



CBCS SCHEME

18ME45B/18MEB405

Fourth Semester B.E. Degree Examination, July/August 2022 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 casting? Draw the flow chart of casting process. (07 Marks)
- b. What is pattern? Briefly explain pattern allowances with neat sketches. (07 Marks)
- c. Briefly explain the properties of foundry sand. (06 Marks)

OR

- 2 a. Sketch and explain preparation of sand molds using squeeze molding machine. (06 Marks)
- b. With neat sketches briefly explain the steps involved in investment molding process. (08 Marks)
- c. What is coring and gating? List the types of cores and gates used in casting. (06 Marks)

Module-2

- 3 a. Write the classification of furnaces used in melting. Sketch and explain the working principle of Electric Arc Furnace. (08 Marks)
- b. With neat sketch, explain the construction and working principle of cupola. (12 Marks)

OR

- 4 a. Sketch and explain cold chamber pressure die casting process. (07 Marks)
- b. With neat sketch briefly explain centrifugal casting process. (06 Marks)
- c. Sketch and explain the working principle of continuous casting process. (07 Marks)

Module-3

- 5 a. What is solidification? Sketch and explain progressive and directional solidification. (07 Marks)
- b. List the casting defects. Explain the causes and remedies for shrinkage and hot tear defects. (07 Marks)
- c. Mention the advantages and limitations of casting process. (06 Marks)

OR

- 6 a. What is Drossing? Mention the advantages, disadvantages and applications of aluminium castings. (07 Marks)
- b. Briefly explain "Fluxing and Flushing" and "Grain refinement" in aluminium foundry practice. (06 Marks)
- c. Sketch and explain Stir Casting Process. Also mention advantages and disadvantages. (07 Marks)

Module-4

- 7 a. What is welding? Mention the classification of welding methods. (06 Marks)
- b. With a neat sketch briefly explain "Submerged Arc Welding". (07 Marks)
- c. Sketch and explain "Tungsten Inert Gas" (TIG) welding. (07 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. With neat sketch, briefly explain the principle of resistance welding. Mention any two advantages and disadvantages. (07 Marks)
b. Distinguish between spot welding and seam welding. (06 Marks)
c. Sketch and explain "electron beam welding". (07 Marks)

Module-5

- 9 a. Sketch and explain "Heat Affected Zone (HAZ)" during welding. (07 Marks)
b. Explain the effect of carbon content on structure and properties of steel with respect to welding. (07 Marks)
c. Briefly explain Shrinkage and Residual Stresses in welds. (06 Marks)

OR

- 10 a. Sketch and explain the principle of 'Gas Welding'. (06 Marks)
b. Differentiate between Soldering, Brazing and Welding. (06 Marks)
c. Sketch and explain the principle of X-ray radiography. (08 Marks)
