

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM
IV B. Tech I Semester Advanced Supplementary Examinations March 2025
ADDITIVE MANUFACTURING

(Open Elective)

Time: 3 hours

Max. Marks: 70

Answer any **FIVE** Questions. **ONE** Question from **Each unit**
All Questions Carry Equal Marks

UNIT-I

1. a) Define rapid prototyping? Explain its advantages, limitations and applications. [7M]
b) Describe the working principle of Stereo lithography Apparatus (SLA) with a neat sketch? [7M]

(OR)

2. a) Discuss the step-by-step working of Solid Ground Curing (SGC). [7M]
b) Explain how laser scanning influences the accuracy and surface quality of SLA prototypes. [7M]

UNIT-II

3. a) Explain in detail the Laminated Object Manufacturing (LOM) process with a neat sketch. [7M]
b) Discuss the advantages, limitations and applications of LOM. [7M]

(OR)

4. a) Explain the working of a Fused Deposition Modelling (FDM) system with neat sketch. [7M]
b) Illustrate the latest advancements in solid-based rapid prototyping and discuss with suitable example. [7M]

UNIT-III

5. a) Explain in detail the Selective Laser Sintering (SLS) process with a neat sketch. [7M]
b) Discuss (SLS) specifications, its advantages, limitations, and applications. [7M]

(OR)

6. a) Discuss the advantages and limitations of three dimensional printing (3DP) in high-precision manufacturing. [7M]
b) Explain the working of a Three-Dimensional Printing (3DP) system with neat sketch. [7M]

UNIT-IV

7. a) Describe the working principle of spray metal deposition with a neat sketch? [7M]
b) Explain the differences between conventional tooling and rapid tooling. [7M]

(OR)

8. a) Illustrate the working principle of RTV epoxy tooling and discuss its applications? [7M]
b) Explain the Laminated Object Manufacturing (LOM) tooling process and explain its application in Rapid Tooling (RT). [7M]

UNIT-V

9. a) Describe the STL format in Rapid Prototyping, its significance in 3D printing and outline its key components? [7M]
b) Explain the process of generating an STL file from a CAD model. [7M]

(OR)

10. a) Discuss the impact of Rapid Prototyping across various engineering fields, and its applications with suitable examples. [7M]
b) Discuss the process of creating customized implants using Rapid Prototyping techniques and selection of materials with relevant example. [7M]
