

FACULTY OF ENGINEERING
B.E. (ECE/MP/AE/CSE/CME/I.T) (AICTE) I-Semester (Supp.) Examination,
December 2020

Subject : Physics

Time : 2 Hours

Max. Marks: 70

Note: Missing data if, any can be assumed suitably.

PART – A

Answer any five questions.

(5 x 2 = 10 Marks)

- 1 What are Miller Indices? Explain with an example.
- 2 Explain the principle of light propagation in optical fibers.
- 3 Draw the I-V characteristic graph of a P-N junction diode for forward and reverse bias.
- 4 Explain meissner effect.
- 5 Explain how population inversion is related to pumping.
- 6 Mention the properties of wave function.
- 7 Give the differential and integral forms of Maxwell's equations.
- 8 Write a note on frequency dependence of dielectric polarization.
- 9 Briefly explain the different types of super conductors.
- 10 Distinguish between hard and soft magnetic materials.

PART – B

Answer any four questions.

(4 x 15 = 60 Marks)

- 11 What are crystal defects? Deduce an expression for equilibrium concentration of Frenkel defect.
- 12 Write down the salient features of Kronig-Penny model and on the basis of this model discuss the energy band formation of solids.
- 13 What is electronic polarization? Obtain an expression for electronic polarizability.
- 14 By considering Schrodinger's time independent equation deduce the expression for energy values for a particle in a 1-D box.
- 15 Explain the hysteresis seen in ferromagnetic materials and how is it useful to explain the nature of different magnetic materials.
- 16 What are the characteristics of lasers? Explain the construction and working of a semiconductor laser.
- 17 Write short notes on
 - (a) Bragg's law of X-ray Diffraction
 - (b) BCS theory