CBCS SCHEME

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18ME741

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)**

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)**

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