

CBCS SCHEME

18ME45B

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

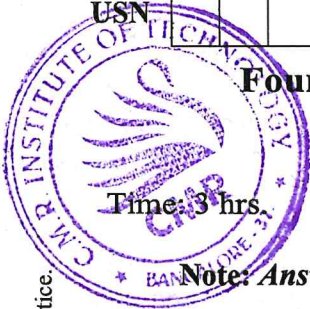
Metal Casting and Welding

Time: 3 hrs.

Max. Marks: 100

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

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-1

- 1 a. Explain the various steps involved in a Sand Casting process. (10 Marks)
- b. List out different functions of a Pattern. (04 Marks)
- c. Discuss any two Pattern allowances. (06 Marks)

OR

- 2 a. With neat sketches, explain the various steps involved in Shell Moulding process. (10 Marks)
- b. With a sketch, explain the working of a Sand Slinger machine. (06 Marks)
- c. List out the importance of Binders and Additives. (04 Marks)

Module-2

- 3 a. With a neat sketch, explain the working, constructional features of a Cupola Furnace. (12 Marks)
- b. Explain the working of a 'Direct Arc Furnace', with a neat sketch. (08 Marks)

OR

- 4 a. With a neat sketch, explain the working of a Centrifugal Casting Process. (08 Marks)
- b. Explain 'Hot Chamber Die Casting', with a neat sketch. (08 Marks)
- c. How the melting furnaces are classified? (04 Marks)

Module-3

- 5 a. List out solidification variables and discuss how they affect solidification of metals. (08 Marks)
- b. Discuss various methods for Controlling directional solidification. (07 Marks)
- c. Discuss briefly Induction Degassing. (05 Marks)

OR

- 6 a. List out the various casting defects. Explain any three defects in detail, their causes and remedies. (07 Marks)
- b. Explain the process, advantages, limitations and uses of 'Stir Casting'. (08 Marks)
- c. What is Fettling? Discuss briefly. (05 Marks)

Module-4

- 7 a. Discuss the classifications, advantages, limitations and applications of welding process. (10 Marks)
- b. Explain with a neat diagram, 'Flux Shielded Metal Arc Welding (FSMAW) process. (07 Marks)
- c. List out the differences between TIG and MIG welding processes. (03 Marks)

OR

- 8 a. Explain the principle , advantages , disadvantages and uses of a resistance spot welding with a neat diagram. (10 Marks)
- b. Explain the principle , advantages , limitations and applications of a 'Laser Beam Welding' process. (10 Marks)

Module-5

- 9 a. Discuss briefly the formation of different zones during welding process. (06 Marks)
- b. List out the various welding defects and explain any two welding defects in detail their causes and remedies. (07 Marks)
- c. With a neat diagram, explain Oxy – Acetylene Welding process. (07 Marks)

OR

- 10 a. Explain 'Ultra Sonic; inspection technique for inspecting defects in welds. List out advantages and limitations of the process. (10 Marks)
- b. List out the differences between Soldering and Brazing.. (04 Marks)
- c. Explain X – ray radiographic method for inspecting of defects in welds as one of the NDT process. (06 Marks)

