CBCS SCHEME

USN | | | | | | | | | |

BME714A

Seventh Semester B.E/B.Tech. Degree Examination, Dec.2025/Jan.2026

Additive Manufacturing

Time: 3 hrs. Max. Marks:100

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. M : Marks , L: Bloom's level , C: Course outcomes.

		Module – 1	M	L	C
1	a.	Define additive manufacturing and list its advantages over conventional manufacturing.	5	L1	CO1
	b.	Distinguish between additive manufacturing and CNC machining.	5	L2	CO1
	c.	Illustrate the generic additive manufacturing process chain with a neat sketch.	10	L3	CO1
		OR			
2	a.	Describe the role of reverse engineering in additive manufacturing.	5	L1	CO1
	b.	List and classify additive manufacturing processes.	5	L2	CO1
	c.	Apply design for additive manufacturing principles to improve component performance.	10	L3	CO1
		Module – 2			
3	a.	Define stereolithography and explain the SL resin curing process.	5	L2	CO2
	b.	Describe the working principle of selective laser sintering.	5	L2	CO2
	c.	Illustrate the various powder bed fusion mechanisms.	10	L3	CO2
		OR			
4	a.	Distinguish between SLS and EBM.	5	L2	CO2
	b.	State advantages and disadvantages of photo-polymerization process.	5	L2	CO2
	c.	Explain bio-extrusion and list its applications.	10	L3	CO2
		Module – 3			
5	a.	Define 3D printing and explain its evolution as an additive manufacturing process.	5	L1	CO3
	b.	Explain the principle of laminated object manufacturing.	5	L2	CO3
	c.	Illustrate the working of a typical beam deposition process with a neat sketch.	10	L3	CO3

		OR			
6	a.	What are the technical challenges associated with printing deposition processes.	5	L1	CO3
	b.	Describe the materials used and bonding methods in sheet lamination.	5	L2	CO3
	c.	Apply sheet lamination process to explain "Bond them form" and form then bond processes.	10	L2	CO3
		Module – 4			
7	a.	Define process selection and state its importance in additive manufacturing.	5	L1	CO4
	b.	Explain the selection methods used for part manufacturing.	5	L2	CO4
	c.	Explain how production planning and control is managed in additive manufacturing environments.	10	L3	CO4
		OR			
8	a.	List post processing techniques which are used to enhance components, which are manufactured by AM process.	5	L1	CO4
	b.	Explain the common problems encountered in STL files.	5	L2	CO4
	c.	Apply post processing methods to explain thermal and non thermal methods.	10	L3	CO4
		Module – 5			
9	a.	Evaluate discrete and blended multiple material processes with example.	10	L4	CO5
	b.	Describe the limitations of AM for medical applications.	10	L3	CO5
		OR			
10	a.	Compare direct digital manufacturing with rapid prototyping.	10	L3	CO5
	b.	Apply direct digital manufacturing in the production of customized foot wear.	10	L4	CO5

* * * * *