

**Scheme – I**  
**Sample Question Paper**

**Program Name : Diploma in Electronics Engineering Program Group**

**Program Code : EJ/DE/ET/EN/EX/EQ**

**Semester : Second**

**Course Title : Electronic Engineering Materials**

**Marks : 70**

**Time: 3 Hrs.**

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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) Preferably, write the answers in sequential order.

**Q.1 Attempt any FIVE of the following.**

**10 Marks**

- a) List any two applications of secondary emission.
- b) List any two dielectric properties of polymeric material.
- c) List any two magnetic materials.
- d) Draw energy level diagram of conductor and insulator.
- e) Define superconductivity.
- f) List any two trivalent and any two pentavalent impurity materials
- g) Give the relevant combination of materials for LED to emit red and green color.

**Q.2 Attempt any THREE**

**12 Marks**

- a) Explain thermoelectric effect and give its any two application.
- b) Explain the concept of ferroelectricity and state its anyone application.
- c) Describe the breakdown in solid dielectric materials.
- d) Explain the process of photoelectric emission.

**Q3. Attempt any THREE**

**12 Marks**

- a) Explain the process of diffusion in semiconductor material.
- b) Identify the material offering higher resistivity from following fig. no.1

Fig.no.1

- c) Suggest the relevant materials used in flexible and wearable antenna.

- d) Differentiate between anti-ferromagnetism and ferrimagnetisms.

**Q4. Attempt any THREE**

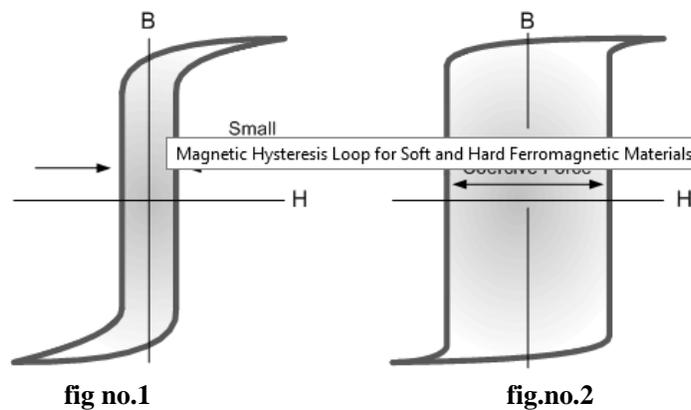
**12 Marks**

- Explain the principle of stimulated emission and radiation in LASER.
- Explain the piezoelectric effect and give any two materials which exhibit this effect.
- Explain Magnetostriction property of ferromagnetic material.
- Explain the effect of change in temperature on conductivity of semiconductor.
- Explain the characteristics of good insulating material.

**Q5. Attempt any TWO**

**12 Marks**

- Suggest the suitable material for i) Thermionic emission ii) photoelectric emission and explain any one emission process. Give one application of each.
- Identify the material based on given Hysteresis loop in fig No.1 and fig. No 2 and describe any one.



- c) Write one applications for the given dielectric material  
(i) Mica (ii) Porcelain (iii) Polythene (iv) Bakelite (v) Rubber (vi) cotton.

**Q6. Attempt any TWO.**

**12 Marks**

- State any four materials used in fabrication of semiconductor device and describe its need.
- On the basis of given properties identify the magnetic materials (i) Permanent magnetic dipole (ii) Diamagnetism (iii) Paramagnetism (iv) Ferromagnetism.
- Describe Hall Effect and state its application.

**Scheme – I**  
**Sample Test Paper - I**

**Program Name** : Diploma in Electronics Engineering Program Group  
**Program Code** : EJ/DE/ET/EN/EX/EQ  
**Semester** : Second  
**Course Title** : Electronic Engineering Materials  
**Marks** : 20

**22217**

**Time: 1 Hour**

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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) Preferably, write the answers in sequential order.

**Q.1. Attempt any FOUR of the following**

**08 Marks**

- a) Define conductor, Insulator with examples
- b) Mention the use of dielectric materials
- c) Define the term polymerization
- d) Define Superconductivity
- e) List the different types of conducting materials
- f) Define dielectric loss

**Q.2. Attempt any THREE of the following**

**12 Marks**

- a) Describe the effect of temperature on superconductivity of metals
- b) Describe the breakdown in liquid dielectric materials
- c) Describe the factors affecting on Mobility
- d) Describe the different modes of emission

**Scheme – I**  
**Sample Test Paper - II**

**Program Name** : Diploma in Electronics Engineering Program Group  
**Program Code** : EJ/DE/ET/EN/EX/EQ  
**Semester** : Second  
**Course Title** : Electronic Engineering Materials  
**Marks** : 20

**22217**

**Time: 1 Hour**

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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) Preferably, write the answers in sequential order.

**Q.1. Attempt any FOUR of the following**

**08 Marks**

- a) Define diamagnetic, paramagnetic and ferromagnetic.
- b) List the materials for fabrication of semiconductor devices.
- c) List different impurities used to emit different colors of light.
- d) Define diffusion.
- e) Give the classification of magnetic materials.
- f) Give different functions of antenna.

**Q.2. Attempt any THREE of the following**

**12 Marks**

- a) Explain electroluminescence.
- b) Sketch energy band diagrams of conductors, semiconductors.
- c) Explain the effect of thermal and electrical conductivity on semiconductor materials.
- d) Give the materials used for flexible and wearable antenna.