Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

M.E DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Second Semester

Product Design and Development

CM4152 – Solid Freeform Manufacturing

Regulations - 2021

Duration : 3 Hrs *Maximum : 100 Marks*

*PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)*

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	State the need of SFM process.	RE	1	2
2.	Define Bio printing.	RE	1	2
3.	List few AM unique capabilities.	RE	2	2
4.	Discuss about part orientation.	UN	2	2
5.	Define photo polymerization.	RE	3	2
6.	Differentiate between LOM and UAM processes.	UN	3	2
7.	State the applications of FDM process.	RE	4	2
8.	Differentiate between SLM and EBM processes.	UN	4	2
9.	Define Jetting.	RE	5	2
10.	Define LENS.	RE	5	2

*PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
11.	a	i	Explain the hierarchical structure of SFM.	UN	1	7
		ii	Discuss about SFM process chain.	UN	1	6
			Or			
	b	i	Discuss about rapid tooling.	UN	1	7
		ii	Explain about AM Supply chain.	UN	1	6
12.	a	i	Describe about topology Optimization for AM.	UN	2	7
		ii	Discuss about data Processing for AM.	UN	2	6
			Or			
	b	i	Explain design Requirements of Additive Manufacturing For Part Production.	UN	2	7
		ii	Explain design Requirements of Additive Manufacturing for Mass Production,	UN	2	6

13.	a		Explain Stereo lithography Apparatus (SLA) in detail with its working Principles along with advantages, limitations and applications.	UN	3	13
			Or			
	b		Explain Laminated Object Manufacturing (LOM) in detail with its working Principles along with advantages, limitations and applications.	UN	3	13
14.	a		Explain Fused deposition Modeling (FDM) in detail with its working Principles along with process, material and applications.	UN	4	13
			Or			
	b	i	Discuss about Selective Laser Melting (SLM) in brief.	UN	4	7
		ii	Discuss about Electron Beam Melting (EBM) in brief.	UN	4	6
15.	a		Describe binder Jetting in detail with its working Principles along with advantages, limitations and applications.	UN	5	13
			Or			
	b		Explain Laser Engineered Net Shaping (LENS) in detail with its working Principles along with advantages, limitations and applications.	UN	5	13

*PART – C (Marks 1*15 = 15)*

Q.No			*Questions*	*BLT*	*CO*	*Marks*
16.	a		Elaborate the case studies of Bio printing, Food Printing and Electronics printing.	AP	1	15
			Or			
	b		Elaborate about Selective Laser sintering (SLS) in detail. Also explain the differences between Indirect and Direct SLS.	AP	3	15