

## B4.4-R3: COMPUTER GRAPHICS & 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 do you mean by homogeneous co-ordinates? How has it simplified 2D transformations?
- b) How are codes of the regions assigned in the Cohen-Sutherland algorithm?
- c) Explain flat shading model. What are its shortcomings?
- d) Describe briefly ray tracing technique for rendering an object.
- e) Why is parametric curve preferred over other forms of curves, in computer graphics?
- f) Explain briefly JPEG compression technique.
- g) OpenGL provides three basic commands for manipulating image data, explain each briefly.

(7x4)

2.

- a) Describe briefly the construction of a colour monitor.
- b) Give the pixel positions of the line joining the points (3, 4) and (10, 9).
- c) Derive the transformation matrix for the operations performed in the given sequence, translation, rotation, scaling.

(5+7+6)

3.

- a) What do you mean by perspective projection? How are vanishing points generated?
- b) Write the transformation matrices for rotation about origin in 3D.
- c) Explain the Cyrus-Beck algorithm for clipping a line with respect to a rectangular window.

(5+3+10)

4.

- a) What do you mean by B-spline? Give its properties.
- b) What do you mean by shading model? Explain Phong shading model.
- c) Define point, line and polygon w.r.t. OpenGL.

(6+6+6)

5.

- a) Explain briefly the OpenGL Utility Toolkit (GLUT).
- b) Describe the commands in OpenGL for translation, rotation and scaling.
- c) Explain RGBA mode of OpenGL.

(6+6+6)

6.

- a) Define multimedia. What are the hardware components required for multimedia?
- b) What do you mean by hypertext? Explain its utility.
- c) How can we simulate acceleration in animation? Give the expressions for acceleration and de-acceleration.

(4+4+10)

7.

- a) What do you mean by morphing? What are the requirements for performing this operation?
- b) Explain tweening and tweaking processes as employed in computer graphics.
- c) Describe in brief multimedia authoring system.

**(4+6+8)**