

Code :R5320501

**R5****III B.Tech II Semester(R05) Supplementary Examinations, April/May 2011  
COMPUTER GRAPHICS****(Computer Science & Engineering)****Time: 3 hours****Max Marks: 80****Answer any FIVE questions  
All questions carry equal marks**

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1. (a) What is the fraction of the total time per frame spent in retrace of electron beam for a non-interfaced raster system with a resolution of 1280 by 1024, a refresh rate of 60 Hz, a horizontal retrace time of 5 micro seconds and a vertical retrace time of 500 micro seconds.  
(b) Explain the architecture of a simple random scan system.
2. (a) Explain the algorithm for circle generation using mid-point circle generation.  
(b) Generate the points on the first octant of first quadrant, starting from (0,10), where the radius of the circle,  $r=10$ .
3. Determine the form of the transformation matrix for a reflection about an arbitrary line defined with equation  $y = m x + b$ .
4. (a) What are the steps involved in Cohen-Sutherland algorithm for line clipping.  
(b) Distinguish between Cohen-Sutherland and Sutherland-Hodgeman algorithms.
5. (a) State the boundary conditions that defines the Hermite curve section.  
(b) Derive the Hermite matrix.  
(c) Explain how the Hermite blending functions are derived.
6. Define tilting as a rotation about the x-axis followed by a rotation about the y-axis. If  $\theta_x, \theta_y$  are the rotations about x and y-axis.  
(a) Find the tilting matrix  
(b) Does the order of performing the rotation matter.
7. (a) Distinguish between object-space and image space methods of visible surface detection algorithms. Give examples for each.  
(b) Given points P (1, 2, 0), P (3, 6, 20) P (2, 4, 6) and a view point C (0, 0, -10), determine which points obscure the others when viewed from C.
8. Explain the procedure to implement the simulation of bouncing ball using damped sine function.

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