Roll No. | | | | | | | | | | | | **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**

INSTRUCTIONS 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

1. Give short answers of the following :

a. What do you mean by scan conversion?

b. Out of raster scan systems and random scan systems, which type of system is beneficial for rendering architectural drawings? Why?

c. What do you mean by viewport? Write a general transformation matrix for mapping a window to a viewport?

d. What do you mean by interior clipping and exterior clipping?

e. What is anti-aliasing?

f. What are composite transformations?

g. Why does parallel railway track appear to converge at horizon?

h. What are fractals?

i. What do you mean by rendering?

j. List various types of plane projections.

SECTION-B

2. Find the transformation matrix for reflection about a line *L* with slope *m* and *y* intercept (*0, b*).

3. What is the difference between boundary-fill end flood-fill algorithms? Write 8-boundary fill algorithm.

4. Describe depth sort algorithm for hidden surface elimination.

5. Explain Gourard shading method.

6. Prove that a uniform scaling ($s_x = s_y$) and a rotation form a commutative pair of operations but that, in general, scaling and rotation are not commutative operations.

SECTION-C

7. Derive the decision parameter expressions for midpoint circle drawing algorithm. Using midpoint circle drawing algorithm, find the coordinates of pixels that lie on the boundary of circle with radius 10 and center as (5,5).

8. Describe in detail Sutherland-Hodgeman polygon clipping algorithm. What are its shortcomings?

9. Write short notes on :

   a. Floating horizon technique.

   b. Edge fill and fence fill algorithms.