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Total Number of Pages : 01

B.Tech
BSMS1213

4th Semester Back Examination 2018-19
MATERIAL SCIENCE AND ENGINEERING

BRANCH : EEE

Time : 3 Hours

Max Marks : 70

Q.CODE : F905

Answer Question No.1 which is compulsory and any FIVE from the rest.

The figures in the right hand margin indicate marks.

- Q1 Answer the following questions : (2 x 10)**
- a) What do you mean by creep?
 - b) What is fatigue?
 - c) What are ferromagnetic materials?
 - d) What is the difference between dielectric strength and breakdown voltage?
 - e) What do you mean by magnetostriction?
 - f) Mention any two applications of laser in the field of scientific research, engineering and medicine.
 - g) Define Rayleigh Scattering Law.
 - h) What is galvanic corrosion?
 - i) What are whiskers and cermet?
 - j) What is glass transition temperature of polymer?
- Q2**
- a) Find an expression for electrical conductivity by using Ohm's law. (5)
 - b) How is the selection of material carried out for technological purpose. (5)
- Q3**
- a) Differentiate between Type-I and Type-II Superconductor (5)
 - b) Explain the Hall effect in a semiconductor (5)
- Q4**
- a) Differentiate between intrinsic semiconductor and extrinsic semiconductor. (5)
 - b) Explain the principles of light propagation in an optical fibre. (5)
- Q5**
- a) Explain antiferromagnetic materials with suitable examples (5)
 - b) Explain the classical theory of paramagnetism. (5)
- Q6**
- a) Explain the different factors influencing corrosion rate. (5)
 - b) Discuss in detail the classification of composites with suitable examples. (5)
- Q7**
- a) Calculate the fraction of the load carried by the fibers in two composites of glass fibers and epoxy resin matrix, one containing 25% fibers by volume and the other 75%. Elastic moduli for the glass fibers and the epoxy resin are 72 GPa and 3.6 GPa respectively. (5)
 - b) Explain crystallinity of polymer (5)
- Q8 Write short answer on any TWO : (5 x 2)**
- a) Vulcanization of rubber
 - b) Piezoelectric material
 - c) Particle reinforced composites
 - d) Hysteresis curve