Fifth Semester B.Tech Degree Examination (2013 scheme)
Engineering Material Science (Elective) 13.506.1
Model question paper

Time: 3 hrs
Max Marks: 100

PART A
Answer all questions from Part A

1) Explain the term electron attachment
2) Define Townsend’s first and second ionization coefficients
3) Explain the difference between photo-ionization and photo-electric emission
4) Describe the various factors that influence breakdown in gas
5) Discuss the properties of transformer oil
6) Discuss the applications of SF₆
7) Define partial discharge
8) What is the difference between treeing and tracking
9) Mention the properties of copper and aluminium
10) What are applications of soft and hard magnetic materials? (10x2 = 20 marks)

PART B

11) a) State and explain Paschen’s law (10 marks)
    b) Explain the streamer theory of breakdown in air at atmospheric pressure (10 marks)
OR
12) a) Describe the current growth phenomena in a gas subjected to uniform fields (10 marks)
    b) Explain the experimental set up for measurement of pre breakdown currents in a gas (10 marks)

13) Discuss the various mechanisms of vacuum breakdown (20 marks)
OR
14) Explain the various theories that explain breakdown in commercial liquid dielectrics (20 marks)

15) Explain abc equivalent circuit of partial discharge (20 marks)
OR
16) Explain the mechanisms of breakdown in solid dielectrics (20 marks)

17) What are the different types of magnetic materials. Discuss its properties (20 marks)
OR
18) a) Write short notes on super conductivity (10 marks)
    b) Mention the properties of non linear resistors (10 marks)