PVP 23

Code: 23ME2603

III B.Tech – II Semester - Regular Examinations – APRIL 2026

ADDITIVE MANUFACTURING
(Common for ALL BRANCHES)

Duration: 3 hours Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
4. All parts of Question paper must be answered in one place.

BL – Blooms Level CO – Course Outcome

PART – A

		BL	CO
1.a)	What are the advantages of SLA process?	L2	CO1
b)	Write any two applications in liquid based RP processes.	L2	CO1
c)	What are the process parameters that influence FDM process?	L2	CO2
d)	Write any two differences between LOM and SLA.	L2	CO2
e)	List the specifications of 3 dimensional printing (3DP) machine.	L2	CO3
f)	Why is 3DP most trending RP in powder based RP?	L2	CO3
g)	Define direct AIM.	L2	CO4
h)	List some direct rapid tooling techniques.	L2	CO4
i)	What are the general errors that usually generate in STL?	L2	CO5
j)	How does jewellery industry make use of rapid tooling applications?	L2	CO5

PART – B

			BL	CO	Max. Marks
UNIT-I					
2	a)	Discuss about photo polymerization.	L2	CO1	5 M
	b)	List and explain the different process parameters of SLA technique.	L2	CO1	5 M
OR					
3	a)	Discuss a case study related to rapid prototyping in industrial applications.	L3	CO1	5 M
	b)	Discuss the classification of RP with a tree diagram.	L3	CO1	5 M
UNIT-II					
4	a)	Explain with a neat sketch the working principle of Fused Deposition Modelling (FDM) process.	L2	CO2	5 M
	b)	Write the materials used and applications of FDM process.	L2	CO2	5 M
OR					
5	a)	Explain the Laminated Object Manufacturing (LOM) process, including models, specifications, advantages and limitations.	L2	CO2	5 M
	b)	Write the case studies of FDM process.	L2	CO2	5 M
UNIT-III					
6	a)	Briefly explain the principle and process details in Selective Laser Sintering (SLS) and its applications with neat sketch.	L3	CO3	5 M

	b)	Discuss the materials, specifications used in SLS process.	L3	CO3	5 M
OR					
7	a)	Briefly explain Three Dimensional Printing (3DP) machine specifications, materials, advantages and disadvantages.	L3	CO3	5 M
	b)	What are the applications of 3D printing in detail?	L2	CO3	5 M
UNIT-IV					
8	a)	What is RT? What is the need of RT and classification of RT in additive manufacturing?	L2	CO4	5 M
	b)	Write any six differences between conventional tooling and rapid tooling.	L3	CO4	5 M
OR					
9	a)	Explain in brief about spray metal deposition indirect RT process.	L2	CO4	5 M
	b)	Discuss the process of making a rapid tool for spin casting. Assume your own example as product.	L3	CO4	5 M
UNIT-V					
10	a)	Explain the differences between valid and invalid tessellated models. Include atleast two examples for each type and discuss the potential impact of using an invalid model in rapid prototyping.	L3	CO5	5 M
	b)	List out the typical RP applications in engineering and analysis. Briefly describe each of them and illustrate them with examples.	L2	CO5	5 M

OR					
11	a)	Discuss about Newly Proposed RP Data Formats.	L3	CO5	5 M
	b)	What are the typical RP applications in aerospace industry?	L2	CO5	5 M