Exam.Code:0942
Sub. Code: 6729

2023
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. I which is compulsory and selecting two questions from each Unit.***

x-x-x

I Attempt the following (5*2=10)

a) What is atomic packing factor?

b) Define twinning.

c) What is the use of Fe-C diagram?

d) What is sorbite?

e) Draw a binary phase diagram.

UNIT -I

II a) Explain different types of imperfections and write their significance. (10)

III a) Write short notes about Stainless Steel and HSLA

b) State the effect of adding following elements to steel: Ni, Cr, V, Si, W. (5,5)

IV a) Name the different types of Phase Transformations. Explain the complete nucleation process for binary solutions.

b) Explain various stages in crystal growth. (5,5)

UNIT -II

V a) What is Solid Solution? Explain its types in brief. Also state the Gibbs phase rule.

b) Explain the mechanism of interpretation of equilibrium diagrams. (5,5)

VI a) Why normalizing is necessary after hardening? Also explain the induction hardening process.

b) What are CCR? Explain in brief. Also describe the TTT diagrams. (5,5)

VII a) Differentiate Austempering and Martempering.

b) Explain solid and liquid carburizing process. (5,5)

x-x-x