

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2181914

Date: 04/05/2017

Subject Name: Rapid Prototyping(Department Elective II)

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.

- Q.1** (a) Explain the Generic RP process with neat sketch. **07**
(b) Give the classification of Rapid Prototyping processes. Differentiate Subtractive Prototyping process and Additive Prototyping process. **07**
- Q.2** (a) Explain in detail the structure of .STL file format and Enlighten the importance of .STL file format in RP. **07**
(b) Compare the shape-based and the product data-based exchange standards. Which has the potential to support industrial automation? Why? **07**
- OR**
- (b) Explain the different errors occurs in RP processes. **07**
- Q.3** (a) Explain Importance of part orientation in RP process in detail with neat sketch. **07**
(b) Explain procedure of tool path generation from the slicing file with flowchart. **07**
- OR**
- Q.3** (a) Give the classification of slicing procedure. Explain slicing of tessellated cad model in detail. **07**
(b) Explain the procedure of slicing with flowchart. **07**
- Q.4** (a) Explain Stereolithography process in detail with neat sketch. **07**
(b) What are the different Rapid Tooling techniques? Explain silicon rubber tooling. **07**
- OR**
- Q.4** (a) Explain Fused Deposition Modelling process in detail with neat sketch. **07**
(b) List the various types of solid models and write the advantages and disadvantages of B-Rep models with neat sketch. **07**
- Q.5** (a) Explain Solider Rapid Prototyping process in detail with neat sketch. **07**
(b) The part shown in fig. no. 1 is to be fabricated using Stereolithography. Layer thickness = 0.10 mm. The diameter of the laser beam (“spot size”) = 0.15 mm, and the beam is moved across the surface of the photopolymer at a velocity of 400 mm/s. Compute an estimate for the time required to build the part, if 08 s are lost each layer to lower the height of the platform that holds the part. Neglect the time for post-curing. **07**
- OR**
- Q.5** (a) Explain Beam Deposition (LENS) Rapid Prototyping process in detail with neat sketch. **07**

- (b) The part shown in fig. no. 1 is to be fabricated using Fused deposition modeling. Layer thickness is to be 0.15 mm and the width of the extrudate deposited on the surface of the part = 1.15 mm. The extruder work head moves in the x-y plane at a speed of 130 mm/s. A delay of 10 s is experienced between each layer to reposition the work head. Compute an estimate time required to build the part. 07

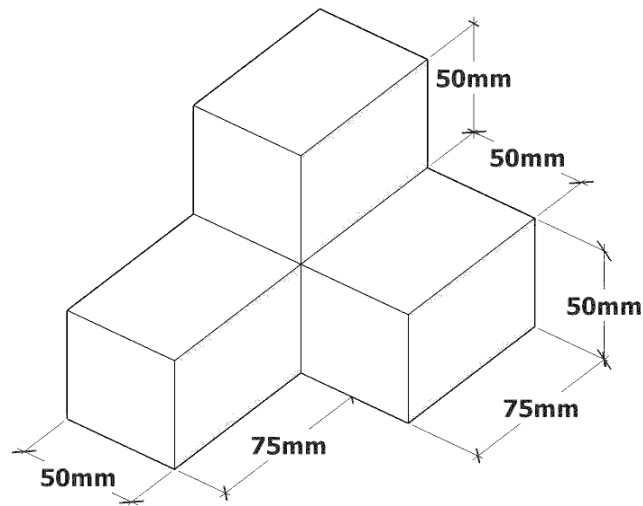


FIG.1
