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Reg No.: _____

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APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree S6 (S, FE) Examination January 2024 (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 | What is the function of electron beam gun used in electron beam welding? | (3) |
| 2 | Write three applications of lasers beam welding. | (3) |
| 3 | List three process parameters of diffusion welding and explain any one | (3) |
| 4 | Write three applications of adhesive bonding | (3) |
| 5 | Write three merits and three demerits of explosion welding | (3) |
| 6 | Draw schematic diagram of friction welding set up | (3) |
| 7 | What is the basic principle of ultrasonic welding. | (3) |
| 8 | What is the basic principle of brazing. | (3) |
| 9 | What is under water welding process | (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 With neat diagram explain the working and the principle of operation of electron beam welding. Write three merits and three demerits of electron beam welding (14)

OR

- 12 With neat diagram explain the working and the principle of operation of laser beam welding. Explain about three different types of lasers used in laser beam welding. (14)

Module II

- 13 a) With the help of a neat diagram, explain the cold pressure welding and list out three process parameters of cold pressure welding. (10)

- b) What are the variables which control the weld quality in diffusion welding process? (4)

OR

- 14 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)

Module III

- 15 a) What is parallel stand-off and angular stand-off arrangements of explosive welding, explain with neat diagram. (8)
- b) List three process variables of explosive welding and explain in detail about one of the process variables of explosive welding (6)

OR

- 16 a) Draw neat diagrams of different stages of friction welding. Also explain the principle and theory of friction welding (8)
- b) Explain in detail about the metal flow phenomena in friction stir welding (6)

Module IV

- 17 a) Explain the basic working of ultrasonic welding process with neat diagram. What all are the various components of ultrasonic welding machine and briefly explain the functions of all the components. (14)

OR

- 18 a) Explain about vacuum brazing and induction brazing with supporting diagrams (10)
- b) Write four merits and three demerits of brazing. (4)

Module V

- 19 a) Explain the principle of operation of Magnetically impelled arc butt (MIAB) welding with diagram. (10)
- b) List out two advantages and two disadvantages of Plasma Arc Welding (4)

OR

- 20 a) With neat diagram, explain working of wet welding and dry welding in underwater welding and advantages, and disadvantages of underwater welding process. (14)
