B.E. (Information Technology) Fifth Semester (C.B.S.)
Computer Graphics

P. Pages : 2

Time : Three Hours

1018

Max. Marks : 80

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Notes :   1.   All questions carry marks as indicated.
2.   Solve Question 1 OR Questions No. 2.
3.   Solve Question 3 OR Questions No. 4.
4.   Solve Question 5 OR Questions No. 6.
5.   Solve Question 7 OR Questions No. 8.
6.   Solve Question 9 OR Questions No. 10.
7.   Solve Question 11 OR Questions No. 12.
8.   Due credit will be given to neatness and adequate dimensions.
9.   Assume suitable data whenever necessary.
10.   Illustrate your answers whenever necessary with the help of neat sketches.

1.   Explain Bresenham's circle generation algorithm in first quadrant clockwise direction. Also draw a circle with radius 8 and having a centre (3, 3).   **13**

OR

2.   a)   Compare the display devices DVST, calligraphic refresh and raster scan display.   **6**

b)   What is aliasing? Explain various anti-aliasing techniques in computer graphics.   **7**

3.   a)   Explain **any three** algorithms.   **9**

1)   Simple ordered edge list algorithm.

2)   Edge flag algorithm.

3)   Seed fill algorithm.

4)   Fence fill algorithm.

b)   Explain Normalized Device co-ordinates (NDC) in detail.   **5**

OR

4.   a)   Explain types of 2D transformations in detail.   **8**

b)   Find the transformation matrix that transforms the square ABCD, whose centre is at (2, 2), is reduced to half of its size, with centre still remaining at (2, 2). The co-ordinates of the square are A(0, 0), B(0, 4), C(4, 4), D(4, 0). Find the co-ordinates of new square.   **6**

5.   Explain the structure of segment table and functions for segmenting the display file.   **13**

OR

6. a) Consider a window $V_1(1,0)$, $V_2(0,1)$, $V_3(0,2)$, $V_4(1,3)$, $V_5(2,3)$, $V_6(3,2)$, $V_7(3,1)$, $V_8(2,0)$. Clip the line $P_1(-1, 1)$ to $P_2(3, 3)$ using Cyrus Beck Algorithm. **7**

b) Explain Sutherland-Cohen Outcode line clipping algorithm. **6**

7. a) Explain parallel and perspective projection in detail. **6**

b) Explain the matrices of 3D transformations. **7**

OR

8. Explain any three Hidden surface Removal Algorithms. **13**

9. a) Explain parametric representation of Bezier Curve. Also derive the parametric equation for a cubic Bezier curve. **8**

b) Explain properties of B-spline curve. **5**

OR

10. a) Explain light sources with its types. **3**

b) Explain following surface rendering methods. **10**

    i) Gourand shading.

    ii) Phong shading.

    iii) Constant Intensity shading.

    iv) Fast Phong shading.

11. a) Explain different modes of representing colour combinations. **3**

b) Explain CIE chromaticity diagram. **5**

c) Explain different colour models in detail. **6**

OR

12. a) Explain principles of animation. **6**

b) What are types of animation system? Also explain animation tools. **8**

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