Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3171926 Date: 26/06/2023

Subject Name: Rapid Prototyping

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)**	Briefly explain the need for rapid prototyping.	**03**
	(b)	Discuss the evolution of RP systems indicating the history and their growth rate in the industrial sector.	**04**
	(c)	Compose the principles behind stereo litho sintering process. Briefly explain the materials used in stereo litho sintering.	**07**
Q.2	**(a)**	List the various types of solid models and explain constructive solid geometry model.	**03**
	(b)	What is Data interfacing formats? and abbreviate the followings: STL, LEAF, IGES, STEP.	**04**
	(c)	Explain the significance of part orientation, support generation & slicing with reference to RPT.	**07**
		OR	
	(c)	What is axis designation? Explain its importance in context with RP Machines.	**07**
Q.3	**(a)**	Discuss about photo polymerization.	**03**
	(b)	Distinguish the following process: FDM, LOM, SGC and SLS.	**04**
	(c)	Describe the principle of working of Stereo lithography system. What are its applications?	**07**
		OR	
Q.3	**(a)**	Differentiate SLA and SLS in rapid prototyping.	**03**
	(b)	With neat sketches explain solid ground curing process and its advantages	**04**
	(c)	Explain the working principle and details of FDM.	**07**
Q.4	**(a)**	Can rapid prototype parts be made of paper? Explain.	**03**
	(b)	List out the various surface digitizing techniques in rapid prototyping and explain any one of the techniques.	**04**
	(c)	Discuss about the influence of various factors in determining the part building error and data preparation error.	**07**
		OR	
Q.4	**(a)**	What is meant by data preparation error?	**03**
	(b)	Write short note on: Surface digitizing	**04**
	(c)	Explain the effect of part building, part finishing and part deposition orientation on accuracy of rapid prototyping model.	**07**
Q.5	**(a)**	Explain rapid tooling.	**03**
	(b)	Write a note on: Reverse Engineering	**04**
	(c)	List out the various indirect rapid tooling methods and explain about the silicon rubber tooling.	**07**

OR

Q.5	**(a)**	Differentiate between soft and hard tooling.	**03**
	(b)	Explain with an example the application of RP in Bio-Medical industry	**04**
	(c)	With a neat sketch explain the following methods of tooling techniques: Sand casting tooling and Laminate tooling	**07**

****