

Note: Attempt five questions.
All questions carry equal marks.

Unit - I

1. a) State the classification of electrical conductor materials. Explain the characteristics and properties of conductor materials.
- b) What is resistor materials? What are the factors, which govern the classification of resistor materials for specific practical applications?

OR

- a) What is meant by relaxation time, collision time, mean free path and mean free time as applied to conduction phenomenon?
- b) Discuss the function of over head transmission lines and give the electrical and mechanical properties of conductor materials for over head transmission lines.

Unit - II

2. a) Explain the following properties of insulating materials:
 - i) Electrical ii) Visual
 - iii) Mechanical iv) Thermal
 - v) Chemical
- b) What is the difference between an insulator and a dielectric?

OR

- a) Define :
 - i) Dielectric strength ii) Dielectric loss
 - iii) Dissipation factor iv) Permittivity
 - v) Polarization
- b) State the difference between polar and non-polar materials.

Unit - III

3. a) Compare the properties and applications of intrinsic and extrinsic semiconductors.
- b) Explain the function and applications of temperature sensitive elements.

OR

Write a brief notes on the following :

- a) Hall effect generator b) Piezo-electric materials
- c) Photo conductive cells

Unit - IV

4. a) Enumerate the effects of impurities and temperature on the properties of magnetic materials.
- b) List soft and hard magnetic materials. Compare properties and applications of soft and hard magnetic materials.

OR

- a) Draw typical hysteresis loops for different ferromagnetic material. Define residual magnetism and coercive force.
- b) Explain galvanizing and impregnation processes and their applications.

Unit - V

5. a) Explain with neat sketches the fabrication process of Bipolar Junction transistor.
- b) Describe how resistors and capacitors are fabricated in an IC.

OR

Write short notes on any two of the following :

- a) Electrical isolation techniques for IC
- b) Fabrication of CMOS
- c) Monolithic Integrated Circuits