Roll No…….. **Total No. of Printed Pages: [1]**
Total No. of Questions: [11]

M. Tech ME (Semester – 2nd)
WELDING METALLURGY
Subject Code: MMEE2260
Paper ID: [191013]

Time: 03 Hours **Maximum Marks: 60**

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A **(4 marks each)**

Q1. How does recrystallization affect the microstructure of a metal?
Q2. Explain partially mixable components.
Q3. Explain spherodising.
Q4. Explain Multi pass welding.

Section – B **(8 marks each)**

Q5. What is solidification, and how does it affect the micro and macro structure of pure metals?
Q6. What is the difference between elastic and plastic deformation?
Q7. What is the structure of welds, and how does it impact their properties?
Q8. What is hardenability, and how does it relate to the heat treatment of steels?

Section – C **(10 marks each)**

Q9. Explain the Fe-C diagram, and how is it used to predict the properties of steel?
Q10. What is the thermal field, and how does it impact the welding process?
Q11. Explain the T-T-T diagram, and how is it used to predict phase transformations in steels?