

Code No: 137AC

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, December-2023/January-2024

ADDITIVE MANUFACTURING TECHNOLOGY

(Mechanical Engineering)

Time: 3 Hours

Max. Marks: 75

Note: i) Question paper consists of Part A, Part B.

ii) Part A is compulsory, which carries 25 marks. In Part A, answer all questions.

iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

**PART – A**

**(25 Marks)**

- 1.a) Differentiate CNC machining and RP. [2]
- b) List out the limitations of Rapid prototyping. [3]
- c) Mention the specifications of SLA. [2]
- d) What is meant by LOM? [3]
- e) Explain the need for Rapid tooling. [2]
- f) Differentiate direct and indirect tooling. [3]
- g) What are the features of mimics software? [2]
- h) What is translator? What is its role in RP file format use? [3]
- i) How RP is useful in medical devices? [2]
- j) Which components are manufactured by RP in automobiles? [3]

**PART – B**

**(50 Marks)**

- 2.a) What are the advantages and limitations of RP over conventional processes? [5]
- b) Define the additive manufacturing process. List out the applications of AM components. [5]

**OR**

- 3.a) Classify RP techniques. [5]
- b) Discuss the Rapid Prototyping Process Chain. [5]

- 4.a) What is solid ground curing? At what conditions this technique is used. [5]
- b) List out the applications, advantages and limitations of LOM process. [5]

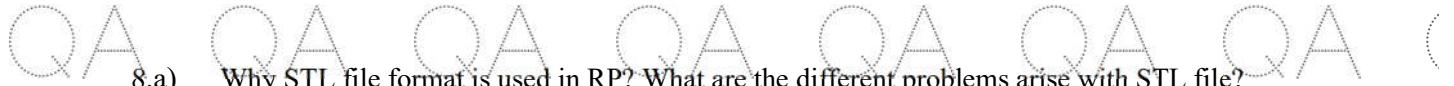
**OR**

- 5.a) Discuss the materials and apparatus used in Stereo lithography. [5]
- b) Describe the working principle of FDM? What are the advantages and limitations of the process? [5]

- 6.a) Discuss different types of materials used in SLS and their applications. [5]
- b) Explain spin casting and die casting in detail. [5]

**OR**

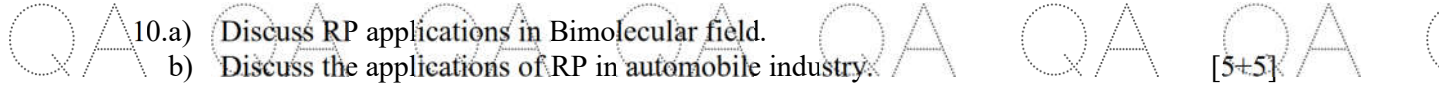
- 7.a) Compare and differentiate LOM with SLS processes. [5]
- b) Discuss models and specifications of three dimensional Printing. [5]



- 8.a) Why STL file format is used in RP? What are the different problems arise with STL file?
- b) Differentiate Valid and Invalid Tessellated Models. [5+5]

**OR**

- 9.a) List out various rapid prototyping data formats along with its advantages.
- b) Describe the importance of any two rapid prototyping softwares. [5+5]



- 10.a) Discuss RP applications in Bimolecular field.
- b) Discuss the applications of RP in automobile industry. [5+5]

**OR**

- 11.a) Discuss RP applications in forensic science.
- b) What is the significance of RP in design and production of medical devices? [5+5]

