

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

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

03000ME366062001

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

B.Tech Degree S6 (S, FE) / S6 (PT) (S, FE) Examination May 2023 (2015 Scheme)



**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) Why vacuum is important in producing a good quality weld in EBW?   | (3) |
|   | b) Explain the principle of electron beam welding with a neat sketch. What do you understand by work accelerated and self accelerated electron gun? | (7) |
| 2 | a) Explain the principle behind LBW and list the classification of laser.   | (7) |
|   | b) Explain major process parameters of Laser beam welding   | (3) |
| 3 | a) Explain the mechanism of bond formation in cold pressure welding   | (6) |
|   | b) List the application of diffusion welding.   | (4) |
| 4 | a) Explain solid state welding process.   | (2) |
|   | b) Explain the role of dies used in diffusion welding process.  | (3) |
|   | c) Describe the different techniques used for cold pressure welding   | (5) |

**PART B**

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

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|---|--|-----|
| 5 | a) Explain how tube welding is done with the help of explosive welding technique | (8) |
|   | b) Explain the phenomenon jetting in explosion welding process.                  | (2) |
| 6 | a) Explain the adhesive bonding theories.  | (5) |
|   | b) What are the structural adhesives used in adhesive bonding process?           | (2) |
|   | c) List the conditions for satisfactory bonding in adhesive joining              | (3) |
| 7 | a) With neat labelled sketch explain the working of Ultra sonic Welding.         | (7) |
|   | b) Explain the process parameters affecting Ultrasonic welding process.          | (3) |
| 8 | a) With sketches explain the working principle of vacuum brazing.                | (6) |
|   | b) Explain stop off materials in vacuum brazing.                                 | (4) |

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**PART C**

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

- 9 a) Explain in detail the equipment and tooling used in Plasma Arc Welding (7)  
b) Describe the shielding mechanism in plasma arc welding. (3)
- 10 a) Explain the process of Needle Arc Micro Plasma Welding. (7)  
b) List the application of magnetic impelled arc butt welding. (3)
- 11 a) Explain dry and wet under water welding. (8)  
b) List the demerits of wet under water welding (2)
- 12 a) Explain various process parameters of friction welding. (3)  
b) Explain the friction welding is used to join collars to shafts and tubes. (7)
- 13 a) With suitable sketches explain different variants of friction welding. (8)  
b) List the advantages of friction welding process. (2)
- 14 a) Explain the types and parameters of tool used friction stir welding. (5)  
b) With the help of sketches explain the different probes used in friction stir welding. (5)

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