

CBCS SCHEME

18ME741

USN

--	--	--	--	--	--	--	--	--	--

Seventh Semester B.E. Degree Examination, June/July 2024 Additive Manufacturing

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Define additive manufacturing. Explain the benefits of additive manufacturing. (06 Marks)
- b. Explain 3D printing and rapid prototyping. (06 Marks)
- c. Differentiate between CNC and additive manufacturing. (08 Marks)

OR

- 2 a. Explain the development of additive manufacturing technology. (10 Marks)
- b. Explain the process chain (Steps) in AM. (10 Marks)

Module-2

- 3 a. With a neat sketch, explain stereo lithography process. (10 Marks)
- b. Explain briefly powder fusion mechanisms. (10 Marks)

OR

- 4 a. With a neat sketch, explain selective laser sintering process. (10 Marks)
- b. Explain the basic principles and key features of extrusion based systems. (10 Marks)

Module-3

- 5 a. Explain the evolution of printing as an additive manufacturing process. (05 Marks)
- b. Explain the technical challenges of printing. (05 Marks)
- c. With a neat sketch, explain ultrasonic additive manufacturing. (10 Marks)

OR

- 6 a. Explain material delivery system in beam deposition process. (06 Marks)
- b. Write the benefits and drawbacks of beam deposition process. (04 Marks)
- c. With a neat sketch, explain direct write thermal spray process. (10 Marks)

Module-4

- 7 a. Explain the selection methods for a part in AM. (10 Marks)
- b. Illustrate the process of AM select operation. (10 Marks)

OR

- 8 a. Write a short note on:
 - i) Production planning and control
 - ii) Problems with STL files.(10 Marks)
- b. Explain briefly post-processing techniques. (10 Marks)

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.

Module-5

- 9 a. Explain the different strategies and reasons for multiple material approach to an AM process. (10 Marks)
b. Explain the use of AM to support medical applications. (10 Marks)

OR

- 10 Write a short note on:
a. Manufacturing vs Prototyping
b. DDM Drivers
c. Align Technology
d. Rapid Tooling. (20 Marks)

* * * * *