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

Total No. of Pages: 02
Total No. of Questions: 09

B. Tech. (CSE) (Sem.-5th)

COMPUTER GRAPHICS

Subject Code: BTCS-504
Paper ID: [A2100]

Time: 3 Hrs. **Max. Marks: 60**

INSTRUCTIONS TO CANDIDATE:

1. ***Section –A, is Compulsory.***
2. ***Attempt any four questions from Section-B.***
3. ***Attempt any two questions from Section-C.***

Section –A (10x2=20)

Q.1. Give short answers of the following:

(a) What is the difference between raster scan systems and random scan systems?

(b) What do you mean by window and viewport?

(c) What are vanishing points?

(d) What is anti-aliasing? Where is it used?

(e) What do you mean by scan line?

(f) What are homogeneous coordinates? How would you represent a point at infinity using homogenous coordinates?

(g) What is difference between boundary- fill algorithm and flood- fill algorithm?

(h) A region bounded by an 8-connected single color boundary is to be filled with 8-boundary fill algorithm. Will it be able to fill the region correctly? if no, why?

(i) Write a transformation matrix for reflection about a line inclined at 45^0 to x-axis.

(j) What are fractals?

Section –B (4x5=20)

Q.2. What are the conditions under which scaling and rotation forms a commutative pair of operations?

Q.3. Describe z-buffer algorithm for hidden surface elimination.

Q.4. Explain Phong's method for smooth shading.

Q.5. Describe in detail Cohen-Sutherland line clipping algorithm.

Q.6. Explain scan line polygon fill algorithm. what problem does the algorithm encounter when a scan line passes through a vertex?

Section –C (2x10=20)

Q.7. Describe in detail Bresenham's line drawing algorithm. Making use of Bresenham's algorithm, Find the coordinates of the pixels that lie on a line segment having the endpoints (2,3) and (5,8).

Q.8. Describe in detail Sutherland Hodge man polygon clipping algorithm. What is the problem that this algorithm encounters when applied on concave polygons?.

Q.9. Write short notes on:

(a) Plane projection and its types

(b) Raytracing.

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