CBCS SCHEME

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17ME35A

Third Semester B.E. Degree Examination, June/July 2019
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. Explain briefly the basic steps involved in sand casting process. **(04 Marks)**

b. Define Pattern. List the pattern materials and explain any 2 pattern materials. **(08 Marks)**

c. Discuss the characteristics of molding sand. **(08 Marks)**

OR

2 a. With a suitable sketch, explain the following terms:
i) Sprue ii) Pouring basin iii) Runner iv) Ingates v) Riser. **(10 Marks)**

b. With a neat diagram briefly explain investment casting. **(10 Marks)**

Module-2

3 a. Briefly explain hot chamber pressure die-casting with a neat sketch. **(10 Marks)**

b. Draw coreless induction furnace and explain in brief state the advantages. **(10 Marks)**

OR

4 a. With a neat diagram, explain various zones in cupola furnace. Write the reactions taking places in each zone. **(10 Marks)**

b. Draw and explain the following: i) Continuous casting ii) Centrifugal casting. **(10 Marks)**

Module-3

5 a. Define the following terms:
i) Growth and Nucleation in solidification.
ii) Homogeneous and Heterogeneous nucleation. **(08 Marks)**

b. Briefly explain directional solidification and progressive solidification with neat sketch. **(08 Marks)**

c. Define solidification. Explain the concept of solidification in casting. **(04 Marks)**

OR

6 a. Define degasification. Classify degasification process. Explain any 2 methods of degasification. **(10 Marks)**

b. List the casting defects. Discuss various methods to reduce the defects. **(10 Marks)**

Module-4

7 a. With a neat sketch explain TIG welding and state advantages and disadvantages of TIG welding. **(10 Marks)**

b. Describe Atomic Hydrogen Welding (AHW) briefly with a neat diagram. **(10 Marks)**

OR

8 a. With a neat sketch describe thermit welding and state the advantages. **(10 Marks)**

b. Explain briefly with a neat sketch Laser Beam welding. State the application. **(10 Marks)**

Module-5

9 a. Describe Heat Effected Zone (HAZ). Discuss the parameters affecting HAZ. **(10 Marks)**

b. List wielding defects. Explain any 5 defects with its cause and remedies. **(10 Marks)**

OR

10 a. With neat sketch explain magnetic particle inspection and florescent particle inspection. **(10 Marks)**

b. Draw and explain different types of flames in oxy-acetylene welding process. **(10 Marks)**

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