B4.4-R4: COMPUTER GRAPHICS AND MULTIMEDIA

NOTE:

1. **Answer question 1 and any FOUR from questions 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) Draw a block diagram for JPEG decoding.

b) Explain how sound card processes MIDI files?

c) What are the problems of putting an animation on the web?

d) What is the difference between Bezier curve and B-Spline?

e) Find the reflected view of a triangle with vertices (30, 40), (50, 50) and (40, 70) about the mirror which is vertically placed such that it passes through (20, 0) and (0, 20)?

f) How clipping in computer graphics works? Give example.

g) How Luma-Chroma Principle is used for video encoding?

(7x4)

2.

a) Write down the name and working principles of a display device made of plasma technology.

b) Identify a circle points in first quadrant having center (0, 0) and radius 5.

c) Given a clipping window P(0, 0), Q(30, 0) R(30, 20), S(0, 20), use Sutherland-Cohen algorithm to determine the visible portion of the line A(10, 30) and B(40, 0).

(6+6+6)

3.

a) Illustrate the MPEG video compression technique using I, P and B-frames technique.

b) A Polygon has four vertices located at A (20, 10), B(60, 10) C(60, 30) and D(20, 30). Indicate a transformation matrix to double the size of the polygon with point A located at the same place?

c) How can the light pen differentiate between two points on the screen when both have the same color intensity?

(7+5+6)

4.

a) Consider a raster system with the resolution of 1024 x 768 pixels and the color palette calls for 65,536 colors. What is the minimum amount of video RAM that the computer must have to support the above-mentioned resolution and number of colors?

b) Why is Gouraud Shading also referred to as interpolation shading? Explain.

c) Develop the specular reflection model for a single light source falling on highly polished surface.

(5+4+9)

5.

a) What is the coordinate of a unit cube after taking reflection about zx-plane?

b) Describe Bresenham's Midpoint Circle Algorithm for the First Quadrant.

c) What do you mean by Perspective Transformation?

(8+7+3)

6.

a) How motion video is different from animation? Explain the working principle of a video camera with diagram.

b) Explain Quantization technique in JPEG compression.

c) Why interference correlation is important in video encoding?

(8+6+4)

7. Write short notes on **any three**:

a) QoS for multimedia system

b) Content based Cooling

c) DDA Algorithm

d) Typical Network Architecture for Multimedia System

(6x3)