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) Illustrate JPEG encoding technique with help of a block diagram.

b) Find the 3x3 transformation matrix for translating a point by (-1, 2). Compute the inverse of this matrix and show that the result is a matrix which translates a point by (1, -2).

c) Write the steps of processes WAV file by a typical sound card?

d) Do you think that putting an animation on the web is a problem? Justify.

e) Differentiate between diffused and specular reflections?

f) Briefly write the Luma-Chroma Principle?

g) Justify clipping as computer graphics operation.

(7x4)

2.

a) Describe simple seed fill algorithm with a suitable example?

b) What are the applications of Rotation about an Axis parallel to a coordination axis and also find transformation matrix for it?

(9+9)

3.

a) How WaveTable synthesizer is different from FM synthesizer and how MIDI file is different from digital audio? Describe the different components in the MIDI protocol.

b) What is the difference between entropy encoding and source encoding?

c) Write down the unique properties of a typical multimedia database.

(7+5+6)

4.

a) Using a simple object illustrate how a 3D object is presented using perspective projection.

b) Describe DDA Algorithm. Write down the drawback of DDA algorithm.

c) What do you mean by interlacing?

(8+7+3)

5.

a) Differentiate between Intra-Object and Inter-Object synchronization.

b) How are characters of various fonts generated on the screen?

c) Name the major component of a graphical interface and what are its features?

(6+6+6)

6.

a) What is the need of homogeneous coordinates? Define affine transformation? Distinguish between uniform scaling and differential scaling? What is fixed point scaling?

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) Draw a circle in first quadrant having center (0, 0) and radius 5.

(7+5+6)

7.

a) Describe typical network architecture for multimedia systems.

b) What is QoS for multimedia systems? Explain why QoS is important for multimedia communication.

c) Explain what is in content based coding? Which MPEG standard is used to support the content based coding and how?

(6+6+6)