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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 21205

B.E./B.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2022.

Fifth/Sixth/Seventh Semester

Production Engineering

PR 8592 – WELDING TECHNOLOGY

(Common to : Mechanical Engineering/Mechanical Engineering (Sandwich))

(Regulations 2017)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Write the reactions that are formed in oxy-acetylene gas welding.

2. Draw the electric circuit for submerged Arc welding.

3. Write the welding cycle for resistance welding.

4. What are the variants in seam welding process?

5. Enumerate the applications of ultrasonic welding.

6. Enumerate the process variables in explosive welding.

7. How is friction stir welding different from friction welding?

8. State the merits of Laser Beam Welding.

9. Define weldability.

10. What is arc blow? What are the causes for its occurrence?

PART B — (5 × 13 = 65 marks)

11. (a) With neat sketch explain the setup for Gas Tungsten Arc welding. Describe the main steps in its operations. Also specify its important applications. (13)

Or

(b) (i) Describe with a neat diagram the constructional features of oxy-acetylene gas welding and cutting torch. (7)

(ii) Differentiate between transferable and non-transferable type of plasma arc welding. (6)

12. (a) (i) Describe with a neat sketch, the salient features of resistance spot welding. (7)

(ii) Write short notes on spot welding and mention its applications. (6)

Or

(b) (i) Describe the role of the following welding variables on resistance welding methods (1) welding current, (2) weld time and (3) pressure control. (6)

(ii) Explain the working of projection welding process. (7)

13. (a) (i) Describe the various process characteristics of a continuous drive friction welding. How is it different from inertia friction welding? (8)

(ii) Explain the variants of cold pressure welding. (5)

Or

(b) (i) Explain the variation of penetration and pressure with welding time in ultrasonic welding process. (7)

(ii) What are the applications, advantages and limitations of high frequency resistance welding? (6)

14. (a) (i) Describe the constructional features and working of a Diode Laser. (6)

(ii) Describe the salient features of a process used for welding reactive metals. Also detail the specific types of applications possible only by this process. (7)

Or

(b) (i) Explain the mechanism of key hole penetration in electron beam welding. (6)

(ii) Describe the principle and mechanism of Laser beam welding operation. (7)

15. (a) Mention any four welding defects, their causes and consequences and explain how they can be rectified. (13)

Or

(b) (i) What precautions are to be taken (1) before (2) during and (3) after welding? (6)

(ii) What are the uses of non-destructive testing of welds? Explain 'magnetic particle inspection' method. (7)

PART C — (1 × 15 = 15 marks)

16. (a) Explain the process of explosion welding, giving the detailed description of its principle of operation. Explain the following process variables in explosion welding: impact velocity, stand-off distance and angle of approach. (15)

Or

(b) Sketch the block diagram and electrical circuit for submerged arc welding. Describe the SAW process in brief and its specific and important applications. Write short notes on fluxes used in SAW. (15)

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