14PHU11

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2019
(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 laws of reflection.
2 What is chromatic aberration?
3 What is an eye piece?
4 What is the function of an epidiascope?
5 Define interference.
6 What is diffraction?
7 What is called double refraction?
8 What is called half wave plate?
9 Define holography.
10 Give any two advantages of optical fibre.

SECTION - B (25 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a Explain spherical aberration at single surface.
OR
b What is a aplanatic lens. Give the theory of a aplanatics points of a spherical refracting surface.

12 a Explain the working of a Galile'os telescope.
OR
b Explain the working of a constant deviation spectrometer.

13 a Explain the method of Newton's ring to determine the wavelength of the given light.
OR
b Explain fraunhoffer diffraction at a circular aperture.

14 a Explain the construction, principle and working of a quarter wave plate.
OR
b Explain the construction, principle and working of a half wave plate.

15 a What are vital and real images in relation to the reconstruction of the image from a hologram?
OR
b Explain graded index fibre and multicode index fibre.

SECTION - C (30 Marks)
Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 State and explain Fermat's principle and establish, using the principle, the laws of reflection in a plane surface.

17 Explain the construction and working of Ramsden eyepiece and huygen's eye piece.

18 Describe the construction, principle and working of a Michelson's interferometer used to determine the wavelength of monochromatic light.

19 Explain the construction and working of a Laurent's half shade polarimeter.

20 Describe schematically, using block diagram, the basic elements of a fibre optics communication system.