

CT-II III sem. MECH.

MEU301: Material Science & Engg. Time: 1hr.

Max. Marks: 15

Solve any three. All questions carry equal marks.

- Q1: Draw temperature ranges for the following heat treatments of steel on the Fe-Fe<sub>3</sub>C diagram: (a) Normalizing (b) Full annealing (c) Spheroidizing anneal (d) Recrystallization anneal and (e) Stress relief anneal. [5]
- Q2: Define hardenability? Describe Jominy end quench test for hardenability with neat diagram. [5]
- Q3: Differentiate between white cast iron and grey cast iron. Draw its microstructures. Discuss the effects of various factors responsible for solidification of cast iron as white cast iron and grey cast iron? [5]
- Q4: What is surface hardening? What are its types and how they are classified? Discuss in short induction hardening. [5]

Third Sem. Mech.

CT 2

Materials Science & Engineering

MEU301

Max. Marks: 15

Solve any three.

All questions carry equal marks.

Time: 1 hrs.

Q1: Draw TTT diagram for eutectoid steel and explain its construction.

Q2: What are the limitations of plain carbon steels? Explain the role of alloying elements.

Q3: Describe the effect of alloying elements on (a) eutectoid composition and (b) eutectoid temperature.

Q4: Why heat treatment is necessary? Differentiate between annealing and normalizing.

Q5: What are quenching defects? State its causes. Distinguish between austempering and martempering.