Code No: **R31054**   # R10   **Set No. 1**

III B.Tech I Semester Supplementary Examinations, May -2017
COMPUTER GRAPHICS
(Common to Computer Science and Engineering, Information Technology**)**

Time: 3 hours   **Max. Marks: 75**
Answer any FIVE Questions
All Questions carry equal marks
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1 a) Describe about the functioning of Plasma display devices.   [8M]
   b) Suppose an RBG raster system is to be designed using an 8-inch by 10 inch screen with a resolution of 100 pixels per inch in each direction. If we want to store 6 bits per pixel in the frame buffer , how much storage in bytes is required?   [7M]

2 a) Justify the approach of using integer arithmetic in Bresenham line drawing algorithm. Explain how rasterization accuracy is preserved despite using integer arithmetic   [8M]
   b) Write a boundary-fill procedure to fill an 8-connected region.   [7M]

3 a) Use composite transformation to fix the triangle $\begin{bmatrix} 1 & 0 & -1 \\ 0 & 1 & 0 \end{bmatrix}^T$ inside the square $\begin{bmatrix} 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 0 \end{bmatrix}^T$ so that its base coincides with the bottom edge of the square and the top vertex touches the middle of the top edge of the square   [8M]
   b) Explain 2- dimensional scaling and shear transformations with examples.   [7M]

4 a) Given a clipping window P(0,0),Q(340,0),R(340,340) and S(0,340),find the visible portion of the lines AB[(-170,595),(170,255)] and CD[(425,85),(595,595)] against the given window, using Cohen – Sutherland algorithm   [8M]
   b) Write a brief note about the following: [7M]
       i)View plane   ii) View reference   iii) View plane normal

5 a) Explain Phong shading algorithm with an example.   [8M]
   b) Write an algorithm for calculating normal vector for a Bezier surface at point P(u, v)   [7M]

6 a) Prove that two successive rotations about any one of the coordinate axes in three dimensions is commutative   [8M]
   b) Set up an algorithm for clipping a polyhedron against a parallelepiped.   [7M]

7 a) Explain any two backface detection methods with examples   [8M]
   b) Explain area subdivision and octree methods with examples.   [7M]

8 a) Explain about Traditional animation techniques and key frame systems.   [8M]
   b) Write in detail about the story board layout in context of animation.   [7M]
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