Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER– VII EXAMINATION – SUMMER 2026

Subject Code:3171926 Date:29-05-2026

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	CO	Cognitive Level
Q.1	**(a)**	Compare rapid prototyping (RP) with traditional prototyping method.	**03**	**CO1**	**U**
	(b)	What are the main roles of the prototypes? How rapid prototyping satisfies these roles?	**04**	**CO1**	**R**
	(c)	Differentiate additive and subtractive manufacturing? Explain the generic additive manufacturing process with neat sketch.	**07**	**CO1**	**A**
Q.2	**(a)**	What causes missing facets or gaps to occur in STL file?	**03**	**CO2**	**U**
	(b)	List various formats used by RP systems for data interfacing. Describe the STL format with an example.	**04**	**CO2**	**U**
	(c)	Discuss the use of support structure. How part orientation affects requirement for support structure?	**07**	**CO2**	**U**
		OR			
	(c)	Discuss the direct and adaptive slicing.	**07**	**CO2**	**U**
Q.3	**(a)**	Define the following terms • Layer thickness • Staircase effect • Infill density	**03**	**CO2**	**R**
	(b)	Define & classify Rapid Tooling.	**04**	**CO4**	**U**
	(c)	Explain Stereolithography (SLA) process with neat sketch.	**07**	**CO3**	**U**
		OR			
Q.3	**(a)**	Define the following terms • Chord Height • Angle Control • Step Size	**03**	**CO2**	**R**
	(b)	Explain any one method of Direct Tooling.	**04**	**CO4**	**U**
	(c)	Explain Fused Deposition Modelling (FDM) process with neat sketch.	**07**	**CO3**	**U**
Q.4	**(a)**	What are the different errors in processing part through rapid prototyping.	**03**	**CO2**	**R**
	(b)	Enlist the applications for Direct Metal Deposition (DMD) process.	**04**	**CO3**	**R**
	(c)	Explain 3D printing process with neat sketch.	**07**	**CO3**	**U**
		OR			
Q.4	**(a)**	What are the various post-processing errors occurring in RP methods.	**03**	**CO2**	**R**
	(b)	Enlist the advantages and limitation for Laminated object manufacturing (LOM) process.	**04**	**CO3**	**R**
	(c)	Explain Selective Laser Sintering (SLS) process with neat sketch.	**07**	**CO3**	**U**
Q.5	**(a)**	What are the typical RP applications in design?	**03**	**CO5**	**R**
	(b)	Define reverse engineering. Enlist various steps of reverse engineering.	**04**	**CO5**	**R**
	(c)	Explain Laser Engineered Net Shaping (LENS) process with neat sketch.	**07**	**CO3**	**U**
		OR			
Q.5	**(a)**	What are the typical RP applications in engineering and analysis?	**03**	**CO5**	**R**
	(b)	How are data points acquired in reverse engineering? Enlist various methods.	**04**	**CO5**	**R**
	(c)	Explain Electron Beam Melting (EBM) process with neat sketch.	**07**	**CO3**	**U**