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B.TECH
(SEM V) THEORY EXAMINATION 2021-22
ADVANCE WELDING

Time: 3 Hours**Total Marks: 100**

SECTION A

- 1. Attempt all questions in brief. 2 x 10 = 20**
- a. What is the function of flux in the welding?
 - b. What is the principle involved in resistance welding.
 - c. Draw the weld symbols for double U and single V-joint.
 - d. How radial friction welding is used to join the collars shaft and tube
 - e. What are the effect of gases in welding
 - f. Define the health & safety in welding.
 - g. How is the carbon equivalent value calculated?
 - h. Write short note on the bend test.
 - i. Describe the factor affecting weldability of copper alloys.
 - j. Describe the arc blow.

SECTION B

- 2. Attempt any three of the following: 10 x 3 = 30**
- a. Describe TIG welding process with neat sketch. What are the advantages and limitation of TIG welding over MIG welding?
 - b. The dc arc current has voltage – length characteristics as $V = (10+30L)$ volts. The characteristics of power source is $V = (60 - 0.07I)$ volts. Determine the optimum arc length and corresponding arc power.
 - c. Define residual stresses in welding. State and explain the major factors responsible for residual stress?
 - d. Briefly describe the various weld defect and distortion in welding and its causes and remedies.
 - e. **Write short note on :**
 - i. Gas metal reaction
 - ii. Slag metal reaction

SECTION C

- 3. Attempt any one part of the following: 10 x 1 = 10**
- (a) Briefly classify the process selection criteria of welding process?
 - (b) Classify the different types of metal transfer used in various types of arc welding process with neat sketch?
- 4. Attempt any one part of the following: 10 x 1 = 10**
- (a) Describe the laser beam welding. Explain the principle behind the generation of laser with neat sketch and also write the various application of laser of beam welding?
 - (b) Define the Magnetically impelled arc butt (MIAB) welding procedure, limitation and application of this process.
- 5. Attempt any one part of the following: 10 x 1 = 10**
- (a) Explain the factor affecting changes in microstructure and mechanical properties of heat affected zone.
 - (b) Discuss in detail about weld thermal cycles with neat sketch and also mention the factor affecting change in microstructure and HAZ.
- 6. Attempt any one part of the following: 10 x 1 = 10**
- (a) Discuss about the different types of weld joint with neat sketch.
 - (b) **Explain the following**
 - i. Dye penetrant testing
 - ii. Discontinuities in weld and their causes
 - iii. Inspection of weld
- 7. Attempt any one part of the following: 10 x 1 = 10**
- (a) what is metallizing process ?how the surface of work must be prepared for this process also describe the nature of bond between sprayed metal and work
 - (b) Discuss the effect of alloying element of the weldability. Explain the welding of dissimilar metal briefly.