B4.4-R3: COMPUTER GRAPHICS AND MULTIMEDIA SYSTEMS

NOTE:

> 1. Answer question 1 and any FOUR questions from 2 to 7.
> 2. Parts of the same question should be answered together and in the same sequence.

Time: 3 Hours   **Total Marks: 100**

1.
a) What are the various syntactic notations used in the commands of OpenGL.
b) What are advantages and disadvantages of homogenous co-ordinates?
c) Explain shadow masking method for colour monitor.
d) Describe how can the first order parametric continuity achieved at the common control point of the two Bezier Curves.
e) Explain how MIDI files are created and what are their applications in multimedia applications?
f) What do you mean by vanishing point in perspective projection? Draw a diagram indicating two vanishing points.
g) Explain tweeking and morphing operators.

(7x4)

2.
a) Describe construction of a typical cathode ray tube for monitor.
b) Explain the Bresenham's line drawing algorithm in 2D. Hence give the pixel positions for the line joining the points (4, 4) and (9, 9).
c) Explain the following statement:
      void glPolygonMode(GLenum face, GLenum mode);
      void glFrontFace(GLenum mode);

(4+10+4)

3.
a) Derive the transformation matrix for y-direction shearing relative to the line x=a. Hence give the transformation matrix for shearing parameter value of ½ and a= -1.
b) What do you mean by hidden lines and surfaces? Describe area subdivision method for removing hidden surfaces.

(6+12)

4.
a) Why do we need two types of continuity in joining two curve segments? Define each type.
b) How is Cyrus-Beck algorithm better than Cohen-Sutherland algorithm?
c) Derive the equation for a cubic form of Bezier Curve, starting with the two controls point Bezier Curves.

(6+4+8)

5.
a) How is B-spline curve different from Bezier Curve?
b) What do you mean by rational B-spline? How is it more useful than non-rational B-spline in drawing curves?
c) Describe rendering pipeline in OpenGL.

(3+5+10)

6.

a) Describe Phong shading model for rendering polygon surface. How is it better than Gourad shading model? How can you make Phong shading model fast?

b) Describe briefly the differences between MIDI and digital audio.

(12+6)

7.

a) What do you mean by authoring tool? Describe the grouping of the authoring tools.

b) Define Hypermedia, Hypertext, Links, Anchors and Nodes.

(12+6)