

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VI (NEW) EXAMINATION – WINTER 2017

Subject Code: 2160703

Date: 20/11/2017

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.
1. Figures to the right indicate full marks.

	MARKS
Q.1* (a) List the application of computer graphics.	03
(b) Explain the function of CRT display with neat and clean Diagram.	04
(c) Explain YIQ and CMY color Model.	07
Q.2 (a) What are the characteristics of line drawing algorithm? Discuss the disadvantage of DDA line drawing algorithm.	03
(b) Derive for Liang-Barskey line clipping algorithm.	04
(c) Magnify the given polygon with coordinates A(1,1) B(5,1) C(5,5), D(1,5) twice of its actual size about a fixed point (3,3).	07
OR	
(c) Consider a triangle with vertices A(1,1), B(3,2) and C(2,4). Find out the transformation matrix which rotates given triangle about point A(1,1) by an angle 45 clockwise.	07
Q.3 (a) What is the difference between Window and ViewPort?	03
(b) What is the difference between 4-connect region and 8-connect region for polygon filling algorithm.	04
(c) Explain Cohen-Sutherland Line Clipping algorithm.	07
OR	
Q.3 (a) Give the difference between Random Scan and Raster Scan.	03
(b) Write Properties of Light and explain RGB model.	04
(c) Explain odd-even, winding number and inside outside test.	07
Q.4 (a) Consider a raster system with resolution of 1024 by 768. What size of frame buffer is needed for given system to store 12bits per pixel? How much should be the buffer size if 24bits per pixel is needed.	03
(b) Prove that two scaling transformation commute, that is $S_1S_2=S_2S_1$.	04
(c) Clip the following polygon using Weiler Atherton polygon clipping algorithm where P1P2P3P4P5P6P7P8P9 is the subjective polygon to	07

be clipped with respect to dotted rectangular boundaries [refer figure 1].

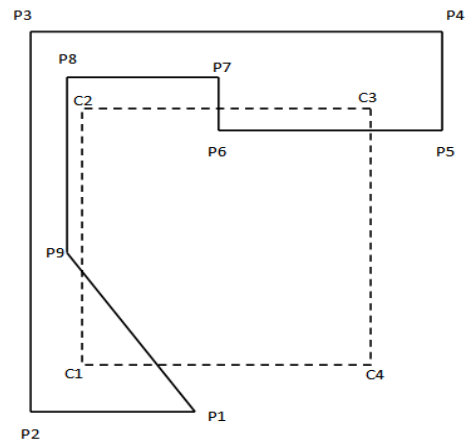


Figure 1

OR

- Q.4** (a) What is the difference between Closegraph() and Cleardevice() function in C graphics library? **03**
- (b) Given end-point P1(1,3) and P2(8,9) find the pixels illuminated using Bresenham Line Drawing algorithm. **04**
- (c) Explain scan line algorithm for polygon filling. **07**

- Q.5** (a) What is spline? **03**
- (b) Give the difference between Boundary fill and Flood fill polygon filling algorithm. **04**
- (c) Briefly explain Z-buffer Visible surface detection algorithm. **07**

OR

- Q.5** (a) What is the difference between Object-Space method and Image-Space Method **03**
- (b) What is need of initgraph() and detectgraph() function in C graphics library? **04**
- (c) Briefly explain types of projection. **07**
