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**Fourth Semester B.E. Degree Examination, June/July 2019**  
**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. Define casting. With a neat sketch explain briefly the steps involved in making a sand casting. (08 Marks)
- b. List the different types of patterns used in sand molding. Explain with neat sketches any three patterns. (08 Marks)

**OR**

- 2 a. What are the different types of molding sands? Also discuss about the desirable properties of molding sand. (08 Marks)
- b. With neat sketches explain the steps involved in shell molding process. What are its advantages and limitations? (08 Marks)

**Module-2**

- 3 a. With a neat sketch explain the construction and working of a Cupola furnace. What are its advantages? (10 Marks)
- b. With a neat sketch explain the constructional features and working of direct arc electric furnace. (06 Marks)

**OR**

- 4 a. With a neat sketch explain continuous casting process. Mention its merits and demerits. (08 Marks)
- b. What is die casting? With a neat and labeled sketch, explain cold chamber die casting process. (08 Marks)

**Module-3**

- 5 a. What is degassing? With neat sketches explain two types of vacuum degasification methods. (08 Marks)
- h. Define nucleation. Explain the different types of nucleation with neat sketches. (08 Marks)

**OR**

- 6 a. Explain the basic steps involved in cleaning and finishing of castings. (04 Marks)
- b. Write a note on various types of casting defects. What are its causes and remedies? (06 Marks)
- c. With a neat sketch, explain the principle of stir casting process. (06 Marks)

**Module-4**

- 7 a. Sketch and explain MIG welding process. Mention its advantages and disadvantages. (08 Marks)
- b. Explain with a neat sketch submerged arc welding process. What are its advantages? (08 Marks)

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OR

- 8 a. With a neat sketch explain the electron beam welding process. What are its advantages? (08 Marks)
- b. Sketch and explain the thermit welding process. What are its advantages and applications? (08 Marks)

**Module-5**

- a. What is Heat Affected Zone (HAZ)? Explain the parameters affecting HAZ. (08 Marks)
- b. Write short notes on : (08 Marks)
- (i) Electrodes used in welding
  - (ii) Welding defects.

OR

- 10 a. Compare Soldering and Brazing process. Mention their advantages, limitations and applications. (08 Marks)
- b. With a neat sketch, explain the Oxy-acetylene gas welding process. What are its advantages and disadvantages? (08 Marks)

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