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 are homogeneous co-ordinates and what are its merits and demerits as related to computer graphics?
b) List the use of data compression to multimedia systems.
c) Explain, how MIDI files are created and what are their roles in multimedia applications?
d) Describe the use of anti-aliasing in raster display devices.
e) What are the multimedia authoring tools, describe their applications.
f) Explain, why RGB color model is used for display?
g) What is clipping? Differentiate it from windowing.

(7x4)

2.

a) Explain the integer Bresenham's line draw algorithm in two dimensions. Plot the trace of the line joining the following end points (-8, -4) and (6, 9).
b) How is clipping done in three dimensional domains?
c) Show that mid point of a line is invariant with scaling transformation.

(8+4+6)

3.

a) Describe parallel projection. Show all parallel projection of cube of unit side.
b) What is a hypertext? Explain the use of hypertext in presentation of information.
c) Derive the transformation matrix for reflection about x-axis.

(6+6+6)

4.

a) What are hidden lines and surface? Explain the mechanism of removing hidden surfaces.
b) Differentiate Cohen Sutherland algorithm with Cyrus-beck algorithm.
c) Explain the major characteristics of digital audio.

(6+6+6)

5.

a) What is rendering? Describe Phong shading model for rendering polygon surface. How is it superior to Gourad shading model?
b) Derive the equation for a cubic form of Bezier curve. How are B-spline curves different from Bezier curves?

(9+9)

6.

a) Explain the algorithm to plot the circle and represent the steps to plot a circle of radius 20 and centre (0, 0).
b) Describe oblique projections and display different type of oblique projections with examples.
c) What is interlacing? Explain the utility of interlacing in display systems.

(8+4+6)

7.

a) What is illumination? Explain the model used for illumination.
b) What is JPEG? How it is different from BMP and GIF files?
c) Explain z-buffer algorithm, apply it for following:
Rectangle with corner points p1(10, 5, 10), p2(10, 25, 10), p3(25, 25, 10) and p4(25, 5, 10) and the triangle with corner points p5(15, 15, 15), p6(25, 25, 5) and p7(30, 10, 5).

(4+4+10)