

3rd Sem./ ELECTRICAL/ EME/2021(W)
Th4 Electrical Engineering Materials

Full Marks: 80

Time- 3 Hrs

Answer any five Questions including Q No.1& 2
Figures in the right hand margin indicates marks

1. Answer **All** questions 2 x 10
 - a. What do you mean by resistivity and state its SI unit.
 - b. Define dielectric constant. What is the dielectric constant of air?
 - c. What is N-type semiconductor? Give an example.
 - d. Which properties should a fuse material possess?
 - e. What are the factors affecting dielectric strength of insulating material?
 - f. Name the materials used in making (i) element of a filament lamp (ii) resistors for loading rheostats.
 - g. What is magnetostriction in magnetic materials?
 - h. What is photovoltaic cell?
 - i. What do you mean by thermocouple? Give an example of thermocouple.
 - j. State an application of (i) Teflon (ii) PVC insulating material.
2. Answer **Any Six** Questions 5X6
 - a. Differentiate between soft and hard magnetic materials.
 - b. Describe about the electron energy and energy band theory briefly.
 - c. Write a short note on soldering materials.
 - d. Explain the domain theory of ferromagnetic material briefly.
 - e. What are the factors affecting insulation resistance?
 - f. Describe the applications of superconductor materials.
 - g. Explain the mechanical properties affecting the selection of insulator in brief.
3. Explain the low resistivity materials and their applications in details. 10
4. Describe about fuse and fuse materials. Draw also a cross section view of cartridge fuse. 10
5. Write a short note on (i) Hall Effect generators (ii) Solar power 10
6. Explain the electrical conductivity and the breakdown of (i) Gaseous dielectrics (ii) Liquid dielectrics 10
7. Describe about natural and synthetic rubber and their applications. 10