PVP 20

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

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

	b)	Illustrate the SL resin curing process and SL scan patterns.	L2	CO2	7 M
OR					
4	a)	How is the curing depth and rate of curing controlled in SLA printing?	L2	CO1	7 M
	b)	Discuss with a neat sketch the working principle of Material Jetting process with advantages and disadvantages.	L2	CO2	7 M
UNIT-III					
5	a)	Describe with a neat sketch the working principle of FDM process.	L2	CO3	7 M
	b)	Explain with a neat sketch the working principle of sheet Lamination AM Processes.	L2	CO3	7 M
OR					
6	a)	Illustrate the advantages, disadvantages and applications of Extrusion-Based AM Processes.	L2	CO1	7 M
	b)	Discuss the Gluing and Thermal bonding process.	L2	CO2	7 M
UNIT-IV					
7	a)	Enumerate with a neat sketch the working principle of Selective laser Sintering (SLS).	L3	CO1	7 M
	b)	Illustrate the advantages, disadvantages and applications of Selective laser Sintering (SLS).	L3	CO2	7 M
OR					

8	a)	Discuss the advantages, disadvantages and applications of Powder Bed Fusion Processes.	L3	CO1	7 M
	b)	Explain the advantages, disadvantages and applications of Electron Beam melting (EBM).	L3	CO3	7 M
UNIT-V					
9	a)	Discuss using a neat sketch the working principle of Direct Metal Deposition (DMD).	L3	CO2	7 M
	b)	Explain with a neat sketch the working principle of Laser Engineered Net Shaping (LENS).	L3	CO4	7 M
OR					
10	a)	Discuss the advantages, disadvantages and applications of Laser Engineered Net Shaping (LENS).	L3	CO1	7 M
	b)	Illustrate the advantages, disadvantages and applications of Directed Energy Deposition process.	L3	CO4	7 M