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[5559]-190

S.E. (Computer Engineering) (II Semester) EXAMINATION, 2019

COMPUTER GRAPHICS

(2015 PATTERN)

Time : Two Hours   **Maximum Marks : 50**

N.B. :—   (*i*)   Answer Q. No. **1** *or* Q. No. **2** and Q. No. **3** *or* Q. No. **4**

and Q. No. **5** *or* Q. No. **6** and Q. No. **7** *or* Q. No. **8**.

(*ii*)   Neat diagram must be drawn wherever necessary.

(*iii*)   Figures to the right indicate full marks.

(*iv*)   Assume suitable data, if necessary.

1.   (*a*)   Explain DDA line drawing algorithm. Consider line segment
from A(– 2, – 1) to B(6, 3) use DDA line drawing algorithm
to rasterize this line.   [6]

(*b*)   Explain any *one* inside test algorithm.   [2]

(*c*)   Explain Cohen-Sutherland line clipping algorithm with
example.   [4]

Or

2.   (*a*)   Define the following terms :   [2]

(*i*)   Resolution

(*ii*)   Aspect ratio.

(b) Write Bresenham line drawing algorithm. Also explain mathematical foundation of it. [6]

(c) Explain in detail polygon fill with scanline algorithm. [4]

3. (a) Write transformation matrix for : [2]

(i) 2-D reflection wrt Y-axis

(ii) 3-D rotation about X-axis.

(b) Consider a square P(0, 0), Q(0, 10), R(10, 10), S(10, 10). Rotate the square anticlockwise about fixed point R(10, 10) by an angle 45 degree. [4]

(c) Explain RGB and HSV color model. [6]

Or

4. (a) Explain the following terms : [2]

(i) Key-frame

(ii) Morphing.

(b) Write an algorithm to rename a segment. Draw a sample segment table. [4]

(c) What are the types of projection and write in brief about each type of projections. [6]

5. (a) Explain Warnock's algorithm. [3]

(b) Explain light sources, ambient light, diffuse reflection and specular reflection. [4]

(c) Explain BSP tree for hidden surface removal and explain its advantages. [6]

Or

6. (*a*) What is Lambert's cosine law ? What is its significance ? [3]

(*b*) Describe Z-buffer hidden surface algorithm. [4]

(*c*) Enlist and explain any *two* shading algorithms. [6]

7. (*a*) Write short note on B-spline curve. [3]

(*b*) Write any *four* important features of NVIDIA gaming platform. [4]

(*c*) Explain Koch curve and Hilbert curve with example. [6]

Or

8. (*a*) Explain architecture of *i*860. [3]

(*b*) Explain bezier curve. List its properties. [4]

(*c*) What is open GL ? Write its features and functions. [6]