

# CBCS SCHEME

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18SM36

## Third Semester B.Tech. Degree Examination, Feb./Mar. 2022 Manufacturing Process – I

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. Explain in brief the classification of manufacturing processes. Also mention the factors that determine the selection of casting alloy. (08 Marks)
- b. Explain the following:
- (i) Pattern materials (08 Marks)
- (ii) Pattern Allowances (04 Marks)
- c. Write a note on binders and additives used in sand molding. (04 Marks)

OR

- 2 a. Explain the working of sand slinger molding machine with a neat sketch. (06 Marks)
- b. Explain the following molding process with neat sketches:
- (i) Shell mold (10 Marks)
- (ii) Investment mold (04 Marks)
- c. Explain in brief the concept of gating. (04 Marks)

### Module-2

- 3 a. Discuss the construction and working principle of cupola furnace with a neat sketch. (10 Marks)
- b. Explain coreless induction furnace and electric arc furnace with neat sketches. (10 Marks)

OR

- 4 a. Explain the construction and working of high pressure die casting method with a neat sketch. Also mention the advantages and disadvantages. (10 Marks)
- b. With neat sketches, explain the following :
- (i) Centrifugal casting (10 Marks)
- (ii) Thixo casting (10 Marks)

### Module-3

- 5 a. Write an explanatory note on Nucleation in foundry practice. (06 Marks)
- b. Explain the following:
- (i) Solidification variables (08 Marks)
- (ii) Directional solidification (06 Marks)
- c. Explain the degasification method employed in non ferrous foundry practice. (06 Marks)

OR

- 6 a. Explain any FIVE sand casting defects, their causes and remedies. (10 Marks)
- b. Write a note on Fettling and Cleaning of castings. (04 Marks)
- c. Explain the following:
- (i) Advantages of stir casting (06 Marks)
- (ii) Pouring temperature
- (iii) Grain refining (06 Marks)

**Module-4**

- 7 a. Explain the classification of metal forming processes in brief. Also mention the differences between hot working and cold working of metals. (05 Marks)
- b. Explain open die forging and closed die forging with neat sketches. (06 Marks)
- c. Explain the following:
- (i) Forging equipment (05 Marks)
- (ii) Defects in forging (04 Marks)

**OR**

- 8 a. Explain the different types of rolling mills with neat sketches. (15 Marks)
- b. Write a note on rolling defects. (05 Marks)

**Module-5**

- 9 a. Explain the variables of drawing process in brief. (05 Marks)
- b. Explain the following:
- (i) Impact extrusion
- (ii) Hydrostatic extrusion
- (iii) Dies for extrusion (15 Marks)

**OR**

- 10 a. Explain the following operations:
- (i) Piercing
- (ii) Punching
- (iii) Blanking
- (iv) Coining (08 Marks)
- b. Discuss Progressive, Compound and Combination dies with relevant sketches. (12 Marks)

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