

- Q.25 What are different applications of high resistivity materials?
- Q.26 Explain in brief the concept of superconductivity.
- Q.27 What should be the properties of materials to be used in soldering?
- Q.28 How is energy stored in capacitor?
- Q.29 Explain in brief the principle of thermocouples.
- Q.30 What is function of connectors, List different types of connectors.
- Q.31 Show how diodes are tested?
- Q.32 Write the main features of SMDs.
- Q.33 List different materials used for fabrication of motors.
- Q.34 Explain in brief the principle of potentiometer.
- Q.35 What are different types of fuses?

#### **SECTION-D**

**Note:** Long answer type questions. Attempt any two questions out of three questions. (2x10=20)

- Q.36 Explain in detail different types of magnetic materials.
- Q.37 With the help of neat diagram, explain various processes in manufacturing of ICs.
- Q.38 Show how transformers are manufactured and how these are tested?

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**3rd Sem / Eltx, EI, IC, Med. Eltx., Comp, Power  
Eltx, Elect. & Eltx. Engg.**

**Subject:- Electrical and Electronics Materials and  
Components / ECM**

Time : 3Hrs. M.M. : 100

#### **SECTION-A**

**Note:** Multiple choice questions. All questions are compulsory (10x1=10)

- Q.1 Aluminum is \_\_\_\_\_ material.  
 a) Conductor      b) Semiconductor  
 c) Insulator      d) None of these
- Q.2 Moisture \_\_\_\_\_ the insulation resistance of material.  
 a) Increases      b) Reduces  
 c) Doesn't affect
- Q.3 The semiconductors have exact \_\_\_\_\_ electrons in last orbit  
 a) 2      b) 4  
 c) 6      d) 8
- Q.4 Unit of resistivity is \_\_\_\_\_  
 a) Ohms      b) Ohms-m  
 c) Ohms/m      d) Ohms/m<sup>2</sup>

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- Q.5 The break down voltage of connectors is \_\_\_\_\_ times the normal voltage.
- a) 2
  - b) 3
  - c) 4
  - d) 5
- Q.6 Hysteresis loss is proportional to the square of \_\_\_\_\_
- a) Voltage
  - b) current
  - c) frequency
  - d) power
- Q.7 A 1mF Capacitor is connected in parallel to 5 mF Capacitor. The resultant capacitance will be \_\_\_\_\_ mF.
- a) 1
  - b) 3
  - c) 5
  - d) 6
- Q.8  $1 M\Omega = \underline{\hspace{2cm}} \Omega$
- a)  $10^3$
  - b)  $10^6$
  - c)  $10^9$
  - d)  $10^{12}$
- Q.9 Relay is \_\_\_\_\_ switch.
- a) Electrical
  - b) Electronic
  - c) Mechanical
- Q.10 The thermocouple is based on \_\_\_\_\_ effect.
- a) Piezoelectric
  - b) Magnetism
  - c) Seebach effect
  - d) Doping

### **SECTION-B**

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 The forbidden gap is insulator is very \_\_\_\_\_ (low/high).
- Q.12 List any two applications of low resistivity materials.
- Q.13 Name any one iron ore.
- Q.14 Gold is \_\_\_\_\_ resistivity material. (low/high)
- Q.15 Paper is conducting material. (True/False)
- Q.16 Define piezoelectric effect.
- Q.17 Define Permeability
- Q.18 Name any one material used in soldering.
- Q.19 Write full form of SMD.
- Q.20 Draw symbol of FET.

### **SECTION-C**

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21 How mechanical stress affect the resistivity?
- Q.22 Write five properties of Nickel.
- Q.23 What are alloys, how are they formed?
- Q.24 List properties of constantan.