

CBCS SCHEME



17ME35A/17MEA305

Third Semester B.E. Degree Examination, Jan./Feb. 2021

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. What is manufacturing? Classify manufacturing processes. (08 Marks)
- b. Briefly discuss the steps involved in casting. (06 Marks)
- c. Explain different types of patterns used in foundry. (06 Marks)

OR

- 2 a. What are the ingredients of moulding sand? Explain briefly. (06 Marks)
- b. With a neat sketch, explain the working of sand slinger machine. (08 Marks)
- c. What is meant by a core? Sketch and explain balanced core. (06 Marks)

Module-2

- 3 a. How are melting furnaces classified? (06 Marks)
- b. What is the principle of Electric Arc Furnace? Explain with a sketch. (08 Marks)
- c. With a neat sketch, describe the operation of a coreless Induction furnace. (06 Marks)

OR

- 4 a. Differentiate between gravity and pressure Die casting. (06 Marks)
- b. With a neat sketch, explain the working principle of continuous casting. (07 Marks)
- c. Explain with a neat sketch working principle of resistance furnace. List the advantages, disadvantages and applications. (07 Marks)

Module-3

- 5 a. What is solidification? (04 Marks)
- b. Explain nucleation with neat sketches. (08 Marks)
- c. What is Degassification in liquid metals? Explain with neat sketches stream droplet and fractional degassing. (08 Marks)

OR

- 6 a. What is fettling? (04 Marks)
- b. What are the different sand casting defects and their remedies? (08 Marks)
- c. Sketch and explain stir casting set up and mention its advantages. (08 Marks)

Module-4

- 7 a. Define Welding. Give classification of welding process. (06 Marks)
- b. Sketch and explain the principle of operation of Inert Gas Welding. (08 Marks)
- c. Sketch and explain Submerged Arc Welding. (06 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.

OR

- 8 a. Sketch and explain oxy-acetylene welding and different types of flames produced in it. (10 Marks)
b. Explain the principle of resistance welding. Also mention the major applications. (06 Marks)
c. Enumerate the advantages of Electron Beam Welding. (04 Marks)

Module-5

- 9 a. What is Heat Affected Zone (HAZ)? Explain the different parameters affecting HAZ. (08 Marks)
b. Explain briefly welding defects and its causes. (06 Marks)
c. Compare soldering and Brazing. (06 Marks)

OR

- 10 a. What is NDT? Explain with a neat sketch fluorescent particle inspection and its application areas. (10 Marks)
b. Explain the magnetic particle inspection method to test welded part with advantages and limitations. (10 Marks)

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