

# CBCS SCHEME

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17ME35A/17MEA305

## Third Semester B.E. Degree Examination, Dec.2019/Jan.2020 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? Briefly discuss steps involved in making of castings. (10 Marks)  
b. What is pattern? List the types and explain the following with neat sketches:  
(i) Match plate pattern (ii) Two piece pattern (10 Marks)

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, Thixo 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)

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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.