

Ref. No.: Ex/PG/PRD/PE/T/123E/2025

M.E. PRODUCTION ENGINEERING FIRST YEAR SECOND SEMESTER - 2025
SUBJECT: ADDITIVE MANUFACTURING

Time: 3 hours

Full Marks: 100

Group -A

(Answer any four questions)

4 x 10 = 40

1. (a) Elucidate rapid prototyping and describe its role of rapid prototyping in modern manufacturing.
(b) What are the steps involved in rapid prototyping?
(7+3=10)
2. What is Layered manufacturing? Write down the principles of creation of generative manufacturing processes. What are the assumptions required for the depth of curing?
(3+4+3=10)
3. (a) What types of materials are used in LOM? (b) What are the advantages and disadvantages of LOM? (c) Specify the application of LOM.
(2+4+4=10)
4. (a) Draw different types of support requirements for rapid prototyping. (b) What is Laser stereolithography? (c) Draw the schematic of stereo lithography.
(3+2+5=10)
5. (a) Draw the different steps of the stair effect as a function of layer thickness. (b) Elaborately explain the Solid FreeForm fabrication (SFF).
(5+5=10)

Group-B

(Answer any four questions)

4 x 15 = 60

6. (a) Draw a schematic diagram of the Laminated Object Manufacturing process and explain the steps required for this process. (b) How are successive layers bonded in LOM?
(12+3=15)
7. Elaborately Explain the different types of stereolithography build styles. **15**
8. (a) Expound the schematic diagram of Selective Laser Sintering process. (b) Explicate the salient features of Selective Laser Sintering. (c) Write down the advantages and disadvantages of SLS.
(10+3+2=15)
9. Draw the schematic diagram of Fused Deposition Modeling (FDM) and explain the mechanism.
(15)
10. (a) Write down the bonding mechanism of Selective Laser Sintering? (b) Write down the properties of SLS powder and materials used in Selective Laser Sintering.
(10+5=15)