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Total No. of Questions : 08

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M.Tech. (PE) (Sem.–1) WELDING TECHNOLOGY Subject Code : PE-504 M.Code : 39005

Time : 3 Hrs. INSTRUCTIONS TO CANDIDATES : Max. Marks : 100

- 1. Attempt any FIVE questions out of EIGHT questions.
- 2. Each question carries TWENTY marks.
- 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? Discuss.
- 2. a) State and explain the mechanism of arc welding. Give schematic diagram of arc welding on a large plate showing direction of welding, inclination angle of electrode and position of spark in support of your answer.
 - b) Deduce an expression for temperature distribution in the arc when a semi infinite plate is welding.
- 3. a) What is heat affected zone? Explain with a schematic diagram showing subdivisions of HAZ for low carbon steel welds and their corresponding temperature ranges.

b) Explain the effect of electrode coating on welding performance characteristics. State the role of flux ingredients and shielding gases. Give examples in support of your answer.

- 4. a) Discuss the effect of welding parameters on weld quality in submerged arc welding process.
 - b) What is electro slag welding? Give its principle, procedure and applications.
- 5. a) Explain the technique, method and scope of friction welding.

b) Explain the effect of polarity on melting and metal transfer rate.

- 6. a) Discuss the solidification mechanism and different types of microstructures obtained in weld metal.
 - b) Describe the process of high energy rate welding along with its applications.
- 7. Explain the principle, working and applications of ultra-sonic welding process with a neat sketch.
- Write notes on : 8.
 - a) Diffusion welding.
 - b) Submerged arc welding.

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.