

**PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
BSc DEGREE EXAMINATION MAY 2018
(Fourth Semester)
Branch - PHYSICS**

OPTICS

Time : Three Hours

Maximum : 75 Marks

SECTION A (20 Marks)

Answer ALL questions

ALL questions carry EQUAL marks (10 x 2 = 20)

- 1 State Fermat's principle of least time.
- 2 What is meant by Coma?
- 3 What is meant by angular magnification of a microscope?
- 4 What is called Abbe's spectrometer?
- 5 Define interference.
- 6 Give a brief note on Fresnel diffraction.
- 7 What do you understand by the term polarization of light?
- 8 Define optical activity.
- 9 What is called holography?
- 10 Write any two applications of optical fibres.

SECTION - B (25 Marks)

Answer ALL Questions

ALL Questions Carry EQUAL Marks (5 x 5 = 25)

- 11 a Explain the concept of aplanatic lens.
OR
b Briefly explain with necessary theory the refraction by prism.
- 12 a Compare the Ramsden and Huygen's eyepiece.
OR
b Write a note on epidiascope.
- 13 a Write the differences between Fresnel and Fraunhofer diffraction.
OR
b Give the theory of Newton's rings by reflected light.
- 14 a Explain the phenomenon of double refraction.
OR
b Define Quarter wave plate and explain its working.
- 15 a Derive an expression for acceptance angle of the fibre.
OR
b Briefly discuss the formation of hologram.

SECTION - C (30 Marks)

Answer any THREE Questions

ALL Questions Carry EQUAL Marks (3 x 10 = 30)

- 16 Define spherical aberration and explain how it is caused at single surface.
- 17 Determine the angular magnification of Galileo is telescope.
- 18 Describe the Fabry - Perot interferometer and also find the resolving power of a spectra.
- 19 Explain the construction and working of a Laurent's Half shade polarimeter.
- 20 Classify the optical fibres based on modes and explain briefly.