Roll No. | | | | | | | | | | | | | **Total No. of Pages : 02**

Total No. of Questions : 07

B.Sc.(Computer Science) (Sem.–6)

COMPUTER GRAPHICS

Subject Code : BCS-606

M.Code : 72786

Date of Examination : 27-05-2023

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 SIX questions carrying TEN marks each and a student has to attempt any FOUR questions.**

SECTION-A

1. Write short answers of the following :

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

b) What is meant by horizontal and vertical retrace?

c) Define fluorescence and phosphorescence.

d) Differentiate between interior clipping and exterior clipping.

e) What are vanishing points?

f) What are cavalier and cabinet projections?

g) What is meant by differential scaling?

h) Differentiate between raster scan systems and random scan systems.

i) If a boundary is 8-connected, can 8-boundary fill algorithm be used to fill the region bounded by that boundary? If no, why?

j) What is the relationship between the rotations R_{Θ}, $R_{-\Theta}$ and R_{Θ}^{-1}?

SECTION-B

2. Explain in detail midpoint algorithm for scan converting a circle. Using Midpoint circle generation algorithm, compute the coordinates of points that lie on the circumference of the circle with radius 5 and center as (7,7).

3. Describe in detail construction and working of refresh Cathode Ray Tube (CRT) monitor. Describe, how color can be generated using shadow mask and beam penetration method.

4. Explain in detail Bresenham's algorithm for scan converting a line. Using Bresenham's line drawing algorithm, compute the coordinates of points on line between (2,3) and (7,5).

5. What is meant by clipping? Describe the sequence of steps involved in clipping a line using Cohen- Sutherland line clipping algorithm.

6. Derive the general perspective transformation onto a plane with reference point $R_o(x_o,y_o,z_o)$, normal vector $N=n_1I+n_2J+n_3K$, using C(a,b,c) as the center of projection.

7. Derive and describe the 3-D graphical transformation for rotating an object about an arbitrary axis.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.