Model Question Paper

Fourth Semester B. Tech. Degree Examination
( 2013 Scheme )
13.404 : Metallurgy and Material Science ( MNPU )

Time: 3 Hours           Max. Marks : 100

Answer ALL questions from PART- A and ONE full question from each Module of PART- B.

PART – A  (10 X 2 marks each = 20marks)

2) Explain the terms Slip and Twining.
3) What is Etching? What are the different methods of Etching?
4) What do you meant by Ductile to Brittle transition? Explain.
5) Define and differentiate Fatigue and Creep.
6) What is a solid solution? Briefly classify them.
7) What are CCT and TTT diagrams? Differentiate.
8) What is heat treatment? Explain how annealing differs from normalising.
9) What are Stainless steels and how they are different other steels?
10) What are smart materials?

PART– B  (4 X 20 marks each = 80marks)

MODULE - I
11) What are crystal defects? Explain in detail with sketches.
   
   OR

12) What are Strengthening mechanisms? Explain the different types of mechanisms.

MODULE – II


   B) Explain Hume Rothery’s rule.

   C) Explain Gibb’s Phase rule.

   
   OR

14) A) What are invariant Phase reactions? Name the different types of phase reactions.

   B) What are Isomorphous Systems? Explain Cu-Ni phase diagram with neat sketch.

( P.T.O )
MODULE - III

15) With an Iron –Carbon equilibrium diagram explain the developments of different microstructures and phases.

OR

16) A) Define and Differentiate hardness and hardenability.
    B) Differentiate austempering and martempering.
    C) Explain with neat sketch Jominy end quench test.

MODULE – IV

17) What is alloying? What are the various elements used for steel alloying? Explain the effect of them on steels.

OR

    B) Describe the various methods of fabrication of composites.
    C) What are Nano materials? What are their advantages?