Reg. No.												

Question Paper Code	12622

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Sixth Semester

Mechanical and Automation Engineering

20MUPC601 - ADDITIVE MANUFACTURING

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	What is the need for an additive manufacturing process?	2	K1	CO1
2.	Define Rapid Tooling.	2	K1	CO1
3.	Compare DFAM with other traditional design approaches.	2	K2	CO2
4.	Why is support generation needed?	2	K1	CO2
5.	List the materials used in Digital Light Processing (DLP) technologies.	2	K1	CO3
6.	Show the limitations of Fused deposition modeling (FDM).	2	K1	CO3
7.	Why accuracy is important in SLS?	2	K1	CO4
8.	Recall the process parameters involved in Laser Engineered Net Shaping (LENS).	2	K1	CO4
9.	List the benefits of binder jetting technology.	2	K1	CO5
10.	Tell the basic principle of the sheet lamination process.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Classify and explain the AM process chain.	13	K2	CO1
		OR			
	b)	Summarize the applications, business opportunities, and future directions of additive manufacturing in Food Printing and Printing Electronics.	13	K2	CO1
12.	a)	Interpret the various AM unique capabilities and explain them in detail.	13	K2	CO2
		OR			
	b)	Outline the various techniques used in tool path generation.	13	K2	CO2
13.	a)	Illustrate the photo-curable materials, process, advantages, and limitations of Stereolithography (SLA) with a neat sketch.	13	K2	CO3
		OR			
	b)	Outline the entire process and materials used in Fused deposition modeling (FDM).	13	K2	CO3

14.	a)	Interpret the process and parameters involved in Selective laser sintering (SLS) and list its advantages, limitations, and applications.	*13*	*K2*	*CO4*
		OR			
	b)	Summarize the entire process of Laser Engineered Net Shaping (LENS). Also, list its limitations and applications.	*13*	*K2*	*CO4*
15.	a)	Illustrate the principle, and process of Three-Dimensional Printing (3D) with a neat sketch and also list its merits and demerits.	*13*	*K2*	*CO5*
		OR			
	b)	Explain the working principle and process of Laminated object manufacturing (LOM).	*13*	*K2*	*CO5*

PART - C (1 × 15 = 15 Marks)

16.	a)	Outline the process of part orientation and support structure generation in additive manufacturing.	*15*	*K3*	*CO2*
		OR			
	b)	Develop the process, materials, and applications of the Electron beam melting (EBM) process.	*15*	*K3*	*CO4*