PVP 20

Code: 20BS1103

I B.Tech - I Semester – Regular / Supplementary Examinations – APRIL 2022

ENGINEERING PHYSICS

(Common to CSE, IT)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.
2. All parts of Question must be answered in one place.

UNIT – I

1. a) Produce the expression for acceptance angle of the optical fiber. 8 M
   b) Calculate numerical aperture and acceptance angle, If the refractive indices of core and cladding are 1.53 and 1.50 respectively. The light is launched into the fiber in air. 6 M

OR

2. a) Analyze the fiber optic communication system. 7 M
   b) Explain the construction and working of temperature sensor. 7 M

UNIT – II

3. a) Apply the concept of electronic polarization to derive the expression for electronic polarizability of dielectric material. 8 M
   b) Deduce the Clausius-Mossotti relation. 6 M

OR

4. a) Explain the origin of permanent magnetic moment. 6 M
   b) Distinguish the soft and hard magnetic materials. 8 M

UNIT-III

5. a) Explain Coulomb's law and Gauss law. 6 M
   b) Deduce the expression for electric field at a point from thin sheet of charge. 8 M

OR

6. a) Produce the ampere's law in differential and integral form. 8 M
   b) Explain maxwell's equations. 6 M

UNIT – IV

7. a) Analyze the mechanism of conduction in intrinsic semiconductors. 6 M
   b) Deduce the expression for electron concentration in intrinsic semiconductors. 8 M

OR

8. a) Write a short note on generation and recombination of the charge carriers. 6 M
   b) Deduce the expression for electron concentration in n-type extrinsic semiconductors. 8 M

UNIT – V

9. a) Explain the Hall effect and describe its applications. 7 M
   b) Interpret the V-I characteristics of PN junction diode for forward and reverse bias. 7 M

OR

10. a) Distinguish direct and indirect band gap semiconductors. 6 M

b) Explain the construction and working of LED. 8 M