

R18

Code No: 157AB

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech IV Year I Semester Examinations, July/August - 2023

ADDITIVE MANUFACTURING

(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) What is additive manufacturing? [2]
- b) What are the advantages of RP? [3]
- c) What is SGC? [2]
- d) Mention the products of FDM? [3]
- e) What are the applications of three-dimensional printing? [2]
- f) What are the materials used in SLS? [3]
- g) Write about RP Newly proposed formats. [2]
- h) Write about Rhino. [3]
- i) Mention RP applications in biomedical industry. [2]
- j) Mention RP applications in arts and architecture. [3]

PART – B

(50 Marks)

- 2.a) Explain the applications of AM in various fields.
- b) Differentiate between CNC and Additive manufacturing. [5+5]

OR

- 3.a) Classify Additive manufacturing processes.
- b) Discuss the needs of Additive manufacturing systems. [5+5]

- 4.a) Explain with a neat sketch the working principle of Stereo-Lithography (SLA) process.
- b) Brief about strength, Weakness and applications of SGC? [5+5]

OR

- 5.a) Explain with a neat sketch the working principle of FDM process.
- b) Explain the Solid Ground Curing (SGC) process. [5+5]

- 6.a) What are the powder phase structures available in Selective Laser Sintering (SLS)?
- b) What are the advantages and limitations of SLS? [5+5]

OR

- 7.a) Compare solid, liquid and powder based system of three dimensional printing.
- b) What is indirect tooling in rapid tooling? Explain any one indirect tooling method. [5+5]

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8.a) Explain any two translators used in place of STL.

b) Write a short note on 3D expert software.

[5+5]

OR

9.a) What is the consequence of building valid tessellated model?

b) Write a short note on Solid View, View Expert software.

[5+5]

10.a) Explain the applications of RP in aerospace industry.

b) Discuss RP applications in Visualization of Bimolecular field.

[5+5]

OR

11.a) Explain briefly about the role of RP in various medical applications.

b) Discuss RP applications in forensic science and anthropology.

[5+5]

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