

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

Sixth Semester B.Tech Degree Regular and Supplementary Examination June 2023 (2019 Scheme)

**Course Code: MET372****Course Name: ADVANCED METAL JOINING TECHNIQUES****Max. Marks: 100****Duration: 3 Hours****PART A***Answer all questions, each carries 3 marks.*

Marks

- |    |   |     |
|----|---|-----|
| 1  | List variants of the electron beam welding process.                   | (3) |
| 2  | Quote original examples of laser beam welding.                        | (3) |
| 3  | Explain the stages involved in diffusion welding process.             | (3) |
| 4  | Summarize the joint curing process in adhesive bonding.               | (3) |
| 5  | State the applications of explosive welding process.                  | (3) |
| 6  | Discuss the differences between continuous drive and inertia welding. | (3) |
| 7  | Identify the various equipment for the ultrasonic welding process.    | (3) |
| 8  | State the principle of brazing process.                               | (3) |
| 9  | Outline the process of MIAB welding.                                  | (3) |
| 10 | Describe the underwater welding process.                              | (3) |

**PART B***Answer any one full question from each module, each carries 14 marks.***Module I**

- |    |   |      |
|----|---|------|
| 11 | a) Explain the process variables and characteristics of the electron beam welding process | (10) |
|    | b) Draw the schematic of the electron beam welding process and label each part.           | (4)  |

**OR**

- |    |  |      |
|----|--|------|
| 12 | a) Demonstrate the principle and process of laser beam welding with a neat figure. | (10) |
|    | b) Draw and explain any four weld joint designs of the laser beam welding process. | (4)  |

**Module II**

- |    |  |      |
|----|--|------|
| 13 | a) Explain the various diffusion welding parameters.               | (10) |
|    | b) State two merits and demerits of the diffusion welding process. | (4)  |

**OR**

- 14 a) Describe the butt weld characteristics of the cold pressure welding process. (10)  
b) State any four applications of cold pressure welding. (4)

**Module III**

- 15 a) Explain the mechanism of explosive welding process with a neat schematic. (10)  
b) Interpret how the testing of explosive weld joint is conducted. (4)

**OR**

- 16 a) Explain the friction stir welding process with a neat and labelled figure. (10)  
b) State the differences between friction welding and friction stir welding. (4)

**Module IV**

- 17 a) Describe the welding variables of ultrasonic welding process. (10)  
b) List four important applications of the ultrasonic welding process. (4)

**OR**

- 18 a) Summarize the following brazing processes: (10)  
(i) Torch brazing and (ii) Vacuum Brazing.  
b) List four differences between brazing and welding. (4)

**Module V**

- 19 a) Discuss the principle and operation of the plasma arc welding process with neat schematic. (10)  
b) State any four equipment required for plasma arc welding. (4)

**OR**

- 20 a) Explain the two types of underwater processes with neat figures. (10)  
b) List two risks of underwater welding. State the safety measures to be considered during this process. (4)

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