

Total No of Questions: [12]

SEAT NO. :

[Total No. of Pages : 2]

**S.E. 2008 (Computer Engineering)**  
**Computer Graphics**  
**(Semester -II)**

Time: 3 Hours

Max. Marks : 100

Instructions to the candidates:

- 1) Answers to the two sections should be written in separate answer books.
- 2) Answer any three questions from each section.
- 3) Neat diagrams must be drawn wherever necessary.
- 4) Figures to the right side indicate full marks.
- 5) Use of Calculator is allowed.
- 6) Assume Suitable data if necessary

**SECTION I**

- Q1) a) Explain DDA line drawing algorithm with the help of illustration. [8]  
b) Explain various Character Generation Methods [6]  
c) Define [4]  
    i) Pixel ii) Frame buffer
- Or
- Q2) a) Consider the line from (4,9) to (7,7). Use Bresenham's line drawing algorithm to rasterize this line and give output pixels. [8]  
b) Explain the features of the following: [6]  
    i) Scanner  
    ii) Digitizer
- c) Explain Display File structure [4]
- Q3) a) What are the different types of polygon. Explain Even-Odd method to test point is inside or outside the polygon. [8]  
b) Explain 2D Viewing transformation. (Window-to-viewport) [8]
- Or
- Q4) a) Explain Cohen-Sutherland outcode algorithm. [8]  
b) What is windowing and clipping? Explain Interior and Exterior Clipping? [8]
- Or
- Q5) a) What is Homogeneous co-ordinate system? Explain its need in Transformations? [8]  
b) Find the transformation matrix that transforms the square ABCD to half the size with center remaining at the same position. The co-ordinates of square are A(1,1), B(3,1), C(3,3), D(1,3) and center at (2,2). Also find resultant co-ordinates of square. [8]
- Or
- Q6) a) Explain Parallel Projection and its types. [6]  
b) Explain rotation of an object about an arbitrary axis in 3D. [10]

**SECTION II**

- Q7) a) Explain with illustration how segments are created, renamed and deleted. [10]
- b) What is animation? Discuss different methods of controlling animations. [8]

Or

Q8) a) What is segment? Explain a segment table with example. What are the data structures used to implement the segment table [8]

b) Describe the steps required to produce real-time animation. [8]

Q9) a) Compare Gouraud and Phong's method of shading. [8]

b) Why are hidden surface algorithms needed? Explain any two algorithms used for removing hidden surfaces. [8]

Or

Q10) a) Explain Binary Space Partition algorithm for hidden surfaces. [8]

b) Write short notes on- [8]

i) HSV Color Model

ii) CMY Color Model

Q11) a) What are fractals? Explain how fractal line algorithm can be used for generating fractal surfaces. [8]

b) What is interpolation? Explain Large range interpolation method. [8]

Or

Q12) a) What is fractal dimension? Explain Hilbert's curve in detail. [8]

b) Explain the features of computer graphics and animation software 3D-Studio or Maya. Enlist its application. [8]