

Please check that this question paper contains 09 questions and 02 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: 02]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 6th

Name of Subject: Computer Graphics

Subject Code: PCCS-113

Paper ID: 17189

MORNING

19 SEP 2022

Time Allowed: 03 Hours

Max. Marks: 60

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) List various applications of computer graphics .
- b) Discuss the limitations of Depth-Sorting method for visible surface detection.
- c) Define the term anti-aliasing.
- d) Define Vanishing point.
- e) Find the general form of a scaling matrix with respect to a fixed point P(h,k).
- f) Differentiate between image space and object space approaches for visible surface detection.

Part – B

[Marks: 04 each]

- Q2.** Discuss in detail the scan line method for visible surface detection.
- Q3.** Explain the working and components of refresh type CRT with labelled diagram.
- Q4.** Illustrate in detail about 3-D viewing pipeline? Differentiate between parallel and perspective projections.
- Q5.** How is raster scan display technique different from random scan display technique? Explain raster scan display system in detail.

- Q6. Find the matrix for mirror reflection with respect to the plane passing through the origin and having a normal vector whose direction is $N = I + J + K$.
- Q7. Distinguish between flood fill and boundary fill algorithm.

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Part – C

[Marks: 12 each]

- Q8. How surface rendering is important for the display of objects? Also compare Gouraud and Phong shading techniques for surface rendering.

OR

Why Bresenham's Line drawing algorithm is better than Digital differential analyser Line Drawing algorithm? Describe Bresenham's Line drawing algorithm in detail along with derivation.

- Q9. Perform a 45° rotation of triangle $A(0,0)$, $B(1,1)$, $C(5,2)$
- (a) about the origin
- (b) about $P(-1, -1)$.

OR

Let R be a rectangular window whose lower left hand corner is at $L(1,2)$ and upper right hand corner is at $R(9,8)$. Using the Liang-Barsky algorithm, clip the line GH having endpoints $G(-1,7)$ and $H(11, 1)$ and line CD having endpoints $C(3,7)$ and $D(3,10)$.
