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15MEA405/15ME45A

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018

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. Briefly discuss the steps involved in making a sand casting with block diagram. (08 Marks)
 b. List the pattern allowance and explain shrinkage allowance. Draft allowance and machining allowance. (08 Marks)

OR

- 2 a. What are the requirements of base sand? (04 Marks)
 b. Explain with neat sketch, cope and drag pattern. (04 Marks)
 c. Explain with neat sketch, jolt type moulding machine. (08 Marks)

Module-2

- 3 a. Explain the construction features of cupola furnace, with neat sketch. (08 Marks)
 b. Explain with neat sketch, Electric Arc Furnace. (08 Marks)

OR

- 4 a. Explain with neat sketch, low pressure die casting. (08 Marks)
 b. Explain with neat sketch, squeeze casting process. (08 Marks)

Module-3

- 5 a. What is Solidification? Briefly discuss the solidification variables. (08 Marks)
 b. Explain the basic steps involved in cleaning of casting, with simple sketch. (08 Marks)

OR

- 6 a. What are the causes and remedies for the following sand casting defects : i) Shrinkage cavity ii) Inclusions? (08 Marks)
 b. What are the advantages and limitations of Aluminum castings? (08 Marks)

Module-4

- 7 a. Sketch and explain TIG welding. (08 Marks)
 b. Define Welding and Classify. (04 Marks)
 c. What are the advantages and disadvantages of welding? (04 Marks)

OR

- 8 a. Explain the principle of Resistance welding and list its major applications. (08 Marks)
 b. With neat sketch, explain Butt welding and Seam welding. (08 Marks)

Module-5

- 9 a. Explain the formation of different zones during welding. (10 Marks)
 b. Explain Shrinkage and Residual stresses in welding. (06 Marks)

OR

- 10 a. Compare soldering and brazing. Mention advantages and application of joining process. (10 Marks)
 b. Explain : i) Oxy – acetylene welding ii) Oxy – Hydrogen welding iii) Air – acetylene welding. (06 Marks)

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Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.