Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII EXAMINATION – SUMMER 2025

Subject Code:3171926 Date:16-05-2025

Subject Name:Rapid Prototyping

Time:02:30 PM TO 05:00 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)**	Differentiate between conventional and rapid prototyping.	**03**
	(b)	Give classification of rapid manufacturing processes.	**04**
	(c)	Write short note on .stl and .slc file formats used for rapid prototyping.	**07**
Q.2	**(a)**	Why part orientation is important in rapid prototyping process?	**03**
	(b)	Differentiate between direct slicing and adaptive slicing.	**04**
	(c)	Briefly explain validity checks and repairs of CAD models for rapid prototyping with suitable examples.	**07**
		OR	
	(c)	Explain (i) support structure generation & (ii) tool path generation for rapid prototyping with suitable examples.	**07**
Q.3	**(a)**	List various materials used for Stereolithography process.	**03**
	(b)	Explain the physics of Stereolithography process with a neat sketch.	**04**
	(c)	What is microstereolithography? Write application and limitations of Stereolithography.	**07**
		OR	
Q.3	**(a)**	What is laminated object with reference to rapid prototyping?	**03**
	(b)	Explain 3D printing process with a neat sketch.	**04**
	(c)	Explain Selective Laser Sintering (SLS) process with a neat sketch and write applications of SLS process.	**07**
Q.4	**(a)**	What is laser engineered net shaping?	**03**
	(b)	Compare powder bed fusion and photopolymerization processes.	**04**
	(c)	Explain ultrasonic consolidation process with a neat sketch and write applications of the process.	**07**
		OR	
Q.4	**(a)**	What are the limitations of 3D printing process.	**03**
	(b)	Write advantages and applications of Laminated object manufacturing.	**04**
	(c)	Explain direct metal deposition process with a neat sketch and write applications and limitations of the process.	**07**
Q.5	**(a)**	What can be the pre-processing errors in rapid prototyping?	**03**
	(b)	Explain various types of errors that can occur during post-processing in rapid prototyping.	**04**
	(c)	Explain part building errors in SLA with suitable examples.	**07**
		OR	
Q.5	**(a)**	What is rapid tooling?	**03**
	(b)	Write medical applications of rapid prototyping.	**04**
	(c)	Explain reverse engineering with a suitable example.	**07**

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