No. of Printed Pages : **2**

Sl. No.

C1-R4 : ADVANCED COMPUTER GRAPHICS

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) Define RGB color model and give conversion process for RGB to HSV color model.

(b) What do you understand by scan conversion?

(c) Describe clipping process and its types.

(d) Describe mechanism of CRT display.

(e) Explain the construction of isometric & oblique projection.

(f) Compare Flat shading and Smooth shading.

(g) What is computer animation and its two basic principles? **(7x4)**

2. (a) Explain appel's algorithm for visible contour line determination in detail.

(b) Explain the methods for creating images by means of iterated function systems in an Interlaced manner.

(c) Briefly explain about the basic transformations performed on three dimensional objects. **(6+6+6)**

3. (a) Explain CMY and HSL color model in detail with example.

(b) What is a spatial-partitioning representation in solid modeling? What is sweep representation ?

(c) What are the important properties of Bezier Curve ? **(6+8+4)**

4. (a) What is the anti-aliasing technique in computer graphics? Explain any two anti-aliasing techniques in detail.

(b) Differentiate between object-space methods and image-space methods with respect to visible surface detection along with their associated cohesion types.

(c) Explain the interactive picture construction techniques in detail. **(6+6+6)**

5. (a) What do you understand by 3-D viewing? Explain parallel and perspective projections technique in 3-D view.

(b) What are the needs of illumination models in Computer graphics? What is surface rendering process? Explain warn model in detail. **(9+9)**

6. (a) Explain Z-Buffer and depth-sort algorithm in detail with a suitable example.

(b) What is the use of 3D shearing matrix? Derive the 3D shearing matrix.

(c) Which key feature of circle is used by Bresenham's circle drawing algorithm? Plot a circle using Bresenham's algorithm whose radius is 10 and center at (0, 0).

(6+6+6)

7. (a) What is ray tracing algorithm for hidden surface removal? Explain mathematically how do we find which planes are visible using ray tracing algorithm.

(b) What are the main components of a computer graphics system? Give an example of each component. What are the state-of-the-art computer graphics software packages available in the market? **(9+9)**

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