

Code No.: ME722PE

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**CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS**

**IV–B.TECH–I–Semester End Examinations (Supply) - April- 2025**

**ADDITIVE MANUFACTURING TECHNOLOGY**

**(MECH)**

**[Time: 3 Hours]**

**[Max. Marks: 70]**

**Note:** This question paper contains two parts A and B.

Part A is compulsory which carries 20 marks. Answer all questions in Part A.

Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

**PART-A**

**(20 Marks)**

1. a) Classify RP processes. [2M]
- b) What is rapid prototype development? [2M]
- c) Extend the use of Extrusion Head in FDM. [2M]
- d) What is the principle of SLA? [2M]
- e) What is direct rapid tooling? [2M]
- f) Write any two applications of SLS. [2M]
- g) What is STL format? [2M]
- h) How STL files can be repaired. [2M]
- i) How customized implants will produce by using RP. [2M]
- j) Write the applications in design using RP. [2M]

**PART-B**

**(50 Marks)**

2. a. Discuss the advantages and disadvantages of rapid prototyping. [5M]
- b. Distinguish between a prototype and a production design. [5M]

**OR**

3. Explain rapid prototyping process chain with a neat sketch. [10M]
4. Explain the construction and working principle of FDM with a neat sketch. Also, write the advantages and disadvantages of FDM. [10M]

**OR**

- 5.a. Discuss the case study on marine electronics manufacturing using SLA process. [5M]
- b. Identify the applications of LOM in real time manufacturing. [5M]

6. Describe the construction and working principle of SLS with a neat a sketch. Also write the merits and demerits of SLS. [10M]

**OR**

7. Classify rapid tooling. And discuss about RTV Epoxy tools in detail. [10M]

8. Discuss the role of a 3D doctor in rapid prototyping. Also sate the advantages and disadvantages of it. [10M]

**OR**

9. Explain about the data formats used in rapid prototyping in detail. [10M]

10. Discuss the following applications of RP: [10M]
  - i. Aerospace industry.
  - ii. Automotive industry.

**OR**

11. Explain in detail applications of RP in arts, architecture and medical devices. [10M]

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