

C. U. SHAH UNIVERSITY

Winter Examination-2019

Subject Name : Computer Graphics

Subject Code : 4TE06CGR1

Branch: B. Tech. (CE)

Semester: 6

Date: 09/09/2019

Time: 10:30 To 01:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1 Attempt the following questions: (14)

- a) What is Computer Graphics?
- b) What is antialiasing?
- c) Define resolution.
- d) What is pixel?
- e) What is window and viewport?
- f) What is convex and concave polygon?
- g) What is the use of frame buffer?
- h) What is pixmap and bitmap?
- i) Give an application of DVST.
- j) Enlist at least four graphics output devices.
- k) What is an aspect ratio?
- l) What is the disadvantage of DDA line drawing algorithm?
- m) Explain use of initgraph() function.
- n) The color code "000" is for which color?

Attempt any four questions from Q-2 to Q-8

Q-2 Attempt all questions: (04)

- (a) Write a short note on Cathode Ray Tube. (04)
- (b) Differentiate between random scan and raster scan methods. (03)
- (c) Explain Bresenham's line drawing algorithm. Show all the necessary calculations for all the intermediate points for a line having end points as (1, 3) and (7, 9) using Bresenham's line drawing algorithm. (07)

Q-3 Attempt all questions: (14)

- (a) List and explain various applications of computer graphics.
- (b) What is 2D shear transformation? Covert the unit square to shifted parallelogram using x-direction shear transformation operation where parameter $sh_x = \frac{1}{2}$ and $Y_{ref} = -1$ and unit square dimensions are (0,0), (1, 0), (0, 1) and (1, 1).



- Q-4** **Attempt all questions:** **(14)**
 (a) Write a short note on Graphics input devices.
 (b) Explain and write Bresenham's circle drawing algorithm.
- Q-5** **Attempt all questions:** **(14)**
 (a) Write a C program to draw an ellipse using mid-point ellipse generation algorithm.
 (b) Explain basic 2-D transformation methods in detail. (Hint: Translation, Rotation and Scaling)
- Q-6** **Attempt all questions** **(14)**
 (a) Explain flood fill and boundary fill methods to fill a polygon.
 (b) Write down and explain Liang-Barsky line clipping algorithm.
- Q-7** **Attempt all questions** **(14)**
 (a) Write a short note on YIQ and RGB color models.
 (b) Explain Character generation methods in detail.
- Q-8** **Attempt all questions** **(14)**
 (a) Explain parallel projection and perspective projection in detail.
 (b) Write a short note on illumination methods. (Hint: ambient, diffuse reflection, specular reflection),

