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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech.

SEM: II - THEORY EXAMINATION (2021 - 2022)

Subject: Advanced Welding Technology

Time: 3 Hours

Max. Marks: 70

General Instructions:

1. The question paper comprises three sections, A, B, and C. You are expected to answer them as directed.
2. Section A - Question No- 1 is 1 marker & Question No- 2 carries 2 marks each.
3. Section B - Question No-3 is based on external choice carrying 4 marks each.
4. Section C - Questions No. 4-8 are within unit choice questions carrying 7 marks each.
5. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION A

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1. Attempt all parts:-

- 1-a. The arc has [CO1] 1
- (a) Linear resistance characteristics
 - (b) Positive resistance characteristics
 - (c) Negative resistance characteristics
 - (d) Highly inductive characteristics
- 1-b. Which of the following rays is/are produced during welding? [CO2] 1
- (a) Visible light rays
 - (b) Infrared ray
 - (c) Ultra violet rays
 - (d) All of the above
- 1-c. In ultrasonic welding, the frequency range is generally [CO3] 1
- (a) 100 – 4000 cps
 - (b) 4000-20000 cps
 - (c) 20,000-40,000 cps
 - (d) 80,000-200,000 cps

- 1-d. Which of the following defects occur when weld metal layer fails to fuse together? [CO4] 1
- (a) Inclusion of slag
 - (b) Inadequate penetration
 - (c) Incomplete fusion
 - (d) Porosity
- 1-e. A robot that acts according to the received information is [CO5] 1
- (a) Playback robot
 - (b) Intelligent robot
 - (c) Fixed sequence robot
 - (d) None

2. Attempt all parts:-

- 2.a. What is arc blow? [CO1] 2
- 2.b. Define fusion zone? [CO2] 2
- 2.c. What are the advantages and disadvantages of Explosive welding? [CO3] 2
- 2.d. What are different types of V Butt welds? [CO4] 2
- 2.e. List some of the important reasons for using robots instead of human to perform a task. [CO5] 2

SECTION B

20

3. Answer any five of the following:-

- 3-a. Compare gas welding and cutting processes. [CO1] 4
- 3-b. What is the need of flux in brazing? [CO1] 4
- 3-c. How solidification occurs in welding? [CO2] 4
- 3-d. Explain the objectives of post welding heat treatment. [CO2] 4
- 3.e. Define Plasma Arc Welding(PAW) .What are the advantages and applications PAW? [CO3] 4
- 3.f. How does the weldability of steel change as its carbon content increases? [CO4] 4
- 3.g. Discuss various types of power sources used in robots. [CO5] 4

SECTION C

35

4. Answer any one of the following:-

- 4-a. How is heat generated in resistance welding? [CO1] 7
- 4-b. What are the functions of coating in coated electrode? [CO1] 7

5. Answer any one of the following:-

- 5-a. Explain various zones for a typical weld with a neat sketch? [CO2] 7
- 5-b. Explain in detail Hydrogen induced cracking test? [CO2] 7

6. Answer any one of the following:-

- 6-a. Describe Principle of operation of EBW (Electron beam welding). [CO3] 7
- 6-b. Explain With neat labeled sketch the working of Ultra sonic Welding. [CO3] 7

7. Answer any one of the following:-

- 7-a. Enlist the different types of welding positions [CO4] 7
- 7-b. What are different stresses induced in welded joint? [CO4] 7

8. Answer any one of the following:-

- 8-a. Explain the future trends in industrial robotics. [CO5] 7
- 8-b. Explain the spherical welding robots [CO5] 7