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May 2023

B.Tech. (ME) VI SEMESTER

Welding Technology (PEC-ME-605-21)

Time: 3 Hours **Max. Marks:75**

Instructions: 1. *It is compulsory to answer all the questions (1.5 marks each) of Part -A in short.*
2. *Answer any four questions from Part -B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART -A

Q1 (a) What are the kinds of joints that are normally employed for welding purposes? (1.5)

(b) What is backfire in gas welding? (1.5)

(c) What is arc length? (1.5)

(d) What is straight polarity and reverse polarity? (1.5)

(e) What is the function of using shielding gases? (1.5)

(f) State the advantages of CO_2 welding over MIG welding. (1.5)

(g) What materials are used for making the resistance welding electrodes? (1.5)

(h) State the principle of resistance welding process. (1.5)

(i) What is Non-Destructive Testing (NDT)? (1.5)

(j) What do you mean by flexible automated welding? (1.5)

PART -B

Q2 (a) Describe the types of flames obtained in an oxy-acetylene gas welding process giving the applications. (10)

(b) Describe the principle of an oxy-acetylene welding. (5)

Q3 (a) What is an arc blow? Explain with a neat sketch the causes of the arc blow, its effects on welding and the methods of reducing the arc blow problem. (10)

(b) What are the problems encountered with the use of coated electrodes? Explains how these can be taken care of. (5)

Q4 (a) Discuss the principle, advantages and disadvantages of gas shielded arc welding. (10)

(b) Explain submerged arc welding with neat sketch. (5)

Q5 Discuss the working principle and applications of following welding processes: (15)
(i) Ultrasonic welding (ii) Electron Beam welding (iii) Laser beam welding

Q6 (a) Discuss the following non-destructive tests: (10)
(i) Dye penetrant inspection (ii) Magnetic particle inspection
(b) State the advantages and limitations of non-destructive testing of welds. (5)

Q7 Write short notes on the following: (15)
(i) Types of Welding Robots
(ii) Robot Selection Mechanics
(iii) Joint tracking system
