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[4857]-1086**S.E. (Information Technology) (Second Semester)****EXAMINATION, 2015****COMPUTER GRAPHICS****(2012 PATTERN)****Time : Two Hours****Maximum Marks : 50**

N.B. :— (i) Solve Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4,
Q. No. 5 or Q. No. 6, and Q. No. 7 or Q. No. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Use of calculator is allowed.

(v) Assume suitable data, if necessary.

1. (a) List the methods for character generation. Explain any *two* character generation methods briefly. [6]
- (b) Derive the equation for decision parameter of midpoint circle algorithm. [6]

Or

2. (a) Explain Scan-Line Polygon filling algorithm. [6]
- (b) Write matrix representation for the following 3D transformations : [6]
 - (i) Reflection about XY-plane
 - (ii) Rotation about X-axis
 - (iii) Translation in X, Y and Z-directions
 - (iv) Scaling.

P.T.O.

3. (a) Let ABCD be the rectangular window with A(20, 20), B(90, 20), C(90, 70) and D(20, 70). Find the region codes for endpoints and use Cohen-Sutherland algorithm to clip the lines P_1 - P_2 with $P_1(10, 30)$ and $P_2(80, 90)$ and Q_1 - Q_2 with $Q_1(10, 10)$ and $Q_2(70, 60)$. [6]
- (b) Explain ways of projecting 3D objects onto 2D screen in detail. [6]

Or

4. (a) Explain display file structure. Why is display file interpreter used ? Which are the commands used in display file interpreter ? [6]
- (b) Explain the different types of polygons. Also explain the various methods for testing a pixel inside a polygon. [6]
5. (a) Explain HSV color model and also compare it with RGB color model. [6]
- (b) Explain Gourand shading and Phong Shading methods. [7]

Or

6. (a) What is Animation ? Explain the basic rules required for Animation. [6]
- (b) How is Polygon shading different from polygon filling ? Explain Phong shading briefly. [7]

7. (a) Explain the technique of smoothing of curves using B-Spline. [6]
- (b) Give the set of equations of Bezier curve. Write the algorithm for drawing a Bezier curve section using four points. [7]

Or

8. (a) Explain features of any graphics tool that you had studied. [6]
- (b) How are fractals used to generate fractal surfaces ? Give *two* examples of fractal surfaces. [7]

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