

13/5/19 (E)

Exam.Code:0942
Sub. Code: 7062

28

1059
B.E. (Mechanical Engineering)
Sixth Semester
MEC-605: Material and Heat Treatment

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Unit.

x-x-x

- I. Attempt the following:-
- Define the lattice parameters of a unit cell?
 - Define importance of close packed planes
 - List one limitation of TTT diagram based on isothermal transformation.
 - Write one difference between annealing and normalizing
 - Write one difference between cementite and bainite

(5x2)

UNIT - I

- II. Draw and explain Line and Surface defects in Crystals and discuss their significance. (10)
- III. Sketch and explain Copper Nickel binary isomorphous phase diagram and explain development of microstructure in its alloy. (10)
- IV. Discuss Homogenous nucleation and growth mechanism in development of crystalline structure. (10)
- V. Explain Eutectic alloy system with the help of phase diagram. Explain the procedure of measurement of chemical composition of phases and relative amount of each phase. (10)

UNIT - II

- VI. Draw Iron carbon equilibrium diagram and label with common names for the structures. Explain various structures formed at room temperature. (10)
- VII. Explain with diagram the process isothermal transformations for eutectoid composition of 0.8 percent carbon in iron. Explain austempering and martempering heat treatment processes. (10)
- VIII. What are the objectives of heat treatment? Explain annealing and normalising heat treatment processes with sketches and list their objectives. (10)

x-x-x