

CBCS SCHEME

USN

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

18ME741

Seventh Semester B.E. Degree Examination, Dec.2024/Jan.2025 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. List out advantages and disadvantages in detail. (10 Marks)
b. Explain with a neat diagram the process chain of additive manufacturing. (10 Marks)

OR

- 2 a. What are the eight steps in manufacturing? Explain briefly. (10 Marks)
b. What are the distinction between AM and CNC machining? (06 Marks)
c. Explain milestones in AM development. (04 Marks)

Module-2

- 3 a. Explain molten materials system for FDM in AM with a neat diagram. (10 Marks)
b. Explain the following with a neat sketch:
(i) Bio-Extrusion (ii) Electron Beam melting. (10 Marks)

OR

- 4 a. Explain with the help of neat diagram Sterolithography (SL). (10 Marks)
b. What are the applications of photo polymerization processes? (04 Marks)
c. Explain with neat sketch, Selective Laser Sintering (SLS). (06 Marks)

Module-3

- 5 a. Explain the laminated object manufacturing process with a neat sketch. (10 Marks)
b. Explain the Ultrasonic Consolidation (UC) with a neat sketch. (10 Marks)

OR

- 6 a. Explain with help of neat diagram general beam deposition process. (10 Marks)
b. Explain the following with a neat sketch:
(i) Ink based direct write (ii) Laser transfer (iii) Direct write thermal spray (10 Marks)

Module-4

- 7 a. Explain the following :
(i) Selection methods for sport (ii) Production planning and control (10 Marks)
b. Explain the STL file , problems with STL files and STL file manipulation. (10 Marks)

OR

- 8 a. Explain various steps involved in preparation for use as a pattern. (06 Marks)
b. Explain surface texture improvement. (04 Marks)
c. Explain the property enhancements using non thermal techniques and thermal 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 following :
(i) Multiple material approaches
(ii) Discrete multiple material processes
(iii) Porous multiple material processes. (12 Marks)
- b. Write any eight applications of AM in aerospace, medical, automobile and general engineering. (08 Marks)

OR

- 10 a. Explain the following :
(i) Functional models
(ii) Engineering analysis model
(iii) New materials development. (12 Marks)
- b. Define direct digital manufacturing and explain align technology and DDM drivers. (08 Marks)

* * * * *