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## 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 $\mathrm{A}(-2,-1)$ to $\mathrm{B}(6,3)$ use DDA line drawing algorithm to rasterize this dine.
(b) Explain any one inside test algorithm.
(c) Explain Cohen-Sutherland line clipping algorithm with example.
2. (a) Define the following terms :
(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.
3. (a) Write transformation matrix for :
(i) 2-D reflection wrt Y-axis
(ii) 3 -D rotation about X-axis.
(b) Consider a square $\mathrm{P}(0,0), \mathrm{Q}(0,10), \mathrm{R}(10,10), \mathrm{S}(10,10)$. Rotate the square anticlockwise about fixed point $\mathrm{R}(10,10)$ by an angle 45. degree.
(c) Explain RGB and HSV color model.

## Or

4. (a) Explain the following terms
(i) Key-frame
(ii) Morphing.
(b) Write an algorithm to rename a segment. Draw a sample segment table.
(c) What are the types of projection and write in brief about each type of projections.
5. (a) Explain Warnock's algorithm.
[3]
(b) Explain light sources, ambient light, diffuse reflection and specular reflection.
(c) Explain BSP tree for hidden surface removal and explain its advantages.
6. (a) What is Lambert's cosine law ? What is its significance ? [3]
(b) Describe Z-buffer hidden surface algorithm.
(c) Enlist and explain any two shading algorithms.
7. (a) Write short note on B-spline curve.
(b) Write any four important features of NVIDIA gaming platform.
[4]
(c) Explain Koch curve and Hilbert curve with example. Or
8. (a) Explain architecture of $i 860$.
(b) Explain bezier curve List its properties.
(c) What is open GL ? Write its features and functions.
