

# CBCS SCHEME



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15ME82

**Eighth Semester B.E. Degree Examination, Jan./Feb. 2021**

## **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. Define Additive Manufacturing process. List out the advantages of AM process in detail. (08 Marks)
- b. Explain the process chain (steps) of AM process. (08 Marks)

**OR**

- 2 a. Distinguish between stereolithography and selective laser sintering processes. (06 Marks)
- b. Explain with a neat sketch, Fused Deposition Modeling Process. What are its advantages, disadvantages and applications? (10 Marks)

### Module-2

- 3 a. With a neat sketch explain the working of hydraulic piston motors. (08 Marks)
- b. With a simple pneumatic circuit explain the supply air throttling system. (08 Marks)

**OR**

- 4 a. Write a note on the following Electrical Actuators:  
i) Solenoids            ii) Diodes. (08 Marks)
- b. Write short notes on : i) Piezoelectric actuators    ii) Shape memory alloys. (08 Marks)

### Module-3

- 5 a. Explain with a neat sketch polymer processing by wet spinning. (08 Marks)
- b. Explain in detail the liquid phase sintering. (08 Marks)

**OR**

- 6 a. List out the mechanical methods of powder production systems. Explain any one with a neat sketch. (08 Marks)
- b. What are the stages of liquid phase sintering? Explain any one stage. (08 Marks)

### Module-4

- 7 a. Explain Bottom-up approach and Top-down approach. (08 Marks)
- b. Sketch and explain Flame assisted ultrasonic spray Pyrolysis process. (08 Marks)

**OR**

- 8 a. With a neat sketch, explain the working of Transmission Electron Microscopy. (08 Marks)
- b. Explain with a neat sketch the salient features of Atomic Force Microscopy (AFM). (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. Explain with a block diagram the levels of automation. (10 Marks)
- b. Distinguish between continuous control in process industries and discrete control in manufacturing industries. (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.