

GUJARAT TECHNOLOGICAL UNIVERSITY
B. E. - SEMESTER – VI • EXAMINATION – WINTER 2012

Subject code: 160703**Date: 04/01/2013****Subject Name: Computer Graphics****Time: 02.30 pm - 05.00 pm****Total Marks: 70****Instructions:**

1. Attempt any five questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain DDA line drawing algorithm. What are the limitations of DDA line drawing algorithm? **07**
(b) Explain the working of Cathode Ray Tube with a diagram. **07**
- Q.2** (a) Explain Direct-View Storage Tubes (DVST). How persistence characteristic of phosphor affect on refresh rate of system? **07**
(b) Explain Odd-Even Rule and Non Zero Winding Rules. **07**
- OR**
- (b) Explain the Bresenham's algorithm to draw line for any kind of slope. **07**
- Q.3** (a) Explain shadow mask technique and explain how does it differ from beam penetration technique? **07**
(b) Derive transformation matrix for 2D rotation. **07**
- OR**
- Q.3** (a) Write and explain the midpoint circle generation algorithm. **07**
(b) Explain the parallel and perspective projection techniques to project 3D object onto 2D view plane. **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 Bazier curves and surfaces. **07**
(b) Explain the Nicholl-Lee-Nicholl (NLN) line clipping algorithm. **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: **07**
1) YIQ color model.
2) RGB Color model.
- OR**
- Q.5** (a) Classify the visible surface detection algorithms and explain one of the image-space based algorithm. **07**
(b) Explain following color model: **07**
1) XYZ color model.
2) CMY Color model.
