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**Total No. of Pages : 02**

**Total No. of Questions : 09**

**B.Tech.(CSE) (2011 Onwards) (Sem.-5)**

## COMPUTER GRAPHICS

**Subject Code : BTCS-504**

Paper ID : [A2100]

**Time : 3 Hrs.**

**Max. Marks : 60**

**INSTRUCTION TO CANDIDATES :**

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students have to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students have to attempt any **TWO** questions.

## SECTION-A

**I. Write briefly :**

- What do you mean by scan conversion?
- What are homogeneous coordinates? How are they useful?
- Write a general transformation matrix for shearing in x-direction.
- List various applications of Computer Graphics.
- Why railway tracks appears to converge at horizon?
- Define clipping.
- Find the matrix that represents rotation of an object by  $30^\circ$  about the origin.
- What do you mean by vanishing points?
- What do you mean by rendering?
- What are fractals?

## SECTION-B

- II. Differentiate between raster scan systems and random scan systems.
- III. Find the transformation matrix for reflection about a line  $L$  with slope  $m$  and  $y$  intercept  $(0, b)$ .
- IV. What do you mean by window and viewport? Describe window to viewport transformation.
- V. What is the difference between Boundary-fill and Flood-Fill algorithms? Write 8-boundary fill algorithm.
- VI. Describe z-buffer algorithm for hidden surface elimination.

## SECTION-C

- VII. Derive the decision parameter expressions for Bresenham line drawing algorithm. Write Bresenham line drawing algorithm and explain how it is better than DDA algorithm for line generation.
- VIII. Describe in detail Sutherland-Hodgeman polygon clipping algorithm. What are its shortcomings?
- IX. Write short notes on :
  - a. Gouraud and Phong Shading
  - b. Edge fill and fence fill algorithms