

Class – B.Sc. (IT)6th SEM

Paper –1 Option(I): Computer Graphics

Time Allowed : 3 Hours

Maximum Marks : 75

Attempt any 5 questions.

1. (a) Derive Bresenham line Drawing algorithm. Explain how it is better than DDA line drawing Algorithm. 10
- (b) Trace all the intermediate points on the line defined from A (0,6) to B (4,0) using Bresenham line algorithm. 5
2. Explain in detail Mid-point Circle generating algorithm. 15
3. Describe 3D rotation about x,y and z axis. Also write the corresponding transformation matrix. 15
4. (a) Prove that 2 successive 2-D rotation are additive i.e.,

$$R(\theta_1) \cdot R(\theta_2) = R(\theta_1 + \theta_2)$$
 7
- (b) Derive the equation for reflection on $y = x$ 8
5. What do you mean by clipping operation? List various clipping algorithm and discuss any one in detail. 15
6. Derive a transformation matrix to Align a vector $V(v_x, v_y, v_z)$ with unit vector K. 15
7. Explain the z-buffer algorithm for hidden surfaces and also explain its limitations. 15

8. Explain the following :

- (a) Inverse transformation
- (b) Antialiasing
- (c) Homogenous co-ordinate system

5×3=15

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