

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026****Seventh Semester****Department of the Mechanical Engineering****OME352 - ADDITIVE MANUFACTURING****(Common to CSE, AGRI, AIDS & IT)****Regulations - 2021****Duration : 3 Hrs****Maximum : 100 Marks****PART – A(ANSWER ALL QUESTIONS) (Marks 10*2=20)**

Q.No	Questions	BTL	CO	Marks
1.	List any two unique capabilities of Additive Manufacturing compared to conventional processes.	L1	1	2
2.	Mention two benefits of AM for small-scale industries.	L1	1	2
3.	Differentiate between top-down and bottom-up SLA approaches.	L2	2	2
4.	Write two commonly used materials in Fused Deposition Modeling (FDM).	L1	2	2
5.	What is the principle of Selective Laser Sintering (SLS)?	L2	3	2
6.	Give two advantages of Binder Jetting over Powder Bed Fusion.	L1	3	2
7.	Name two industrial applications of Multijet Modeling.	L1	4	2
8.	Compare deposition resolution in Material Jetting and LENS.	L2	4	2
9.	Why is thermal bonding preferred in some sheet lamination processes?	L2	5	2
10.	State one reason why DW is considered an emerging technique in additive manufacturing.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11. a	Elaborate the need and development of Additive Manufacturing technologies, focusing on RP, RT, and RM.	L2	1	16
Or				
b i	Illustrate the applications of AM in healthcare such as implants, prosthetics, and surgical models.	L2	1	8
ii	Compare the benefits and unique capabilities of AM with conventional subtractive and formative processes.	L2	1	8
12. a i	Compare the top-down and bottom-up approaches in SLA with diagrams.	L2	2	8
ii	Explain the Digital Light Processing (DLP) process with suitable diagram.	L2	2	8
Or				
b i	Explain the working principle of Fused Deposition Modeling (FDM) with neat sketch.	L2	2	8
ii	Discuss the applications of FDM in engineering and medical fields.	L2	2	8
13. a	Evaluate the suitability of SLS, SLM, and EBM for fabricating high-performance aerospace components. Justify your choice with material and process considerations.	L3	3	16
Or				
b	Evaluate the challenges of residual stresses and porosity in EBM compared to SLM. Suggest engineering solutions to minimize these issues.	L3	3	16

14.	a	Design a flowchart to represent the Material Jetting process and justify its efficiency in rapid prototyping.	L4	4	16	
Or						
	b	Analyze the effect of process parameters (laser power, scanning speed) on microstructure and mechanical properties of LENS-deposited parts.	L4	4	16	
15.	a	i	Discuss in detail the adhesive bonding and thermal bonding mechanisms in sheet lamination.	L2	5	8
		ii	List and explain the different materials suitable for LOM along with their properties.	L2	5	8
Or						
	b	i	Explain the nozzle dispensing process in ink-based direct writing with a neat sketch.	L2	5	8
		ii	Discuss in detail the applications of ink-based DW in electronics, biomedical, and structural engineering.	L2	5	8
