USN | | | | | | | | | | |

13MCA34

Third Semester MCA Degree Examination, June/July 2017
Computer Graphics

Time: 3 hrs. Max. Marks:100

Note: *Answer any FIVE full questions.*

1 a. List out all the data types available in OpenGL. Explain each separately. **(06 Marks)**

b. Explain OpenGL. Differentiate Resize( ) and MyInit. **(04 Marks)**

c. Write a program taking input from keyboard and demonstrate line whose window size is (500, 500) and window position is (50, 100). **(07 Marks)**

Explain following :

i) glClear
ii) glcolor3f
iii) glMatrixMode. **(03 Marks)**

2 a. Write a DDA Line algorithm for drawing a line and draw a Bressenham's line using (5, 5) to (13, 9). **(08 Marks)**

b. Give a circle of radius r = 6 determining the position along the circle quadrant in the first quadrant from x = 0, to x = y. **(05 Marks)**

c. Explain boundary fill algorithm with stack operation. **(07 Marks)**

3 a. Give 3 types of 2D transformation and gives appropriately Transformation matrices. **(06 Marks)**

b. Explain about General 2D Fixed point scaling with a neat sketch. **(05 Marks)**

c. Explain two Dimensional rigid body transformations. **(05 Marks)**

d. Explain Reflection. Give the transformation matrices to find the reflection of an object along the i) x axis and y axis ii) to the line y = x. **(04 Marks)**

4 a. Explain in three Dimensional Transformation

i) Scaling
ii) Translation
iii) Sharing. **(07 Marks)**

b. Explain each :

i) glPushMatrix
ii) glPopMatrix
iii) glModelView
iv) glPixelZoom
v) glRotatef **(05 Marks)**

c. Write a program to create (without using built function) and rotate (i. given an angle ii. Around x and y axis) a tringle by implementing rotation algorithm. **(08 Marks)**

5 a. Derive the window to viewport co-ordinates transformation matrices. **(07 Marks)**

b. Describe Sutherland Hodgman polygon Clipping algorithm with an example. **(07 Marks)**

c. Explain with an example:

i) Text Clipping
ii) Curve Clipping. **(06 Marks)**

6 a. With a neat diagram explain three Dimensinal viewing pipeline. **(06 Marks)**

b. Give Overview of Three – Dimensional viewing concept. **(06 Marks)**

c. Explain :

i) View Plane Normal Vector

ii) View up vector

iii) Generating 3D viewing concept

iv) Uv_n viewing co-ordinate Reference **(08 Marks)**

7 a. Explain projection. **(02 Marks)**

b. i) Explain orthogonal projection

ii) Explain oblique projection **(10 Marks)**

c. Explain perspective projection

i) One venising point

ii) Two venesing point

iii) Three venesing point **(04 Marks)**

d. What is center of projection? Explain with a neat diagram. **(04 Marks)**

8 a. Give properties of Bezier curves. **(04 Marks)**

b. Explain Cubic Bezier curves with a diagram. **(06 Marks)**

c. Short notes :

i) General Computer Animation function **(05 Marks)**

ii) Raster method for computer Animation. **(05 Marks)**

* * * * *