

JUNE-2006

2006-CALICUT UNIVERSITY
B. TECH DEGREE EXAMINATION
MATERIAL SCIENCE
(ELECTRICAL AND ELECTRONICS ENGINEERING)

TIME-3HOUR
MARKS-100

ANSWER FULL QUESTIONS

SECTION A 8*5=40 MARKS

- 1.a) define i) rated current ii) fusing current and fusing time for fuse.
- b) explain the composition and application of ferrites.
- c) explain dielectric loss.
- d) what is hysteresis loss? explain how it affects the selection of magnetic materials for electrical machines.
- e) discuss the properties of mica as a dielectric.
- f) state the factors that influence the dielectric strength of a material.
- g) discuss the properties of gallium arsenide.
- h) what is electron spin resonance..

SECTION B 4*15=60 MARKS

2.a) what is ferromagnetism? explain spontaneous magnetisation possessed by ferromagnetic materials below Curie point.

OR

b) explain clearly the Fermi Dirac distribution. discuss briefly the materials for electric resistance.

3.a) derive the expression for electronic polarization in mono atomic gases.

OR

b) explain Clausius Mosotti relation. what is domain theory.

4.a i) give a detail account on the properties and testing of transformer oil.

ii) discuss dielectric materials used in cables.

OR

b i) narrate the factors influencing dielectric strength.

ii) what are the properties that make plastic more suitable as insulating material

5.a) compare silicon, cadmium and gallium arsenide with reference to their semi conducting properties.

OR

b) explain in detail the magnetic and electron spin resonance.