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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 Bresenham'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 triangle 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)

Important Note - 1 On completing your answers compulsorily draw diagonal cross lines on the remaining blank pages.
The quality level of identification appears & candidates will be equivalent to the quality level of the question paper.

- 6 a. With a neat diagram explain three Dimensional 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 vanishing point
ii) Two vanishing point
iii) Three vanishing 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)

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