

22217

11819

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Illustrate your answers with neat sketches wherever necessary.
 - (3) Figures to the right indicate full marks.
 - (4) Assume suitable data, if necessary.
 - (5) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE :

2 × 5 = 10

- (a) Define resistivity. State its unit.
- (b) State any four dielectric materials.
- (c) State the classification of magnetic material.
- (d) Define intrinsic and extrinsic semiconductor.
- (e) Define Thermionic emission.
- (f) State the impurities for obtaining p-type and n-type semiconductor from intrinsic semi conductor. (2 each)
- (g) Give the material composition for obtaining RED and yellow colour LED.

2. Attempt any THREE :**4 × 3 = 12**

- (a) Describe super conductivity. State its applications.
- (b) Describe the concept of piezo electricity and state its applications.
- (c) State the requirements of good insulating material.
- (d) Describe the effects of temperature on conductivity of metals.

3. Attempt any THREE :**4 × 3 = 12**

- (a) State the materials used for fabrication of photo diode along with its justification.
- (b) Describe the process of photo emission. State the application of photo emission in electronic components.
- (c) Describe the principle of thermoelectric. State thermoelectric materials.
- (d) Draw and explain hysteresis loop in magnetic material.

4. Attempt any THREE :**4 × 3 = 12**

- (a) Write one application for the given dielectric material.
 - (i) Polyvinyl Carbide (PVC)
 - (ii) Glass
 - (iii) Mica
 - (iv) Cotton and silk

- (b) Explain the materials used in wearable antennas with their properties.
- (c) Describe dielectric strength and dielectric constant with respect to dielectric materials.
- (d) Explain the concept of anti ferro magnetism and state its significance.
- (e) Define Electron mobility. State its significance in electronic components.

5. Attempt any TWO :**6 × 2 = 12**

- (a) State the different modes of electron emission in metal. Explain any two modes of emission.
- (b) Define magnetic permeability. State and explain the factors affecting permeability of magnetic materials.
- (c) Describe the concept of ferro electricity. Explain the application of ferro electric material.

6. Attempt any TWO :**6 × 2 = 12**

- (a)
 - (i) Explain the process of diffusion in semiconductor material.
 - (ii) Explain Hall effect.
 - (b) Explain magnetostriction property. Explain generation of ultrasonic using magnetostriction.
 - (c) State any four materials used in fabrication of semiconductor device and describe its need.
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