



# CBCS SCHEME

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18ME45B/18MEB405

Fourth Semester B.E. Degree Examination, Dec.2023/Jan.2024

## Metal Casting and Welding

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Define metal casting and briefly explain steps involved in casting process. (10 Marks)  
b. What is pattern? List its types and explain any two with neat sketch. (10 Marks)

OR

- 2 a. List the types of molding machines and explain any one with neat sketch. (10 Marks)  
b. What is core? Why they are required and explain methods of making cores. (10 Marks)

### Module-2

- 3 a. Write a note on:  
(i) Resistance furnace. (10 Marks)  
(ii) Electric Arc Furnace. (10 Marks)  
b. With necessary sketch, explain working principle of cupola furnace along with chemical reactions. (10 Marks)

OR

- 4 a. Write a note on the following :  
(i) Centrifugal casting (12 Marks)  
(ii) Thixo casting (08 Marks)  
b. Explain continuous casting process with neat sketch and list its advantages. (08 Marks)

### Module-3

- 5 a. Define solidification and what are its variables. Explain solidification. (10 Marks)  
b. Explain casting defects, causes features and remedies. (10 Marks)

OR

- 6 a. Explain the following :  
(i) Fluxing and Flushing (08 Marks)  
(ii) Grain refining (12 Marks)  
b. With neat sketch, explain Stir-casting procedure, uses, advantages and limitations. (12 Marks)

### Module-4

- 7 a. Define welding. Give its classification, application, advantages and limitations. (10 Marks)  
b. Explain flux shielded metal arc welding and list its advantages and limitations. (10 Marks)

OR

- 8 a. What are the resistance welding principles? Explain projection welding. (10 Marks)  
b. Write a note on:  
(i) Friction welding. (10 Marks)  
(ii) Thermit welding. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Write a note on:  
(i) Structure of welds. (10 Marks)  
(ii) Heat affected zone and parameters affecting HAZ. (10 Marks)
- b. Explain welding defects, detection causes and remedy. (10 Marks)

OR

- 10 a. Explain Oxy-Acetylene welding process with neat sketch. (08 Marks)
- b. Write a note on :  
(i) Radiography Inspection. (12 Marks)  
(ii) Holography Inspection.

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