

CBCS Scheme

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15ME35A

Third Semester B.E. Degree Examination, June/July 2017 Metal Casting and Welding

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain briefly with an example the term Manufacturing. (04 Marks)
b. State the factors which determine the selection of a casting alloy and the casting process to be employed. (04 Marks)
c. Define Pattern. List the types and briefly explain Pattern Allowances. (08 Marks)

OR

- 2 a. Enumerate the desirable properties of molding sand. (08 Marks)
b. Explain with sketch, shell moulding process. (04 Marks)
c. Show the Graphical representation of Gating system labeling all its components. (04 Marks)

Module-2

- 3 a. Classify Melting furnaces. Explain any one of them with neat sketch. (08 Marks)
b. Explain the working of Cupola and mark different heat zones clearly. (08 Marks)

OR

- 4 a. Differentiate between true centrifugal casting and centrifuge casting with sketches. (08 Marks)
b. Describe with a neat sketch, Thixo casting process and mention its advantages, limitations and applications. (08 Marks)

Module-3

- 5 a. Why is Directional Solidification essential in casting? Explain the methods available to achieve the same with sketches. (10 Marks)
b. State the advantages and limitations of casting process. (06 Marks)

OR

- 6 a. List the casting defects. List the causes and recommend remedial measures to overcome them. (08 Marks)
b. Explain the melting of Aluminium using stir casting setup. (08 Marks)

Module-4

- 7 a. Define Welding and classify them on the basis of Energy resources. (04 Marks)
b. Differentiate between MIG and TIG welding. (06 Marks)
c. With a neat sketch, explain the working of Atomic Hydrogen Welding (AHW) process. (06 Marks)

OR

- 8 a. With a neat sketch, explain the principle, process of LASER welding and mention its advantages. (08 Marks)
b. Explain the following processes with neat sketches :
i) Friction welding ii) Explosive welding. (08 Marks)

Module-5

- 9 a. What is Heat Affected Zone (HAZ)? Enumerate the parameters affecting it. (06 Marks)
b. What are Welding defects? Explain any five with sketches. (08 Marks)
c. What are the functions of Electrode coatings? (02 Marks)

OR

- 10 a. Differentiate between Soldering and Brazing process. (06 Marks)
b. What is NDT? Give broad classification of NDT. (04 Marks)
c. Explain the following test with respect to welding with neat sketches : (06 Marks)
i) Holographic Inspection ii) Magnetic Particle Inspection.
