

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3171926****Date:08-12-2023****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.

- Q.1** (a) Define additive manufacturing. **03**
(b) Differentiate between conventional prototyping and rapid prototyping. **04**
(c) Give classification of Rapid prototyping with suitable examples. **07**
- Q.2** (a) Write full form of (i) STL (ii) IGES (iii) STEP related to CAD file formats. **03**
(b) Differentiate between direct slicing and adaptive slicing. **04**
(c) Write short note on: Part orientation and support generation. **07**
- OR**
- (c) Explain the validity checks and repair procedures for CAD file conversions with suitable examples. **07**
- Q.3** (a) What is slicing of CAD model? Explain with suitable example. **03**
(b) Briefly explain the physics of photopolymerization process. **04**
(c) Explain advantages and disadvantages of Stereolithography process. **07**
- OR**
- Q.3** (a) What is tessellation in CAD modelling? **03**
(b) Explain tooling for Ultrasonic Consolidation process. **04**
(c) Explain Selective Laser Sintering process with neat sketches. **07**
- Q.4** (a) Explain the principle of laminated object manufacturing process. **03**
(b) Write applications, advantages and disadvantages of Laminated object manufacturing process. **04**
(c) Explain the Fused Deposition modelling process with neat sketches. **07**
- OR**
- Q.4** (a) Explain the principle of Beam deposition RP processes. **03**
(b) Write applications and advantages of Beam deposition RP processes. **04**
(c) Explain the Laser Engineering Net Shaping (LENS) process with neat sketches. **07**
- Q.5** (a) 'Usually RP parts need the finishing processes' Justify. **03**
(b) Briefly explain the post-processing errors in RP processes. **04**
(c) Explain various part building errors in RP with suitable examples. **07**
- OR**
- Q.5** (a) What is Rapid tooling? Explain with suitable example. **03**
(b) Give comparison of Powder Based Fusion RP and Extrusion based RP. **04**
(c) Write short note on: Reverse Engineering. **07**
