Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VI (OLD) EXAMINATION – WINTER 2018**

**Subject Code:160703** **Date: 16/11/2018**

**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.**

| | | | |
|---|---|---|---|
| **Q.1** | **(a)** | List various techniques used for display graphics in computer. Explain CRT display with the help of diagram. | **07** |
| | **(b)** | Explain DDA line drawing algorithm. What are the limitations of DDA line drawing algorithm? | **07** |
| **Q.2** | **(a)** | List and explain various 2D transformations. | **07** |
| | **(b)** | Explain the Bresenham's algorithm to draw line for any kind of slope | **07** |
| | | **OR** | |
| | **(b)** | Explain working of Touch Panel and digitizer. | **07** |
| **Q.3** | **(a)** | Write and explain the midpoint circle generation algorithm. | **07** |
| | **(b)** | Translate a Square ABCD with the coordinates A(0,0), B(5,0), C(5,5), D(0,5) by 2 units in X-direction and 3 units in Y-direction. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | Develop and implement a flood-fill algorithm to fill the interior of any specified area. What are the differences between flood-fill and boundary fill algorithm? | **07** |
| | **(b)** | Apply the shearing transformation to Square with A(0,0), B(1,0), C(1,1) and D(0,1) as given below:<br>a) Shear parameter value of 0.5 relative to line Yref = -1<br>b) Shear parameter value of 0.5 relative to line Xref = -1 | **07** |
| **Q.4** | **(a)** | Explain the Cohen Sutherland line clipping algorithm. | **07** |
| | **(b)** | What is window and view-port? Retrieve equations for the scaling factors to map the window to view-port in 2D viewing system. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain the Nicholl-Lee-Nicholl (NLN) line clipping algorithm | **07** |
| | **(b)** | What is Bezier Curve? Define properties of Bezier Curve. | **07** |
| **Q.5** | **(a)** | What is depth buffer method? Write and explain the steps of a depth buffer algorithm. | **07** |
| | **(b)** | Explain following color model:<br>1) YIQ color model.<br>2) XYZ Color model. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Difference between parallel and perspective projection. | **07** |
| | **(b)** | Explain following color model:<br>1) RGB color model.<br>2) CMY Color model. | **07** |

**********