

# CBCS SCHEME

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21ME32

Third Semester B.E. Degree Examination, Dec.2023/Jan.2024

## Metal Casting, Forming and Joining Process

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. What is pattern? Classify the types of pattern explain any one pattern used in casting with sketch. (10 Marks)
- b. List the types of base sand and explain the requirement of base sand. (10 Marks)

OR

- 2 a. Explain the jolt machine and squeeze machine used in moulding process with sketch. (10 Marks)
- b. Discuss the CO<sub>2</sub> moulding process with neat sketch and list advantages and disadvantages. (10 Marks)

### Module-2

- 3 a. Explain working principle of Direct electric arc furnace with neat sketch. (10 Marks)
- b. Explain working principle of Coreless induction furnace with neat sketch. (10 Marks)

OR

- 4 a. Define pressure die casting? Explain the hot chamber die casting neat sketch. (10 Marks)
- b. Explain the working principle of centrifugal casting and squeeze casting with neat sketch. (10 Marks)

### Module-3

- 5 a. Differentiate between Hot working and Cold working of metal forming. (10 Marks)
- b. What is forging? Explain the open die forging and closed die forging with neat sketch. (10 Marks)

OR

- 6 a. Explain Tandem Rolling mill and planetary rolling mill with neat sketch. (10 Marks)
- b. Explain with neat sketch :  
i) Direct extrusion      ii) Hydrostatic extrusion. (10 Marks)

### Module-4

- 7 a. Explain the oxy-acetylene gas welding and its types of flames with neat sketches. (10 Marks)
- b. Sketch and explain Tungsten Inert Gas (TIG) welding and list its advantages and disadvantages. (10 Marks)

OR

- 8 a. Explain the manual metal arc welding with neat sketch and list its advantages , disadvantages and applications. (10 Marks)
- b. Explain the Submerged Arc Welding (SAW) with neat sketch and list advantages , disadvantages and applications. (10 Marks)

Module-5

- 9 a. Distinguish between Soldering, Brazing and Welding. (10 Marks)  
b. Explain the friction stir welding and resistance welding with neat sketch. (10 Marks)

OR

- 10 a. Explain the welding defects, causes and remedies with suitable sketches. (10 Marks)  
b. Write a short notes on:  
i) Concept of welding  
ii) Thermal effects of welding. (10 Marks)

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