

**PSG COLLEGE OF ARTS & SCIENCE  
(AUTONOMOUS)**

**BSc DEGREE EXAMINATION MAY 2017  
(Fourth Semester)**

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Branch- **PHYSICS**

**OPTICS**

Time : Three Hours

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Maximum : 75 Marks

**SECTION-A (20 Marks)**

Answer **ALL** questions

**ALL** questions carry **EQUAL** marks . ( 10x2 = 20)

- 1 State the law of refraction.
- 2 What is a aplanatic lens?
- 3 Give the focal lengths  $f_1$  and  $f_2$  of two lenses in the Huygen's eye-piece.
- 4 What is the distance between the two lenses in the Ramsden's eyepiece?
- 5 What is interference?
- 6 What is diffraction?
- 7 What is double refraction?
- 8 What is called half wave plate?
- 9 What is holography?
- 10 Give any two applications of optical fibre.

**SECTION - B (25 Marks)**

Answer **ALL** Questions

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

- 11 a Explain spherical aberration in a single surface.  
OR  
b Describe Abbe's conduction.
- 12 a Explain the construction of Ramsden eyepiece.'  
OR  
b Explain the working of Epidiascope.
- 13 a Describe how Newton's Rings are formed.  
OR  
b Explain the diffraction due to a circular aperture.
- 14 a Explain Fresnel's rotatory polarization.  
OR .  
b Explain the working of a quarter - wave plate.
- 15 a Describe light propagation in optical fibre. Define numerical aperture.  
OR  
b Explain the working of any one of the optical fibre.

**SECTION - C (30 Marks)**

Answer any **THREE** Questions

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

- 16 Describe the (i) Fermat's principle (ii) Critical angle and total internal reflection.
- 17 Explain the construction and working of a constant deviation spectrometer.
- 18 Explain the working of a F. P - interferometer with diagram.
- 19 Explain the construction and working of a Laurent's half shade polarimeter.
- 20 Give the industrial and medical applications of fibre optic sensors.

**Z-Z-Z**

END