B. Tech.

(SEM. IV) EXAMINATION, 2006-07

ENGINEERING MATERIALS

Time : 2 Hours [Total Marks : 50]

Note : (1) Answer all questions.
      (2) All questions carry equal marks.
      (3) Answer part of the question in sequential order at one place.

1 Fill up the blanks : \[1 \times 2 \times 5 = 10\]

(a) i) Metals are normally ________ solids.
    ii) Inorganic glasses are ________ solids.

(b) i) Usually percentage of carbon in mild steel is ________.
    ii) Carbon percentage in gray cast-iron is ________.

(c) i) Yield strength of a fine grained metal / alloy is _______ than of coarse grained.
    ii) Failure which occurs under repeated stressing is called ________

(d) i) Polyvinyl chloride is _______ plastics.
    ii) Styrene-butadiene is a ________ rubber

(e) i) Corrosion is defined as destruction of metal resulting from _______ by environment.
(ii) Metal matrix composite materials have been intensely developed for aerospace industries because it possess high ________

2 Answer any two of the following : 5x2=10
(a) Explain the term “Crystal Lattice”. Describe the type of crystal structures of metallic elements.
(b) Discuss the major kinds of imperfections in the crystal sentence of metals
(c) Draw the iron-carbon phase diagram and label it completely.

3 Answer any two of the following : 5x2=10
(a) Explain the purpose and process of annealing treatment.
(b) Explain the Time-Temperature Transformation (TTT) curves.
(c) Discuss in detail the effects of alloying element in steel.

4 Answer any two of the following : 5x2=10
(a) How are wrought aluminium alloys classified.
(b) Discuss the types, properties and applications of various bearing materials
(c) Explain intergranular corrosion and its prevention in stainless steel.

5 Answer any two of the following : 5x2=10
(a) Explain the polymerization processes for different types of plastics.
(b) Explain plastic deformation and elastic deformation.
(c) Describe the various types of magnetic behaviour.

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