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121532/031532

**3rd Sem / Elx, EI, Med Elx, Comp,  
Power Elx. Elect & Elx**

**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 Germanium is \_\_\_\_\_ material

- a) Conductor
- b) Semiconductor
- c) Insulator
- d) None of these

Q.2 Unit of resistivity is \_\_\_\_\_

- a) Ohms
- b) Ohms-m
- c) Ohms/m
- d) Ohms/m<sup>2</sup>

Q.3 Fes<sub>2</sub> is \_\_\_\_\_

- a) Iron sulphite
- b) Iron sulphate
- c) Pyrite
- d) Pyrate

Q.4 Moisture \_\_\_\_\_ the insulation resistance of material.

- a) Increases
- b) Reduces
- c) Doesn't affect

Q.5 The process of adding sulphur in rubber is known as \_\_\_\_\_

- a) Impregnation
- b) Vulcanisation
- c) Doping
- d) None of these

Q.6 Hysteresis loss is proportional to the square of \_\_\_\_\_

- a) Voltage
- b) current
- c) frequency
- d) power

Q.7 A 10 ohm resistance is connected in parallel to 10 ohm resistance. The resultant resistance will be \_\_\_\_\_ ohms.

- a) 5
- b) 10
- c) 15
- d) 20

Q.8 1  $\mu$ F = \_\_\_\_\_

- a)  $10^{-3}$  F
- b)  $10^{-6}$  F
- c)  $10^{-9}$  F
- d)  $10^{-12}$  F

Q.9 Push button switch is \_\_\_\_\_

- a) Electrical
- b) Electronic
- c) Mechanical

Q.10 The break down voltage of connectors is \_\_\_\_\_ times the normal voltage.

- a) 2
- b) 3
- c) 4
- d) 5

## **SECTION-B**

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

Q.11 There is no single free electron in \_\_\_\_\_ (Insulator / Conductor).

Q.12 Gold is \_\_\_\_\_ resistivity material (low/high)

Q.13 List any two applications of aluminum.

Q.14 Define ferromagnetism.

Q.15 MICA is conducting material. (True/False)

Q.16 Write full form of SMD.

Q.17 Honey has \_\_\_\_\_ viscosity (low/high)

Q.18 Define Permeability.

Q.19 Define capacitance.

Q.20 Draw symbol of SCR.

## **SECTION-C**

**Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)

Q.21 Define alloying, how it affects the material?

Q.22 Write five properties of copper.

Q.23 What are the factors which affect resistivity?

Q.24 Explain in brief the concept of hysteresis.

Q.25 What is impregnation, how it is useful in insulating technology?

Q.26 Differentiate between hard & soft magnetic materials.

Q.27 What should be the properties of materials to be used in fuse?

Q.28 Explain the concept of "energy stored in capacitor".

Q.29 What is time constant? how it affects the performance of R-C circuit?

Q.30 What is function of relays, write their characteristics.

Q.31 Show how transistors are tested.

Q.32 Write different specifications of SMDs.

Q.33 Explain in brief the need of shielding.

Q.34 Explain in brief different types of resistors.

Q.35 What are different types of connectors?

## **SECTION-D**

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

Q.36 What is superconductivity, explain in detail.

Q.37 Explain the principle of operation of thermocouple.

Q.38 With the help of neat diagram, explain various processes in manufacturing of ICs.