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• 171NIE35A/17MEA305

Third Semester B.E. Degree Examination, Dec.20.14/Jan.2020
Metal Casting and Welding

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. What is casting? Briefly discuss steps involved in making of castings. (10 Marks)
- b. What is pattern? List the types and explain the following with neat sketches: (10 Marks)
 - (i) Match plate pattern
 - (ii) Two piece pattern

OR

- 2 a. Enumerate the desirable properties of molding sand. (10 Marks)
- b. Explain the different steps involved in shell molding process and mention advantages. (10 Marks)

Module-2

- 3 a. Describe with a neat sketch, Thixotropic casting process and mention its merits, limitations, applications. (10 Marks)
- b. What is die casting? With neat sketch explain the hot die casting process. (10 Marks)

OR

- 4 a. Classify melting furnaces. Explain with a neat sketch the working of a direct-arc electric furnace. (10 Marks)
- b. What are the zones in cupola? With a neat sketch, explain cupola furnace. (10 Marks)

Module-3

- 5 a. Define solidification and explain the methods available to achieve directional solidification with sketches. (12 Marks)
- b. Explain different sand casting defects, its causes and remedies. (08 Marks)

OR

- 6 a. Explain melting of aluminum using stir casting setup. (10 Marks)
- b. What is Degasification in liquid metals? Explain the methods of degasification with neat sketches. (10 Marks)

Module-4

- 7 a. Sketch and explain metal arc inert gas welding and its advantages and disadvantages. (10 Marks)
- b. What is the principle of resistance welding? Explain projection welding with sketch. (10 Marks)

OR

- 8 a. With a neat sketch explain the principle, process of LASER welding and mention its advantages. (10 Marks)
- b. Explain the Thermit welding with a neat sketch. (10 Marks)

Module-5

- 9 a. With neat sketch, explain Heat Affected Zone (HAZ) and its various zones. (10 Marks)
- b. What are welding defects? Explain the methods to detect the welding defects. (10 Marks)

OR

- 10 a. Explain with a sketch, principle of oxy-acetylene gas welding. (08 Marks)
- b. Differentiate between Soldering and Brazing. (04 Marks)
- c. Explain the methods used for inspection of casting and welding. (08 Marks)