Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech.(PE) (Sem.–1)

WELDING TECHNOLOGY

Subject Code : PE-504

M.Code : 39005

Date of Examination : 19-01-2023

Time : 3 Hrs. **Max. Marks : 100**

INSTRUCTIONS TO CANDIDATES :

1. **Attempt any FIVE questions out of EIGHT questions.**
2. **Each question carries TWENTY marks.**
3. **Assume missing data.**

1. a) Explain the constant current and constant voltage characteristics of arc welding machines. Give applications of each of them.

   b) Why DC arc welding is preferred for specialized applications over AC arc welding ?

2. a) What is Heat Affected Zone (HAZ)? Explain with a schematic diagram showing subdivisions of HAZ for low carbon steel welds and their corresponding temperature ranges.

   b) Explain the solidification mechanism and microstrural products in welding metal.

3. a) What is thyristor controlled rectifier? Give its applications and drawbacks.

   b) What is arc blow? Explain the causes and effects of arc blow on the welding process. What are the remedies available to control arc blow?

4. a) What are the various types of fluxes used in submerged arc welding? Briefly describe the role of fluxes in SAW.

   b) How coatings of electrodes for SMAW are classified? Explain with example.

5. a) Explain the working principle of GMAW process. Give a simple sketch of this process.

   b) Explain electro slag welding process with a suitable sketch. What are its industrial applications?

6. a) What is KVA in welding machine? Explain the significance of Duty cycle.

   b) What is the principle of high energy rate welding? How is it carried out?

7. a) Explain laser welding process with a neat, labelled sketch. Write its applications.

   b) Write the name of the different types of metal transfer during welding. Explain the mechanism of metal transfer for each case separately.

8. Write a detailed note on the following :

   a) Diffusion welding

   b) DC rectifier.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.