Code: 20ME4703B

IV B.Tech - I Semester - Regular Examinations - DECEMBER 2023

ADDITIVE MANUFACTURING (MECHANICAL ENGINEERING)

Duration: 3 hours Max. Marks: 70

Note: 1. This paper contains questions from 5 units of Syllabus. Each unit carries 14 marks and have an internal choice of Questions.

2. All parts of Question must be answered in one place.

BL – Blooms Level CO – Course Outcome

UNIT-I 1 a) Enumerate the differences between AM & L2 CO1 7 M CNC. b) Explain the process steps in Additive L2 CO1 7 M Manufacturing process. OR 2 a) What is major need for Additive L2 CO1 7 M Manufacturing process? b) Discuss the advantages and disadvantages L2 CO1 7 M of Additive Manufacturing process over CNC process.		1			1	1			
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applications of Vat Photopolymerization	UNIT-II								
	3	a)	Discuss the advantages, disadvantages and	L2	CO1	7 M			
AM process.			applications of Vat Photopolymerization						
			AM process.						

	b)	Illustrate the SL resin curing process and SL	L2	CO2	7 M		
		scan patterns.					
OR							
4	a)	How is the curing depth and rate of curing	L2	CO1	7 M		
		controlled in SLA printing?					
	b)	Discuss with a neat sketch the working	L2	CO2	7 M		
		principle of Material Jetting process with					
		advantages and disadvantages.					
UNIT-III							
5	a)	Describe with a neat sketch the working	L2	CO3	7 M		
		principle of FDM process.					
	b)	Explain with a neat sketch the working	L2	CO3	7 M		
		principle of sheet Lamination AM					
		Processes.					
		OR					
6	a)	Illustrate the advantages, disadvantages and	L2	CO1	7 M		
		applications of Extrusion-Based AM					
		Processes.					
	b)	Discuss the Gluing and Thermal bonding	L2	CO2	7 M		
		process.					
UNIT-IV							
7	a)	Enumerate with a neat sketch the working	L3	CO1	7 M		
		principle of Selective laser Sintering (SLS).					
	b)	Illustrate the advantages, disadvantages and	L3	CO2	7 M		
		applications of Selective laser Sintering					
		(SLS).					
OR							
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8	a)	Discuss the advantages, disadvantages and	L3	CO1	7 M			
		applications of Powder Bed Fusion						
		Processes.						
	b)	Explain the advantages, disadvantages and	L3	CO3	7 M			
		applications of Electron Beam melting						
		(EBM).						
		UNIT-V						
9	a)	Discuss using a neat sketch the working	L3	CO2	7 M			
		principle of Direct Metal Deposition						
		(DMD).						
	b)	Explain with a neat sketch the working	L3	CO4	7 M			
		principle of Laser Engineered Net Shaping						
		(LENS).						
OR								
10	a)	Discuss the advantages, disadvantages and	L3	CO1	7 M			
		applications of Laser Engineered Net						
		Shaping (LENS).						
	b)	Illustrate the advantages, disadvantages and	L3	CO4	7 M			
		applications of Directed Energy Deposition						
		process.						