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

**BSc DEGREE EXAMINATION MAY 2022**
(Fourth Semester)

Branch – **PHYSICS**

**OPTICS**

Time: Three Hours Maximum: 75 Marks

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

1 What is the nature of light?
(i) Transverse electromagnetic (ii) Transverse electric
(iii) Transverse magnetic (iv) Longitudinal electromagnetic

2 Identify the shape of image endowed by Coma.
(i) Symmetrical Shape (ii)Asymmetrical Shape
(iii) Narrow (iv)Blurred

3 How many lenses are used in eyepiece?
(i) One (ii)Two
(iii) Three (iv)Four

4 Choose the type of lenses in Ramsden eyepiece.
(i) Two thin plano-concave (ii) Two thick plano-convex
(iii) Two thin plano-convex (iv) Two thick plano-concave

5 Temporal Coherence is based on_____.
(i)Mass (ii)Space
(iii) Temperature (iv) Time

6 Find the usefulness of Haidinger's fringes.
(i) Flatness of plate (ii) weight of the object
(iii) Intensity of reflection (iv) quality of lens

7 Brewster's law gives relation between_____ and _____.
(i) $\Phi$ and $\theta$ (ii) $\Phi$ and n
(iii) $\Phi$ and t (iv) $\Phi$ and i

8 Find the Quarter wave also known as_____ plate.
(i) $\lambda/4$ (ii) $\lambda/3$
(iii) $\lambda/2$ (iv) $\lambda$

9 What type of phenomena is behind the formation of image by Holography?
(i) Wave front reconstruction (ii) Photocopying
(iii) Diffraction (iv) Interference

10 Name the principle involved in Optical fibre.
(i)Partial Reflection (ii) Total internal reflection
(iii) Total internal refraction (iv) Partial Refraction

**Cont...**

## SECTION - B (35 Marks)

Answer **ALL** questions
**ALL** questions carry **EQUAL** Marks (5 x 7 = 35)

11 (a) Outline the concept of ray of light.

**OR**

(b) Describe the terms critical angle and total internal reflection.

12 (a) Explain the principle and construction of compound microscope.

**OR**

(b) Write a short note on epidiascope.

13 (a) State and explain Fresnel-Faunhofer diffraction with neat diagram.

**OR**

(b) Explain the working of single slit diffraction.

14 (a) Summarize the construction of Nicol prism.

**OR**

(b) Explain the polarization of waves.

15 (a) Classify the types of optical fibre.

**OR**

(b) Summarize the industrial and medical applications of optical fibre.

## SECTION -C (30 Marks)

Answer **any three** questions
**ALL** questions carry **EQUAL** Marks (3 x 10 = 30)

16 Examine the spherical aberration at single surface in detail.

17 Explain the construction and working of Newton's telescope.

18 Discuss the setup and working of Michelson interferometer with its applications.

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

20 Summarize the construction and reconstruction of holography and its applications in detail.

Z-Z-Z END