

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) What do you mean by Lossy and Lossless data compression?
 - b) What is orthographic projection?
 - c) What are the main advantages of Bresenham's line drawing algorithm?
 - d) How to clip a point?
 - e) Explain the difference in Gouraud and Phong shading.
 - f) Write recursive flood fill algorithm.
 - g) Explain the basics of Cathode Ray Tube used for display.

(7x4)

2.
 - a) Write the general form of NURBS using its basis function.
 - b) Explain the GIF image format with suitable details.

(9+9)

3.
 - a) Explain the functioning of optical mouse.
 - b) What do you mean by MIDI files? What are MIDI messages?

(9+9)

4.
 - a) What are I, P and B frames in H.264 format? Discuss in detail.
 - b) Discuss the polygon clipping algorithm which works by extending each line of the convex *clip polygon* in turn and selecting only vertices from the *subject polygon* that are on the visible side.

(9+9)

5.
 - a) Clip a 2D line from P1 (4,12) to P2 (8,8) using Liang-Barsky algorithm if clipping window has lower left at (5,5) and upper right at (9,9).
 - b) Explain Phong Illumination model with proper diagrams.

(9+9)

6.
 - a) Discuss the holographic display technology. Discuss any two types of holographic displays.
 - b) In 2D transformation, the reflection along the line $y = x$ is equivalent to the reflection along x-axis followed by counter clock wise rotation by α degree. Find out the value of α .

(9+9)

7.
 - a) Using DDA algorithm fit a line from (2, 3) to (12,8). Show all intermediate steps.
 - b) What is aliasing effect? Discuss one way to handle the aliasing.

(9+9)