

FACULTIES OF ENGINEERING AND TECHNOLOGY**B.E. / B.Tech. (Bridge Course) I – Semester (Backlog) Examination, December 2016****Subject : Engineering Physics
(Common to all Branches)****Time : 3 hours****Max. Marks : 75****Note: Answer all questions from Part-A. Answer any FIVE questions from Part-B.****PART – A (25 Marks)**

- 1 Newton's rings are observed in reflected light of wavelength 5900\AA . The diameter of the dark ring is 0.5cm. Find the radius of curvature of the lens and the thickness of the corresponding air film. 2
- 2 Explain the phenomena of optical activity. 3
- 3 Mention few applications of lasers. 2
- 4 What are the properties of matter waves? 3
- 5 State and explain Bragg's law. 3
- 6 State Hall effect and derive an expression for hall coefficient. 3
- 7 What are different types of dielectric polarizations? 3
- 8 Distinguish between dia, para and ferromagnetic materials. 2
- 9 Mention few applications of Nano materials. 3
- 10 Match the following [] 1

1 Half shade device	a) Semiconductor
2 Pumping process	b) Optical Fibre
3 Fermi energy	c) Polarization
4 Numerical Aperture	d) Lasers
	e) Interference
i) 1 – e ; 2 – a ; 3 – c ; 4 – d	ii) 1 – c ; 2 – d ; 3 – a ; 4 – b
iii) 1 – d ; 2 – a ; 3 – b ; 4 – e	iv) 1 – a ; 2 – b ; 3 – c ; 4 – d

PART – B (50 Marks)

- 11 a) Explain construction and working of Nicol prism. 5
b) Discuss Fraunhofer's diffraction at a single slit and explain intensity distribution. 5
- 12 a) Explain construction and reconstruction of hologram. 5
b) Explain propagation of light through optical fibre and define Numerical aperture and acceptance angle. 5
- 13 a) Describe Kronig Penny model qualitatively and discuss its conclusions. 5
b) Find the carrier concentration of electrons in intrinsic semiconductor. 5
- 14 a) Explain Weiss domain theory of ferromagnetism and hysteresis variation. 5
b) Distinguish between Type-I and Type-II superconductors. 5
- 15 a) Explain sol-gel method of preparing thin film. 5
b) Mention few applications of Nano materials. 5
- 16 a) Explain construction and working of He-Ne laser. 5
b) Calculate packing fraction of FCC and BCC. 5
- 17 a) Distinguish between soft and hard magnetic materials. 5
b) Write a note on Auger Electron Process. 5
