

# VP&RPTP SCIENCE COLLEGE-VALLABH VIDYANAGAR

B.Sc. (Semester- III)

Subject: Physics

Course Code No: US03CPHY01

Monday, Date: 01-10-2018

First Internal Test

Time: 03:00 pm to 05:00 pm

(Optics)

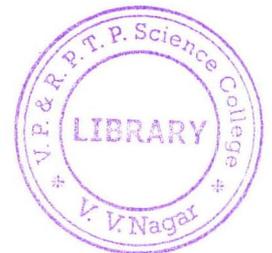
[Total Marks-50

*Instructions: 1. Attempt all questions.*

*2. Figures to the right indicate full marks.*

## Q-1 Multiple Choice Questions: [Attempt all] (08)

- (1) Distance between two Nodal points is always equal to the distance between \_\_\_\_\_
- a) Two Focal points                      b) Two Principal points  
c) Two Focal plains                      d) Two lenses
- (2) Aberrations occur due to the dispersion of light are called \_\_\_\_\_ aberrations.
- a) Astigmatism                              b) monochromatic  
c) Distortion                                d) chromatic
- (3) The wave front splitting method is useful only with \_\_\_\_\_ type of sources.
- a) narrow                                      b) bright  
c) diffused                                    d) broad
- (4) Fabryperot interferometer is suitable to study the \_\_\_\_\_ of the spectral lines.
- a) wave length                              b) frequency  
c) structure                                    d) fine structure
- (5) Nicol prism was invented by \_\_\_\_\_ in 1928 AD.
- a) Alfred Nicol                                b) Christopher Nicol  
c) William Nicol                              d) Charles Nicol
- (6) In \_\_\_\_\_ crystals both the refracted rays are extra ordinary rays.
- a) Biaxial                                        b) Isotropic  
c) Uniaxial                                      d) Calcite
- (7) The innermost cylindrical region is the light guiding region known as the \_\_\_\_\_
- a) Cladding                                    b) Core  
b) Shield                                        d) Cloths
- (8) GRIN fiber stands for \_\_\_\_\_.
- a) Graded Index Fiber                      b) Groove Index fiber  
c) Green Index fiber                        d) Greatest Index fiber



## Q-2 Attempt any Five questions in short. (10)

- (a) Write the properties of nodal points.
- (b) What are lens aberrations? Enlist the various types of aberrations.

- (c) Give the comparison between the fringes produced by biprism and Lloyd's mirror.
- (d) What is interference? Explain amplitude splitting.
- (e) State Brewster's law
- (f) Explain Polarization through reflection in brief.
- (g) Define optical fiber.
- (h) Mention the disadvantages of the optical fibers.



- Q-3      Discuss in detail the coma aberration in lens. 08
- OR**
- Q-3      Explain in detail – “Huygens Eyepiece.” 08
- Q-4      Explain how to determine the wave length of monochromatic light using Fresnel's biprism. 08
- OR**
- Q-4      Explain the theory of Newton's ring and discuss the Newton's ring experiment. 08
- Q-5      What is polarization? Explain Nicol prism preparation and working as polarizer and Analyzer. 08
- OR**
- Q-5      Write a note on Calcite Crystal and explain double refraction. 08
- Q-6      Define Total Internal Reflection and explain critical angles of propagation. 08
- OR**
- Q-6      With neat diagram explain the modes of propagation 08

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