S. B. Roll. No.....

ELECTRICAL ENGINEERING MATERIALS
2nd Exam/Elect/6524/Nov'24
(For 2023 Batch Onwards)

Duration: 3Hrs. **M.Marks:50**

SECTION-A

Q1. Do as directed any nine of the following. **9x1=9**

a. Conductors are materials that allow the flow of _____ easily.
b. A material's ability to store electrical energy in an electric field is defined by its_____.
c. Superconductors are materials that exhibit zero _____ when cooled below a critical temperature.
d. The electrical resistance of insulating materials is extremely _____compared to conductors.
e. The electrical conductivity of a conductor_____ as temperature increases.
f. Ceramics are often used as insulators in_____ applications due to their high heat resistance.
g. Ferromagnetic materials, such as iron, are strongly attracted to _____.
h. The ability of a magnetic material to retain its magnetism is called_____.
i. Diamagnetic materials are _____by a magnetic field.
j. Insulators are used to prevent electric shocks. (T/F)
k. Wood is commonly used as an electrical insulator. (T/F)
l. The human body is a good electrical insulator. (T/F)

SECTION-B

Q2. Attempt any five questions. **5x4=20**

i. What is a bundle conductor? Write its applications?
ii. Write differences between hard drawn copper and annealed copper?
iii. Define hygroscopicity and tensile strength in the context of insulators?
iv. Explain effect of overloading on the life of insulator?
v. Differentiate between thermoplastic and thermosetting materials?
vi. Describe the properties and application of hydrogen as insulating material?
vii. Explain the concept of eddy current?

SECTION-C

Q3. Attempt any three questions. **3x7=21**

a. Explain the classification of materials into conductor, semiconductor and insulator based on energy band theory?
b. Describe the properties of platinum, gold and mercury?
c. Explain the chemical properties of insulators including solubility, chemical resistance and weather ability
d. Discuss the properties and applications of Cotton, rubber and polyvinyl chloride (PVC)?
e. What is a hysteresis loop and hysteresis loss? Explain with a diagram?