

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2151603****Date: 31/05/2019****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) Define: 1) Refresh Buffer 2) Pixel 3) Bitmap [ 3 ]  
 (b) Write short note on DVST [ 4 ]  
 (c) Explain different techniques for producing color displays with a CRT. [ 7 ]
- Q-2** (a) Explain in-line arrangement electron gun in shadow mask method. [ 3 ]  
 (b) Explain in brief coordinate representation. [ 4 ]  
 (c) Write a brief note Emissive displays. [ 7 ]
- or**
- (c) Derive all formulas to scan convert a line using Mid Point line drawing algorithm. Write a function midline(x1, y1, x2, y2) which draws a dotted line between (x1, y1) and (x2, y2). [ 7 ]
- Q-3** (a) What is inside-outside test? List out the method for inside-outside test. [ 3 ]  
 (b) How point and line generated in graphics system? Explain in short. [ 4 ]  
 (c) Explain Mid-point circle generation algorithm with example [ 7 ]
- OR**
- Q-3** (a) Write short note on Antialiasing. [ 3 ]  
 (b) What are the problem occur with line width attribute? How to solve it? [ 4 ]  
 (c) Explain NLN line clipping algorithm with proper example(s). [ 7 ]
- Q-4** (a) List and explain character attributes with example. [ 3 ]  
 (b) Write a short note on Viewing Pipeline. [ 4 ]  
 (c) Explain in brief Sutherland Hodgeman polygon clipping algorithm. [ 7 ]
- OR**
- Q-4** (a) Explain non zero winding rule. [ 3 ]  
 (b) Explain Hermite curve with necessary equations [ 4 ]  
 (c) Explain B-spline curves and surfaces [ 7 ]
- Q-5** (a) List the properties of Bezier curves [ 3 ]  
 (b) Explain back face detection in details. [ 4 ]  
 (c) What is scaling transformation? Prove that two scaling transformation commute that is  $S_1S_2 = S_2S_1$ . [ 7 ]
- OR**
- Q-5** (a) What is ambient light and Diffuse illumination [ 3 ]  
 (b) What is Geometric Transformation? List out all two dimensional geometric transformation? And explain any one in details. [ 4 ]  
 (c) Explain z-buffer visible surface determination algorithm. [ 7 ]

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