

Code: R7100103

R07

B.Tech I Year (R07) Supplementary Examinations, June 2013

ENGINEERING PHYSICS

(Common to CE and ME)

Time: 3 hours

Max. Marks: 80

Answer any FIVE questions
All questions carry equal marks

- 1 (a) What is interference? Derive an expression for fringe width and show that the fringes are uniformly spaced.
(b) What are the different methods of obtaining polarization? Define double refraction.
(c) A parallel beam of sodium light of wavelength 5890 \AA is incident on a thin glass plate of refractive index 1.5, such that the angle of refraction in the plate is 60° . Calculate the smallest thickness of the plate which will make it appear dark by reflection.
- 2 (a) Explain in detail magnetostriction method of producing ultrasonic waves.
(b) Discuss the different factors affecting the architectural acoustics and give some remedies.
- 3 (a) Define magnetic susceptibility, magnetic permeability, magnetic induction and magnetization.
(b) Explain BCS theory of super conductors.
(c) The field strength of a magnetic material is 10^6 amp/mt . If the susceptibility is 0.5×10^{-5} , calculate intensity of magnetization and flux density in the material.
- 4 (a) Describe the seven crystal systems with diagrams.
(b) Explain the powder method of crystal analysis.
- 5 (a) Explain the characteristics of a laser beam.
(b) Describe the construction and working of ruby laser.
- 6 (a) Define numerical aperture and acceptance angle. Derive expressions for them.
(b) What is holography? Explain the construction of a hologram.
- 7 (a) Write short notes on piezoelectricity and Ferroelectricity.
(b) What are lattice vibrations? Derive an expression for thermal conductivity.
- 8 (a) Explain fundamental concepts of nanotechnology.
(b) Discuss various physical and chemical properties of nanomaterials.
