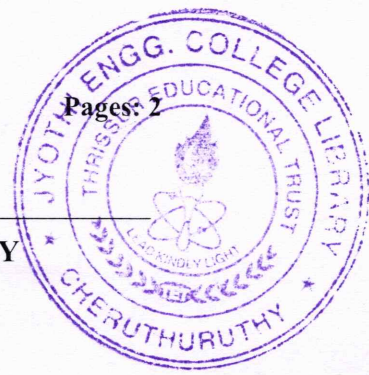


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Reg No.: \_\_\_\_\_

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**

B.Tech Degree S6 (R,S) Exam April 2025 (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  | Draw the relationship between beam current and depth of penetration in EBW.  | (3) |
| 2  | What is the function of the electron beam gun used in electron beam welding? | (3) |
| 3  | Write three merits and three demerits of diffusion welding.                  | (3) |
| 4  | List three process parameters of diffusion welding and explain any one.      | (3) |
| 5  | Explain the influence of process parameters in friction welding.             | (3) |
| 6  | Discuss the differences between continuous drive and inertia welding.        | (3) |
| 7  | Explain about furnace brazing.   | (3) |
| 8  | Explain the process variables of ultrasonic welding                          | (3) |
| 9  | Draw three joint configurations in plasma arc welding.                       | (3) |
| 10 | Write three applications of Plasma Arc Welding.                              | (3) |

**PART B**

*Answer any one full question from each module, each carries 14 marks.*

**Module I**

- |    |   |      |
|----|---|------|
| 11 | a) Explain the working of Electron Beam Welding, using a neat sketch. | (10) |
|    | b) Write four applications of Electron Beam Welding                   | (4)  |

**OR**

- |    |  |      |
|----|--|------|
| 12 | a) Explain the process variables and characteristics of Laser Beam Welding   | (10) |
|    | b) Explain about three different types of lasers used in laser beam welding. | (4)  |

**Module II**

- |    |   |      |
|----|---|------|
| 13 | a) Explain the working and the principle of operation of diffusion welding with help of a neat diagram. | (10) |
|    | b) Draw neat diagrams of three types of weld joints in cold pressure welding.                           | (4)  |

**OR**

- |    |   |      |
|----|---|------|
| 14 | a) Using a neat sketch, explain the mechanism of cold pressure welding. | (10) |
|    | b) Write four applications of cold pressure welding.                    | (4)  |



**Module III**

- 15 a) Explain the principle of operation of explosive welding with neat sketch (10)  
b) Write two advantages and two limitations of explosive welding (4)

**OR**

- 16 a) Draw and explain various joint designs employed in friction welding. (14)

**Module IV**

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

**OR**

- 18 a) Explain the process variables and equipment in ultrasonic welding (10)  
b) Write four applications of ultrasonic welding (4)

**Module V**

- 19 a) Using neat sketches, compare transferred and non-transferred plasma arc welding techniques. (14)

**OR**

- 20 a) Using neat sketches, explain the principle of operation of MIAB welding. (7)  
b) Explain the working principle of wet underwater welding (7)

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