B.E. Seventh Semester (Production Engineering) (CGS)

# 10953 : Elective-II : Advanced Welding Technology : 7 PE 05

P. Pages : 2 **AW - 3309**

Time : Three Hours Max. Marks : 80

Notes :
1. Answer **three** question from Section A and **three** question from Section B.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Diagrams and chemical equations should be given wherever necessary.
5. Illustrate your answer necessary with the help of neat sketches.

## SECTION – A

**1.** a) Give classification of welding processes on the basis of power requirement and Explain single-carbon Arc-welding process. 7

b) What is importance of welding fixtures? Explain various factors to be considered while designing welding fixture. 7

**OR**

**2.** a) Differentiate between TIG and MIG-welding process with their working principle, advantages, Disadvantages and fields of application. 7

b) What is the difference between transfer and non-transfer plasma Arc welding process? Discuss with neat sketch in detail. 7

**3.** a) Explain Gas-welding process with equipments and their functions. 7

b) Which are the methods suitable for welding carbon steel and alloy steel? why? Explain. 6

**OR**

**4.** a) Classify welding torches. Explain any one in detail with neat sketch. 7

b) Explain the chemistry of oxi-Acetylene gas welding. How different flams are useful for different operations. 6

**5.** a) Differentiate between Brazing and soldering with their advantages and applications. 6

b) Explain graphically following in resistance spot welding. 7

i) Squeez time, ii) Weld time

iii) Hold time iv) Off-Time

**OR**

**6.** a) Describe 'Flash-welding' with its procedure and applications. How it differs from spot-welding? 7

b) Explain Seam welding in detail with neat sketch and applications. What is the difference between seam welding and stitch welding? 6

## SECTION - B

7. a) Explain the steps in diffusion-welding. Why it is called solid-state-welding? Explain with neat sketches. 7

b) Explain 'Explosion-welding' with neat sketch what are its advantages disadvantages and field of application. 7

**OR**

8. a) Why 'Forge-welding' is called as solid state welding? Differentiate between forge-welding and Friction-welding. 7

b) What is ultra-sonic welding? Define and draw neat sketch to explain-process with advantages dis-advantages and applications. 7

9. a) What do you mean by 'Heat-treatment of weld'? What are types of Heat-treatment methods and discuss its need. 7

b) What is Heat-affected zone in butt weld? Explain with neat sketch. 6

**OR**

10. a) Explain in detail Electron-Beam welding with neat sketch and field of application. 7

b) What is hardness of weld? and How it varies across the weld? and why? What is the remedy? 6

11. a) What do you mean by inspection before welding, inspection during welding and inspection after welding? Explain with suitable example. 7

b) Explain 'Eddy-current' testing of weld in detail. 6

**OR**

12. a) Explain X-Ray radiography process for testing of weld. 7

b) How will you conduct following tests. 6

i) Tension ii) Bend

iii) Hardness

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