

B.TECH. SEM -IV ELECTRICAL 2014 COURSE (CBCS) :

WINTER - 2017

SUBJECT: ELECTRICAL ENGINEERING MATERIALS

Day: **Friday**

Time: **02.30 PM TO 05.30 PM**

Date: **24/11/2017**

W-2017-2082

Max Marks: 60

N.B:

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

- Q.1**
- a) Write a short note on thermobimetals. (05)
 - b) Write down properties & applications of - (05)
 - i) Silver & silver alloys
 - ii) Copper & copper alloys

OR

- a) Write down properties & applications of- (05)
 - i) Materials used for heating devices
 - ii) Electrical carbon materials
- b) Write a short note on Thermoelectric effect. (05)

- Q.2**
- a) Describe magnetic materials used for electrical rotating machines. (05)
 - b) Write a short note on Orbital Magnetic Dipole Moment. (05)

OR

- a) A magnetic field strength of a material is 1.0×10^6 A/M and its flux density is 1.8 T. Calculate its permeability, magnetization. (05)
- b) Differentiate between- (05)
 - i) Cold rolled grain oriented silicon steel and hot rolled grain oriented silicon steel.
 - ii) Soft magnetic material & hard magnetic material.

- Q.3**
- a) Give the thermal classification of insulators with the limiting temperature range & materials used. (05)
 - b) Write down properties & application of poly-vinyl chloride (PVC) & poly-ethylene. (05)

OR

- a) Write down insulating materials used for wires & transformers. (05)
 - b) State & explain electrical properties of insulating materials. (05)
- Q.4**
- a) Define the terms (05)
 - i) Dielectric strength
 - ii) Dielectric constant
 - iii) Dielectric loss
 - b) CO₂ has no dipole moment, but H₂O has dipole moment. Explain. (05)

OR

- a) What are photo emitters? Explain the structure of photo emitter. (05)
- b) Describe the material used, construction, working and application of photo-voltaic cells. (05)

- Q.5**
- a) Explain various conducting mechanism in Nano- structures. (05)
 - b) Explain the carbon molecules, carbon clusters. (05)

OR

- a) Explain with structure the working of carbon Nano- tubes & Write down the applications of carbon nanotubes. (10)

- Q.6**
- Write down the types of resistors and their applications. Describe any two with the construction and materials used. (10)

OR

- Give the classification of capacitors. Describe any two with the constructional details. (10)

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