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MTECH
(SEM II) THEORY EXAMINATION 2021-22
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.****2x7 = 14**

a.	Explain hydrogen embrittlement in brief.
b.	Define heat affected zone.
c.	Tell the difference between lap joint and corner joint.
d.	Explain brazing.
e.	Discuss the working principle of friction welding.
f.	Describe the difference between transferred arc type and non-transferred arc type plasma arc welding.
g.	List any two welding processes that can be performed by robot welding.

SECTION B**2. Attempt any three of the following:****7x3 = 21**

a.	Summarize the classification of welding processes. Also compare welding process with other fabrication processes.
b.	Illustrate various types of weld defects with neat sketches.
c.	Explain plasma arc welding with neat sketch. Also discuss its advantages and limitations.
d.	An "I" beam (arc weld) is to be welded. Illustrate about the welding processes involved and welding tools required for this.
e.	Describe welding robots. Discuss the advantages and limitations of robot welding.

SECTION C**3. Attempt any one part of the following:****7x1 = 7**

a.	Illustrate the weldability of cast iron in detail.
b.	Illustrate: (i) Residual stresses in welding (ii) Effects of alloying elements on weldability

4. Attempt any one part of the following:**7x1 = 7**

a.	Illustrate various types of welds with neat sketches.
b.	Illustrate any two non-destructive testing methods for welds.

5. Attempt any one part of the following:**7x1 = 7**

a.	Explain ultrasonic welding with neat sketch. Also discuss its advantages and limitations.
b.	Discuss the working principle of: (i) electron beam welding (ii) Explosive welding

6. Attempt any one part of the following:**7x1 = 7**

a.	Discuss the advantages, disadvantages and applications of spiral welded pipes. How they differ from longitudinal welded pipes.
b.	Define induction welding. Discuss the significance of induction welding in tube and pipe industry.

7. Attempt any one part of the following:**7x1 = 7**

a.	Describe: (i) Applications of robots in welding (ii) Efficiency of robotics in welding
b.	Discuss about the programming of welding robots.