

- Q.* Explain Implicit and Explicit function with example.
- Q.* Find the reflected coordinate of triangle ABC about line  $y = 3x + 4$ . The original coordinates of triangle A(5,10); B(10,10) & C(5,15).
- Q.* Discuss about B-rep and CSG approach in Solid modeling with advantages and limitation.
- Q.* Explain parametric representation of surface and write parametric equation of ruled surface, surface of revolution and Bezier surface.

*Q.* Explain NC, CNC and DNC and differentiate between them.

*Q.* Explain open and closed loop system with example.

*Q.* Explain the procedure for manual part programming with example.

*Q.* Explain automated material handling with example.

*Q.* Explain product life cycle with a neat block diagram.

*Q.* Write short notes on

- i. Input devices.
- ii. Output devices.

And also explain Mouse, Keyboard.

*Q.* Given a point P(1,3,-5) find:

The transformed point  $p^*$  is translated by  $d = 2i + 3j - 4k$  and then rotated by  $30^\circ$  about Z axis.

*Q.* Consider a triangle whose vertices are (2, 2), (4, 2) and (4, 4). Find the concatenated Transformation matrix and the transformed vertices for rotation of  $90^\circ$  about the origin followed by reflection through the line  $y = x$ .

*Q.* Describe explicit, implicit and parametric representations. What are the advantages of parametric representation over non-parametric representation? Write parametric equations for circle, parabola, hyperbola, line and ellipse.

*Q.* Describe Hermite Cubic Splines curves.

*Q.* Describe Bezier curves.

*Q.* Describe B-spline curves.

## Short Questions

- i. Explain the term CAM.
- ii. Differentiate homogenous coordinate and ordinary coordinate.
- iii. What are combined transformations?
- iv. Define 3D shearing and Scaling.
- v. Define Automation.
- vi. Write down the parametric equation of Bezier curve and  $\beta$  spline.
- vii. What is the application of FEM?
- viii. What are FMS components?
- ix. Differentiate between NC & CNC.
- x. If a circle is revolved about the axis of revolution by  $360^0$ , then give the shape of object in 3D.
- xi. List the advantages of CAD and CAM.
- xii. Explain Scaling.
- xiii. Define a curve.
- xiv. Define a synthetic curve.
- xv. Key board as an input device in CAD.
- xvi. Explain WCS.
- xvii. Explain Non-Parametric equations of curve.
- xviii. Synthetic Curve.
- xix. Drive the equation of line (end point not known).
- xx. Advantage of Cam.