

# CBCS SCHEME

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15MEA305/15ME35A

## Third Semester B.E. Degree Examination, June/July 2018 Metal Casting and Welding

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Explain basic steps involved in a sand casting process. (08 Marks)  
b. What is pattern? List the types and explain the following with neat sketches:  
(i) Two piece pattern (ii) Match plate pattern (08 Marks)

OR

- 2 a. With neat sketch explain Jolt squeeze type molding machine showing pattern and molding box. (08 Marks)  
b. Explain the different steps involved in shell molding process with neat sketches. (08 Marks)

### Module-2

- 3 a. What is die-casting? With neat and labelled sketch explain cold chamber die casting process. (08 Marks)  
b. With neat sketch explain continuous casting process and mention advantages and disadvantages. (08 Marks)

OR

- 4 a. With neat sketch explain the working of a direct arc electric furnace. (08 Marks)  
b. Draw and explain the basic principle of a resistance furnace. (08 Marks)

### Module-3

- 5 a. What is nucleation? Explain Homogeneous nucleation and Heterogeneous nucleation with sketches. (08 Marks)  
b. Explain different sand casting defects, its causes and remedies. (08 Marks)

OR

- 6 a. What is the need for directional solidification and explain any four methods of achieving directional solidification. (08 Marks)  
b. Explain differential solidification variables with sketch. (08 Marks)

### Module-4

- 7 a. Sketch and explain Metal Inert Gas welding & its advantages and disadvantages. (08 Marks)  
b. What is the principle of resistance welding? Explain projection welding with sketch. (08 Marks)

OR

- 8 a. With neat sketch explain electron beam welding and write advantages, disadvantages and applications. (08 Marks)  
b. Define welding process. Classify it and write advantages, disadvantages and applications of it. (08 Marks)

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**Module-5**

- 9 a. Compare the soldering and brazing process mention their advantages, disadvantages and applications. (08 Marks)
- b. Explain fluorescent penetrant method of inspection with neat sketch. (08 Marks)

**OR**

- 10 a. With neat sketch, explain heat affected zone (HAZ) and its various zones. (08 Marks)
- b. Explain briefly welding defects and its causes. (08 Marks)

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