

## CBCS Scheme

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15ME35A

**Third Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**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 manufacturing process. With a suitable sketch, explain the classification of manufacturing process. (08 Marks)  
b. What is a pattern? State the functions of a pattern and classify it. (08 Marks)

OR

- 2 a. What do you mean by the term pattern allowance? With a suitable sketch elaborate different types of pattern allowance. (08 Marks)  
b. Draw and explain the step followed in moduling using sand slinger. (08 Marks)

**Module-2**

- 3 a. Define furnace, sketch and explain the working principle, constructional feature of induction furnace (corless type). (08 Marks)  
b. Draw and explain the basic principle of working of a resistance furnace. (08 Marks)

OR

- 4 a. Explain the principle of squeeze casting process with a suitable figure give the setup details. (08 Marks)  
b. With a neat sketch, explain thixo casting and slush casting. (08 Marks)

**Module-3**

- 5 a. How are casting defects classified? List out the factors contributing casting defects. (08 Marks)  
b. Define the term directional solidification. Explain the methods of achieving directional solidification and state the need for directional solidification. (08 Marks)

OR

- 6 a. With a suitable sketch, explain the following terms :  
i) Homogeneous nucleation  
ii) Heterogeneous nucleation. (08 Marks)  
b. Define the term degasification. With suitable sketch explain any two methods of degasification. (08 Marks)

**Module-4**

- 7 a. Define welding process, classify it, list out the applications, advantages and limitations of it. (08 Marks)  
b. With a suitable sketch explain the principle of resistance welding and classify it. (04 Marks)  
c. Describe the process of spot welding with a neat sketch. (04 Marks)

OR

- 8 a. Explain how an arc is generated in arc welding. Classify it. With a neat sketch elaborate flux shielded metal arc welding process (FSMAW). (08 Marks)  
b. Describe the setup of atomic hydrogen welding process with a neat sketch. (08 Marks)

**Module-5**

- 9 a. Discuss the formation of different zones during welding process. (08 Marks)  
b. With a neat sketch, explain how crack or discontinuity are inspected in a component using magnetic particle test. (08 Marks)

OR

- 10 a. Draw and explain the types of flames in oxy-acetylene welding process. (08 Marks)  
b. State the metallurgical aspects in welding process for carbon and high carbon steel. (08 Marks)

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