

Time allowed : 3 hours] [Maximum marks : 100

- Note:**
- There are *Nine* questions in this paper. All questions carry equal marks.
 - Attempt *five* questions in all.
 - *Question No. 1* is compulsory.
 - Attempt remaining *four* questions by selecting *only one* question from each unit.

1. Explain the following:- 20
- (a) Metallurgy of Fusion Weld.
 - (b) Welding Mechanization
 - (c) Difficulties in welding of Plastics.
 - (d) Weld bead geometry and shape factor.
 - (e) Welding defects.

Unit-I

2. (a) Explain solidification mechanism and micro structural products in weld metal. 10
- (b) Describe the epitaxial cellular and dendritic solidification during welding. 10

3. (a) Describe the Heat affected Zone and re-crystallization and grain growth of Heat affected Zone. 10
- (b) Explain the effects of alloying elements on welding of ferrous metals. 10

Unit-II

4. (a) Explain the role of electrode polarity on arc behaviour and arc stability in detail. 10
- (b) Explain the electrical characteristics of an arc in detail. 10
5. (a) Explain the different types of electrode and Indian system of classification and coding of cover electrode for mild steel. 10
- (b) Explain the terms - Arc Blow, Arc Efficiency and temperature distribution in the arc. 10

Unit-III

6. (a) Explain how is an arc obtained in arc welding? Explain in detail with neat sketch. 10
- (b) Explain the Submerged Arc Welding process in detail with neat sketch. 10
7. (a) Explain the difference between TIG and MIG welding in detail. 10
- (b) Explain the CO₂ Welding process in detail with neat sketch. 10

Unit-IV

8. (a) Explain the various processes for welding of
Plastics. 10
- (b) Explain the Ultrasonic process of welding with its
advantages, disadvantages and application in detail.
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9. (a) Explain the process of Robotics welding and how
you classify the types of welding robots. 10
- (b) Explain main features and application of Under
Water process of Welding in detail. 10

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