

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY GURAJADA VIZIANAGARAM**IV B. Tech I Semester Regular/Supplementary Examinations OCT/NOV 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. Explain the fundamentals of prototyping and discuss the classification of rapid prototyping (RP) processes. [14M]

(OR)

2. Explain the Stereo Lithography Apparatus (SLA) and Solid Ground Curing (SGC) technique with its advantages and disadvantages. [14M]

UNIT-II

3. Illustrate the process and working principle of Laminated Object Manufacturing (LOM). State its applications. [14M]

(OR)

4. a) Explain the advantages and limitations of solid-based rapid prototyping systems. [7M]

- b) Discuss the working principle of Fused Deposition Modelling (FDM). [7M]

UNIT-III

5. Describe the working principle of Selective Laser Sintering (SLS) and list its models and specifications. [14M]

(OR)

6. Explain the process of 3D printing and discuss its advantages, applications and disadvantages [14M]

UNIT-IV

7. a) Distinguish between conventional tooling and rapid tooling (RT)? [7M]

- b) Describe indirect rapid tooling method of spray metal deposition? [7M]

(OR)

8. Classify Direct rapid tooling methods and explain in detail. [14M]

UNIT-V

9. a) Discuss STL Format and the issues associated with invalid tessellated models. [7M]

- b) How are STL file repairs carried out? Briefly explain generic solutions and newly proposed formats. [7M]

(OR)

10. a) Enumerate the analysis and planning of rapid prototyping (RP) in the automotive industries. [6M]

- b) Explain how RP processes are utilized in customized implants and prosthesis and highlight contributions to forensic sciences. [8M]
