PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Fourth Semester)

Branch - PHYSICS
OPTICS

Time: Three Hours   Maximum: 75 Marks

SECTION-A (10 Marks)
Answer ALL questions
ALL questions carry EQUAL marks   (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	The visible light has a wavelength of range a)100-200 nanometers b) 250-300nanometers c) 300-350 nanometers d) 400-700 nanometers	K1	CO1
	2	What is the formula to find the refractive index a) n=C-V b) n=2CV c) n=C/V d) n=C+V	K2	CO4
2	3	The diameter of a lens is called a) Focal length b) principle axis c) Aperture d) Radius	K1	CO2
	4	Magnification of astronomical telescope is a) f_0+f_e b) f_0/f_e c) f_e/f_0 d) $(1+f_0/f_e)^2/f_0$	K2	CO4
3	5	Which of a following lights derivates the most when it passes through a prism a) Red light b) Violet light c) Neither (a) or (b) d) Both (a) or (b)	K1	CO3
	6	Which of the following phenomena of light results in a mirage a) Refraction of light b) Reflection of light c) total internal refraction d) Diffraction of light	K2	CO2
4	7	Which type of waves are light waves? a) Transverse waves b) longitudinal waves c) More than one of the above d) Electromagnetic waves	K1	CO1
	8	The phenomenon of polarization shows that light has ------- nature a) Particle b) transverse c) Longitudinal waves d) dual	K2	CO2
5	9	In which of the following are the optical fibers commonly used? a) communication b) Electrical transformers c) Nuclear reactors d) Musical instruments	K1	CO1
	10	Fiber optic power meters have input for attaching fiber optic connector and detector a) gamma rays b) Light rays c) X rays d) UV rays	K2	CO3

SECTION - B (35 Marks)
Answer ALL questions
ALL questions carry EQUAL Marks   (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain what is mean by spherical aberration for a lens.	K2	CO1
		(OR)		
	11.b.	Discuss any one method for determining the velocity of light.		
2	12.a.	State Huygen's Eyepiece.	K3	CO4
		(OR)		
	12.b.	Explain Abbe's Spectrometer.	K2	CO1
3	13.a.	How can Newton's rings be used to determine the refractive index of a liquid?	K3	CO4
		(OR)		
	13.b.	Give the theory of interference in thin flims and explain the colours of thin flims.		
4	14.a.	Explain polarization by reflection and arrive at Brewster's law.	K2	CO5
		(OR)		
	14.b.	What is meant by "double refraction".	K1	CO1
5	15.a.	Write a theory of Holography.	K1	CO1
		(OR)		
	15.b.	Explain the types of Optical Fibres.	K4	CO3

SECTION -C (30 Marks)
Answer ANY THREE questions
ALL questions carry EQUAL Marks   (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Derive Abbe's Sine condition for refraction at spherical surfaces.	K3	CO4
2	17	Explain Galileo Telescope.	K1	CO1
3	18	Describe the construction of Michelson's interferometer and its working.	K4	CO3
4	19	Explain the construction principle and use of i) Quarter wave plate and ii) Half wave plate.	K2	CO1
5	20	Write a notes on i) Industrial applications ii) Medical applications.	K1	CO1

Z-Z-Z   END