

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

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

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

**Course Code: ME366**

**Course Name: Advanced metal joining technology**

Max. Marks: 100

Duration: 3 Hours

**PART A**

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

Marks

- |   |   |     |
|---|---|-----|
| 1 | a) List major components of an Electron Beam Welding Equipment                | (2) |
|   | b) What are the different degrees of vacuum used in EBW ?                     | (3) |
|   | c) What are the classification of electron beam gun? Explain                  | (5) |
| 2 | a) Draw schematic of a solid state laser beam and identify the parts          | (5) |
|   | b) Explain laser beam hazards and safety measures taken in laser beam welding | (5) |
| 3 | a) What is meant by deformation welding?                                      | (2) |
|   | b) What are the factors affecting cold pressure welding?                      | (3) |
|   | c) List the advantages of diffusion welding                                   | (5) |
| 4 | a) Explain theory of diffusion welding  | (5) |
|   | b) Describe the different techniques employed for cold pressure welding       | (5) |

**PART B**

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

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|---|--|-----|
| 5 | a) With the help of a diagram, explain explosive welding procedure           | (7) |
|   | b) List different types of explosives used in explosive welding              | (3) |
| 6 | a) With the help of a neat sketch, explain the working of Ultrasonic welding | (7) |
|   | b) List major process parameters of Ultrasonic welding                       | (3) |
| 7 | a) Explain major adhesive bonding theories                                   | (7) |
|   | b) List the conditions for satisfactory bonding in adhesive joining          | (3) |
| 8 | a) With the help of a neat sketch, explain vacuum brazing                    | (5) |
|   | b) Explain the advantageous and disadvantages of vacuum brazing              | (5) |

**PART C**

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

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|---|---|-----|
| 9 | a) Differentiate between wet and dry underwater welding | (5) |
|---|---|-----|

- b) Explain Needle Arc Micro Plasma welding (5)
- 10 a) Explain magnetically impelled arc butt welding process with a neat diagram (6)
- b) List advantages and disadvantages of MIAB welding (4)
- 11 a) Differentiate between plasma arc welding and TIG welding (6)
- b) Explain transferred and non-transferred arc techniques in plasma arc welding (4)
- 12 a) Explain different modes of friction welding (5)
- b) What are the major process parameters in friction welding? (5)
- 13 a) What are the major concerns in designing Friction weld joint? (6)
- b) List major application of friction welding (4)
- 14 a) Explain friction stir welding with the help of a neat sketch (5)
- b) Explain mechanism of bonding in friction stir welding (5)

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