

**B.Tech. SEM -IV Electrical 2014 Course (CBCS) : SUMMER - 2019**

**SUBJECT: ELECTRICAL ENGINEERING MATERIALS**

Day : Saturday  
Date : 01/06/2019

Time: 10.00 AM TO 01.00 PM  
Max. Marks: 60

**S-2019-2611**

**N. B.:**

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Assume suitable data, if necessary.

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- Q.1** a) State Properties & Applications of 1) Silver and silver alloys (06)  
2) Copper and copper alloys
- b) Write a short note on thermoelectric effect. (04)
- OR**
- Q.1** a) Differentiate between characteristics high and low resistive materials. (04)  
b) What properties of conductors are required for electric machines? Discuss the conductors required for DC machines. (06)
- Q.2** a) In a material an application of magnetic field of  $2.75 \times 10^6$  A/m causes a magnetic flux density of  $0.2485$  wb/m<sup>2</sup>. Calculate its permeability and susceptibility. (04)  
b) Differentiate between 1) Soft & Hard magnetic materials (06)  
2) Ferromagnetism & Antiferromagnetism.
- OR**
- Q.2** a) Classify magnetic materials on the basis of distribution of dipole moment. (04)  
b) List the properties and type of magnetic materials required for (06)  
1) Power Transformer 2) DC machines
- Q.3** a) Explain properties and application of 1) Polyvinyl Chloride 2) Polyethylene (06)  
b) Discuss the insulating materials used for (04)  
1) Power Transformer 2) Electrical wires
- OR**
- Q.3** a) Explain the effect of increase in temperature on insulating materials (05)  
b) State & Explain the electrical properties of insulating materials. (05)
- Q.4** a) State the dielectric parameters. Discuss the phenomenon of dielectric loss. (05)  
b) State the materials used in photo-conductivity, photo-electric emission and photovoltaic cells. (05)
- OR**
- Q.4** Write a short note on 1) mechanism of polarization 2) photo transistors (10)
- Q.5** a) Explain concept of energy band and conducting mechanism in nanostructures. (05)  
b) Describe single electron transistor in nanotechnology. (05)
- OR**
- Q.5** a) State the applications of nano materials in electrical engineering. (05)  
b) Discuss how carbon nanostructures used in engineering fields. (05)
- Q.6** Describe any two types of capacitors with operations and applications. (10)
- OR**
- Q.6** a) Describe air core inductor and ferromagnetic core inductor with construction, losses, effects & application. (10)

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