

Rajiv Gandhi University of Health
Sciences
Bangalore, Karnataka



Ophthalmology Curriculum
as per
Competency-Based Medical Education Curriculum

RGUHS Ophthalmology Curriculum as per the new Competency Based Medical Education

Preamble

The NMC envisages that the Indian Medical Graduate, should function as the Physician of first contact in the community, to provide holistic health care to the evolving needs of the nation and the world. To fulfil this the IMG should be able to perform the following roles: a clinician, a communicator, a lifelong learner, a professional and a team leader.

Competency-based medical education (CBME) is an outcomes-based training model that has become the new standard of medical education internationally. This new curriculum is being implemented across the country and the first batch has been enrolled since the academic year 2019. The regulatory and accrediting body NMC had started the process by training faculty across the country in the key principles of CBME and developing key competencies for each speciality with the input from expert groups under each speciality.

Ophthalmology is one of the most advanced specialities in the field of medicine. Ophthalmology deals with preserving vision, the most important special sense. The eye is a unique organ, with none other to match it in structure, function, and gross appearance. Most disorders of the eye lend itself to direct visualisation. The advances in ophthalmology are frequent both in diagnostics and treatment options. It is an interesting area of study. The Ophthalmology undergraduate curriculum provides the IMG the requisite knowledge, essential skills, and appropriate attitudes to be able to diagnose and treat common ocular disorders and to be able to recognise serious eye conditions and refer appropriately.

The NMC, in the Graduate medical regulations 2019, has provided the list of ophthalmology competencies required for an IMG and these have been included in this ophthalmology curriculum document. The Specific learning objectives (SLO's) to achieve each competency has been listed along with the suggested Teaching-Learning methods and preferred assessment methods both formative and summative.

Following this is a detailed **blueprint** showing the weightage and the assessment tool for a particular chapter. This blueprint will ensure that there is an alignment between the SLOs', TL methods and the assessment. A **question paper layout** has also been added to ensure that there is consistency among different paper setters. Finally, the list of practical skills along with the most appropriate TL and assessment methods has been laid out.

Goals and Objectives of the RGUHS Ophthalmology Curriculum

Goals

The broad goal of the ophthalmology curriculum is to equip the IMG with sufficient knowledge, skills and attitude to diagnose and appropriately treat common ophthalmic disorders affecting our population.

Objectives

A) Knowledge

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

- a. Describe the applied anatomy, physiology and biochemical attributes of the normal eye and adnexa.
- b. Describe the pathophysiology, clinical features, and management of diseases of the eye, orbit and adnexa.
- c. Demonstrate the ability to apply the knowledge in a clinical setting.

(B) Skills

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

- a. Elicit a detailed clinical history and perform an ocular examination in both outpatient and ward setting.
- b. Apply the elicited history and examination to arrive at correct diagnosis and plan treatment.
- c. Perform minor diagnostic and therapeutic procedures in an emergency situation prior to referral to higher centres

C) Attitude and communication skills

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

- a. Communicate effectively with patients, their families and the public at large.
- b. Communicate effectively with peers and teachers demonstrate the ability to work effectively with peers in a team.
- c. Demonstrate professional attributes of punctuality, accountability and respect for teachers and peers.
- d. Appreciate the issues of equity and social accountability while undergoing all clinical encounters

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List of all Ophthalmology Competencies with their specific learning objectives, with suggested teaching-learning and assessment methods

	Competencies	Specific learning objectives	Teaching learning methods	When T-L will be done	Formative assessment	Summative assessment
Topic: Refractive errors						
OP1.1	Describe the physiology of vision	Anatomy of retina and fovea Visual pathway Mechanism of vision Theories of color vision	Lecture	6 th term	MCQs at the end of lecture	Short essay/viva voce
OP1.2	Define, classify and describe the types and methods of correcting refractive errors.	Definition of myopia, hypermetropia and astigmatism Describe the Types of myopia Describe Types of hypermetropia Describe Types of astigmatism Enumerate the Treatment options for myopia Enumerate the retinal findings in myopia Enumerate the Treatment options of hypermetropia Describe the treatment of astigmatism List the indications and advantages, complications of contact lenses	Lectures Tutorial to reinforce learning and prevent decay	6 th term	MCQs/SAQ's at the end of lecture or a group of lectures	Essay/SAQ/viva voce
OP1.3	Demonstrate the steps in performing	Assess visual acuity using Snellen's chart	DOAP session	1 st posting	Skill assessment	End of 1st posting – OSCE

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	the visual acuity assessment for distance vision,near vision,colour vision,the pin hole test and the menace and blink reflexes	Demonstrate use of pin hole in visual acuity testing and interpret the findings Assess near vision using Times new Roman charts Elicit the blink reflex and menace reflex in an adult patient Assess color vision using Ishihara's color plates	during clinical posting		during clinics Logbook	or short case
OP1.4	Enumerate the indications and describe the principles of refractive surgery	Enumerate the types of refractive surgery Enumerate the indication for refractive surgery Briefly describe the principle of LASIK	Lecture	6 th term	MCQ's/SAQ/ Viva voce at the end of lecture	Short essay/viva voce
OP1.5	Define, enumerate the types and the mechanism by which strabismus leads to amblyopia	Define amblyopia Enumerate the types of amblyopia Describe briefly the mechanism of strabismic amblyopia	Lecture	6 th term	MCQ's/SAQ/ Viva voce at the end of lecture	Short essay/viva voce
Topic: Lids and Adnexa, Orbit Number of Competencies: (08)						
OP2.1	Enumerate the causes, describe and discuss the aetiology, clinical presentations and diagnostic features of common conditions of the lid	Describe the etiology, clinical features of common conditions of the lid and adnexa including Hordeolum externum/ internum, blepharitis, preseptal cellulitis, dacryocystitis, hemangioma, dermoid, ptosis,entropion, lid lag, lagophthalmos	Lecture, Small group discussion like tutorials, PBL or CBL	6th term	MCQs/SAQ/ Viva voce	Short essay/viva voce

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	and adnexa					
OP2.2	Demonstrate the symptoms & clinical signs of conditions enumerated in OP2.1	Elicit signs and symptoms of common eyelid conditions Diagnose accurately common lid conditions based on the elicited signs and symptoms Accurately prescribe the local medication for common lid conditions Counsel a patient with lagophthalmos the need for tarsorrhaphy	DOAP session during clinical posting	1st clinical posting	Skill Assessment during clinics Logbook	End of 1st posting – OSCE or short case
OP2.3	Demonstrate under supervision clinical procedures performed in the lid including: bells phenomenon, assessment of entropion/ectropion, perform the regurgitation test of lacrimal sac. Massage technique in cong. dacryocystitis, and trichiasis cilia removal by epilation	Elicit Bell's phenomenon perform lacrimal sac regurgitation test Demonstrate the correct technique of lacrimal sac massage for congenital nasolacrimal duct obstruction to the mother	DOAP session during clinical posting	1st clinical posting	Skill Assessment during clinics Logbook	End of 1 st posting – OSCE or short case
OP2.4	Describe the aetiology, clinical presentation.	Discuss the etiopathogenesis of orbital cellulitis Describe the clinical features of OC	Lecture, Small group discussion	7th term	MCQs/ SAQ/ Viva voce	Short essay/viva voce

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	Discuss the complications and management of orbital cellulitis	Discuss the management of OC				
OP2.5	Describe the clinical features on ocular examination and management of a patient with cavernous sinus thrombosis	Enumerate the predisposing factors for cavernous sinus thrombosis Compare and contrast clinical features of OC and cavernous sinus thrombosis Describe the management of CST	Lecture	7th term	MCQs/SAQ/ Viva voce	Short essay/viva voce
OP2.6	Enumerate the causes and describe the differentiating features, and clinical features and management of proptosis	Discuss causes of unilateral proptosis Enumerate the causes of bilateral proptosis	Lecture, SGD	7th term	MCQs/ SAQ/ Viva voce	Short essay/viva voce
OP2.7	Classify the various types of orbital tumours. Differentiate the symptoms and signs of the presentation of various types of ocular tumours		Lecture, SGD	7 th term	Written/ Viva voce	Short essay/viva voce
OP2.8	List the investigations helpful in diagnosis of orbital		Lecture, SGD	7th term	Written/ Viva voce	Short essay/viva voce

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	tumours. Enumerate the indications for appropriate referral					
Topic: Conjunctiva Number of Competencies (09)						
OP3.1	Elicit document and present an appropriate history in a patient presenting with a “red eye” including congestion, discharge, pain	Elicit appropriate history in a patient presenting with "Red eye" Perform ocular examination including vision assessment, pupil examination in a patient with "red eye" Counsel a patient with conjunctivitis on appropriate hand hygiene to prevent spread of infection	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	End of 1st posting – OSCE or short case
OP3.2	Demonstrate document and present the correct method of examination of a “red eye” including vision assessment, corneal lustre, pupil abnormality, ciliary tenderness	Demonstrate correct method of digital tonometry Discuss the differential diagnosis of "red eye"	DOAP session	1st clinical posting	Skill assessment Logbook	End of 1st posting – OSCE or short case
OP3.3	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications. and	Describe the clinical features of ophthalmia neonatorum according to the pathogenetic agent Describe the management of Ophthalmia neonatorum Compare the clinical features of	Lecture	6th term	SAQ Viva voce	Essay/SAQ

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	management of various causes of conjunctivitis	conjunctivitis of different aetiologies Describe the management of bacterial conjunctivitis				
OP3.4	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications, and management of trachoma.	Describe the clinical features of Trachoma Describe the management of Trachoma Describe the WHO classification of Trachoma Discuss the National programme for control of blindness due to Trachoma	Lecture	6th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP3.5	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of vernal catarrh	Describe the clinical features of vernal catarrh How will you manage a patient with vernal catarrh	Lecture,	6th term	Written/ Viva voce	Essay/SAQ
OP3.6	Describe the aetiology, pathophysiology, ocular features, differential diagnosis, complications and management of pterygium	Elicit appropriate history and clinical signs of pterygium Enumerate causes of decreased vision due to pterygium Describe the different surgical options for pterygium	Lecture	6th term	Skill assessment SAQs	Essay/SAQ
OP3.7	Describe the aetiology,	Enumerate causes and complications of symblepharon	Lecture	6th term	MCQs/SAQ/ Viva voce	SAQ

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	pathophysiology, ocular features, differential diagnosis, complications and management of symblepharon					
OP3.8	Demonstrate correct technique of removal of foreign body from the eye in a simulated environment	Demonstrate correct technique of removal of foreign body from the eye in a simulated environment	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	
OP3.9	Demonstrate the correct technique of instillation of eye drops in a simulated environment	Demonstrate the correct technique of instillation of eye drops in a simulated environment	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	
OP3.10	Demonstrate the correct technique of applying an eye pad	Demonstrate the correct technique of applying an eye pad	DOAP session during clinical posting Logbook	1st clinical posting	Skill assessment Logbook	
Topic: Cornea Number of Competencies: (10)						
OP4.1	Enumerate, describe and discuss the types and causes of	Discuss the pathogenesis of corneal ulcer Discuss the clinical features based on	Lecture	6th term	MCQs/SAQ/ Viva voce Skill	Essay/SAQ

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	corneal ulceration	etiological agent Elicit signs and symptoms of corneal ulcer Describe the general principles of management of corneal ulcers			assessment	
OP4.2	Enumerate and discuss the differential diagnosis of infective keratitis	Enumerate the causes of infective keratitis Compare and contrast the clinical features of bacterial and fungal corneal ulcer	Lecture, SGD	6th term	Written/ Viva voce	Essay/SAQ
OP4.3	Enumerate the causes of corneal edema	Enumerate the causes of corneal edema	Lecture	6th term	Written/ Viva voce	SAQ
OP4.4	Enumerate the causes and discuss the management of dry eye	Describe briefly the Physiology of Tear film Describe briefly the tests done to detect dry eyes Enumerate different modalities of treatment of dry eyes	Lecture, SGD	6th term	SAQs/ Viva voce	Essay/SAQ
OP4.5	Enumerate the causes of corneal blindness	Enumerate the causes of corneal blindness	Lecture, SGD	6th term	Written/ Viva voce	SAQ
OP4.6	Enumerate the indications and the types of keratoplasty	Enumerate the indications and the types of keratoplasty	Lecture, SGD	6th term	Viva voce	Essay/SAQ
OP4.7	Enumerate the indications and describe the methods of tarsorrhaphy	Enumerate the indications and describe the methods of tarsorrhaphy	Lecture	6th term	Written/ Viva voce	Essay/SAQ

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OP4.8	Demonstrate technique of removal of foreign body in the cornea in a simulated environment	Demonstrate technique of removal of foreign body in the cornea in a simulated environment	DOAP during clinical posting	6th term	Logbook	SAQ
OP4.9	Describe and discuss the importance and protocols involved in eye donation and eye banking	Enumerate the contraindications for eye donation List all methods of corneal button storage	Lecture	6th term	Written/ Viva voce	Essay/SAQ
OP4.10	Counsel patients and family about eye donation in a simulated environment	Counsel patients and family about eye donation in a simulated environment	DOAP during clinical posting	1st clinical posting	Logbook	
Topic: Sclera Number of competencies: (02)						
OP5.1	Define, enumerate and describe the aetiology, associated systemic conditions, clinical features complications indications for referral and management of episcleritis	Define scleritis Discuss the etiology of scleritis	Lecture, SGD	6th term	Written/ Viva voce	Essay/SAQ
OP5.2	Define, enumerate,	Describe the clinical features, and	Lecture,	6th	Written/ Viva	Essay/SAQ

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	and describe the aetiology, associated systemic conditions, clinical features, complications, indications for referral and management of scleritis	treatment of scleritis Enumerate the complications of scleritis	SGD	term	voce	
Topic: Iris and Anterior chamber Number of Competencies (10)						
OP6.1	Describe clinical signs of intraocular inflammation and enumerate the features that distinguish granulomatous from non-granulomatous inflammation. Identify acute iridocyclitis from chronic condition	Describe the etiology, clinical features of iridocyclitis Describe the distinguishing features of granulomatous and non-granulomatous iridocyclitis What is the etiology of granulomatous iridocyclitis	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.2	Identify and distinguish acute iridocyclitis from chronic iridocyclitis	Define acute and chronic iridocyclitis Mention the differentiating features between acute and chronic iridocyclitis	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.3	Enumerate systemic conditions that can present as	Enumerate the systemic conditions associated with iridocyclitis Enumerate the other ocular	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	iritidocyclitis and describe their ocular manifestations	manifestations				
OP6.4	Describe and distinguish hyphema and hypopyon	What is hyphema and what are its causes How will you manage a case of hyphema What is a hypopyon and what are its causes	Lecture	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.5	Describe and discuss the angle of the anterior chamber and its clinical correlates	Describe the anatomy of the angle of the anterior chamber How will you grade the angle of the anterior chamber	Lecture	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.6	Identify and demonstrate the clinical features and distinguish and diagnose common clinical conditions affecting the anterior chamber	Describe the clinical features of Primary open angle glaucoma Describe the management of POAG What is Trabeculectomy and describe its steps Describe the clinical features and management of Primary angle closure glaucoma Describe the clinical features and management of congenital glaucoma	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.7	Enumerate and discuss the aetiology, the clinical distinguishing features of shallow	What are the causes of shallow and deep anterior chamber What is gonioscopy	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	and deep anterior chamber. Choose appropriate investigations for patients with above conditions of the anterior chamber	What is perimetry and what are the visual field changes in glaucoma What is tonometry and how is it measured Demonstrate digital tonometry				
OP6.8	Enumerate and choose the appropriate investigation for patients with conditions affecting the Uvea	Describe the investigations in a patient with iridocyclitis	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP6.9	Choose the correct local and systemic therapy for conditions of the anterior chamber and enumerate their indications, adverse events and interactions	Describe the management of a patient with iridocyclitis Enumerate the side effects of steroid use Discuss various routes of administration of steroids in ocular disease	Lecture, SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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OP6.10	Counsel patients with conditions of the iris and anterior chamber about their diagnosis, therapy and prognosis in an empathetic manner in a simulated environment	Counsel a patient with uveitis regarding the need for compliance	DOAP during clinical posting	1 st posting	OSCE	OSCE/ short case examination
Topic: Lens Number of Competencies: (06)						
OP7.1	Describe the surgical anatomy and the metabolism of the lens	Describe the anatomy of the lens Describe the metabolism of the lens	Lecture	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP7.2	Describe and discuss the etio-pathogenesis, stages of maturation and complications of cataract	Describe the etiopathogenesis of senile cataract Stages of cortical and nuclear cataract Complications of senile cataract Discuss etiology and morphology of complicated cataract	Lecture/SGD	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP7.3	Demonstrate the correct technique of ocular examination in a patient with a cataract	Differentiate between immature, mature and hypermature cataract Demonstrate the presence of iris shadow Macular function tests	DOAP during clinical posting	1 st posting	OSCE	OSCE/short case examination
OP7.4	Enumerate the types of cataract surgery and describe the steps,intra-operative	Describe the steps of cataract surgery Mention the intraoperative complications	SGD/Lecture	6 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	and post-operative complications of extracapsular cataract extraction surgery.	Mention the early and late postoperative complications Treatment of After cataract				
OP7.5	To participate in the team for cataract surgery	Discuss the preoperative preparation of a patient for cataract surgery Experience a walkthrough of a single patient from advising for surgery till discharge of the patient	Learner-doctor	2 nd posting	OSCE	OSCE/short case examination
OP7.6	Administer informed consent and counsel patients for cataract surgery in a simulated environment	Administer informed consent and counsel patients for cataract surgery in a simulated environment	DOAP during clinical posting	2 nd posting	OSCE	OSCE/short case examination
Topic: Retina & optic Nerve Number of Competencies (05)						
OP8.1	Discuss the aetiology, pathology, clinical features and management of vascular occlusions of the retina	Describe the etiology, pathology, clinical features, and management of Retinal vein occlusions Describe the etiology, pathology, clinical features, and management of Retinal artery occlusions What is cherry red spot and what are its causes	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP8.2	Enumerate the indications for laser therapy in the treatment of retinal diseases (including retinal detachment,	What is the pathogenesis of diabetic retinopathy What are the stages of diabetic retinopathy and maculopathy	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	retinal degenerations, diabetic retinopathy & hypertensive retinopathy)	<p>What is the management for each of the stages</p> <p>What are the grades of hypertensive retinopathy? What is Keith Wagner classification</p> <p>Enumerate the types of retinal detachment and its management</p> <p>What is age related macular degeneration? What are the clinical features and management</p>				
OP8.3	Demonstrate the correct technique of a fundus examination and describe and distinguish the fundoscopic features in a normal condition and in conditions causing an abnormal retinal exam	<p>Demonstrate the correct technique of using a direct ophthalmoscope.</p> <p>Describe a normal fundus with the help of a diagram</p>	DOAP in skills lab	6-7 th term	OSCE	
OP8.4	Enumerate and discuss treatment modalities in management of diseases of the retina	<p>Enumerate the various disease conditions of the retina</p> <p>Enumerate the treatment modalities of the above conditions</p>	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP8.5	Describe and discuss the correlative anatomy, aetiology, clinical manifestations,	<p>Describe the anatomy of the Optic nerve</p> <p>Describe the clinical features, investigations and management of</p>	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	diagnostic tests, imaging and management of diseases of the optic nerve and visual pathway	<p>Optic neuritis</p> <p>Describe the clinical features, stages and fundus picture, investigations, and management of Papilledema</p> <p>Describe the clinical features, classification, investigations and management of Optic Atrophy</p> <p>Describe the anatomy of the visual pathway</p> <p>Describe the visual field defects occurring in diseases affecting the visual pathway</p> <p>Describe the pupillary pathway</p> <p>Describe the clinical features of the various pupillary abnormalities- Hutchisons pupil, ARP, Adies Pupil, Marcus Gunn Pupil</p> <p>Demonstrate swinging flashlight test</p>				
PA36.1	Describe the etiology, genetics, pathogenesis, pathology, presentation, sequelae, and complications of retinoblastoma	<p>Discuss the pathogenesis, histopathology and genetics of retinoblastoma</p> <p>Enumerate the causes of leukocoria</p> <p>Describe the staging and clinical features of retinoblastoma</p> <p>Discuss the treatment options for the various stages of retinoblastoma</p>	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
Topic: Miscellaneous Number of Competencies (05) Number of procedures that require certification: (01)						

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OP9.1	Demonstrate the correct technique to examine extra ocular movements (Uniocular & Binocular)	List the extraocular muscles, their insertions, and their actions Demonstrate the correct technique to examine extra ocular movements (Uniocular & Binocular)	DOAP during clinical posting	1 st & 2 nd posting	Logbook	
OP9.2	Classify, enumerate the types, methods of diagnosis and indications for referral in a patient with heterotropia/ strabismus	List the types of strabismus What are the differences between Paralytic squint and Concomitant squint Enumerate and demonstrate the tests done in a case of Squint (Hirschberg's test, Head posture) List the conditions in which a patient with strabismus has to be referred	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP9.2	Describe the role of refractive error correction in a patient with headache and enumerate the indications for referral	Enumerate the causes of headache and list the differentiating features to suggest an ocular cause List the type of headaches which require referral	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP9.4	Enumerate, describe and discuss the causes of avoidable blindness and the National Programs for Control of Blindness (including vision 2020)	What are the causes of avoidable blindness What is NPCB. What are the diseases included in this What is vision 2020 Define legal blindness, social blindness and economical blindness	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
OP9.5	Describe the evaluation and	List the types of ocular injuries	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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	enumerate the steps involved in the stabilisation, initial management and indication for referral in a patient with ocular injury	List the effects of blunt trauma to the eye List the steps of initial management of chemical injuries Demonstrate the correct method of eye irrigation List the steps of initial management of an open globe injury				
Integration – Anatomy						
AN30.5	Explain effect of pituitary tumours on visual pathway	Describe the visual field changes in pituitary tumors Discuss the anatomical basis of VF changes in pituitary lesions	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN31.3	Describe anatomical basis of Horner's syndrome	What is Horner's syndrome? Differentiate acquired from congenital HS Describe the anatomical basis for HS due to various causes	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN31.5	Explain the anatomical basis of oculomotor, trochlear and abducent palsy	Describe the anatomy of the 3 rd , 4 th and 6 th cranial nerves Enumerate the causes of 3 rd , 4 th and 6 th cranial nerve palsies	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN41.1	Describe & demonstrate parts and layers of eyeball		Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
AN41.2	Describe the anatomical aspects of cataract, glaucoma & central		Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

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AN41.3	Describe the position, nerve supply and actions of intraocular muscles		Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
Integration- Physiology						
PY10.17	Describe and discuss functional anatomy of eye, physiology of image formation, physiology of vision including colour vision, Refractive errors, colour blindness, Physiology of pupil and light reflex	Describe the theories of color vision Describe the pupillary pathway Describe the clinical features of the various pupillary abnormalities	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY10.18	Describe and discuss the physiological basis of lesion in visual pathway	Draw a neat, labelled diagram of the visual pathway Describe the field defects of lesions affecting the visual pathway	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY10.19	Describe and discuss auditory & visual evoke potentials		Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PY10.20	Demonstrate testing of visual acuity, colour and field of vision in a simulated environment	Assess visual acuity, colour vision and visual field in a simulated patient	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ
PH1.58	Describe drugs used	Describe the mechanism of action,	Lecture/SGD	7 th	MCQs/SAQ/	Essay/SAQ

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	in Ocular disorders	dosage, duration, modes of delivery and side effects of the following groups of drugs used in Ophthalmology Anti-glaucoma drugs, antibiotics, antifungals, mydriatic and cycloplegics, steroids		term	Viva voce	
IM24.15	Describe and discuss the aetiopathogenesis, clinical presentation, identification, functional changes, acute care, stabilization, management and rehabilitation of vision and visual loss in the elderly	List the causes of acute painless loss of vision in the elderly and their systemic causes List the causes of acute painful loss of vision in the elderly and their systemic causes Discuss the systemic investigations that is required in acute loss of vision in the elderly Discuss the treatment of acute loss of vision in the elderly	Lecture/SGD	7 th term	MCQs/SAQ/ Viva voce	Essay/SAQ

Draft

**Summary of course content, teaching and learning methods and student assessment for the undergraduate (MBBS)
Curriculum in Ophthalmology**

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Course content

The course content been given in detail in the above Table, which includes competencies, specific learning objectives for each competency and the suggested Teaching-Learning methods and assessment methods both formative and summative. The competencies have been developed by an expert group nominated by NMC, while the SLOs, T-L methods and assessments methods have written by the expert committee constituted by Rajiv Gandhi University of Health Sciences.

Teaching-Learning methods and Time allotted

	Lectures	Small group discussion	Self-directed learning	Total hours	Clinical postings
Ophthalmology	30hours	60hours	10hours	100 hours	Two postings of 4 weeks each. First posting in 3-4 th terms (15hours/week) and Second posting in 6-7 th terms (18hours/week)

Teaching-learning methods shall be learner centric and shall predominantly include small group learning, interactive teaching methods and case-based learning. Didactic lectures not to exceed one-third of the total teaching time. The teaching learning activity focus should be on application of knowledge rather than acquisition of knowledge.

The curricular contents shall be vertically and horizontally aligned and integrated to the maximum extent possible to enhance learner's interest and eliminate redundancy and overlap. The integration allows the student to understand the structural basis of ophthalmologic problems, their management and correlation with function, rehabilitation, and quality of life

Acquisition and certification of skills shall be through experiences in patient care, diagnostic and skill laboratories. Use of skill lab to train undergraduates in Direct Ophthalmoscopy although not mandatory, but it is desirable.

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

The clinical postings in the third professional part II shall be 18 hours per week (3 hrs per day from Monday to Saturday)

Newer T-L method like Learner-doctor method (Clinical clerkship) should be mandatorily implemented, from 1st clinical postings in ophthalmology itself.

The goal of this type of T-L activity is to provide learners with experience in longitudinal patient care, being part of the health care team, and participate in hands-on care of patients in outpatient and inpatient setting. During the 1st clinical postings, the students are oriented to the working of the department. During the second clinical posting the students are allotted patients, whom they follow-up through their stay in the hospital, participating in that patient's care including case work-up, following-up on investigations, presenting patient findings on rounds, observing surgeries if any till patient is discharged.

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 which is called the AETCOM module. The purpose is to help the students apply principles of bioethics, systems-based care, apply empathy and other human values in patient care, communicate effectively with patients and relatives and to become a professional who exhibits all these values. This will be a longitudinal programme spread across the continuum of the MBBS programme including internship. MBBS Phase 3 Part 1, has to complete 5 modules of 5hours each. The Ophthalmology faculty will have the responsibility of conducting 1-2 modules as per the decision and logistics of each institution.

Assessment

Eligibility to appear for university examinations is dependent on fulfilling criteria in two main areas – attendance and internal assessment marks

Attendance

Attendance requirements are 75% in theory and 80% in clinical postings for eligibility to appear for the examinations in Ophthalmology.

75% attendance in AETCOM Module is required for eligibility to appear for final examination in 3rd professional year 3 part 1.

Internal Assessment

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.

There shall be no less than three internal assessment examinations in Ophthalmology. An end of posting clinical assessment shall be conducted for each of the Ophthalmology clinical posting.

Day to day records and logbook (including required skill certifications) should be given importance in internal assessment. Internal assessment should be based on competencies and skills.

Learners must secure at least 50% marks of the total marks (combined in theory and clinical; not less than 40 % marks in theory and practical separately) assigned for internal assessment in Ophthalmology in order to be eligible for appearing at the final University examination.

Internal assessment marks will reflect as separate head of passing at the summative examination.

The results of internal assessment should be displayed on the notice board within 1-2 weeks of the test.

Remedial measures should be offered to students who are either not able to score qualifying marks or have missed on some assessments due to any reason.

Learners must have completed the required certifiable competencies for that phase of training and Ophthalmology logbook entry completed to be eligible for appearing at the final university examination.

AETCOM assessment will include: (a) Written tests comprising of short notes and creative writing experiences, (b) OSCE based clinical scenarios / viva voce.

University examinations

Third Professional Part I shall be held at end of third Professional part 1 of training (12 months) in the subjects of Ophthalmology, Otorhinolaryngology, Community Medicine and Forensic Medicine and Toxicology

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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.

Marks allotted

Ophthalmology	Theory	Clinical examination
Total marks	100 marks	100 marks
	Long essay 2X10= 20	Two cases x40marks=80marks
	Short essay 8x5=40 marks	Viva voce 2x10=20marks
	Short answer question 10x3=30marks	
	MCQs 10x1=10marks	

The theory paper should include different types such as structured essays, short essays, Short Answers Questions (SAQ) and MCQs (Multiple Choice Questions). Marks for each part should be indicated separately.

All the question papers to follow the suggested **blueprint (APPENDIX 1)**. It is **desirable** that the marks allotted to a particular topic are adhered to.

A minimum of **80%** of the marks should be from the **must know** component of the curriculum. A maximum of **20%** can be from the **desirable to know** component. All **main essay questions** to be from the **must know component** of the curriculum.

One main essay question to be of the **modified variety** containing a clinical case scenario. At least 30% of questions should be clinical case scenario based. Questions to be constructed to test higher cognitive levels.

Clinical examinations will be conducted in the hospital wards. Clinical cases kept in the examination must be common conditions that the learner may encounter as a physician of first contact in the community. Selection of rare syndromes and disorders as examination cases is to be discouraged. Emphasis should be on candidate's capability to elicit history, demonstrate physical signs, write a case record, analyze the case and develop a management plan.

Viva/oral examination should assess approach to patient management, emergencies, attitudinal, ethical and professional values. Candidate's skill in interpretation of common investigative data, X-rays, identification of specimens, ECG, etc. is to be also assessed.

At least one question in each paper of the clinical specialties in the University examination should test knowledge competencies acquired during the professional development programme. Skill competencies acquired during the Professional Development Programme must be tested during the clinical, practical and viva voce.

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.

Pass criteria

Internal Assessment: 50% combined in theory and practical (not less than 40% in each) for eligibility for appearing for University Examinations

University Examination: Mandatory 50% marks separately in theory and clinicals (clinicals = clinical + viva)

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.

Appointment of Examiners

Person appointed as an examiner in the 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.

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.

All eligible examiners with requisite qualifications and experience can be appointed as internal examiners by rotation
External examiners may not be from the same University.

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

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

Draft

APPENDIX 1: Blueprint for Ophthalmology theory Examinations

Topics	Marks allotted
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Eyelids disorders	6
Conjunctival diseases	10
Corneal disorders	10
Refractive errors	6
Lacrimal Drainage system	6
Tear Film abnormalities	5
Diseases of Sclera	3
Diseases of Lens	8
Glaucoma	10
Uveitis	5
Diseases of Retina and choroid	10
Orbital diseases	5
Neuroophthalmological conditions	8
Community Ophthalmology	5
Strabismus	3
Total	100

Sample Ophthalmology Question Paper

Time: 3 hours

Ophthalmology Paper

Marks: 100

**Your answers should be specific to the questions asked.
Draw neat, labelled diagrams wherever necessary.**

Long essays (2 X 10 = 20 marks)

1. A 42year old male, farmer by profession seeks treatment for painful loss of vision in the left eye 1 week duration after he sustained trauma with vegetable matter while working. On examination his visual acuity is CF 3meters with a central whitish lesion on the cornea.

What is the most likely diagnosis? Describe the clinical features of this condition? Discuss the investigations and treatment for this condition. Describe briefly the complications associated with this condition

(1+3+4+2=10)

2. Describe the staging of diabetic retinopathy with the clinical features and treatment of each stage. Add a note on anti-VEGF treatment (8+2=10)

Short essays (8x5=40marks)

3. A 3month old male child was brought with complaints of watering of right eye since birth with intermittent yellowish-white discharge. What is the most probable diagnosis and how will you manage this child?

4. Describe the WHO classification of vitamin A deficiency. Add a note on treatment of vitamin A deficiency

5. Discuss the etiological classification of entropion. Discuss the etiopathogenesis and management of senile entropion

6. Describe the visual field changes in Primary open angle glaucoma

7. Describe the Classification of Hypermetropia and management

8. A 48year old female presents with gradually progressive loss of vision in the right eye since 8months. What is the probable differential diagnosis and how will you investigate and manage this patient?

9.Enumerate the causes and discuss the investigations and treatment of non-granulomatous iridocyclitis.

10. Discuss the etiology, clinical features and management of optic neuritis

Short answer questions (10x3=30marks)

11. What is Paracentesis? Enumerate the indications

12. Enumerate the Differential diagnosis of Leukocoria

13. Briefly describe the tests for dry eyes
14. Causes of Anisocoria
15. Describe briefly the actions and nerve supply of Extraocular muscles
16. Write a short note on the uses of Atropine in Ophthalmology
17. Classification of scleritis
18. Write briefly on the Treatment of trachoma
19. Write a note on clinical features of orbital cellulitis
20. Enumerate the indications for keratoplasty

Multiple choice questions (10x1=10marks, with no negative marking)

21. (i) Corneal perforation is an expected complication of

- A) Hypopyon ulcer
- B) Fasicular ulcer
- C) Mooren's ulcer
- D) Dendritic ulcer

21. (ii) Surgery of choice in "Buphthalmos" is

- A) cyclocryo therapy
- B) iridectomy
- C) trabeculectomy

D) trabeculotomy

21. (iii) A vertically oval mid-dilated pupil unresponsive to light is diagnostic of

A) acute anterior uveitis

B) acute mucopurulent conjunctivitis

C) acute congestive glaucoma

D) acute nodular scleritis

21. (iv) Orbicularis oculi is innervated by which cranial nerve?

A) 4th

B) 5th

C) 6th

D) 7th

21. (v) Proptosis is measured using

A) Keratometer

B) Tonometer

C) Exophthalmometer

D) Gonioscope

22. (i) Formation of a “Cyclitic membrane” leads to all the following **EXCEPT**

- A) Hypotony
- B) Glaucoma
- C) Loss of vision
- D) Pthisis bulbi

22, (ii) In an adult male presenting with acute severe purulent conjunctivitis, preauricular lymph node enlarged and tender with associated constitutional symptoms the treatment of choice is

- A) Ceftriaxone 1gm intramuscularly with intensive topical penicillin therapy
- B) Intensive topical penicillin therapy alone
- C) Fluoroquinolones 500mg BID intravenously with topical tetracycline therapy
- D) Intensive topical tetracycline therapy alone

22. (iii) Topical Mitomycin C is used in the treatment of pterygium to

- A) Prevent malignant transformation
- B) Improve circulation
- C) Prevent recurrence
- D) Prevent calcification

22. (iv) "Pizza pie" appearance is typically seen in

- A) Retinitis pigmentosa
- B) CMV retinitis
- C) Toxoplasma retinitis
- D) Tuberculous retinitis

22. (v) "Homonymous hemianopia with macular sparing" is seen in lesions of

- A) Occipital cortex
- B) Optic radiation
- C) Optic chiasm
- D) Optic nerve

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