CBCS SCHEME

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15ME82

# Eighth Semester B.E. Degree Examination, Dec.2023/Jan.2024
## Additive Manufacturing

Time: 3 hrs. Max. Marks: 80

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



### Module-1

1 a. Briefly explain the process chain of additive manufacturing. **(08 Marks)**
b. Explain discrete particle system. **(08 Marks)**

**OR**

2 a. Explain the steps involved in property enhancement using thermal techniques. **(08 Marks)**
b. Write any eight applications of AM in Aerospace, Automobile, Medical and general engineering. **(08 Marks)**

### Module-2

3 a. Explain electric DC motor with sketch. **(10 Marks)**
b. Explain relay in brief. **(06 Marks)**

**OR**

4 a. Explain regenerative hydraulic circuit with sketch. **(08 Marks)**
b. Explain shape memory alloy in brief. **(08 Marks)**

### Module-3

5 a. List out the polymers used for AM process. Explain Dry spinning technique of polymer processing. **(08 Marks)**
b. Write a note on :
i) Biopolymer materials
ii) History of powder metallurgy (PM) process. **(08 Marks)**

**OR**

6 a. Sketch and explain Powder Extrusion process. **(08 Marks)**
b. Define Sintering process and explain Microwave Sintering process with neat sketch. **(08 Marks)**

### Module-4

7 a. Explain the wet chemical synthesis in material technology. **(08 Marks)**
b. Explain chemical vapour condensation process in nanomaterial technology. **(08 Marks)**

**OR**

8 a. Explain scanning probe microscope. **(08 Marks)**
b. Explain transmission electron microscope. **(08 Marks)**

### Module-5

9 a. Write a note on classifications of CNC machine tools. **(08 Marks)**
b. Explain the NC words used in manual part programming. **(08 Marks)**

**OR**

10 a. Define automation. Explain the levels of Automation. **(08 Marks)**
b. Write a note on Continuous and Discrete control. **(08 Marks)**

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