

B.TECH DEGREE EXAMINATIONS: NOV/DEC 2014

(Regulation 2009)

Fifth Semester

INFORMATION TECHNOLOGY

CSE109: Computer Graphics

Time: Three Hours

Maximum Marks: 100

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. The maximum number of points that can be displayed without overlap on a CRT is referred to as
 - a) resolution
 - b) high-definition
 - c) aspect ratio
 - d) frame buffer
2. Image processing applications
 - a) Creates new pictures
 - b) Improves picture quality
 - c) Take photographs
 - d) Take videos
3. For a line with the endpoint coordinates (x_1, y_1) and (x_2, y_2) , they coordinate of the intersection point with a vertical boundary can be obtained
 - a) $Y = y_1 + m(x_2 - x_1)$
 - b) $Y = y_1 + m(x - x_1)$
 - c) $Y = y_1 + m(x_2 + x_1)$
 - d) $Y = y_1 + m(x + x_1)$
4. A world-coordinate area selected for display is called a
 - a) window
 - b) device
 - c) viewport
 - d) World-window
5. The parallel lines in a scene that are not parallel to the display plane are projected into converging line in
 - a) Perspective projection
 - b) Parallel projection
 - c) Depth Cueing
 - d) Surface Identification
6. _____ representations are used to describe interior properties, by partitioning the spatial region containing an object into a set of small, non-overlapping, contiguous solids
 - a) Boundary
 - b) Space-partitioning
 - c) Surface
 - d) Plane
7. The function for scaling a three dimensional object is

- a) Scale(scaleVector, matrixScale) b) Scale1(scaleVector, matrixScale)
 - c) Scale2(scaleVector, matrixScale) d) Scale3(scaleVector, matrixScale)
8. The positive direction for the viewing z axis, and the orientation of the view plane, is selected by specifying
- a) view-plane normal vector b) window-plane normal vector
 - c) normal-plane normal vector d) device-plane normal vector
9. The curve obtained by plotting the normalized amounts x and y for colors in the visible spectrum
- a) XYZ Color b) CIE chromaticity
 - c) Intuitive Color d) RGB Color
10. A detailed drawing of the scene at a certain time in the animation sequence
- a) object definition b) storyboard
 - c) keyframe d) film sequence

PART B (10 x 2 = 20 Marks)

- 11. Define refresh CRT
- 12. How three dimensional scenes are generated with a vibrating and flexible mirror?
- 13. The coordinates of a triangle is given by A(50,50), B(150,150) and C(180,180). Find the coordinate values after translation and scaling given $t_x=50, t_y=50$ and $s_x=2, s_y=2$.
- 14. Differentiate between Cohen-Sutherland line clipping and Nicholl-Lee-Nicholl line clipping.
- 15. What is surface rendering?
- 16. Write the equation for a spherical surface in cartesian coordinate and parametric form
- 17. List the functions used for three dimensional transformations.
- 18. What is view reference point?
- 19. Mention the uses of chromaticity diagram.
- 20. Give the steps of animation sequence.

PART C (5 x 14 = 70 Marks)

- 21. a) Draw the architecture of a raster scan system. Explain the video controller and refresh operations.
- (OR)**
- b) With an example demonstrate the midpoint circle drawing algorithm.
22. a) (i) What is composite transformation? How general pivot-point rotation and general fixed point scaling performed? (7)

- (ii) Explain the transformation that distorts the shape of an object with necessary transformation matrix. (7)

(OR)

- b) What is clipping? Enumerate sutherland-hodgeman polygon clipping algorithm with an example.

23. a) (i) Explain the method for adding a sense of realism to a computer-generated scene using either three-dimensional or stereoscopic views. (7)

- (ii) Compare three dimensional parallel projection and perspective projection. (7)

(OR)

- b) List the properties of Bezier curves.

24. a) For a three dimensional object perform the translation and scaling with homogenous coordinate representation.

(OR)

- b) Explain the general ideas involved in three-dimensional clipping

25. a) Compare RGB and YIQ color model.

(OR)

- b) (i) How do you transform an object shape from one form to another? (7)

- (ii) Evaluate the direct motion specification and goal directed system of objects in an animation system. (7)
