

Paper Id: Roll No.

B.TECH
(SEM V) MODEL PAPER 2023-24
ADVANCED WELDING

Time: 3Hours**Total Marks: 100****Note: 1.** Attempt all Sections. If require any missing data; then choose suitably.

SECTIONA

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.

SECTIONB

2. Attempt any three of the following:**10x3=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: 10x1=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: 10x1=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: 10x1=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: 10x1=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: 10x1=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.