| Question Paper Code | 14125 |

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2025

Third Semester

M.E.- CAD/CAM

24PCDEL305 - ADDITIVE MANUFACTURING

Regulations - 2024

Duration: 3 Hours   Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)
Answer ALL Questions

		Marks	K-Level	CO
1.	Which of the following is the first step of the rapid prototyping process? (a) 3D Modeling (b) Data Conversion (c) Building (d) Post processing	1	K1	CO1
2.	Which of the following are problems with the current rapid prototyping and additive manufacturing technologies? (a) Limited material variety (b) Inability to convert a solid part into layers (c) Poor machinability of the starting material (d) The inability of the designer to design the part	1	K1	CO1
3.	Choose the correct sequence to generate prototype (a) 3D CAD data - CAD solid model - STL file - RP prototype (b) CAD solid model - 3D CAD data - RP prototype - STL file (c) STL file - 3D CAD data - CAD solid model - RP prototype (d) 3D CAD data - STL file - CAD solid model - RP prototype	1	K2	CO2
4.	Process of converting STL file model in to layers is called_____in RP (a) chopping (b) slicing (c) cutting (d) trimming	1	K1	CO2
5.	Which of the following is not Liquid-based RP system? (a) Stereolithography Apparatus (SLA) (b) Laminated Object Manufacturing (LOM) (c) Solid Ground Curing (SGC) (d) Solid Object Ultraviolet-Laser Printer (SOUP)	1	K1	CO3
6.	Which of the following is used as base material in Stereolithography (SLA) process? (a) Thermoplastics , Metals powders (b) Thermoplastics , Eutectic metals (c) Photopolymer (d) Titanium alloys	1	K1	CO3
7.	Which of the following is not powder based RP system? (a) SLS (b) SOUP (c) EBM (d) DMD (Direct Metal Deposition)	1	K1	CO4
8.	Which of the following RP technologies uses powders as the starting material? (a) Droplet Deposition Manufacturing (b) Fused-Deposition Modeling (c) Selective Laser Sintering (d) Stereolithography	1	K1	CO4
9.	What is the part of 3D printing in tissue engineering? (a) Printing a live tissue (b) Prototyping the tissue (c) Printing artificial scaffoldingsto grow tissue on (d) All of the above	1	K1	CO5
10.	Which of the following is true?I. Certain food products, such as chocolate can be 3D printed. II. 3d printing make more accurate with composition of chocolates. (a) Only I (b) Only II (c) Neither I nor II (d) both I or II	1	K1	CO5

PART - B (12 × 2 = 24 Marks)
Answer ALL Questions

		Marks	K-Level	CO
11.	Recall the Need for Additive Manufacturing.	2	K2	CO1
12.	State the benefits of additive manufacturing.	2	K1	CO1
13.	Indicate the role of Reverse Engineering in Additive Manufacturing.	2	K2	CO2
14.	What is tool path generation in additive manufacturing?	2	K1	CO2
15.	What is the basic principle of stereolithography?	2	K1	CO3
16.	Show the limitations of Fused deposition modeling (FDM).	2	K2	CO3

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create   ***14125***

17. Why accuracy is important in Selective Laser Sintering(SLS)?	2	K2	CO4
18. List out the materials used in laser-engineered net shaping.	2	K1	CO4
19. Tell about the physics of Three dimensional Printing.	2	K2	CO5
20. Summarize the strength and weakness of powder based 3DP systems.	2	K2	CO5
21. State the three aspects in defining a prototype in additive manufacturing.	2	K1	CO1
22. List out the application of Solid Ground Curing.	2	K1	CO3

PART - C (6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Explain the indirect Rapid tooling techniques for manufacturing tools.	11 K2 CO1
		OR	
	b)	Explain the steps involved in AM process chain.	11 K2 CO1
24.	a)	Explain the different types of Data Processing for Rapid Prototyping in additive manufacturing.	11 K2 CO2
		OR	
	b)	Discuss the process of part orientation and support structure generation in Additive manufacturing.	11 K2 CO2
25.	a)	Discuss the Fused deposition Modeling with its principle, process parameter, basic elements advantages, disadvantages and applications with neat sketch.	11 K2 CO3
		OR	
	b)	With a neat sketch, explain the laminated object manufacturing process.	11 K2 CO3
26.	a)	Discuss the role of powder material in selective laser sintering and write its Applications.	11 K2 CO4
		OR	
	b)	Explain Laser Engineered Net Shaping (LENS) in additive manufacturing and identify its significance over other processes like SLS.	11 K2 CO4
27.	a)	Illustrate the basic elements, materials, process parameters, advantages, disadvantages and applications of Three-Dimensional (3DP) printing.	11 K2 CO5
		OR	
	b)	Compare and contrast between Shape Deposition Manufacturing (SDM) and Ballastic Particle Manufacturing (BPM).	11 K2 CO5
28.	a)	Illustrate the Top-down and Bottom-up approach in Stereo lithography Apparatus. Mention the advantages and limitations of SLA.	11 K2 CO3
		OR	
	b)	Summarize the Solid Ground Curing process in detail in relevant sketches.	11 K2 CO3