

(b) (i) A polygon has four vertices located at A(20, 10) B(60, 10) C(60, 30) D(20, 30). Calculate the vertices after applying a transformation matrix to double the size of polygon with point A located on the same place. (8)

(ii) The reflection along the line $y = x$ is equivalent to the reflection along the X axis followed by counter clockwise rotation by ϕ degrees. Find the value of ϕ . (8)

12. (a) (i) Determine the blending function for Uniform periodic Bspline curve for $n=4$, $d=4$. (8)

(ii) Explain any one visible surface identification algorithm. (8)

Or

(b) Explain a method to rotate an object about an axis that is not parallel to the coordinate axis with neat block diagram and derive the transformation matrix for the same. (16)

13. (a) (i) Explain RGB color model in detail. (8)

(ii) Explain how 3D scenes are drawn. (8)

Or

(b) (i) Discuss the computer animation techniques. (10)

(ii) Explain how 3D objects are drawn (6)

14. (a) (i) Explain the process of mapping texture over a cylindrical surface. (8)

(ii) Explain the vector interpolation technique used by Phong shading model. (8)

Or

(b) (i) How does environment mapping differ from surface texturing process? What is the effect of any directional light source? (8)

(ii) Explain the process of drawing shadows for modeled objects. (8)

15. (a) (i) How are Peano curves produced? Give examples. (8)

(ii) Write short notes on Mandelbrot sets. (8)

Or

(b) Describe the process of Ray Tracing. Explain how it is used to create Reflections and Transparency. (16)