

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V(New) • EXAMINATION – WINTER 2016

Subject Code:2151603

Date:19/11/2016

Subject Name:Computer Graphics

Time:10:30 AM to 01:00 PM

Total Marks: 70

Instructions:

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

MARKS

- Q.1 Short Questions 14**
- 1 Vector display is well suited for
a) Animation b) Line drawing applications
c) Cartoons d) All of the above
 - 2 The amount of light emitted by the phosphor coating depends on the?
a) Number of electrons striking the screen
b) Speed of electrons striking the screen
c) Distance from the cathode to the screen
d)None of above
 - 3 Define Persistence
 - 4 Memory area holding the intensity information of an image is called
a)Refresh buffer b)Font cache
c)Picture definition d)Video controller
 - 5 Identify the colors produced in beam penetration method.
a) Red, Green, Blue, White b)Red, Orange, Yellow, Green
c)Red, Green, Blue d) Green, Red, White, Orange
 - 6 Match the following
Part A Part B
A. Plasma panel i) Polarizer
B. DVST ii) Zinc sulfide
C. LCD iii) Dielectric mesh
D. Thin film electroluminescent iv)Neon gas
a) A-ii, B-iv, C-i, D-iii b) A-ii, B-iii, C-iv, D-i
c) A-iv, B-iii, C-i, D-ii d) A-i ,B-iv, C-ii, D-iii
 - 7 Identify the odd one out.
a) Mouse b) Keyboard c) Trackball d) Space ball
 - 8 Define Aspect Ratio.
 - 9 The process of extracting a portion of a database or a picture inside or outside a specified region are called
a) Transformation b) Projection c) Clipping d) Mapping
 - 10 Digitizing a picture definition into a set of intensity values is known as
a) Digitization b) Scan conversion c)Refreshing d) Scanning

- 11 GIF stands for
 a) Global Image Format b) Graphics Interchange Format
 c) Graphics Image Format d) None of the above
- 12 In CRT, the electron intensity is adjusted using
 a) Accelerating anode b) Control grid
 c) Electron gun d) Focusing anode
- 13 The rectangle portion of the interface window that defines where the image will actually appear are called
 a) Transformation viewing b) View port
 c) Clipping window d) Screen coordinate system
- 14 The region code of a point is 1001. The point is in the region of window.
 a) Top right b) Top left c) Bottom left d) Bottom right

Q.2 (a) Write short note on Flood fill algorithm for 8 connected region . **03**

(b) Write the differences between Random Scan display and Raster scan Display. **04**

(c) Derive all necessary formulas for Bresenham line drawing algorithm. Bresenham line drawing algorithm is used to draw a line from (01, 02) to (7, 5). Determine all the pixels which will be on as the line is drawn. **07**

OR

(c) Write the Midpoint Ellipse generation algorithm. **07**

Q.3 (a) Explain Starbust method used for Character generation. **03**

(b) Explain scaling in 2D Transformations **04**

(c) Explain Scanline polygon fill algorithm in detail. **07**

OR

Q.3 (a) List merit and demerit of DVST. **03**

(b) What is aliasing? How to compensate the aliasing? Explain in Brief. **04**

(c) 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). **07**

Q.4 (a) Explain non zero winding rule. **03**

(b) Explain reflection with respect to any plane in 3D transformations. **04**

(c) Write Nicholl-Lee-Nicholl line clipping algorithm. How NLN line clipping algorithm reduce the computation of unnecessary intersection point. **07**

OR

Q.4 (a) List the properties of Bazier curves. **03**

(b) Explain Working principle of Plasma Panel Display. **04**

(c) Clip the line PQ having coordinates A(4,1) and B(6,4) against the clip window having vertices A(3,2) , B(7,2) , C(7,6) and D(3,6) using Cohen Sutherland line clipping algorithm. Mention the limitations of algorithm. How it can be overcome? **07**

Q.5 (a) How coordinate values of selected screen position is determined in touch screens? **03**

(b) Briefly Explain RGB color model. **04**

(c) What is depth buffer method? Write and explain the steps of a depth buffer algorithm. **07**

OR

- Q.5** (a) Briefly explain parametric cubic curve and its applications **03**
(b) Briefly explain Z-buffer visible surface determination algorithm. **04**
(c) Explain following color model: **07**
1) XYZ color model.
2) CMY Color model.
