Enrolment No./Seat No_____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–V EXAMINATION – SUMMER 2025**

**Subject Code:3150712 Date:15-05-2025**

**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 in-line arrangement electron gun in shadow mask method. | **03** |
| | **(b)** | Write short note on DVST with advantages. | **04** |
| | **(c)** | Explain different techniques for producing color displays. with a CRT. | **07** |
| **Q.2** | **(a)** | Define: 1) Resolution 2) Pixel 3) Bitmap | **03** |
| | **(b)** | Explain RST with suitable diagram. | **04** |
| | **(c)** | Explain & derive all formulas for Bresenham's line drawing algorithm. | **07** |
| | | **OR** | |
| | **(c)** | Explain In details: Emissive displays. | **07** |
| **Q.3** | **(a)** | Write short note on Boundary fill algorithm. | **03** |
| | **(b)** | Derive all formulas for mid-point circle generation algorithm. | **04** |
| | **(c)** | Explain Cohen Sutherland line clipping algorithm with example. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Write short note on Antaliasing. | **03** |
| | **(b)** | Explain: How point and line generated in graphics system? | **04** |
| | **(c)** | Explain NLN line clipping algorithm with proper example. | **07** |
| **Q.4** | **(a)** | Explain scaling in 2D transformation. | **03** |
| | **(b)** | Derive 3D Rotation matrix. | **04** |
| | **(c)** | What is window and view-port? Retrieve equation for the scaling factor to map the window to view-port in 2D viewing system. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Write short note on 3D translation. | **03** |
| | **(b)** | Explain the Bazier curves and surfaces. | **04** |
| | **(c)** | Derive transformation matrix for 2D rotation. | **07** |
| **Q.5** | **(a)** | What is ambient light and Diffuse illumination? | **03** |
| | **(b)** | Write short note on RGB Color Model. | **04** |
| | **(c)** | Explain Z-buffer visible surface determination algorithm. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Explain: XYZ color models. | **03** |
| | **(b)** | Explain back face detection in details. | **04** |
| | **(c)** | Explain CIE diagram with its usefulness. | **07** |

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