

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

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

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**SIXTH SEMESTER B.TECH DEGREE(S) EXAMINATION, DECEMBER 2019**

**Course Code: ME366**

**Course Name: Advanced Metal Joining Technology**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any three full questions, each question carries 10 marks.*

Marks

- |   |  |      |
|---|--|------|
| 1 | a) List out the process parameters which are needed to be controlled during EBW?         | (5)  |
|   | b) What are the main parts of electron gun? List out and explain its functions.          | (5)  |
| 2 | Explain the different types of Lasers  | (10) |
| 3 | a) Describe the theory and principle behind the diffusion welding process                | (5)  |
|   | b) List the key process variables in diffusion welding process                           | (5)  |
| 4 | a) With the help of neat sketch explain the equipment and setup of cold pressure welding | (7)  |
|   | b) List the advantages of deformation welding  | (3)  |

**PART B**

*Answer any three full questions, each question carries 10 marks.*

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|---|--|-----|
| 5 | a) Compare oblique and parallel explosion welding processes.                           | (5) |
|   | b) List the advantages and limitations of explosion welding process.                   | (3) |
|   | c) Explain the importance of detonation velocity in explosion welding.                 | (2) |
| 6 | a) With the help of neat sketch explain the failure mechanisms of adhesive bonding     | (5) |
|   | b) What are the major classifications of adhesive used in adhesive bonding?            | (5) |
| 7 | a) Explain the main process parameter in Ultrasonic welding.                           | (5) |
|   | b) Describe the theory and working principle of Ultrasonic welding with neat sketches. | (5) |
| 8 | a) Explain the key features of vacuum brazing furnace.                                 | (5) |
|   | b) List the advantages and limitations of Vacuum brazing.                              | (5) |

**PART C**

*Answer any four full questions, each question carries 10 marks.*

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|----|--|-----|
| 9  | a) Explain in detail the equipment and tooling used in Plasma Arc Welding. | (7) |
|    | b) Write a short note on Needle Arc Micro Plasma welding.                  | (3) |
| 10 | a) With the help of a neat sketch explain hyperbaric welding.              | (7) |
|    | b) List the demerits of underwater welding.                                | (3) |

- 11 a) Explain the principle of Magnetically Impelled Arc Butt welding process. (5)  
b) Compare transferred and non - transferred arc technique in PAW. (5)
- 12 a) With the help of neat sketch explain the different stages of friction welding. (5)  
b) Describe the influence of process parameters in friction welding. (5)
- 13 a) Explain Influence of Tool Geometry on Material Flow Pattern in Friction Stir Welding Process. (7)  
b) List out the materials that can be friction stir welded. (3)
- 14 a) Draw the different shapes of probes used in friction stir welding. (5)  
b) List the application of friction stir welding. (5)

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