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Unit-IV

8. (a) Explain various elements of Multimedia. 8  
(b) Write the steps involved in JPEG compression. Is it a lossy compression? 8
9. (a) Explain the various audio formats supported by internet. 8  
(b) What is a Multimedia database? Discuss the usage of such a database. 8

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MCA 1st Semester (MCA 2 Year Programme)

w.e.f. 2020-21 Examination,  
December-2022

COMPUTER GRAPHIC & MULTIMEDIA

Paper-20MCA21C3

Time allowed : 3 hours/

[Maximum marks : 80

*Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after examination.*

**Note :** *Attempt five questions in all. Question Number 1 is compulsory. In addition to the compulsory question, student will have to attempt four more questions, selecting one question form each unit.*

**Compulsory Questions**

1. Answer the following questions: 8×2=16
- (a) Define Resolution of a display device.
- (b) Determine the size of the frame buffer required for a color device that has the resolution 1268×780 with ability to show 1024 colors.
- (c) Write the equation of a circle in polar co-ordinate system and show it using a diagram.

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- (d) Why are polygon surfaces used in 3D graphics?
- (e) Name the transformations used to reduce the size of an object to its half keeping a certain point on the object fixed.
- (f) Define view confusion.
- (g) What do you mean by multimedia?
- (h) What is Flash used for?

**Unit-I**

- 2. Write the steps of Bresenham's line drawing algorithm. Indicate the raster locations that would be chosen by a line drawn from pixel coordinate (1,1) to pixel coordinate (8,5) using the same algorithm. 16
- 3. (a) What are two distinct ways to produce color using a color CRT. Explain using suitable diagrams. 8
- (b) Write differences between : 2×4=8
  - (i) Random and Raster scan systems
  - (ii) Boundary Fill and Flood Fill

**Unit-II**

- 4. (a) What is the window-to-viewport transformation? Evolve the steps of transformations for a rectangular window with lower left corner

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- (xw<sub>min</sub>, yw<sub>min</sub>) and upper right corner at (xw<sub>max</sub>, yw<sub>max</sub>) to be mapped with rectangular viewport with lower left corner at (xv<sub>min</sub>, yv<sub>min</sub>) and upper right corner at (xv<sub>max</sub>, yv<sub>max</sub>). 10
- (b) Explain any two methods of 3D object representations with diagrams. 6

- 5. Explain the Cohen-Sutherland line clipping method in detail. Also describe how to compute the intersection points of a line having starting point (x<sub>st</sub>, y<sub>0</sub>) and ending point (x<sub>e</sub>, y<sub>e</sub>) with the left edge (at x = x<sub>l</sub>) and top edge (at y = y<sub>t</sub>) of the clipping window. 16

**Unit-III**

- 6. Explain 3D scaling, rotation and translation transformations with suitable diagrams and their matrices. Obtain the composite matrix of transformation when one applied rotation from x-axis by angle θ (theta) and rotation from y-axis by angle φ (phi). 16
- 7. (a) What are shading models? Compare the Gouraud and Phong shading models. 8
- (b) What are Illumination models? Draw a neat diagram showing the components while explaining its different type. 8

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