			
Mental Health				
Define and describe the concept of mental Health	CM15.1	PSYCHIATRY		3
Describe warning signals of mental health disorder	CM15.2			
Describe National Mental Health program	CM15.3			
Essential Medicine				
Define and describe the concept of Essential Medicine List (EML)	CM19.1		PHARMA	3
Describe roles of essential medicine in primary health care	CM19.2			
Describe counterfeit medicine and its prevention	CM19.3			

SI.NO		TOPIC/SLO
LECTURES TO BE COVERED IN FIRST BLOCK		
36.	CM 3.1	1. Describe the health hazards of air and noise pollution 2. Explain prevention and control of air pollution. 3. Define water pollution and describe health hazards of water pollution 4. Enumerate biological effects of radiation
37.	CM 3.2	1. Discuss safe and wholesome water along with the sources of water 2. Describe the Purification of water on the large scale. 3. Describe the Purification of water on the small scale. 4. Discuss the drinking water quality-criteria standards water conservation and rainwater harvesting.
38.	CM 3.3	Classify the water borne diseases
39.	CM 3.4	1. List the types of solid waste and the hazards due to each type. 2. Describe various scientific methods of sewage/liquid waste and solid waste disposal 3. Discuss hazards due to human excreta and open defaecation 4. Explain the principles behind functioning of sanitary latrines and other methods of human excreta disposal
40.	CM 3.5	1. Explain and differentiate the housing standards of Urban and rural area. 2. Assess over crowding 3. Explain hazards of overcrowding. 4. List and explain the indicators of housing. 5. Explain the effects of poor housing on the health.
41.	CM 3.6	1. Describe medical entomology – arthropods 2. Classify vectors of medical importance 3. List various diseases transmitted by vectors and its modes 4. Describe various vector control measures 5. Describe the national vector borne disease control program
42.	CM 3.7	1. List vectors of public health importance 2. Identify different vectors of public health importance 3. Describe lifecycle and control measures of different vectors of public health importance

43.	CM 3.8	1. Define insecticides and rodenticides and Classify with examples 2. Explain mode of action and application of commonly used insecticides and rodenticides 3. List hazards of injudicious use of insecticides.

Competencies to be covered in 2nd Professional year with

Specific Learning Objectives

THEORY

COMPETENCY DISTRIBUTION IN EACH BLOCK

FIRST BLOCK

44.	CM 7.1	1. Define the term epidemiology 2. List various components and approaches of epidemiology 3. Describe the aims of epidemiology 4. Enumerate various uses of epidemiology
45.	CM 7.2	1. Define infection, contamination, and infestation 2. Classify modes of transmission of zoonotic diseases 3. Differentiate between concept of disease control, elimination and eradication 4. Define Incubation period, secondary attack time, generation time and serial interval 5. Classify and describe adverse events following immunization (AEFI) 6. Explain cold chain system and its uses
46.	CM 7.3	1. Enlist various sources of epidemiological data 2. Describe the advantages and disadvantages of various sources of epidemiological data 3. Discuss the uses of epidemiological data 4. Describe SRS Classify health surveys 5. Enlist the uses of hospital records
47.	CM 7.4	1. List the uses of morbidity and mortality indicators 2. Classify morbidity and mortality indicators of public health importance with examples. 3. Comment of the impact of national health programmes based on the given set of data on morbidity and mortality indicators
48.	CM 7.5	1. Classify the epidemiological study designs 2. Explain the steps of different epidemiological study designs (Cross sectional, case control, cohort and RCT) 3. List the advantages and limitations of various epidemiological study designs. 4. Select the appropriate study design for a given research question
49.	CM 7.6	1. Define screening test and list the types of screening tests 2. List the differences between screening and diagnostic test 3. List the criteria for screening of a disease 4. Enumerate and explain the uses of screening tests 5. List and explain the evaluation indicators for a screening test
50.	CM 7.7	1. Know the objectives and steps in investigation of epidemic 2. Know the principle of control measures 3. With problem-based case scenario, enumerate the steps in the investigation of epidemic able to list at least five steps of epidemic investigation

51.	CM 7.8	1. Explain the principle of association and causation 2. List different types of biases in epidemiological studies 3. Identify the biases in various epidemiological studies 4. Enlist 3 biases in epidemiological studies

52.	CM 7.9	1. Describe the application of computers in epidemiology 2. Hands on training by using computers in epidemiology 3.List out the 3 uses of computer in epidemiology
53.	CM 11.1	1. List the most common occupations in India 2. List the most common occupational illnesses suffered by workers in these occupations 3. List and describe the clinical features of the occupational illnesses experienced by workers, including those in agriculture
54.	CM 11.2	1. List two important acts related to Occupational Health in India. 2. Describe in brief the benefits to employees under the Employees State Insurance Act (ESI Act).
55.	CM 11.3	1. Distinguish between hazard and risk 2. List and classify the hazards faced employees in common occupations 3. Draw the triangle depicting the Hierarchy of Control 4. List preventive interventions under the different levels of the hierarchy of controls
56.	CM 11.4	1. Define "Ergonomics" 2. List the common ergonomic problems seen among employees in different occupations 3. List the risk factors implicated in the causation of common ergonomic problems 4. List the measures to be taken to ensure ergonomic safety
57.	CM 11.5	1. List the categories of healthcare workers employed in the healthcare industry 2. List and describe the clinical features of the occupational illnesses experienced by healthcare workers. 3. List and classify the hazards faced employees in different departments in a hospital setting 4. List preventive interventions to prevent and manage occupational hazards and illnesses in the hospital setting

PRACTICAL / DOAP TOPICS TO BE COVERED IN FIRST BLOCK

1	C M 3.2	1. Estimate the amount of bleaching powder required for chlorination of a water source 2. Differentiate a sanitary and non sanitary well from the given models 3. Analyse water quality form the given information
	C M 3.6	1. Identify and distinguish the vectors of public health importance based on the morphology 2. Identify and distinguish the different stages of the life cycle of the vectors of public health importance 3. Identify the insecticide/pesticide and associate its use in vector control
2	C M 5.2	1. Conduct a nutritional assessment of individuals, families, and the community using the appropriate anthropometric and clinical methods

	C M 5.4	1. Plan a diet chart for individuals of different age groups and gender, based on their requirements, availability of foods and economic status in a simulated environment 2. Plan a comprehensive dietary guideline for families belonging to various

		socio economic status in a simulated environment
3	M 7.4	1. Calculate and interpret morbidity and mortality indicators based on given set of data 2. Calculate and interpret sensitivity, specificity, false positive, false negative, predictive value positive and negative of a screening test
	M *7.7*	1. In a simulated scenario: Demonstrate the steps in the investigation of an epidemic of a communicable disease and outline the control measures
	M 7.9	1. Use computers and appropriate software technology in epidemiology
4	M 11.4	1. Identify the hazards associated with different occupations 2. Identify the measures, personal protective devices and equipments and demonstrate its correct use in ensuring occupational safety

SI NO		**TOPIC**
LECTURES TO BE COVERED IN THIRD BLOCK		
19.	CM 13.1	1. DEFINE the terms Hazard, Disaster. 2. CLASSIFY different disaster types with examples 3. DESCRIBE the response of a given institution during past disasters
20.	CM 13.2	1. LIST the phases of disaster management 2. DESCRIBE Triaging, Tagging and Identification of Dead 3. LIST the steps of Epidemiological surveillance and disease control in disasters 4. Describe the role of disaster preparedness and personal protection in various disasters
21.	CM 13.3	1. LIST the various manmade disasters in the world and in India 2. LIST the responses in manmade disasters

SECOND BLOCK

Community Medicine has no teaching hours in 2nd Block

THIRD BLOCK

22.	CM 13.4	1. DESCRIBE the role of the National Disaster Management Authority in Disaster Management
23.	CM 15.1	1. To list the common mental health problems among the population 2. To classify psychiatric ailments- Common Mental Health Disorders (CMDs) and Severe Mental Health Disorders (SMDs)
24.	CM 15.2	1. To understand the factors that contribute to the burden of the mental health problems among women in the rural areas 2. To describe the warning signs of mental health
25.	CM 15.3	1. To be able to state the roles and the functions of community health workers in a rural mental health programme
26.	CM 18.1	1. Define health 2. Define the concept of International health 3. Describe the concept of International health
27.	CM 18.2	1. Describe roles of various international health agencies 2. Explain the health work of bilateral health organization
28.	CM 19.1	1. Define NLEM 2. State the rationale for NLEM 3. Name atleast10 categories of drugs under NLEM 4. List 5 potential uses of NLEM
29.	CM 19.2	1. Define primary health care 2. Explain the roles of essential medicine in primary health care
30.	CM 19.3	1. Enlist the different types of counterfeit drugs which can be seen in healthcare settings 2. Discuss the medico-social consequences of prescription of counterfeit drugs to population 3. Demonstrate understanding of various legal, social, and medical measures to prevent availability of counterfeit drugs in Indian healthcare system

DOAP TOPICS TO BE COVERED IN THIRD BLOCK

		NIL

Competency No.	Teaching-Learning Methods	Assessment Method
5.4	SGD – P (Practical)	Skill assessment –OSPE
5.5	Lecture, SGD	WRITTEN
5.6	Lecture	Written
5.7	Lecture DOAP	WRITTEN OSPE
5.8	Lecture	WRITTEN
3.1	Lecture, SGD	Written, Viva Voce
3.2	Lecture, SGD/ Field Visit/ DOAP session	Written Viva Voce
3.3	Lecture, SGD, DOAP	Written, Viva voce
3.4	Lecture, SGD, Practical	Written, Viva voce
3.5	SGD/ Practical	Written, Viva voce
3.6	Practical	Written, Viva voce
3.7	SGD/ Practical/ Lecture	Written, Viva Voce, Skill assessment
3.8	SGD/ Lecture	Written, Viva voce
7.1	SGD, Lecture	Written/ Viva Voce
7.2	SGD, Lecture	Written/ Viva Voce
7.3	SGD, Lecture	Written/ Viva Voce
7.4	Lecture/ SGD, DOAP sessions	Written/ Skill assessment
7.5	Lecture/ SGD	Written, Viva Voce
7.6	SGD, Lecture	Written/ Skill assessment
7.7	Lecture/ SGD	Written/ Skill assessment
7.8	Lecture/ SGD	Written/ Viva voce

Summary of TL methods and list of competencies to be covered in Phase II MBBS and

Assessment methods

CM 7.9	Lecture/ DOAP	Written
CM 11.1	Lecture, SGD	Written, Viva Voce
CM 11.2	Lecture, SGD	Written, Viva Voce
CM 11.3	Lecture/ SGD	Written, Viva Voce
CM 11.4	Lecture, SGD	Written, Viva Voce
CM 11.5	Lecture, SGD	Written, Viva Voce
CM 13.1	Lecture, SGD	Written, Viva voce
CM 13.2	Lecture, SGD	Written, Viva Voce
CM 13.3	Lecture, SDG	Written, Viva Voce
CM 13.4	Lecture, SGD	Written, Viva Voce
CM 15.1	Lecture, SGD	Written, Viva voce
CM 15.2	Lecture, SGD	Written, Viva voce
CM 15.3	Lecture, SGD	Written, Viva voce
CM 18.1	Lecture, SGD	Written, Viva voce
CM 18.2	Lecture, SGD	Written, Viva Voce
CM 19.1	Lecture, SGD	Written, Viva voce
CM 19.2	Lecture, SGD	Written, Viva voce
CM 19.3	Lecture, SGD	Written, Viva Voce

CERTIFIABLE SKILLS

Certifiable skill - 1

Conduct a nutritional assessment of individual by using the appropriate anthropometric and clinical methods and communicate the same to the patient. Student has to perform this activity 5 times to be certified

Certifiable skill - 2

Plan a diet chart for individuals of different age groups and gender, and physiological states (pregnancy, lactation, disease) based on their requirements, availability of foods and economic status during family study.
Student has to perform this activity 2 times to be certified

Certifiable skill - 3

Plan a comprehensive dietary chart for families belonging to different socio economic status in a simulated environment. Student has to perform this activity 2 times to be certified

Certifiable skill – 4

Calculate and interpret morbidity and mortality indicators based on a given data set. Student has to perform this activity 5 times to be certified

Certifiable skill – 5

Validate a screening test (sensitivity, specificity, false positive, false negative, predictive value positive and negative) using the given information. Student has to perform this activity 2 times to be certified

CASE SCENERIOS FOR TOPICS OF SECOND PROFESSIONAL YEAR

I) Epidemiology

Topic: A) Enumerate, describe and discuss the sources of epidemiological data

TL method: SDL

Duration: 1 hour Assignments:

1) Find out the current mortality and morbidity indicators from census, SRS, NFHS and DLHS. Comment on the current IMR and MMR.
2) Describe in brief about census and SRS. Compare and comment on the statistics from 2001 till current.
3) Describe the importance and list the parts of a death certificate. Collect and analyze 10 random death certificates from your hospital.
4) Enlist notifiable diseases in India.
5) Visit and find out the registers maintained in the urban health training centre, siddaiah road. Write a note on the importance of maintaining each register.
6) Visit and find out the registers maintained in ARC of your hospital. Write a note on importance of each register.
7) Enlist different sources of epidemiological data. What is primary data and secondary data.

Topic: B) Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures.

TL method: SGD

Duration: 2 hours

Example

Class 1: A lecture class of duration 1 hour on the same topic Followed by

Class 2: Division into groups (how many ever possible) and Discussion on steps of outbreak investigation by quoting an example.

Dr. Vani was appointed as Medical officer of Health in **UHTC A** in Bangalore. On 2nd june2019 at 12 AM, Dr.

Vani got a call from the **medical officer of a girl's hostel B**, which was near to UHTC and informed that12 cases of diarrhoea and vomiting with mild dehydration had occurred in the hostel and he was referring them to the UHTC. The hostel had about 1000 girls who were students in different colleges in Bangalore. These girls used to leave early morning in namma metro or BMTC buses for their respective colleges, after breakfast and used to carry packed lunch. They used to comeback in late evening, have tea and some snacks at 6pm followed by dinner at 9 pm in the hostel. In the meanwhile Dr. Vani also gets 15 cases with similar history from a quarters which is located nearby to the hostel B. On enquiring she found that the hostel B and the quarters had shared the same general piped water supply and sewerage system.KR market was very near to both hostel and quarters with all the necessary daily requirements available.

Topic: C) Describe and demonstrate the application of computers in epidemiology

TL method: SDL

Duration: 1 hour Assignments:

1. Write a short note on computational epidemiology
2. Importance of ANMOL program
3. Role of GIS in epidemiology (quoting an example)
4. e hospitals
5. RCH portal and HMIS
6. Asha soft
7. Electronic health records
8. m health
9. e VIN

Occupational health

Topic: Enumerate and describe specific occupational health hazards, their risk factors and preventive measures TL method: SDL

Duration: 1 hour Assignments:

1. List important occupational health hazards in following streams

- Software engineer
- School Teacher
- Traffic police
- Miners
- Nursing staff
- Farmers
- Truck driver

2. Write a note on the roles and responsibilities of an in charge medical officer in a factory

3. Visit ESI hospital and note down the facilities given under ESI scheme.

Category	Basis	Examples
Water borne diseases	Caused by the ingestion of water contaminated by human or animal faeces or urine containing pathogenic bacteria or viruses.	Cholera, typhoid, amoebic and bacillary dysentery, viral hepatitis, leptospirosis, giardiasis.
Water washed diseases	Diseases due to lack of water. Poor personal hygiene favours spread.	Scabies, skin sepsis & ulcers, yaws, trachoma, conjunctivitis, flea-, lice-, and tick- borne diseases.
Water based diseases	Caused by parasites found in intermediate organisms living	Schistosomiasis, dracunculiasis and some other

II) Disaster management

Topic: Describe man-made disasters in the world and in India

TL method: SDL

Duration: 1 hour

Assignments:

1. Write a note on the aftermath of terrorist attack onSrilanka.
2. Climate change and its effects on health.
3. Bhopal gas tragedy and its effect on the current generation.
4. Write a note on deep-water horizon oil spill, Mexico.
5. Write a note on effects of war on health system.

III) Environmental health problems

Topic: A) Describe the aetiology and basis of water borne diseases /jaundice/hepatitis/ diarrheal diseases

	in water. Infecting agents spread by contact or ingestion of water. An essential part of life cycle of agent takes place in aquatic animal eg snails, Cyclops etc	helminths
Water related diseases	Transmitted by insect vectors which breed in water	Yellow fever, dengue, encephalitides, filariasis, malaria, onchocerciasis, trypanosomiasis, sleeping sickness

TL method: SGD

Duration: 1 hour

Division into 4 groups or establishment of 4 stations (on rotation)

1: Water borne diseases

2: Water washed diseases

3: Water based diseases

4: Water related diseases

Topic: B) Describe the concept of solid waste, human excreta and sewage disposal

TL method: Practical

Duration: 1 hour

Modular based teaching

Topic: C) Describe the mode of action, application cycle of commonly used insecticides and rodenticides

TL method: SDL

Duration: 1 hour

Assignments

1. What is an insecticide and rodenticide?
2. Classification of insecticides with examples
3. DDT and its application
4. Write a note on botanical insecticides
5. Classification of rodenticides with examples
6. Insecticide toxicity and its treatment
7. Write a note on different anti rodent measures.

IV) MENTAL HEALTH

Topic: Describe warning signals of mental health disorder

TL method: SDL

Duration: 1 hour Assignments

1. Write down the epidemiology of suicide - world and India
2. Signs of good mental health
3. Enlist features of depression
4. List down the preventive strategies to curtail increasing suicidal rates in India

5. Note on mental health care act

6. Burden of depression on individuals and families

ESSENTIAL MEDICINE

Topic: Describe roles of essential medicine in primary health care

TL method: SDL

Duration: 1 hour

Assignments

1. List the essential medicines to be available in PHC
2. Visit a PHC and understand the indenting of essential medicines
3. Role of essential medicines in primary health care
4. Enlist and describe various methods of inventory management

ASSESSMENT / UNIVERSITY EXAMINATION

Summative Assessment - An assessment conducted at the end of instruction to check how much the student has learnt.

Formative Assessment - An assessment conducted during the instruction with primary purpose of providing feedback for improving learning.

Internal assessment – Range of assessments conducted by the teacher teaching a particular subject with the purpose of knowing what is learnt. Internal assessment can have both formative and summative functions.

Note - Assessment requires specification of measurable and observable entities. This could be in the form of whole tasks that contribute to one or more competencies or assessment of a competency per se. Another approach is to break down the individual competency into learning objectives related to the domains of knowledge, skills, attitudes, communication etc. and then assess them individually.

Scheduling of Internal Assessment - done once at the end of each professional year

Theory IA can include: Written tests should have essay questions, short notes, and creative writing experiences.

Practical IA can include: Spotters, Problem solving exercises, Objective Structured Practical / Clinical Examination (OSPE / OSCE), Clinicosocial case discussion, and records maintenance and logbook assessment.

Assessment of Log-book- Log book should record all academic and curricular activities like seminar, symposia, and quizzes. It should be assessed regularly and submitted to the department. Marks should be allotted for logbook assessment and should be included as a part of formative assessment marks under practical's

Assessment of Practical Record book- Practical book should record all skills and other practical exercises done during the academic programme. It should be assessed regularly and submitted to the department. Marks should be allotted for practical record and should be included as a part of formative assessment marks under practical's

Assessment for AETCOM will include: - Written tests comprising of short notes and creative writing experiences only in internal assessment.

INTERNAL ASSESSMENT

- There will be 3 internal assessment examinations in Community Medicine. The structure of the internal assessment examinations should be like the structure of University examinations.
- It is mandatory for the students to appear for all the internal assessment examinations.
- First internal assessment examination will be held at the end of 1st professional, second internal assessment examination will be held at the end of 2nd professional and third internal assessment examination will be held at the end of 3rd professional.

- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However,

third internal assessment has to be conducted in the same pattern of the University exam

- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.
- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.
- 20% of the internal assessment marks should be from Formative Assessment in Practical internal assessment
- Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.
- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.
- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
- Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.
- Internal assessment should be based on competencies and skills.
- Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.
- **Average marks obtained in all three internal assessments should be calculated to 40 marks**.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Annexures Blueprint for Theory and Practical assessment

Theory (Maximum marks)		Practical (Maximum marks)	
Theory papers	30*	Practical exercises	30**
Professionalism	5	Level of participation in AETCOM activities	5
Part completion tests	5	Practical record book	5
TOTAL	40	TOTAL	40

Please note:

- *Prior to submission to the University, the marks for each of the internal examination theory assessments must be calculated out of 30 marks, regardless of the maximum marks.
- **Prior to submission to the University, the marks for each of the internal examination practical assessments must be calculated out of 30 marks, regardless of the maximum marks.
- Only the final marks out of 40 (as in the table) needs to be submitted to the University, separately for theory and practical for each internal assessment.

SCHEME OF EXAMINATION

Internal assessment

TABLE SHOWING SCHEME FOR CALCULATION OF INTERNAL EXAMINATION MARKS

GENERAL INSTRUCTIONS

- Questions in each paper should be as per distribution of competencies in each professional year.
- The SLO to be referred while setting the question paper
- Repetition of questions from the same SLO to be avoided
- The marks allotted to the different topics & sections to be adhered
- There will be at least one question on AETCOM in the theory papers.
- Internal assessment needs to be for 40 marks in theory and 40 marks for Practical
- Internal assessment for theory may constitute Long essay, Short essay, and short answers
- 20% of the internal assessment marks will be contributed by formative assessment in both theory i.e. 8 marks in theory and 8 marks in practical.
- Total internal assessment marks of 40 will be 32 for internal assessment and 8 for formative assessment conducted. (32+8=40)
- Marks allocated for record and logbook maintenance will be added to practical internal assessment marks.

FORMATIVE ASSESSMENT

- CBME mandates conduct of formative assessments, institutions can conduct formative assessments as per their convenience however the formative assessment would contribute towards the internal assessments.

Si. No.	**TOPICS**	**Percentage Weightage**	**Nature of question**
1	Epidemiology	**5 – 30%**	**LA, SE, SA**
2	Occupational Health	**3 -10%**	**LA, SE, SA**
3	Disaster Management	**3- 4%**	**SE, SA**
4	International health	**3- 4%**	**SE, SA**
5	Environmental health problems	**5- 35%**	**LA, SE, SA**
6	Mental Health	**3- 4%**	**SE, SA**
7	Essential Medicine	**3- 3%**	**SA**
8	AETCOM	**3- 12%**	**SE, SA**

- Institutions can select from the suggested methods of formative assessment that are given below however

the institutions can adapt methods that comply with that of the MCI regulations.

- Feedback to students regarding formative assessment have to be documented and should be the basis for mark allocation.
- The logbook in community medicine is a record of all activities of the students. All competencies at a "Shows How" level in the Miller's pyramid should be documented in the logbook. In addition, logbook also contains documentation of attendance, involvement in departmental academic and extracurricular activities and feedback given to the student. The logbook should be signed by faculty on a regular basis. A total of 10 marks should be allotted to logbook in the second professional year. This should be reduced and added to formative assessment marks.
- The practical record in community medicine contains documentation of the practical sessions head during the course.A total of 10 marks should be allotted to practical record and should be reduced and added to formative assessment marks in the second professional year.
- Suggested methods for Formative Assessments are:
    - MCQs ○ Essays ○ Assignments ○ Seminar presentations ○ Project work ○ OSCE
    - OSPE

TOPIC-WISE MARKS DISTRIBUTION FOR THEORY EXAMINATION

*LA-LONG ANSWER, SE-SHORT ESSAY, SA-SHORT ANSWER

PRACTICALS

Total Marks – 40

Respective institutions can conduct practical examinations by the following suggested methods

Exercise 1- Spotters

Spotters can be chosen from among the following topics covered in the second professional year including Entomology. Disinfectants, insecticides, environment health models, instruments, occupational health

Note: Students need to identify the spotter and write two relevant points

Exercise 2– Problem solving exercises

Three problems from a list of problems on topics covered in the second professional year including epidemiology, biostatistics, environmental health, occupational health and AETCOM

Exercise 3: OSPE / OSCE

Two OSPE / OSCE stations will be set up based on topics covered in the second professional year of which at least one station should be a counselling station.

Exercise 4: Family study

One clinic-social case / family study will be allotted per student based on problems of public health importance. The clinic-social case may be allotted from the community or the hospital.

Exercise 5: Viva Voce

Division of the topics can be at the discretion of the institution.

NOTE:

3. **The spotters, exercises and OSPE depends on the portion covered in the respective block.**
4. **Certifiable competencies/AETCOM should be completed in Formative/Internal assessment**

ATTITUDE ETHICS AND COMMUNICATION SKILLS (AETCOM)

SI NO	MODULE	TOPIC	DEPARTMENT				
			PA	MI	PH	CM	FM
1	2.1	Foundation of communication				✓	
2	2.2	Foundation of bioethics					✓
3	2.3	Health care as a right				✓	
4	2.4	Working in a health care team	✓				
5	2.5	Bioethics- case studies on patient autonomy and decision making (patient rights and shared responsibility in health care)			✓		
6	2.6	Bioethics-Case studies on patient autonomy and decision making (refusal of care including do not resuscitate and withdrawal of life Support)			✓		
7	2.7	Bioethics- Case studies on patient autonomy and decision making (consent for surgical procedures)		✓			
8	2.8	What does it mean to be a family member of sick patient					✓

****PA-Pathology; MI- Microbiology; PH- Pharmacology; CM- Community medicine; FM- Forensic medicine.**

Sl.no	Topic
1.	Family health study-Introduction (CM 2.2)
2	Spot mapping and Assessment of Housing standards (CM3.4 and 3.5)
3	Family visit - Anthropometric measurement & Dietary assessment (CM 5.2)
4	Family visit – Dietary assessment
5	Family visit – Dietary assessment

6	Family visit – Dietary assessment
7	Diet calculation
8	Introduction of Health education principles (CM 1.6)
9	Preparation of presentation
10	Presentation of family health study
11	Presentation of family health study
12	Feedback to family
13	Health education activity in family
14	Nutritional education
15	Planning and recommending diet for family from the locally available food
16	Health education activity in community (CM 1.6, 1.9)
17	Health education activity in community
18	Health education activity in community
19	Follow up visit to studied family
20	Presentation of follow up visit
21	Data analysis (CM 7.9)
22	Anganwadi visit -
23	Anganwadi visit
24	Anganwadi visit
25	Anganwadi visit
26	Presentation
27	Observation of maternal child health services at PHC/UHC
28	Observation of maternal child health services at PHC/UHC
29	Writing reports of family study, Anganwadi visit and PHC
30	Presentation of Family study activity

FAMILY STUDY/ CLINICAL POSTING IN SECOND PROFESSIONAL YEAR

Duration - one month SLOs

1. To assess socioeconomic status of given family
2. To assess housing condition and presence of overcrowding in a given family
3. To do anthropometric measurement of individuals in given family
4. To explain effect of socio-environmental conditions on the health of the family
5. To plan and recommend suitable diet for family
6. To do nutritional assessment of under five children in anganwadis
7. To assess the socio environmental conditions of anganwadis
8. To describe maternal and child health services at PHC/UHC.

REFERENCE BOOK

1. K. Park, Park's textbook of preventive and social medicine, M/s Banarasidas Bhanot Publishers, Jabalpur. -
2. B.K. Mahajan &M. Gupta Textbook of preventive and social medicine, Jaypee Brothers.
3. Mahajan's Methods in Biostatistics for Medical Students and Research Workers. Jaypee Publishers 4). D.K Mahabalaraju., Essentials of Community Medicine, Practicals.
5) Sundar Lal, Textbook of Community Medicine, CBS Publishers.

Level II

1) A M Kadri.IAPSM's Textbook of Community Medicine.

2) J Kishore.Kishore's National Health Programs of India 3) Rajvir Bhalwar ,Textbook of Public Health and Community Medicine, Published in

Collaboration with WHO.

3) Principles of Medical Education: Dr. T Singh

4) A H Suryakanth Community Medicine with Recent Advances.

5) P S S Sundar Rao.Introduction to biostatistics and research methods

Level-III

1. Donald Hunter, (2018) The Disease of Occupations, Latest Edition, Hodder & Stoughton London, Sydney, Auckland, Toronto.
2. International Labour Organization, Encyclopaedia of Occupational Health and Safety, Volume 1 & 2. ILO, Geneva, Switzerland
3. Jallifee, Clinical Nutrition, WHO., Geneva

Rajiv Gandhi University of Health Sciences

UNDERGRADUATE LOGBOOK

For 1st 2nd and 3rd Professional Year MBBS Students

DEPARTMENT OF COMMUNITY MEDICINE

Name of College, address & Logo

PREFACE

The Medical Council of India has revised the undergraduate medical education curriculum so that the Indian Medical Graduate (IMG) is able to recognize "Health for all" as a national goal. He/she should also be able to fulfil his/her societal obligations. The revised curriculum has specified the competencies that a student must attain and clearly defined teaching learning strategies for the same. With this goal in mind, integrated teaching, skill development, AETCOM and selfdirected learning have been introduced. There would be emphasis on communication skills, basic clinical skills, and professionalism. There is a paradigm shift from the traditional didactic classroom-based teaching to learning environments where there is emphasis on learning by exploring, questioning, applying, discussing, analysing, reflecting, collaborating, and doing. The recognition of this need is enshrined by a greatly enhanced allocation of time to these methods and also the assessment techniques. With this view in mind the logbook has been designed as per the guidelines of Competency Based Curriculum.

INSTRUCTIONS

1) The logbook is a record of the academic and co-curricular activities of thedesignated student, who would be responsible for maintaining his/her logbook.

2) The student is responsible for

3) getting the entries in the logbook verified by thefaculty in charge regularly.

4) Entries in the logbook will reflect the activities undertaken in the department &have to be scrutinized by the Head of the concerned department.

5) The logbook is a record of various activities by the student like:

- Overall participation & performance
- Attendance
- Participation in sessions
- Record of completion of pre-determined activities.
- Acquisition of selected competencies

6) The logbook is the record of work done by the candidate in that department /specialty and should be verified by the college before submitting the application ofthe students for the university examination.

BASIC INFORMATION

	Passport size photo
Name	
Roll No	
University Registration Number	
Batch	
Contact No	
E mail Id	
Guardian/Parent Name Contact Number	
Faculty Mentor Name Department	

LOGBOOK CERTIFICATE

This is to certify that this log book is the bonafide record of

Mr./Ms……...Registrationnumber

…..... and admitted to this Institution in the academic year

.....whose particulars are given above. His/ Her log of competencies acquired, are as noted in the entries in this log book in the subject of COMMUNITY MEDCINE and related AETCOM modules as per the Competency Based Undergraduate Medical Education Curriculum, Graduate Medical Regulation 2019, during the period

…….. to……..

She / He is not eligible / eligible to appear for the summative (University) assessment as on the date given below.

Signature of FacultyMentor

Name and Designation

Countersigned by Head of the Department

Place:

Date:

INDEX

Internal assessment marks	With record feedback	
Communication activity		
Family study		
Clinico-social Case		
Seminar		
Self-Directed Learning		
Record Maintenance		
Health Days		
Volunteering in National Health Program Related Field Activities		
Field Visit		
AETCOM		
Research		
Investigation of an Epidemic*		
Non-Core Activities		
Co - Curricular Activities (Quiz, Poster, Debate, Essay, Skits)		
CME/ Conference / Workshop		
Awards / recognition		
Overall assessment of student		

ATTENDANCE EXTRACT

Professional year	**Classes conducted**		**Classes attended**		**Percentage**	
	Theory	**Practical**	**Theory**	**Practical**	**Theory**	**Practical**
First						

Second						
Third						
Total						

Signature of faculty and date

Note:

Every candidate should have **attendance not less than 75% of the total classes conducted in theory which includes didactic lectures and self-directed learning and not less than 80% of the total classes conducted in practical which includes small group teaching, tutorials, integrated learning and practical sessions** in each calendar year calculated from the date of commencement of the term to the last working day as notified by the University in each of the subjects prescribed to be eligible to appear for the university examination.

The Principal should notify at the College the attendance details at the end of each term withoutfail under intimation to this University

INTERNAL ASSESSMENT MARKS

Professional year	Theory		Practicals	
	Total marks	Obtained	Total	Obtained
First				
Feedback given Date Signature of faculty Signature of student				
Second				
Feedback given Date Signature of faculty Signature of student				
Third				
Feedback given Date Signature of faculty Signature of student				

SUMMARY OF FORMATIVE ASSESSMENT FOR THE ENTIRE YEAR

Sl. No.	Type of Assessment	Total marks	Marks scored	Signature of student	Signature of teacherwith date
1	Seminars/Tutorials/other activities/SGD	10			
2	Professionalism	10			
	TOTAL	20			

Note: Learners must secure at least 50% marks of the total marks (combined in theory andpractical / clinical; not less than 40 % marks in theory and practical separately) assignedfor internal assessment in a particular subject in order to be eligible for appearing at
thefinal University examination of that subject. Internal assessment marks will reflect asseparate head of passing at the summative examination.

RUBRIC FOR ASSESSING THE PROFESSIONALISM

Phase	**Areas assessed**					**Signature of student**	**Signature of teacher**
	Regular for Classes (5)	Submission of records (5)	Behaviour in class and discipline (5)	Dress code and presentablility (5)	Total (20)		
At the end of 1st IA							
At the end of 2nd IA							
At the end of 3rd IA							
Average score at the end of the year							

COMMUNICATION ACTIVITY

Competencies covered

1.9: Demonstrate the role of effective communication skills in health in a simulated environment

1.10: Demonstrate the important aspects of the doctor patient relationship in a simulated environment

4.3: Demonstrate and describe the steps in evaluation of health promotion and education program

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** **First or Only (F)** **Repeat (R)** **Remedial (Re)**	**Rating** **Below (B) expectations** **Meets (M) expectations** **Exceeds (E) expectations**	**Decision of faculty** **Completed (C)** **Repeat (R)** **Remedial (Re)**	**Initial of faculty and date**	**Feedback received** **Initial of learner**

FAMILY STUDY

Competencies covered

2.1: Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

2.2: Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status

2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

CLINICO – SOCIAL CASE

Competencies covered

2.1: Describe the steps and perform clinic-socio-cultural and demographic assessment of the individual, family, and community

2.2: Describe the socio-cultural factors, family (types), its role in health and disease & demonstrate in a simulated environment the correct assessment of socio-economic status

2.3: Describe and demonstrate in a simulated environment the assessment of barriers to good health and health seeking behaviour

5.2: Describe and demonstrate the correct method of performing a nutritional assessment of individuals, families, and the community by using the appropriate method

5.4: Plan and recommend a suitable diet for the individuals and families based on local availability of foods and economic status, etc in a simulated environment

Competency # addressed	**Name of Activity**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

SEMINAR

Competencies covered

1.9: Demonstrate the role of effective communication skills in health in a simulated environment

4.3: Demonstrate and describe the steps in evaluation of health promotion and education program

Competency # addressed	**Topic**	**Date completed**	**Attempt at activity** First or Only (F) Repeat (R) Remedial (Re)	**Rating** Below (B) expectations Meets (M) expectations Exceeds (E) Expectations	**Decision of faculty** Completed (C) Repeat (R) Remedial (Re)	**Initial of faculty and date**	**Feedback received** Initial of learner

STUDENT SEMINAR EVALUATION RUBRIC

Name of the student: _____

Reg.No._____

Name of the Topic: _____ Date of Presentation: _____

Please tick mark (□) the response which best represents your answer for the following questions.

S. No.		Strongly Disagree (1)	Disagree (2)	Uncertain (3)	Agree (4)	Strongly Agree (5)
	Content:					
1.	The topic chosen was relevant to the course					
2.	The objectives of the topic were clearly stated.					
3.	There was adequate review of the literature.					
4.	The student maintained good continuity of thoughts throughout the presentation.					
5	The student demonstrated a good understanding of the topic.					
6.	The material presented was appropriate for the time allotted.					
	Presentation:					
1.	The presentation was well organized.					
2.	The audio visuals were well prepared.					
3.	The voice was clear and audible.					
4.	The student maintained regular eye contact with the audience.					
5.	The student adhered to the expected style of a scientific talk.					
6.	The student maintained the interest of the audience throughout the presentation.					
7.	The student maintained proper pace during the presentation.					
8.	The student handled all the questions well.					

9.	The student summarized the topic well emphasizing a take home.					

Suggestions for Improvement:

Any other Comments:

Overall Score: | **Evaluated by: Name of the Faculty: _____**

SMALL GROUP DISCUSSION– ASSESSMENT AND FEEDBACK

Module#	**Name of SGD/SDL Activity**	**Date completed**	Score	**Initial Offaculty anddate**	**Feedback Receive**d Initial of learner

The small group discussions will be scored based on the following criteria. Marks to be given

Score	Criteria for assessment
5	Is a proactive participant showing a balance between listening, initiating, and focusing discussion. Displays a proactive use of the whole range of discussion skills to keep discussion going and to involve everyone in the group. Understands the purpose of the discussion and keeps the discussion focused and on topic. Applies skills with confidence, showing leadership and sensitivity.
4	Is an active participant showing a balance between listening, initiating, and focusing discussion. Demonstrates all the elements of discussion skills but uses them less frequently and with less confidence than the above level. Keeps the discussion going but more as a supporter than a leader. Tries to involve everyone in the group. Demonstrates many skills but lacks the confidence to pursue them so that the group takes longer than necessary to reach consensus. Demonstrates a positive approach but is more focused on getting done than on having a positive discussion.
3	Is an active listener but defers easily to others and lacks confidence to pursue personal point of view even when it is right. Participates but doesn't use skills such as summarizing and clarifying often enough to show confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Lacks balance between discussion and analytical skills. Either displays good analysis skills and poor discussion skills or good discussion skills and poor analysis skills.
2	Is an active listener but defers easily to others and tends not pursue personal point of view, lacking confidence. Limits discussion skills to asking questions, summarizing, and staying on topic. Rarely demonstrates analysis skills because doesn't understand the purpose of the discussion, and as a result, offers little evidence to support any point of view.
1	Demonstrates no participation or effort. Participates only when prompted by the teacher. Only responds to others and initiates nothing. Provides limited responses that are often off topic. Participates minimally so that it is impossible to assess analysis skills or understanding of the issues.

EVALUATION OF SGL SESSIONS

COURSE TITLE: _____

PHASE_____ DATE: _____

Scale:1- Never

2- Occasionally

3- Sometimes **4-** Often

5- Always

1 2 3 4 5

1.	Assembles for the session in time					
2.	Contributes relevant information in discussions					
3.	Shares learning resources relevant to the topic					
4.	Gives critical feedback					
5.	Takes criticism in a healthy manner					
6.	Seeks answers to learning questions					
7.	Integrates old and new knowledge (across the courses)					
8.	Shows consideration for group process					
9.	Shows confidence in areas of understanding					

10.	Shows commitment to correct deficiencies					
	Total					

STUDENT	TUTOR
SIGNATURE	SIGNATURE
NAME:	NAME:
REG.NO.	DEPARTMENT:

Documentation and feedback for Self-Directed Learning

Sl no	Date	Topic of SDL	Feedback	Signature of faculty/mentor
1				
2				
3				
4				
5				
6				
7				

8				
9				
10				
11				
12				

Reflection on Self-directed learning Experience

Topic:

Date:

Signature of Teacher-in- charge

RECORD MAINTAINANCE

Scoring: Excellent (8-10) Good (6-7) Average (4-5) Poor (<4)

Criterion	Rating	Signature of faculty and date
Completion		
Quality of content		
Appropriate diagrams where required		
Neatness		

Total		

WORLD HEALTH DAY

Health day observed		
Date		
Location		
Role of the student	Participated	Observed
Details of the program		
Reflection by student		

Signature of faculty and date

VOLUNTEERING IN NATIONAL HEALTH PROGRAM RELATED FIELD ACTIVITIES

Name of the National Health Program		
Date		
Location		
Role of the student	Participated	Observed
Details of the activity		
Reflection by student		

Signature of faculty and date

FIELD OR CLINIC VISIT

Name of the visit	Date	Report written in record	Signature of faculty

The following are the recommendedfield visits for undergraduate students

1. PHC
2. Anganwadi
3. DOTS Centre

4. Hospital Waste Management Facility
5. Water Treatment Plant
6. ART / ICTC Centre

Check List for Evaluation of Field Visit Report

Field Visit Report will be marked on five-point Likert Scale:

1=Strongly Disagree,2= Disagree, 3= Neutral, 4= Agree, 5= Strongly Agree

	1	2	3	4	5
1. There is a comment on whether the objectives of the visit have been fulfilled, if not which objective has not been covered					
2. There is Clear Description of student observation/ skill learned.					
3. Analysis of strengths and weaknesses of the services in light of theory and key concepts of the course					
4. Report include information that supports student analysis [Pictures, maps, forms]					
5. There is evidence of active participation of student during the visit					
6. There is statement of Limitation / suggestions					

AETCOM

Competency # addressed	Name of Activity	Date	Signature of faculty	Feedback Received Initial of learner

RESEARCH

Competencies covered

6.2: Describe and discuss the principles and demonstrate the methods of collection, classification, analysis, interpretation, and presentation of statistical data

6.3: Describe, discuss, and demonstrate the application of elementary statistical methods including test of significance in various study designs

6.4: Enumerate, discuss, and demonstrate Common sampling techniques, simple statistical methods, frequency distribution, measures of central tendency and dispersion

7.9: Describe and demonstrate the application of computers in epidemiology

Activity	
Objectives	
Study design and sample size	
Study tool	
Main results	
Results presented in conference / department	
Signature of faculty guide	

INVESTIGATION OF EPIDEMIC

Competencies covered

7.7: Describe and demonstrate the steps in the Investigation of an epidemic of communicable disease and describe the principles of control measures/ If this activity is not possible a case scenario/ simulated event may be given for completion of this activity

Name of the exercise	Date	Documentation in record	Signature of faculty

CME/CONFERENCE / WORKSHOP

Name of event	Date	Role	Learnings	Signature of faculty

CO-CURRICULAR ACTIVITIES

Details of event	Date	Role	Learnings	Signature of faculty

AWARDS/ RECOGNITION

Sl No	Details

OVERALL ASSESSMENT OF THE STUDENT

STRENGTHS	
SUGGESTIONS	

Signature of Mentor **Signature of HOD**

CLINICAL SUBJECTS IN PHASE II

GENERAL GUIDELINES-

A) **75 hours of lectures are allotted to Clinical subjects of which**

- 25 hours each for Medicine, Surgery and Gynecology & Obstetrics.
- At least 3 hours of clinical instruction each week must be allotted to training in clinical and procedural skill laboratories. Hours may be distributed weekly or as a block in each posting based on institutional logistics.
- The clinical postings in the second professional shall be 15 hours per week (3 hrs per day from Monday to Friday).

B) **Internal Assessment-**

- Regular periodic examinations shall be conducted throughout the course.
- There will be 3 internal assessment examinations in each clinical subject. The structure of the internal assessment examinations should be like the structure of University examinations.
- It is mandatory for the students to appear for all the internal assessment examinations.
- First internal assessment examination (THEORY) will be held at the end of 1st professional, second internal assessment examination will be held at the end of 2nd professional and third internal assessment examination will be held at the end of 3rd professional.
- An end of posting clinical internal assessment shall be conducted for each clinical posting in each professional year.
- Pattern of first and second Internal Assessment are left to the discretion of the individual institute. However, third internal assessment has to be conducted in the same pattern of the University exam
- Additional internal assessment examination for absent students can be considered due to genuine reason after approval by the head of the department. It should be taken before the submission of internal assessment marks to the University.
- Internal assessment marks allotment for theory and practical for the first and second internal assessment are left to the discretion of the respective institutes. Marks allotted in the third (final) Internal Assessment should be preferably for 100 marks each for Theory and Practical.
- 20% of the internal assessment marks should be from Formative Assessment in Practical internal assessment
- Feedback in Internal Assessment - Feedback should be provided to students throughout the course so that they are aware of their performance and remedial action can be initiated well in

time. The feedbacks need to be structured and the faculty and students must be sensitized to giving and receiving feedback.

- The results of IA should be displayed on notice board within two weeks of the test and an opportunity provided to the students to discuss the results and get feedback on making their performance better.
- It is also recommended that students should sign with date whenever they are shown IA records in token of having seen and discussed the marks.
- Internal assessment marks will not be added to University examination marks and will reflect as a separate head of passing at the summative examination.
- Internal assessment should be based on competencies and skills.
- Criteria for appearing in University examination: Learners must secure at least 50% marks of the total marks (combined in theory and practical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in order to be eligible for appearing at the final University examination.
- **Average marks obtained in all three internal assessments should be calculated to 40 marks**.
- A candidate who has not secured requisite aggregate in the internal assessment may be subjected to remedial assessment by the institution. If he/ she successfully complete the same, he/she is eligible to appear for University Examination. Remedial assessment shall be completed before submitting the internal assessment marks online to the University.

Second Professional teaching hours

Subjects	Lectures (hours)	Small group learning (Tutorials / Seminars) /Integrated learning (hours)	Clinical Postings (hours) *	Self - Directed Learning (hours)	Total (hours)
Pathology	80	138	-	12	230
Pharmacology	80	138	-	12	230
Microbiology	70	110	-	10	190
Community Medicine	20	30	-	10	60
Forensic Medicine and Toxicology	15	30	-	5	50
Clinical Subjects	**75****	-	540***		615
Attitude, Ethics & Communication Module (AETCOM)		29	-	8	37
Sports and extracurricular activities	-	-	-	28	28
Total	-	-	-	-	1440

Clinical postings

Subjects	Period of training in weeks			Total weeks
	II MBBS	III MBBS Part I	III MBBS Part II	
Electives	-	-	8* (4 regular clinical posting)	4
General Medicine[1]	4	4	8+4	20
General Surgery	4	4	8+4	20
Obstetrics &Gynaecology[2]	4	4	8 +4	20
Pediatrics	2	4	4	10
Community Medicine	4	6	-	10
Orthopedics - including Trauma[3]	2	4	2	8
Otorhinolaryngology	4	4	-	8
Ophthalmology	4	4	-	8
Respiratory Medicine	2	-	-	2
Psychiatry	2	2	-	4
Radiodiagnosis[4]	2	-	-	2
Dermatology, Venereology & Leprosy	2	2	2	6
Dentistry & Anesthesia	-	2	-	2
Casualty	-	2	-	2
	36	42	48	126

GENERAL MEDICINE
CURRICULUM FOR MBBS PHASE II

CHAPTER: OBESITY & METABOLISM: NO. OF COMPETENCIES= 15;

CERTIFIABLE PROCEDURES= 0 (NIL)

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED LEARNING METHOD	TIME ALLOTTED	SUGGESTED ASSESSMENT METHOD
IM 14.1	DEFINE AND MEASURE OBESITY AS IT RELATES TO INDIAN POPULATION	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Define Obesity as per WHO guidelines and with respect to Asia/ Indian population • List the normal BMI and calculate the same using various formulae • Classify Obesity as per WHO/ Indian guidelines	LECTURES SMALL GROUP DISCUSSION (SGD)	30 MINS	SHORT NOTE/ VIVA VOCE
IM 14.2	DESCRIBE AND DISCUSS THE AETIOLOGY OF OBESITY INCLUDING MODIFIABLE AND NON	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the causes of	LECTURES SMALL GROUP	30 MINS	SHORT NOTE/ VIVA VOCE

	MODIFIABLE RISK FACTORS AND SECONDARY CAUSES				reversible and irreversible weight gain • Enumerate the reasons for increased prevalence of Obesity • List the modifiable and Non modifiable causes of obesity • Describe the reasons for susceptibility to Obesity	DISCUSSION (SGD)		
IM 14.3	DESCRIBE AND DISCUSS THE MONOGENIC FORMS OF OBESITY	K	K	**NO**	**DESIRABLE TO KNOW** AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the Monogenic forms of Obesity Describe the variants of Monogenic forms of Obesity	LECTURES SMALL GROUP DISCUSSION (SGD)	30 mins	SHORT NOTE/ VIVA VOCE
IM 14.4	DESCRIBE AND DISCUSS THE IMPACT OF ENVIRONMENTAL FACTORS INCLUDING EATING HABITS, FOOD, WORK, ENVIRONMENT & PHYSICAL ACTIVITY ON THE INCIDENCE OF OBESITY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the causes of obesity • Describe host/ environment interactions in the pathogenesis of Obesity • Discuss the role of eating habits, physical activity, food and environment in weight management and obesity	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE

IM 14.5	DESCRIBE AND DISCUSS THE NATURAL HISTORY OF	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO;	LECTURES SMAL	30 MINS	SHORT NOTE/ VIVA
	OBESITY AND ITS COMPLICATIONS				• Describe the pathophysiology of obesity • Discuss the natural history of obesity • List the complications of Obesity • Describe its implications on the organ systems	L GROUP DISCUSSION (SGD)		VOCE
IM 14.13	DESCRIBE AND ENUMERATE THE INDICATIONS, PHARMACOLOGY AND SIDE EFFECTS OF PHARMACOTHERAPY FOR OBESITY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the non pharmacological methods of weight loss • Enumerate the indications for using drugs in obesity management • List the drugs available in management of obesity • Describe the mechanism of action of these drugs, dosing and efficacy of these drugs • Discuss the adverse effects of these drugs	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE

IM 14.14	DESCRIBE AND ENUMERATE THE INDICATIONS AND SIDE EFFECTS OF BARIATRIC SURGERY	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Describe the concept of Bariatric Surgery and its benefits • List the indications of Bariatric surgery	LECTURES SMALL GROUP DISCUSSION (SGD)	1 HR	SHORT NOTE/ VIVA VOCE
					• List the various methods of Bariatric surgery available • Discuss each method; vertical Banded Gastroplasty, Laparoscopic banding and Roux en y procedure • Discuss the complications and side effects of these procedures • Discuss the long term advantages and disadvantages of Bariatric surgery			

IM 14.15	DESCRIBE AND ENUMERATE AND EDUCATE PATIENTS, HEALTH CARE WORKERS, & PUBLIC ON MEASURES TO PREVENT OBESITY AND PROMOTE HEALTHY LIFESTYLE	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the benefits of exercise and healthy balanced diet • Discuss the disadvantages of sedentary lifestyle and unhealthy eating • Enumerate the side effects and complications of obesity • Discuss the concept of social well being and healthy eating	LECTURES SMALL GROUP DISCUSSION (SGD)	1HR	SHORT NOTE/ VIVA VOCE
						TOTAL	**6 HOURS**	

CHAPTER: NUTRITIONAL & VITAMIN DEFICIENCIES:

NO. OF COMPETENCIES= 05; **CERTIFIABLE PROCEDURES= 0 (NIL)**

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED ASSESSMENT METHOD	TIME ALLOTTED	SUGGESTED ASSESSMENT METHOD

IM 23.1	DISCUSS AND DESCRIBE THE METHODS OF NUTRITIONAL ASSESSMENT IN AN ADULT AND CALCULATION OF CALORIC REQUIREMENTS DURING ILLNESSESS	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the Physiology of Nutrition and Energy Balance • Describe the regulation of Energy balance • List the Macronutrients and Micronutrients • Describe the consequences of Over nutrition and Under Nutrition • Discuss the Dietary recommendations of macro and micro nutrients • Calculate caloric requiremen	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO OPD/ WARDS TO CALCULATE BMI, OTHER NUTRITIONAL PARAMETERS	2 Hrs	WRITTEN/ VIVA VOCE

					ts in health & illness Discuss special circumstances like pregnancy and lactation Enumerate the anthropometric measurements and their methods			

IM 23.2	DISCUSS AND DESCRIBE THE CAUSES AND CONSEQUENCES OF PROTEIN CALORIC MALNUTRITION IN THE HOSPITAL	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Discuss the normal physiology of Protein metabolism • List the causes of Protein and Calorie malnutrition • Discuss consequences of Starvation and Famine • Enumerate the investigations available commonly to assess protein malnutrition • Describe the concept of 'Under Nutrition in the Hospital' • Discuss	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO WARDS AND CALCULATE CALORIC REQUIREMENTS FOR IN-PATIENTS	1 Hr	WRITTEN/ VIVA VOCE

					Energy Balance in old age • List the Nutritional support available in the hospital and describe their details			

IM 23.3	DISCUSS AND DESCRIBE THE AETIOLOGY, CAUSES, CLINICAL MANIFESTATIONS, COMPLICATIONS, DIAGNOSIS AND MANAGEMENT OF COMMON VITAMIN DEFICIENCIES	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • List the fat and water soluble vitamins • List the common causes of vitamin deficiencies • Describe vitamin A deficiency causes, its eye signs and clinical manifestations. Discuss on the management of it. • Discuss on Vitamin A toxicity and its features • Describe vitamin D deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin E	LECTURES SMALL GROUP DISCUSSION (SGD) VISIT TO OPD TO SEE PATIENTS WITH SUCH DEFICIENCIES	4 Hrs	WRITTEN/ VIVA VOCE

					deficiency causes, its clinical manifestati ons. Discuss on the managemen t of it. • Describe vitamin K deficiency causes, its clinical manifestati ons. Discuss on the managemen t of it. • Describe vitamin B1 (Thiamine) deficiency causes, its clinical manifestati ons. Discuss on the managemen t of it. • Describe vitamin B2 (Riboflavin) deficiency causes, its clinical manifestati ons. Discuss on the managemen t of it. • Describe vitamin B 3(Niacin) deficiency/ Pellagra causes, its clinical manifestati ons. Discuss on the			

					management of it. • Describe vitamin B6 (Pyridoxine) deficiency causes, its clinical manifestations. Discuss on the management of it. • Describe vitamin B12 & Folate deficiency causes, its clinical & Neurological manifestations. Discuss on the management of it. • Describe vitamin C deficiency/ Scurvy causes, its clinical manifestations. Discuss on the management of it. • List out the Inorganic nutrients and minerals. Briefly discuss about their importance in			

					health and illness			

IM 23.4	ENUMERATE THE INDICATIONS FOR ENTERAL	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO;	LECTURES SMALL GROUP DISCUSSIO	1 HR	WRITTEN/ VIVA VOCE

	AND PARENTERAL NUTRITION IN CRITICALLY ILL PATIENTS				• Enumerate the indications for enteral and parenteral nutrition • Discuss methods to screen hospitalized patients for risk of malnutrition • Describe the enteral formulations available and their use • List the methods to give Enteral nutrition and the procedures in their insertion- nasogastric tube feeds, percutaneous endoscopic gastrostomy (PEG) • List the methods to give Parenteral nutrition and the formulations • Describe the medical, legal and ethical complications and considerations in the management of Artificial Nutrition	N (SGD) Visit to Medical ICU and demonstrate various feeding- Enteral and Parenteral methods & formulations		

					support Define Refeeding syndrome and its implications			
IM 23.5	COUNSEL AND COMMUNICATE TO PATIENTS IN A SIMULATED ENVIRONMENT WITH ILLNESS ON AN APPROPRIATE BALANCED DIET	S	SH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO; • Identify the dietary requirements of patients either in a simulated situation (Role Play) or in actual situation • Inform the patient about the importance of Balanced diet • Demonstrate a sample balanced diet plan for the patient who is ill • Counsel the patient about the need for balanced diet for health and inform about necessary dietary changes needed for the same	DOAP SESSION • ROLE PLAY • At tend ward & OPD with diet counselling sessions	2 hrs	SKILL ASSESSMENT
						TOTAL TIME	**10 HRS**	

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CHAPTER: COMMON MALIGNANCIES

NO OF COMPETENCIES: 19, CERTIFIABLE PROCEDURES: 0

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	SPECIFIC LEARNING OBJECTIVES	SUGGESTED LEARNING METHOD	TIMEALLOTED	SUGGESTED ASSESSMENT METHOD
IM13.1	Describe the clinical epidemiology and inherited & modifiable risk factors for common malignancies in India	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the epidemiology of common malignancies in India • Describe the disease burden of common malignancies in India • List most	Lecture, Small group discussion Visit to wards	1 hour	Short notes/viva voce

					common solid organ malignancies • Enumerate the risk factors for common malignancies • List the modifiable risk factors of common malignancies • Discuss genetics of common malignancies • Describe the environmental determinants that predispose to common malignancies • Discuss the role of occupation in common malignancies • Enumerate the malignancies caused by radiation			

IM13.2	Describe the genetic basis of selected cancers	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the genetic factors of common malignancies • Enumerate inherited cancer predisposition syndromes and their respective malignancies • List a few malignancies with their pattern of inheritance • Enumerate the genes that predispose to malignancies	Lecture, Small group discussion	1 hour	Short notes/viva voce

IM13.3	Describe the relationship between infection and cancers	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Discuss the malignancies along with their infective agents • Enumerate the infections that predispose to common malignancies • List the viruses and bacteria that can cause malignancies	Lecture, Small group discussion Visit to wards	30 minutes	Short notes/viva voce
IM13.4	Describe the natural history, presentation, course, complications and cause of death for	K	K	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO □ Enumerate some malignant diseases with their local	Lecture, Small group discussion Visit to wards	2 hours	Short notes/viva voce
	common cancers				features/symptoms □ List the nonmetastatic manifestations of malignant diseases and their site associations			

					• Discuss the endocrine manifestations of tumors • Describe the cutaneous manifestations of cancer • Enumerate and describe the emergency complications of cancer • Describe neurological paraneoplastic syndromes in cancer • Describe clinical features, diagnosis and management of superior vena caval obstruction • Discuss etiology, clinical features, diagnosis of hypercalcemia in			

					malignancy • Describe neutropenic sepsis • Enumerate the primary tumor sites that metastasize to brain • Enumerate the primary tumor sites that metastasize to the lung • List the tumors that lead to liver metastasis • Describe the etiology, clinical features, of bone metastasis • Discuss the major cause of death in cancer			

IM13.5	Describe the common issues encountered in patients at the end of life and principles of management	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the presenting problems in palliative care • Discuss the principles of palliative care • List the pharmacological treatment of pain in palliative care • Discuss	Lecture, Small group discussion Visit to wards. Attend patient counseling sessions	1 hour	Short notes/viva voce

					nonpharmacological and complementary treatments for pain in palliative care • Enumerate, discuss in brief non painful presenting problems in palliative care and their management.			

IM13.6	Describe and distinguish the difference between curative and palliative care in patients with cancer	K	K	N	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the differences between curative and palliative care in patients with cancer • Enumerate the different modes of curative treatment in cancer • Describe in brief each of the curative therapies in cancer • Discuss biological therapies and their advantages over the other	Lecture, Small group discussion Visit to wards	1 hour	Short notes/viva voce

					modes of treatment in cancer			

IM13.12	Describe the indications and interpret the results of Chest X Ray, mammogram, skin and tissue biopsies and tumor markers used in common cancers	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the different methods of imaging in cancer • Discuss the role of mammogram in CA breast • Describe the tumor markers and enumerate them • Enumerate the different methods of histological analysis of a biopsy • Describe in brief the different methods of histological analysis of biopsy • Describe the role of immunohistochemistry in cancer • Describe in brief TNM classification	Bedside clinic, small group discussion Visit to wards and radiology department	1 hour 30 min	Short notes/viva voce
IM13.13	Describe and assess pain and suffering objectively in a patient with	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the types of pain in	Bedside clinic, small group discussion	1 hour	Short notes/viva voce

	cancer				cancer and their specific clinical features • Define pain & describe mechanisms of pain and its classification • Describe assessment and measurement of pain in a patient with cancer • Describe pharmacological treatment of pain in cancer and its side effects • Describe non pharmacological treatments of pain in cancer • Describe the WHO analgesic ladder of management of pain • Discuss the different methods of measurement of pain and its score	Visit wards and assess pain and write a pain scale		

IM13.14	Describe the indications for surgery, radiation and chemotherapy for	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the modes of	Bedside clinic, small group discussion Visit to	1 hour	Short notes/viva voce
	common malignancies				treatment in cancer • Describe the indications and role of surgery in common malignancies • Discuss adjuvant chemotherapy and its indications and adverse effects • Discuss radiation therapy, its indications and adverse effects	wards		

IM13.15	Describe the need, tests involved, their utility in the prevention of common malignancies	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the different investigations required for the screening and prevention of common malignancies • Discuss the need for various tests and investigations in common malignancies • Describe the role of cytogenetic analysis in prevention of cancer	Bedside clinic, small group discussion Visit to wards	30 min	Short notes/viva voce

					□ List and discuss the imaging modalities in cancer			

IM13.16	Demonstrate an understanding and needs and preferences of patients when choosing curative and palliative therapy	A/C	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate indications of palliative therapy in cancer • Discuss different forms of palliative therapy in cancer • Enumerate indications of curative therapy in cancer • Discuss different forms of curative therapy in cancer	Bedside clinic, small group discussion Visit to wards	30 min	Short notes/viva voce
IM13.17	Describe and enumerate the indications, use, side effects of narcotics in pain alleviation in patients with cancer	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the indications of narcotics/opioids in pain alleviation in patients with cancer • Enumerate and discuss about opioid use for pain in cancer • Describe WHO analgesic	Bedside clinic, small group discussion Visit wards and learn to counsel patients regarding side effects of narcotics and their advantages at the same	30 min	Short notes/viva voce

					ladder • Describe opioid toxicity • Enumerate , discuss, side effects of opioid and its manageme nt	time		
IM13.1 8	Describe and discuss the ethical and the medico legal issues involved in end of life care	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Describe step wise how to manage a patient who is dying due to cancer • Discuss ethical issues at the end of life in a patient with terminal cancer • Discuss "talking about and planning towards dying" in a patient with terminal cancer • Describe euthanasia and its role in terminal cancer	Bedside clinic, small group discussio n Visit wards and learn to discuss ethical issues with patient relatives	30 min	Short notes /viva voce

IM13.1 9	Describe the therapies used in alleviating suffering in patients at the end of life	K	KH	Y	AT THE END OF THE SESSION THE STUDENT SHOULD BE ABLE TO • Enumerate the pharmacological and non-	Bedside clinic, small group discussion Visit wards	1 hour	Short notes/viva voce
					• pharmacological treatment in terminal cancer Enumerate nonpharmacological and complementary treatment in terminal cancer • Describe palliative treatment of breathlessness and cough in patients with terminal cancer Describe the management of GI disturbances in terminal cancer • Describe how to manage the psychosocial factors in terminal cancer	and learn to discuss palliative therapy with patient and their relatives		

Recommended Books

1. Davidson’s Principles and Practice of Medicine, 23rdEd., 2018, Churchil Livingston, London.
2. API Text Book of Medicine 11thed, 2019.
3. Swash M, Hutchison’s Clinical Methods. 24th Edition, 2017
4. Chamberlain’s Symptoms and Signs in Clinical Medicine 13th Edition, ELBS, 2010

Reference Books

1. Harrison's Principles of Internal Medicine 20th Ed 2018 . McGraw Hill
2. Macleod’s Clinical Examination ISE 14th ed,

SURGERY CURRICULUM FOR MBBS PHASE II

Topic - **metabolic response to injury**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
					THEORY	CLINICS
SU1.1	Describe basic concepts of homeostasis, enumerate the metabolic changes in injury and their mediators	K	KH	Y	4hrs	
SU1.2	Describe the factors that affect the metabolic response to injury	K	KH	Y		
SU1.3	Describe basic concepts of perioperative care	K	KH	Y		

PA 4.1	Define and describe the general features of acute and chronic inflammation including stimuli, vascular and cellular events • Acute Inflammation, • Morphological patterns of acute inflammation, • Chemical mediators and regulators of acute inflammation. • Chronic Inflammatory Cells • Chronic inflammation. • and Mediators. • Granulomatous	K	KH	Y		
	Inflammation. • Systemic inflammatory response syndrome following major injury					

PA4.2	Enumerate and describe the mediators Of acute inflammation • Cell-Derived Mediators • Plasma Protein–Derived Mediators	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session 1st phase MBBS student should be able to : • Classical concepts of homeostasis • To understand the terms - “milieu intérieu’’ and homeostasis • The graded nature of the injury response • Mediators of the metabolic response to injury • Systemic inflammatory response syndrome following major injury • The metabolic stress response to surgery and trauma: the ‘ebb and flow’ model • Key catabolic elements of the flow phase of the metabolic stress response • Changes in body composition following injury • Avoidable factors that compound the response to injury • Concepts behind enhanced recovery after surgery

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic - **SHOCK**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU2.1	Describe pathophysiology of shock ,types of shock ,principles of resuscitation including fluid replacement and monitoring	K	KH	Y	4 hrs	
SU2.2	Describe the clinical features of shock and its appropriate treatment	K	KH	Y		
SU2.3	Communicate and counsel patients and families about the treatment and prognosis of shock demonstrating empathy and care	K	KH	Y		
PA6.3	Define and describe shock, its pathogenesis and its stages • SHOCK • Pathogenesis of Septic Shock • Three Major Types of Shock • Stages of Shock	K	KH	Y		
SPECIFIC LEARNING OBJECTIVES						

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- Pathophysiology-cellular,microvascular
- Systemic- cardiovascular,respiratory,renal,endocrine
- Classification of shock- hypovolemic,cardiogenic,obstructive,distributive,endocrine
- Severity of shock-compensated,decompensated ,mild,moderate,severe
- Pitfalls- capillary refill,tachycardia,blood pressure
- Effects on each system
- Consequences- unresuscitable shock,multi organ failure
- Effects of multi organ failure
- Resuscitation- Conduct of resuscitation. Fluid therapy, Type of fluids
- Dynamic fluid response
- Vasopressor and inotropic support
- Monitoring
- End points of resuscitation
- 'occult hypoperfusion'
- Resuscitation algorithms

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic - **Blood and blood components**

Number of competencies- 03

Number of procedures that require certification- nil

Total number of hours required-

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU3.1	Describe the Indications and appropriate use of blood and blood products and complications of blood transfusion.	K	K	Y	4 hrs	

	Observe blood transfusions	K	K	Y		DOAP
SU3.2						
SU3.3	Counsel patients and family/ friends for blood transfusion and blood donation	K	K	Y		DOAP
IM15.3	Describe and discuss the physiologic effects of acute blood and volume loss • Causes • Indications for Blood transfusion	K	K	Y		
IM15.4	Elicit document and present an appropriate history that identifies the route of bleeding, quantity, grade, volume loss, duration, etiology, comorbid illnesses and risk factors	K	K	Y		
IM15.12	Enumerate the indications for whole blood, component and platelet transfusion and describe the clinical features and management of a mismatched transfusion	K	KH	Y		
IM15.11	Develop, document and present a treatment plan that includes fluid resuscitation, blood and blood component transfusion, and specific therapy for arresting blood loss	K	KH	Y		
IM15.13	Observe cross matching and blood / blood component transfusion • Types of transfusions • Indications • Complications Transfusion Components	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- Pathophysiology of haemorrhage
- Revealed and concealed haemorrhage
- Primary, reactionary and secondary haemorrhage
- Surgical and non-surgical haemorrhage
- Degree and classification
- Management
- History of blood transfusion
- Blood and blood products
- Indications for blood transfusion
- Blood groups and cross-matching
- Transfusion reactions
- Complications of blood transfusion
- Management of coagulopathy
- Regarding the indication of transfusion
- Regarding the blood and blood products
- Regarding the procedure and complications Blood substitutes

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic – **Burns**

Number of competencies- 04

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU4.1	Elicit document and present history in a case of Burns and perform physical examination. Describe Pathophysiology of Burns	K	KH	Y	THEORY	CLINICS
					4 Hrs	Case discussion
SU4.2	Describe Clinical features, Diagnose type and extent of burns and plan appropriate treatment	K	KH	Y		
SU4.3	Discuss the Medicolegal aspects in burn injuries.	K	K	Y		
SU4.4	Communicate and counsel patients and families on the outcome and rehabilitation demonstrating empathy and care.	K	KH	N		

FM2.25	Describe types of injuries, clinical features, pathophysiology, post- mortem findings and medico-legal aspects in cases of • burns, • scalds, • lightening, • electrocution and • radiations.	K	KH	Y		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- To assess The area and depth of burns
- Prevention of burns
- Pathophysiology of burn injury
- Warning signs of burns to the respiratory system
- Injury to the airway and lungs
- Dangers of smoke, hot gas or steam inhalation
- Inflammation and circulatory changes
- The shock reaction after burns
- Other life-threatening events with major burns
- Immediate care of the burn patient
- Prehospital care
- Hospital care
- The criteria for acute admission to a burns unit
- Assessment of the burn wound-size, area and depth
- Fluid resuscitation
- Escharotomy
- Additional aspects of treating the burned patient
- Monitoring and control of infection
- Surgery for the acute burn wound
- Minor burns
- Non-thermal burn injury
- Recent advances
- Medicolegal aspects in burn injuries
- Outcome and rehabilitation demonstrating empathy and care.

Teaching and Learning Methods		Assessment Method	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic – Wound healing and wound care

Number of competencies- 04

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS	
SU5.1	Describe normal wound healing and factors affecting healing	K	K/KH/SH	Y	THEORY 4 hrs	CLINICS
SU5.2	Elicit, document and present a history in a patient presenting with wounds	K/S	K/KH	Y		
SU5.3	Differentiate the various types of wounds, plan and observe management of wounds	K/S	K/KH/SH	Y		
SU5.4	Discuss medico legal aspects of wounds	K	K	N		

PA 5.1	Define and describe the process of repair and regeneration including wound healing and its types	K	K/KH	Y		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session 1st phase MBBS student should be able to : • Factors influencing healing of a wound • Phases of wound healing • Normal healing in specific tissues • Classification of wound closure and healing • Types of wounds − tidy versus untidy • Managing the acute wound • Specific wounds • Compartment syndromes • Chronic wounds • pressure sores- frequency, staging, vacuum assisted closure • Necrotising soft-tissue infections • Hypertrophic scars,keloids • Contractures • Medico legal aspects of wounds

Topic – **Surgical infections**

Number of competencies- 02

Number of procedures that require certification- nil

Total number of hours required

NUMBER	COMPETENCY	DOMAIN K/S/A/C	LEVEL K/KH/SH/P	CORE Y/N	TEACHING TIME REQUIRED IN HOURS

SU6.1	Define and describe the aetiology and pathogenesis of surgical Infections	K	K/KH	Y	2 hr	
SU6.2	Enumerate Prophylactic and therapeutic antibiotics Plan appropriate management	K	K/KH	Y		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session 1st phase MBBS student should be able to :

- Koch's postulates
- Microbiology of surgical infection
- Sources of infection
- Factors that determine whether a wound will become infected
- Presentation of surgical infection
- Southampton wound grading system
- ASEPSIS wound score
- Specific local wound infections
- Systemic infection
- Systemic inflammatory response syndrome (SIRS)
- Viral infections relevant to surgery
- Prevention of surgical infection
- Prophylactic antibiotics
- Postoperative wound infections
- Antimicrobial treatment of surgical infection

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
• **Lecture** • **Case based learning**	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Recommended Books for General surgery:

1. Baily & Love, A Short Practice of Surgery, Ed. 27, 2018
2. Das S, Clinical Methods in Surgery, Ed. 14, S Das 13 Old Mayors, Calcutta;

Reference books

1. Sabiston textbook of surgery, 20th edition, Elsevier.
2. Schwartz'z Principles of surgery, 11th edition, Mcgraw Hill Education
3. Hamilton bailey's demonstration of physical signs in clinical surgery, 19th edition, CRC press.

OBSTETRICS AND GYNAECOLOGY

CURRICULUM FOR MBBS PHASE II

Topic: Demographic and Vital Statistics

Number of Competencies: 3

Number of procedures that require certification: nil

Total number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG1.1	Define and discuss birth rate, maternal mortality rate and morbidity	K	KH	Y	Lecture, Small group discussion	Short notes		Community Medicine		2 HOURS
OG1.2	Define and discuss perinatal mortality and morbidity including perinatal and neonatal mortality and morbidity audit	K	KH	Y	Lecture, Small group discussion	Short notes		Community Medicine	Pediatrics	
CM9.2	Define, calculate and interpret demographic indices including birth rate, death rate, fertility rates	S	SH	Y	Lecture, Small group discussion, DOAP sessions	Skill assessment		Obstetrics & Gynaecology, Pediatrics		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session the student should be able to : • Define birth rate, Maternal Mortality rate (MMR), Perinatal mortality • Define perinatal and neonatal mortality • Enumerate causes of Maternal mortality • Enumerate causes of Perinatal mortality • Discuss measures to reduce the maternal mortality and morbidity

Teaching and Learning Methods	Assessment Method
Theory • **Lecture** • **Small group discussions**	**Theory** • **long essay** • **short essay** • **short answers**

Topic: Anatomy of the female reproductive tract (Basic anatomy and embryology)

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/ C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG2.1	Describe and discuss the development and anatomy of the female reproductive tract, relationship to other pelvic organs, applied anatomy as related to Obstetrics and Gynaecology	K	KH	Y	Lecture, Small group discussion	Theory/ Skill station		Human Anatomy		2 HOURS
AN52.8	Describe the development of male & female reproductive system	K	KH	Y	Lecture	Written/ Viva voce		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : • Discuss the anatomy of external genitalia and internal genital organs • Describe the blood supply, nerve supply and lymphatics to the pelvic organs • Describe the muscles and fascia in relation to the pelvic organs • Describe the structure of female urethra , urinary bladder and course of pelvic ureter

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Physiology of conception

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hour

No.	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG3.1	Describe the physiology of ovulation, menstruation, fertilization, implantation and gametogenesis	K	K	Y	Lecture, seminars	Theory		Physiology		2 HOUR
PY9.8	Describe and discuss the physiology of pregnancy, parturition & lactation and outline the psychology and psychiatrydisorders associated with it.	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Describe about the morphology of the oocyte, development of graafian follicle and selection and maturation of the dominant follicle during a natural cycle
- Discuss Ovulation , Gametogenesis and morula formation
- Discuss the phases of menstruation – endometrial cycle and even about hormones role
- Draw the structure of graafian follicle and blastocyst

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Gro**

Topic: Development of the fetus and the placenta

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 1 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG4.1	Describe and discuss the basic embryology of fetus, factors influencing fetal growth and development, anatomy and physiology of placenta, and teratogenesis	K	K	Y	Lecture, Small group discussion	Theory		Human Anatomy		1 HOUR
AN77.4	Describe the stages and consequences of fertilisation	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		
AN79.6	Describe the diagnosis of pregnancy in first trimester and role of teratogens, alphafetoprotein	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		
AN80.3	Describe formation of placenta, its physiological functions, foetomaternal circulation & placental barrier	K	KH	Y	Lecture	Written		Obstetrics and Gynecology		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : • Describe the development and function of placenta • Describe the placental circulation • Describe about the fetal membranes and functions • Discuss the fetal circulation and changes of the fetal circulation at birth • Enumerate about the FDA categories and about various teratogenic drugs

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Diagnosis of pregnancy

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG6.1	Describe, discuss and demonstrate the clinical features of pregnancy, derive and discuss its differential diagnosis, elaborate the principles underlying and interpret pregnancy tests.	S	SH	Y	Lecture, Small group discussion, Bedside clinics	Theory/ Clinical Assessment/Viva voce				**2 HOURS**

SPECIFIC LEARNING OBJECTIVES

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Maternal changes in pregnancy

Number of Competencies: 01

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours

OG7.1	Describe and discuss the changes in the genital tract, cardiovascular system, respiratory, haematology, renal and gastrointestinal system in pregnancy	K	KH	Y	Lecture, seminars	Theory		Physiology		**2 HOURS**

PY9.8	Describe and discuss the physiology of pregnancy , parturition & lactation and outline the psycholog y and psychiatry - disorders associated with it.	K	KH	Y	Lecture , Small group discuss ion	Writte n, Viva Voce		Obstetri cs and Gynecol ogy		

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning student should be able to: Discuss the changes in pelvic organs during pregnancy ▪ Discuss the physiological changes in different organ systems during pregnancy

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**

▯ Lecture	▯ Demonstration with small group discussion	• long essay • short essay • short answers	▯ Gro

TOPIC: ANTENATAL CARE

Number of Competencies: 08

Number of procedures that require certification: nil

Number of hours required: 4 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG8.1	Enumerate, describe and discuss the objectives of antenatal care, assessment of period of gestation;	K	KH	Y	Small group discussion, Bedside clinics, Lecture	Written/ Viva voce/ Skill assessment		Community Medicine		1 HOUR
	screening for highrisk factors.									

OG8.2	Elicit document and present an obstetric history including menstrual history, last menstrual period, previous obstetric history, comorbid conditions , past medical history and surgical history	KS	SH	Y	Small group discussion, Bedside clinics, Lecture	Written/ Viva voce/ Skill assessment				**1 HOUR**
OG8.3	Describe, demonstrate, document and perform an obstetrical examination including a general and abdominal examination and clinical monitoring of maternal and fetal wellbeing;	K/S	SH	Y	Bed side clinic, DOAP session	Skill assessment				1 HOUR
OG8.4	Describe and demonstrate clinical monitoring of maternal and fetal well-being	K/S	SH	Y	Bedside clinic, DOAP session, Small group discussion	Skill assessment/ Written/ Viva voce				1 HOUR

OG8.7	Enumerate the indications for and types of vaccination in pregnancy	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				
PE18.3	Conduct Antenatal examination of women independently and apply at-risk approach in antenatal care	S	SH	Y	Bedside clinics	Skill Station		Community Medicine	Obstetrics and Gynecology	
CM10.2	Enumerate and describe the methods of screening high risk groups and common health problems	K	KH	Y	Small group discussion, Lecture	Written / Viva voce		Pediatrics, Obstetrics & Gynaecology		

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Discuss history taking
- Discuss the estimation of gestational age and prediction of expected date of delivery
- Discuss antenatal advice and follow up
- Discuss screening of high risk pregnancy

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Discuss vaccinations in pregnancy

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Topic: Complications in early pregnancy

Number of Competencies: 05

Number of procedures that require certification: nil

Number of hours required: 3 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG9.1	Classify, define and discuses the aetiology and management of abortions including threatened, incomplete, inevitable, missed and septic abortion	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				2 HOURS

OG9.5	Describe the etiopathology, impact on maternal and fetal health and principles of management of hyperemesis gravidarum	K	KH	Y	Lecture, Small group discussion	Written/ Viva voce				1 HOUR

SPECIFIC LEARNING OBJECTIVES
At the end of the teaching and learning session student should be able to : ▪ Define abortion. ▪ Discuss about the types and management of abortion

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Define hyperemesis and discuss the causes and management

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Gro**

TOPIC: NORMAL LABOUR

Number of Competencies: 05

Number of procedures that require certification: nil

Number of hours required: 5 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours

OG13.1	Enumerate and discuss the physiology of normal labour , mechanism of labour in occipito-anterior presentation ; monitoring of labour including partogram ; conduct of labour , pain relief ; principles of inductio	K/S	KH	Y	Lecture, Small group discussion(with models / videos / AV aids etc)	THEORY / clinical assessment/ viva voce				**5HOURS**

	n and accelera tion of labour ; manage ment of third stage of labour									

SPECIFIC LEARNING OBJECTIVES

Teaching and Learning Methods		**Assessment Method**	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion** **Mechanism of labour with dummy pelvis** **Plotting of partogram**	• **long essay** • **short essay** • **short answers**	**Group discussion**

At the end of the teaching and learning session student should be able to :

- Define labour
- Discuss physiology of labour
- Discuss the mechanism of labour
- Discuss management of labour
- Describe the methods of induction of labor -medical, surgical and combined

TOPIC: NORMAL PUERPERIUM

Number of Competencies: 04

Number of procedures that require certification: nil

Number of hours required: 2 hours

Number	COMPETENCY The student should be able to:	Domain K/S/A/C	Level K/KH/SH/P	CORE Y/N	Suggested Teaching/ Learning method	Suggested Assesment method	Number required to certify	Vertical Integration	Horizontal Integration	Number of hours
OG19.1	Describe and discuss the physiology of puerperium, its complications, diagnosis and management; counsellin g for contra ceptio n, puerp eral sterili zation	K	KH	Y	Lecture, Small group discussio n, Bedside clinics	Written/ Viva voce				2 HOURS

SPECIFIC LEARNING OBJECTIVES

At the end of the teaching and learning session student should be able to :

- Describe the involution of uterus
- Discuss about lochia and types
- Discuss the physiology of lactation
- Discuss postnatal care
- Define and discuss puerperal sepsis
- Discuss the different methods of contraception in the postpartum period

Teaching and Learning Methods		Assessment Method	
Theory	**Clinical**	**Theory**	**Clinical**
Lecture	**Demonstration with small group discussion**	• **long essay** • **short essay** • **short answers**	**Group discussion**

Obstetrics :

1. Mudaliar & Menon, Clinical Obstetrics, 12th edition, 2015, Orient Longman.

2. Dutta D.C., Text book of Obstetrics including Perinatology and Contraception, 9th edition, New central Book Agency (P) Ltd., New Delhi, 2017

3. Dawn C.S., Text Book of Obstetrics and Neonatology, 14th edition, Dawn Books, Calcutta, 2004.

4. Holland and Brews, Textbook of Obstetrics, 16th Edition, B. I. Publication, New Delhi, 1998.

Reference books:

1. Williams Obstetrics – Cunningham, Mc Donald & Gant, 25th edition

2. Dewhurst's Text book of Obstetrics & Gynaecology by whitfield C.R, 9th edition, 2018

Gynaecology:

1. Padubidri VG and Shirish N Dafftary, Shaw's A Text book of Gynaecology, 17th edition

B. I. Churchill Livingstone, New Delhi, 2018

2. Dutta DC, Text book of Gynaecology, 8th edition, 2020.

3. Dawn CS, Text book of Gynaecology & Contraception, 14th edition, Dawn Books Calcutta,

2003

Reference books

1. Jeffcoate Principles of Gynaecology, by V.R. Trindall, 9th edition, Bullerworth Heinmans.