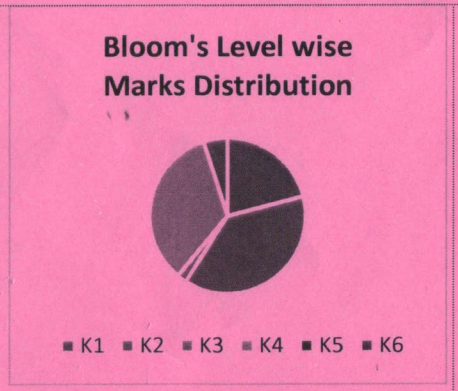
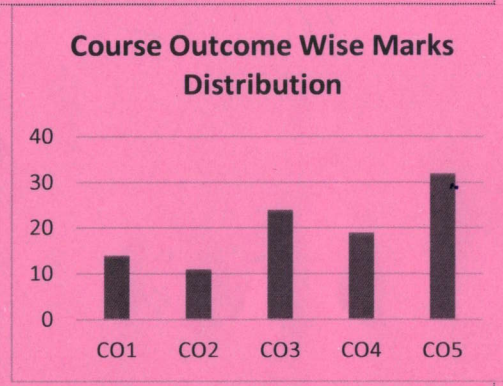
CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Establish fluent professional communication between the clinician and the patient.
	CO2	Emphasize on the writing skills of the student for better writing of articles or manuscripts.
	CO3	Appreciate literature through critical study of selected literary work.
	CO4	Demonstrate effective speaking skills.
	CO5	Demonstrate comprehension in reading text.

GRAPHICAL REPRESENTATION





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NAAC GRADE A
ACCREDITED UNIVERSITY

[16-01-2026]
END SEM EXAMINATION
School of Health & Allied Sciences

Program	**Bachelor of Optometry**		
Subject Name	**English**	**Session**	**Odd, 2025-26**
Semester	**I**	**Year**	**Jan, 2026**

Time: 1.5 Hour
Max. Marks : 35

- Start writing from 2nd page onwards; **don't Write on the 1st Page Backside**
- **Answer all Questions of Section A (Compulsory)**
- **Answer Any Five out of Six of Section B**
- **Answer Any Two out of Four of Section C**
- **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers.**

Knowledge Level (KL)			
	K1 : Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 01 Marks from Q1-i to v) – 05 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	What is meant by voice culture?	01	CO4	K1
ii	Give one example of a *homonym*.	01	CO5	K1
iii	Identify the type of reading: *skimming* or *scanning*: "Reading quickly to locate specific information."	01	CO3	K2
iv	Fill in the blank with a suitable conjunction: "The optometrist spoke clearly ___ the patient felt reassured.	01	CO1	K2
v	What is *listening barrier*? Mention one example.	01	CO4	K1

Section B (Answer any FIVE out of SIX) – 10 Marks
(Each question Carry 02 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Explain any two secrets of good speech delivery.	02	CO5	K3
3	Write a short note on audience psychology in presentations.	02	CO4	K2
4	List any two techniques for improving listening skills.	02	CO4	K3
5	Write a short paragraph on the importance of interview techniques for healthcare professionals.	02	CO1	K3

6	Differentiate between intensive reading and extensive reading.	02	CO3	K2
7	Rewrite the following sentence in Passive Voice: "The optometrist explains the test procedure to the patient."	02	CO5	K3

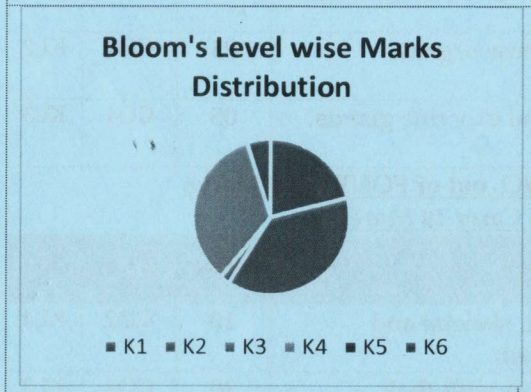
Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

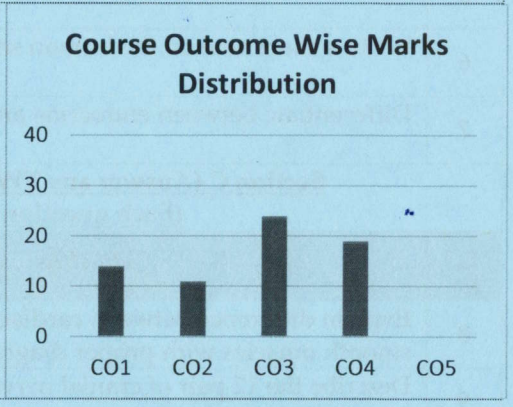
Q. No.	QUESTIONS	Marks	COs	KL
8	Discuss the importance of speaking efficiently in clinical and professional settings. Explain voice culture, preparation of speech, and delivery techniques.	10	CO4	K5
9	What is efficient and fast reading? Describe techniques to improve reading speed, concentration, and comprehension through systematic study.	10	CO3	K4
10	Describe presentation skills and conference/interview techniques required for optometry students and professionals.	10	CO1	K6
11	Explain the importance of listening in healthcare communication. Discuss barriers to listening and strategies for good and persuasive listening.	10	CO4	K5

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand the concept & terminology of Human Anatomy
	CO2	Enlist and memorizing the structure, function & location of cells, tissues and major human organ's system/part
	CO3	Recognizing the different organ and organ system
	CO4	Understand relationship between different organs of the body with organ system
	CO5	Develop a holistic approach to human health and medical research

GRAPHICAL REPRESENTATION





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[19-01-2026]
END SEM EXAMINATION
School of Health & Allied Sciences

Program	**Bachelor of Optometry**		
Subject Name	**Anatomy**	**Session**	**Odd, 2025-26**
Semester	**I**	**Year**	**Jan, 2026**
Time: 2 Hour Max. Marks : **50**	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Two out of Four of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Which epithelial tissue type is most commonly associated with protection and rapid regeneration, and is clinically relevant to the corneal surface? A. Simple squamous epithelium B. Stratified squamous epithelium C. Simple cuboidal epithelium D. Pseudostratified columnar epithelium	01	CO1	KL1
ii	During embryological development, cellular differentiation primarily refers to: A. Increase in cell size B. Division of cells into identical copies C. Specialization of cells to perform specific functions D. Random arrangement of cells within tissues	01	CO1	KL3
iii	The muscle type that is involuntary, non-striated, and commonly found in the walls of visceral organs is _____ muscle. A. Skeletal muscle B. Cardiac muscle C. Smooth muscle D. Rough muscle	01	CO2	KL2

iv	The sensory innervation of the skin is mainly provided by _____ nerves that travel in close association with muscles and blood vessels. A. Cutaneous nerves B. Motor nerves C. Visceral nerves D. Cranial nerves	01	CO4	KL2
v	Name the lymphatic organs involved in immune response. A. Stomach, Intestines, Appendix B. Liver, Pancreas, Gallbladder C. Heart, Lungs, Kidneys D. Spleen, Lymph nodes, Thymus	01	CO2	KL1
vi	_____ gives origin to embryonic blood vessels. A. Ectoderm B. Mesoderm C. Endoderm D. Trophoblast	01	CO1	KL1
vii	Glands that release their secretions directly into the bloodstream are classified as: A. Exocrine glands B. Endocrine glands C. Serous glands D. Mixed glands	01	CO3	KL3
viii	Which of the following glands has a duct? A. Thyroid gland B. Pituitary gland C. Salivary gland D. Adrenal gland	01	CO3	KL2
ix	The protective fluid that circulates in the ventricles of the brain and subarachnoid space is called _____. A. Cerebrospinal fluid B. Interstitial fluid C. Lymphatic fluid D. Synovial fluid	01	CO3	KL2
x	The structural and functional unit of the nervous system is the _____. A. Nephron B. Alveolus C. Sarcomere D. Neuron	01	CO4	KL1

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Discuss the role of blood capillaries, oil glands (sebaceous glands) & sweat glands.	05	CO2	KL3
3	Write a short note on Autonomic Nervous System.	05	CO3	KL2
4	Contrast the structural difference between arteries and the veins.	05	CO2	KL4
5	Draw and label the structure of a neuron.	05	CO3	KL4
6	Write a short note on the human sense organs.	05	CO1	KL2
7	Differentiate between endocrine and exocrine glands.	05	CO4	KL3

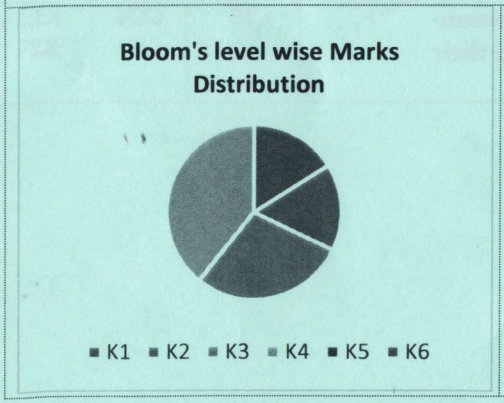
Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

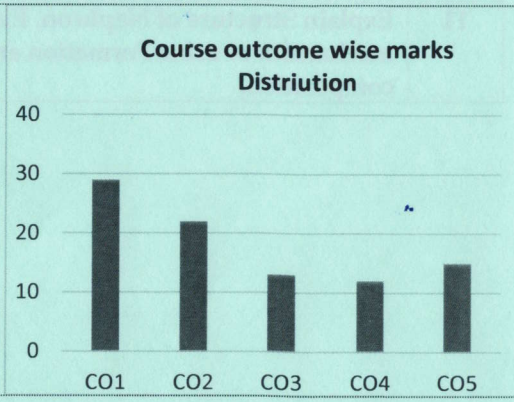
Q. No.	QUESTIONS	Marks	COs	KL
8	Explain difference between cardiac, skeletal and smooth muscles with proper diagram.	10	CO2	KL4
9	Describe the 12 pair of cranial nerves with their specific functions.	10	CO4	KL3
10	Describe about types of joints in human body with example & diagram.	10	CO4	KL4
11	Define the different planes that we study in anatomy. Also describe the significance of each plane.	10	CO1	KL4

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand concepts & terminology of human physiology
	CO2	Enlist and memorizing the function & structure of cells, tissues and major human organs systems/parts
	CO3	Understand function of various organ systems and employing its knowledge to identify diseases related to them.
	CO4	Identify and explaining the interrelation between different organ systems.
	CO5	Differentiate various organs & organs system

GRAPHICAL REPRESENTATION





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[21-01-2026]
END SEM EXAMINATION
School of Health & Allied Sciences

Program	**Bachelor of Optometry**		
Subject Name	**Physiology**	**Session**	**Odd, 2025-26**
Semester	**I**	**Year**	**Jan, 2026**
Time: 2 Hour Max. Marks : **50**	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Two out of Four of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Master of Master gland is known as_____. a. Hypothalamus b. Thyroid gland c. Pituitary gland d. Androgen	01	CO4	K1, K2
ii	The gaseous exchange in alveoli is a type of a. simple diffusion b. osmosis c. active transport d. passive transport	01	CO3	K2
iii	Ranjit is about to face an interview. But during the first five minutes before the interview she experiences sweating, increased rate of heart beat, respiration etc. Which hormone is responsible for her restlessness? a. Oestrogen and progesterone b. Oxytocin and vasopressin c. Adrenaline and noradrenaline d. Insulin and glucagon	01	CO1	K3, K4
iv	Corpus luteum is the source of secretion of a. LH b. Estradiol c. Estrogen d. Progesterone	01	CO1	K1
v	The total amount of air inhaled or exhaled during normal breathing is known as_____. a. Inspiratory volume b. Tidal volume	01	CO3	K3

	c. Expiratory Volume d. Respiration Capacity			
vi	Which Neurotransmitter is responsible for Function of Sympathetic Nervous System? a. Epinephrine b. Acetyl Choline c. Carbachol d. None of them	01	CO2, CO3	K3
vii	In which part of the respiratory system, gaseous exchange takes place? a. Alveoli b. Pharynx c. Larynx d. Trachea	01	CO4	K1
viii	Non Keratinized stratified epithelium are found in_____. a. Hair b. Nail c. Vagina d. Skin	01	CO1	K2
ix	Which of the following is not a endocrine gland. a. Hypothalamus b. Pituitary c. Parathyroid d. Pancreas	01	CO1	K4
x	The maximum volume of air contained in the lung by a full forced inhalation is called _____. a. Tidal volume b. Vital capacity c. Ventilation rate d. Total lung capacity	01	CO2	K3

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Give a short note on Epithelial tissue.	05	CO2	K1
3	Give a short note on General human physiology.	05	CO1	K2
4	Classify the secretion of hormones according to their function.	05	CO1	K3, K4
5	Write Blood Grouping Classification, Importance of Transfusion and Rh factor.	05	CO1	K3, K4
6	Give a short note on transport mechanism of cells.	05	CO2	K3, K4
7	Explain spermatogenesis.	05	CO5	K3, K4

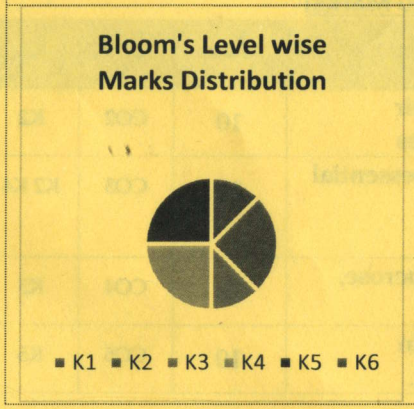
Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

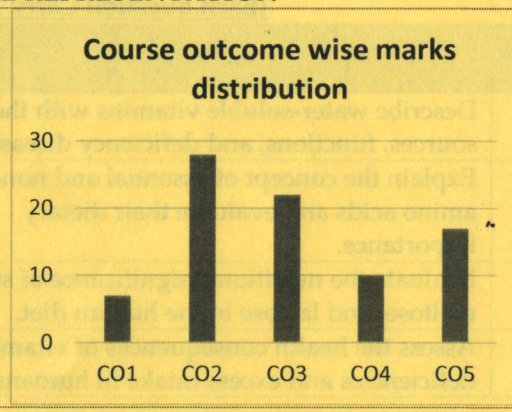
Q. No.	QUESTIONS	Marks	COs	KL
8	Classify the secretion of hormones according to their function and explain physiological function and regulation of Thyroid.	10	CO1	K3, K4
9	Briefly explain about Female reproductive system?	10	CO2	K2
10	Describe the movement of food through Alimentary Canal.	10	CO3, CO5	K3
11	Explain Structure of Nephron. Elaborate mechanism of urine Formation and their composition.	10	CO4	K1, K2

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand the concepts and theories of Biochemistry related to optometry
	CO2	Understand the chemistry of carbohydrates, proteins, lipids and amino acids
	CO3	Analyze the mechanism of enzyme action and identify the classes and factors affecting action
	CO4	Understand the role of Minerals with respect to eyes
	CO5	Understand the biochemical testing and analyzing the test result

GRAPHICAL REPRESENTATION





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[27-01-2026]
END SEM EXAMINATION
School of Health & Allied Sciences

Program	**Bachelor of Optometry**		
Subject Name	**Biochemistry**	**Session**	**Odd, 2025-26**
Semester	**I**	**Year**	**Jan, 2026**
Time: 2 Hour Max. Marks : 50	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Two out of Four of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1 :** Remembering	**K3 :** Applying	**K5 :** Evaluating
	K2 : Understanding	**K4 :** Analysing	**K6 :** Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Fat-soluble vitamins include A. Vitamin B and C B. Vitamin C and K C. Vitamin A, D, E, K D. Vitamin B_{12} and B_6	01	CO1	K2
ii	Sucrose is composed of A. Glucose + Glucose B. Glucose + Galactose C. Glucose + Fructose D. Galactose + Fructose	01	CO2	K1
iii	An athlete requires a diet rich in carbohydrates mainly to A. Build enzymes B. Provide quick energy C. Prevent anemia D. Store fat	01	CO2	K3
iv	Which vitamin deficiency causes scurvy? A. Vitamin A B. Vitamin B_1 C. Vitamin C D. Vitamin D	01	CO5	K3

v	Lactose is commonly known as A. Fruit sugar B. Malt sugar C. Milk sugar D. Cane sugar	01	CO3	K1
vi	Which pair of nutrients provides the highest energy per gram? A. Carbohydrates and proteins B. Proteins and vitamins C. Lipids and carbohydrates D. Lipids and fats	01	CO5	K4
vii	A person on a fat-free diet may develop deficiency of A. Vitamin C B. Vitamin B_1 C. Vitamin A D. Vitamin B_{12}	01	CO5	K4
viii	Which nutrient is most important for tissue repair? A. Carbohydrates B. Proteins C. Lipids D. Vitamins	01	CO1	K5
ix	Which lipid helps in insulation and protection of organs? A. Phospholipids B. Cholesterol C. Triglycerides D. Glycolipids	01	CO2	K5
x	Excess intake of carbohydrates is stored in the body as A. Protein B. Glycogen and fat C. Vitamins D. Amino acids	01	CO3	K5

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	Cos	KL
2	Define disaccharides. Describe the structure, sources, digestion, and functions of sucrose.	05	CO2	K2 K3
3	Differentiate between saturated and unsaturated fats and evaluate their effects on health	05	CO2	K4 K5
4	Describe the structure and functions of triglycerides, phospholipids, and cholesterol.	05	CO3	K2
5	Differentiate between fat-soluble and water-soluble vitamins with suitable examples.	05	CO2	K4
6	Define proteins. Explain their classification, structure, and functions with examples.	05	CO1	K1 K2
7	Compare and analyze marasmus and kwashiorkor as two major forms of protein-energy malnutrition	05	CO5	K4

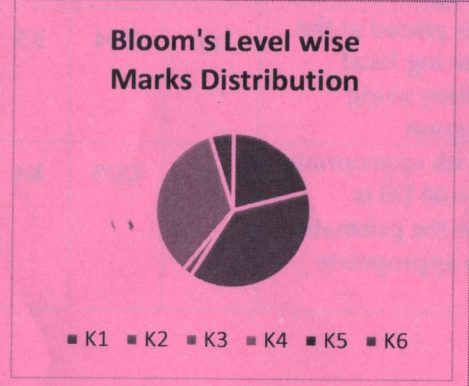
Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

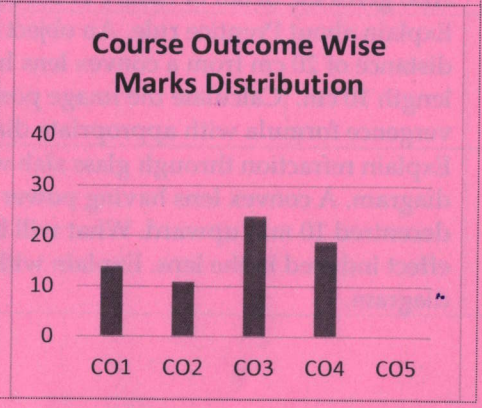
Q. No.	QUESTIONS	Marks	COs	KL
8	Describe water-soluble vitamins with their sources, functions, and deficiency diseases	10	CO2	K2
9	Explain the concept of essential and non-essential amino acids and evaluate their dietary importance.	10	CO3	K2 K4
10	Evaluate the nutritional significance of sucrose, maltose, and lactose in the human diet.	10	CO4	K5
11	Assess the health consequences of vitamin deficiencies and excess intake in humans.	10	CO5	K5

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand concepts and theories of light, its nature & properties
	CO2	Understand concepts and properties of mirror & lenses
	CO3	Identifying various of lens& mirror during practical
	CO4	Applying formula calculation related to Vergence

GRAPHICAL REPRESENTATION





JGi **ARKA JAIN University** Jharkhand | NAAC GRADE A ACCREDITED UNIVERSITY | [29-01-2026] END SEM EXAMINATION School of Health & Allied Sciences

Program	Bachelor of Optometry		
Subject Name	Geometrical Optics - I	Session	Odd, 2025-26
Semester	I	Year	Jan, 2026
Time: 2 Hour Max. Marks : 50	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Two out of Four of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Increase in Sagittal height will ..... (a) Increase radius of curvature (b) Decrease Radius of Curvature (c) Remains same (d) Radius of curvature is independent on Sagittal height	01	CO2	K3
ii	The angle formed between two refracting surface of prism is called ..... (a)Angle of Refraction (b) Apex (c) Apical Angle (d) Incident angle	01	CO3	K2
iii	The angle of Incidence will be equal to angle of refraction in ..... (a) Specular Reflection (b) Diffuse Reflection (c) Refraction (d) None of the above	01	CO1	K1
iv	Deviation of rays in thin prism depends on ..... (a)Apical Angle (b) Angle of Incidence (c) Both (a) and (b) (d) None of the above	01	CO2	K4
v	The focal length of +10.00D lens will be ..... (a)+10 cm (b) -10 cm (c) 0.1 m (d) Both (a) and (c)	01	CO2	K4

vi	S.H.M stands for…… (a) Simple Harmonic Motion (b) Sinusoidal Harmonic Motion (c) Simple Harmonic Mass (d) None of the above	01	CO1	K1
vii	What will be the refractive index of water with respect to air? (a) 1 (b) 1.33 (c) 1.5 (d) 2.46	01	CO1	K1
viii	The ratio of image distance to object distance is known as ….. (a) Linear Magnification (b) Angular Magnification (c) Both a and b (d) Cannot say	01	CO3	K2
ix	What will be the prismatic effect in a convex lens having power 2.00D and decentration 1 cm. (a) 2PD (b) 0.2 PD (c) 0.5 PD (d) None of the above	01	CO4	K5
x	A parallel light coming from infinity has …… vergence. (a) Positive (b) Negative (c) Zero (d) Cannot Say	01	CO4	K4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Define Refractive index. Explain different types of wavefronts with appropriate diagram.	05	CO1	K1
3	Write short notes on Paraxial approximation. What will be change in the angle of reflection in plane mirror if the mirror is rotated by 10°, provided angle of incidence is 15°.	05	CO2	K4
4	Explain deviation produced by prism with appropriate diagram.	05	CO3	K6
5	State and Derive Newton's Lens formula.	05	CO2	K2
6	Differentiate between crown glass and flint glass. Define angular dispersion of prism.	05	CO3	K1
7	Write short notes on Front and Back Vertex Power.	05	CO2	K3

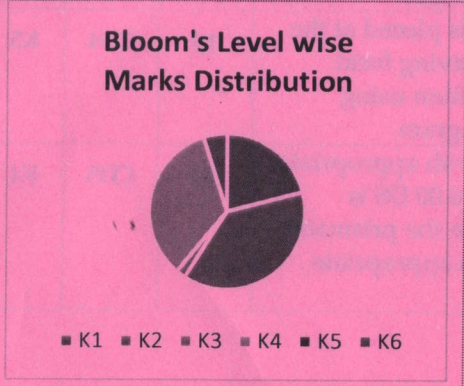
Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

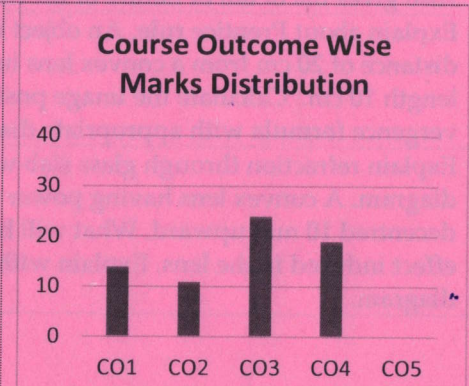
Q. No.	QUESTIONS	Marks	COs	KL
8	State Fermat's Principle. Derive law of Reflection using Fermat's principle.	10	CO1	K1
9	Explain Image formation by concave mirror for 6 standard object positions with the help of diagram. Also gives the detail of nature of the images.	10	CO2	K6
10	Explain about Prentice rule. An object is placed at the distance of 20 cm from a convex lens having focal length 10 cm. Calculate the image position using vergence formula with appropriate diagram	10	CO4	K5
11	Explain refraction through glass slab with appropriate diagram. A convex lens having power 6.00 DS is decentred 10 mm upward. What will be the prismatic effect induced in the lens. Explain with appropriate diagram.	10	CO3	K4

CO- Course Outcomes, **KL**- Knowledge Level, **PO** – Program Outcome

Course Outcomes	CO1	Understand concepts and theories of light, its nature & properties
	CO2	Understand concepts and properties of mirror & lenses
	CO3	Identifying various of lens& mirror during practical
	CO4	Applying formula calculation related to Vergence

GRAPHICAL REPRESENTATION





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[29-01-2026] END SEM EXAMINATION
School of Health & Allied Sciences

Program	**Bachelor of Optometry**		
Subject Name	**Geometrical Optics - I**	**Session**	**Odd, 2025-26**
Semester	**I**	**Year**	**Jan, 2026**
Time: 2 Hour Max. Marks : **50**	• Start writing from 2nd page onwards; **don't Write on the 1st Page Backside** • **Answer all Questions of Section A (Compulsory)** • **Answer Any Four out of Six of Section B** • **Answer Any Two out of Four of Section C** • **Possession of Mobile Phones** or any kind of **Written Material, Arguments with the Invigilator or Discussing with Co-Student** will comes under **Unfair Means** and will **Result** in the **Cancellation of the Papers**.		
Knowledge Level (KL)	**K1** : Remembering	**K3** : Applying	**K5** : Evaluating
	K2 : Understanding	**K4** : Analysing	**K6** : Creating

Section A (Each question Carry 01 Marks from Q1-i to x) – 10 Marks

Q. N 1	QUESTIONS	Marks	COs	KL
i	Increase in Sagittal height will ……. (a) Increase radius of curvature (b) Decrease Radius of Curvature (c) Remains same (d) Radius of curvature is independent on Sagittal height	01	CO2	K3
ii	The angle formed between two refracting surface of prism is called ……. (a)Angle of Refraction (b) Apex (c) Apical Angle (d) Incident angle	01	CO3	K2
iii	The angle of Incidence will be equal to angle of refraction in …….. (a) Specular Reflection (b) Diffuse Reflection (c) Refraction (d) None of the above	01	CO1	K1
iv	Deviation of rays in thin prism depends on …….. (a)Apical Angle (b) Angle of Incidence (c) Both (a) and (b) (d) None of the above	01	CO2	K4
v	The focal length of +10.00D lens will be ……. (a)+10 cm (b) -10 cm (c) 0.1 m (d) Both (a) and (c)	01	CO2	K4

vi	S.H.M stands for..... (a) Simple Harmonic Motion (b) Sinusoidal Harmonic Motion (c) Simple Harmonic Mass (d) None of the above	01	CO1	K1
vii	What will be the refractive index of water with respect to air? (a) 1 (b) 1.33 (c) 1.5 (d) 2.46	01	CO1	K1
viii	The ratio of image distance to object distance is known as ..... (a) Linear Magnification (b) Angular Magnification (c) Both a and b (d) Cannot say	01	CO3	K2
ix	What will be the prismatic effect in a convex lens having power 2.00D and decentration 1 cm. (a) 2PD (b) 0.2 PD (c) 0.5 PD (d) None of the above	01	CO4	K5
x	A parallel light coming from infinity has ..... vergence. (a) Positive (b) Negative (c) Zero (d) Cannot Say	01	CO4	K4

Section B (Answer any FOUR out of SIX) – 20 Marks
(Each question Carry 5 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
2	Define Refractive index. Explain different types of wavefronts with appropriate diagram.	05	CO1	K1
3	Write short notes on Paraxial approximation. What will be change in the angle of reflection in plane mirror if the mirror is rotated by 10°, provided angle of incidence is 15°.	05	CO2	K4
4	Explain deviation produced by prism with appropriate diagram.	05	CO3	K6
5	State and Derive Newton's Lens formula.	05	CO2	K2
6	Differentiate between crown glass and flint glass. Define angular dispersion of prism.	05	CO3	K1
7	Write short notes on Front and Back Vertex Power.	05	CO2	K3

Section C (Answer any TWO out of FOUR) – 20 Marks
(Each question Carry 10 Marks)

Q. No.	QUESTIONS	Marks	COs	KL
8	State Fermat's Principle. Derive law of Reflection using Fermat's principle.	10	CO1	K1
9	Explain Image formation by concave mirror for 6 standard object positions with the help of diagram. Also gives the detail of nature of the images.	10	CO2	K6
10	Explain about Prentice rule. An object is placed at the distance of 20 cm from a convex lens having focal length 10 cm. Calculate the image position using vergence formula with appropriate diagram	10	CO4	K5
11	Explain refraction through glass slab with appropriate diagram. A convex lens having power 6.00 DS is decentred 10 mm upward. What will be the prismatic effect induced in the lens. Explain with appropriate diagram.	10	CO3	K4