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M.TECH
(SEM-II) THEORY EXAMINATION 2017-18
ADVANCED WELDING TECHNOLOGY

*Time: 3 Hours**Total Marks: 70*

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 7 = 14

- a) What are the effects of gases in welding?
- b) What are the main factors affecting the welding design?
- c) What are the advantages of constricting plasma in PAW?
- d) What is the principle of explosive welding?
- e) What are the steps necessary for robotic arc welding?
- f) How Friction welding is different from Explosive welding?
- g) What are the factors that cause slag inclusion?

SECTION B

2. Attempt any three of the following:

7 x 3 = 21

- a) Define weldability of material and the factors on which weldability depends.
- b) Explain how the weld quality of different welded joints can be determined?
- c) Describe Principle of operation of Electron beam welding. What are the possible problems or difficulties and how it can be dealt with? Write down the advantage and limitation.
- d) Explain the TIG welding of spiral welded pipes and also differentiate between the soldering and brazing process.
- e) Write the programming of welding robots.

SECTION C

3. Attempt any one part of the following:

7 x 1 = 7

- (a) What do you understand by Residual Stresses in welded joint? How it affects the welded joint?
- (b) What is HAZ in welding? Why weld usually fails in HAZ?

- 4. Attempt any *one* part of the following:** **7 x 1 = 7**
- a) Write note on design of welding joint and weld quality.
 - b) What are the material joining characteristics? Explain the testing of weldament.
- 5. Attempt any *one* part of the following** **7 x 1 = 7**
- a) What are ultrasonic waves / vibrations and how it is generated and what are its various applications? Describe ultrasonic welding.
 - b) Explain the three variables involved in Continuous drive friction welding?
- 6. Attempt any *one* part of the following** **7 x 1 = 7**
- a) A “I” beam (arc weld) is to be welded. Describe the welding processes involved and the welding tools required for it.
 - b) Explain the Circular welding joint.
- 7. Attempt any *one* parts of the following:** **7 x 1 = 7**
- a) Explain the tolerances for assemblies for robot welding and robots for car body welding.
 - b) Write short notes on: (i) Efficiency of robotics in welding (ii) Microelectronic welding