Total No. of Questions : 12] **SEAT No. :**

P643 **[Total No. of Pages : 3**

[4457] - 118

S.E. (Computer) (Semester - II)

COMPUTER GRAPHICS

(2008 Course)

Time :3 Hours] ***[Max. Marks :100***

Instructions to the candidates:

1) ***Answers to the two Sections should be written in separate answer books.***
2) ***In Section-I attempt Q.1 or 2, 3 or 4, 5 or 6 and in Section-II Q.7 or 8, 9 or 10, 11 or 12.***
3) ***Neat diagrams must be drawn whenever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain Bresenham's circle drawing algorithm with mathematical treatment? Explain significance of Δ, δ, δ'. **[12]**

b) Explain the various character generation methods. **[6]**

OR

Q2) a) Consider the line from (0, 0) to (6,6) Bresenham's algorithm to rasterize this line. **[6]**

b) Explain following terms with suitable example: **[6]**

i) Pixels

ii) Resolution

iii) Frame buffer.

c) What is antialiasing? Explain any two antialiasing techniques. **[6]**

Q3) a) Enlist any three polygon filling algorithms. Explain even-odd method of inside test. **[8]**

b) What is windowing and clipping? What is interior and exterior clipping? **[8]**

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OR

Q4) a) Explain Cohen-Sutherland out code algorithm with example. **[8]**

b) Enlist any three methods of polygon filling. Explain how a polygon is filled with pattern. **[8]**

Q5) a) Write a note on Parallel and Perspective projection and state their types. **[8]**

b) Describe 3D viewing transformations. **[8]**

OR

Q6) a) Magnify the triangle with vertices A(0, 0), B(1, 1), C(5, 2) to twice its size as well as rotate it by 45°. Derive the translation matrices. **[8]**

b) Derive the transformation matrix for rotation about an arbitrary point. Explain with example. **[8]**

SECTION - II

Q7) a) What is a segment? How do we create it? Why do we need segments? Explain in detail the various operations of segments. **[10]**

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

OR

Q8) a) Define animation and explain the methods of controlling the animation. Give different types of animation languages. **[10]**

b) Write the algorithm for the following : **[8]**

i) Change of visibility attribute of segments.

ii) Delete a segment.

Q9) a) Explain Back-Face removal algorithm. **[8]**

b) Explain RGB, HSV and CMY color model. **[8]**

OR

Q10) a) Why are hidden surfaces algorithms needed? Explain Z-Buffer Algorithm. **[8]**

b) Explain different surface shading algorithms. **[8]**

Q11) Write short notes on : **[16]**

a) B-splines

b) Interpolation

c) Fractals

d) 3-D graphics design tool

OR

Q12) Write short notes on : **[16]**

a) Blending functions

b) Bezier curves

c) Fractal lines and surfaces.

d) B- Splines

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