Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE-MINOR- SEMESTER–IV EXAMINATION – SUMMER 2022

Subject Code:114AN01 Date:13-07-2022

Subject Name:Introduction to Additive Manufacturing

Time:10:30 AM TO 01:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define the additive manufacturing Process. How is it different from subtractive manufacturing?	**03**
	(b)	Enlist the various stages an additive manufacturing process.	**04**
	(c)	What are the advantages and limitations of an Additive manufacturing process? Enlist any five application areas of AM.	**07**
Q.2	**(a)**	Classify the AM process based on raw material used.	**03**
	(b)	Write a short note on the future opportunities of AM processes.	**04**
	(c)	What are the major considerations in assessing the economic feasibility of a proposed AM product?	**07**
		OR	
	(c)	Describe in detail the RP benchmarking methodology.	**07**
Q.3	**(a)**	Enlist the various Liquid based AM Processes.	**03**
	(b)	What are the various process parameters in a Stereolithography Process (SL)?	**04**
	(c)	With help of a figure explain the Process Principle and working of a Stereolithography AM process.	**07**
		OR	
Q.3	**(a)**	Explain why two photo initiators are needed in most commercial SL resins.	**03**
	(b)	Classify the various Stereolithography machines.	**04**
	(c)	Explain the principle and working of MultiJet printing.	**07**
Q.4	**(a)**	Enlist various Powder based AM processes.	**03**
	(b)	Enlist the various materials used in Powder based AM Processes.	**04**
	(c)	Explain the advantages, limitations and application of Powder based AM processes.	**07**
		OR	
Q.4	**(a)**	Describe the principle of the Selective Laser Sintering process.	**03**
	(b)	Explain the basic process of sintering.	**04**
	(c)	Describe the working of Electron Beam Melting process with a neat sketch.	**07**
Q.5	**(a)**	Classify the solid based AM Processes	**03**
	(b)	What the various types of materials used in Fused Deposition modeling (FDM)?	**04**
	(c)	Explain the process Principal of FDM Process with a neat sketch.	**07**

OR

Q.5	**(a)**	What are the advantages of solid based AM Processes?	**03**
	(b)	Compare the Liquid, Powder, and Solid based AM Processes on the basis of strength of part manufactured.	**04**
	(c)	Explain the process Principal of Laminated object Manufacturing (LOM) Process with a neat sketch.	**07**

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