

Code: R7 100103

B.Tech I Year (R07) Supplementary Examinations, May 2012

ENGINEERING PHYSICS

(Common to CE and ME)

Time: 3 hours

Max Marks: 80

Answer any FIVE questions

All questions carry equal marks

- 1 (a) Differentiate interference and diffraction.
(b) What is resolving power of grating? Derive an expression for it.
(c) Explain the construction of Nicols prism.
- 2 (a) Explain any one method of producing ultrasonic waves.
(b) What are the factors that affect architectural acoustics?
- 3 (a) What are domains? Explain hysteresis curve based on domain theory?
(b) The field strength of a magnetic material is found to be 10^6 amp/mt. If the susceptibility of the material is 0.5×10^{-5} , calculate the intensity of magnetization and flux density of the material.
(c) Differentiate Type - I and Type - II superconductors.
- 4 (a) Show that FCC is closely packed than SC and BCC.
(b) State and prove Bragg's law.
- 5 (a) Describe with suitable diagrams the principle, construction and working of He-Ne Laser.
(b) Explain the characteristics of a Laser beam.
- 6 (a) Explain the construction of an optical fibre with diagram.
(b) The refractive index of the core and cladding of a fibre are 1.45 and 1.4 respectively. Find the numerical aperture, acceptance angle and Δ .
(c) What is a hologram? What are its applications?
- 7 (a) What are the different types of polarizations? Obtain an expression for electronic polarizability.
(b) Derive an expression for the coefficient of thermal conductivity of a metal.
- 8 (a) What is a carbon nano tube? Explain different types of carbon nano tubes.
(b) Write a few properties of nano materials which make them exceptional.
