

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022****Subject Code:3150712****Date:04/06/2022****Subject Name:Computer Graphics****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

- Q.1** (a) Explain applications of Computer Graphics. **03**
 (b) Compare Raster scan system and Random scan system. **04**
 (c) Describe DDA line drawing algorithm. **07**

- Q.2** (a) Explain 2D Reflection and Shearing transformation. **03**
 (b) Bresenham line Algorithm, Calculate between the starting coordinates (9, 18) and ending coordinates (14, 22). **04**
 (c) Find out the new coordinates. For a triangle with corner coordinates (0, 0), (1, 0) and (1, 1). Rotate the triangle by 90 degree anticlockwise direction. **07**

OR

- (c) Explain midpoint ellipse generation algorithm, Write pseudo code for midpoint ellipse generation algorithm. **07**
- Q.3** (a) Explain 3D rotation. **03**
 (b) Describe beam penetration technique for color display. **04**
 (c) Explain scan line fill algorithm and with all data structures used in algorithm. **07**

OR

- Q.3** (a) Explain window to view port transformation **03**
 (b) Describe scaling in 2D transformations. **04**
 (c) Explain types of projection. **07**

- Q.4** (a) What are the characteristics of line drawing algorithm? **03**
 (b) What are inside – outside tests? **04**
 (c) What is aliasing? How to compensate the aliasing? Describe in detail. **07**

OR

- Q.4** (a) Explain properties of Bezier curve. **03**
 (b) Explain following terms : **04**
 1) Aspect ratio 2) Cubic spline 3) Window port
 (c) Describe NLN clipping algorithm. **07**

- Q.5** (a) Explain RGB color model. **03**
 (b) Explain parallel and perspective transformation. **04**
 (c) Explain Depth Buffer method for visible surface detection. **07**

OR

- Q.5** (a) Explain CMY color model. **03**
 (b) Explain following terms : **04**
 (1) Dominant Frequency (2) Purity (3) Clipping (4) Frame buffer
 (c) Describe Cohen Sutherland Line clipping algorithm with example. **07**
