

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019

Subject Code:2162006

Date:18/05/2019

Subject Name:Computer Aided Design for Mechatronics

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) What do you mean by CAD/CAM? State limitations of it. **03**
 (b) Draw the product Cycle with CAD/ CAM. **04**
 (c) What is Computer Graphics? Give benefits & general application of it. **07**
- Q.2** (a) Explain the Working of Digitizers & Laser Printers. **03**
 (b) Compare between vector display & Raster Display. **04**
 (c) Explain Bresenham's Algorithm for generation of Circles & also write down advantages of it. **07**

OR

- (c) What is Graphic Standards? Enlist them. Explain any one of them in brief. **07**
- Q.3** (a) Differentiate between B-rep & CSG. **03**
 (b) Identify the pixel location that will be chosen by the DDA algorithm while scan converting a line from screen co-ordinate (10, 30) to (19, 36). **04**
 (c) A rectangle is formed by four points whose coordinates are: (50, 50), B (100,100), C (100, 80) & D (50, 80). Determine the coordinate's of four points for new rectangle in reduced size using the scaling factors 0.5 & 0.6 along X & Y direction respectively. **07**

OR

- Q.3** (a) Define following terms: i) Inverse Transformation **03**
 ii) Homogeneous co-ordinate system
 (b) Comparison between IGES & PDES. **04**
 (c) A Triangle PQR with vertices P (20, 20), Q (50, 20) & (20,140) is to be enlarged twice along X direction & compressed to half along Y direction. Determine the coordinates of the vertices for a scaled triangle. **07**
- Q-4** (a) Explain following Entities used in surface Modeling **03**
 i) Ruled Surface ii) Plain Surface.
 (b) What is Feature based Modeling? Explain in detail. **04**
 (c) The co-ordinates of four control points P0, P1, P2, & P3, relative to WCS are : (2,2,0), (3,3,0), (3,4,0), & (4,3,0) respectively . Find the equation of the Bezier curve & determine the coordinates of points on curve for u =0, 0.25, 0.5, 0.75, 1.0. **07**

OR

- Q-4** (a) Explain the approaches of generation of analytical curve. **03**
 (b) Develop parametric equation for i) Line ii) Ellipse. **04**
 (c) A Bezier curve is controlled by three points (4, 2), (0, 0) & (2, 8). Determine **07**
 i) the degree of Bezier curve. ii) The parametric equation of Bezier curve.

- Q-5** (a) What is Geometric Modeling? Explain Methods of Geometric Modeling. **03**
(b) Explain advantages & characteristics of Bezier Curve. **04**
(c) Explain Langranj Multiplier Method with suitable example. **07**

OR

- Q-5** (a) What do you mean by 2D & 3D wire frame Modeling? Differentiate them. **03**
(b) Define Primary & Subsidiary equation in Optimizations. **04**
(c) What is Design Optimization? Explain its application & limitations in engineering design. **07**

www.FirstRanker.com