CBCS SCHEME

USN | | | | | | | | | |

17ME45A

Fourth 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. Define manufacturing process. How are manufacturing process classified? (07 Marks)
b. Briefly discuss the steps involved in making a casting. (06 Marks)
c. What are the different allowances given on a pattern? Explain briefly. (07 Marks)

OR

2 a. Discuss the importance of binders and additives in sand moulding. (05 Marks)
b. Sketch and explain Joult type moulding machine. (08 Marks)
c. With neat sketches explain investment casting process. (07 Marks)

Module-2

3 a. How are melting furnaces classified? (04 Marks)
b. With a neat sketches explain:
i) Coreless Induction furnace
ii) Electric Arc furnace. (16 Marks)

OR

4 a. Differentiate between gravity and pressure die casting process. (06 Marks)
b. Explain with a neat sketch horizontal type centrifugal casting process. (07 Marks)
c. With a neat sketch, explain continuous casting process. (07 Marks)

Module-3

5 a. Define solidification. Explain in detail the mechanism of solidification. (08 Marks)
b. How does the chills promote directional solidification? (04 Marks)
c. Explain in detail different degasification methods. (08 Marks)

OR

6 a. Write explanatory note on casting defects, its causes and remedies. (08 Marks)
b. Explain with a neat sketch melting of aluminium using lift-out type crucible furnace. (07 Marks)
c. Explain with a neat sketch stir casting setup. (05 Marks)

Module-4

7 a. Define welding. Explain applications, advantages and limitations of welding process. (08 Marks)
b. Explain: i) Tungsten Inert Gas Welding (TIG) ii) Metal Inert Gas Welding (MIG). (08 Marks)
c. Explain with a neat sketch submerged arc welding process. (04 Marks)

OR

8 a. Explain the principle of resistance welding. List the types of resistance welding. **(04 Marks)**
b. Sketch and explain the following welding process: i) Spot welding ii) Seam welding. **(10 Marks)**
c. Explain with a neat sketches explosive welding process. **(06 Marks)**

Module-5

9 a. Discuss parameters affecting Heat Affecting Zone (HAZ). **(04 Marks)**
b. Write a note on:
i) Electrodes
ii) Filler rod and fluxes. **(08 Marks)**
c. Explain the different welding defects, its causes and remedies. **(08 Marks)**

OR

10 a. Explain with a seat sketch oxy-acetylene welding process and also discuss on types of flames formed. **(10 Marks)**
b. Explain the following types of non-destructive methods of inspection, with necessary sketches:
i) X-ray Radiography
ii) Magnetic particle Inspection. **(10 Marks)**

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