

M.Sc. (Physics) (CBCS Pattern) Semester-IV
PSCPHYT16.2 - Paper-XVI - Optics and Optical Instruments

P. Pages : 1

Time : Three Hours



GUG/S/25/11420

Max. Marks : 80

Either:

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| 1. | a) | Explain in details cardinal points of an optical system. | 8 |
| | b) | Differentiate between Ramsden and Huygens eyepiece. | 8 |

OR

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| e) | What is aberration in images? Discuss chromatic and monochromatic aberration. | 8 |
| f) | Explain entrance and exit pupil. What is the need of multiple eyepieces? | 8 |

Either:

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| 2. | a) | How Newton's ring can be formed? Explain applications of Newtons ring in calculation of wavelength of monochromatic light. | 8 |
| | b) | Explain construction of Fresnel's half period zone of a plane wave front and show that half period zones have approximately equal areas. | 8 |

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| e) | Derive an expression for resolving power of prism and grating. | 8 |
| f) | Describe the construction and working of Nicol prism. | 8 |

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| 3. | a) | What is angular magnification, aperture and camera lucida. Explain. | 8 |
| | b) | What is Binocular? Describe in details how it works. | 8 |

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| e) | Explain the principle and working of eyeglasses. | 8 |
| f) | Explain field glass and jeweler's glass. | 8 |

Either:

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| 4. | a) | Explain the types of waveguide in optical fibre. | 8 |
| | b) | Write a note on graded index fibre. | 8 |

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| e) | Discuss magnetic resonance imaging and its working. Also give its application. | 8 |
| f) | Discuss principle and process of X-ray image production. | 8 |

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| 5. | Attempt all of the followings. | | |
| | a) | Discuss aspherical mirrors and Meniscus lenses. | 4 |
| | b) | Explain Rayleigh's criterion for resolution. | 4 |
| | c) | Explain periscope with labelled diagram and mentioned its applications. | 4 |
| | d) | What are the factors affecting radiographs. | 4 |
