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**PRESIDENCY UNIVERSITY
BENGALURU**

SET A

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2024**

Semester : Semester III 2022
Course Code : CSE2066
Course Name : Computer Graphics
Program : B.Tech.

Date : 08-JAN-2024
Time : 9:30AM - 12:30 PM
Max Marks : 100
Weightage : 50%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

5 X 2M = 10M

1. How the Bresenham's line drawing algorithm overcomes the drawbacks of DDA?
(CO1) [Knowledge]
2. Write the rotation matrix to rotate a point $P(x,y)$ with an angle 'theta' to $P'(x',y')$ and represent $P'(x',y')$ in terms of $P(x,y)$
(CO2) [Knowledge]
3. Outline the advantages and disadvantages of Cohen-Sutherland line clipping algorithm.
(CO3) [Knowledge]
4. What is quadric surfaces?
(CO3) [Knowledge]
5. Define 2D Curves and 3D Space Curves
(CO4) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

5 X 10M = 50M

6. Explain general three dimensional transformation pipeline from world coordinates to device coordinates with all the steps involved.
(CO1) [Comprehension]

7. Explain Two Dimensional viewing pipeline architecture to map world-coordinate scene description to device coordinates with a neat diagram.
(CO2) [Comprehension]
8. Explain perspective projection with a neat diagram and summarize the perspective projection types in detail.
(CO3) [Comprehension]
9. Distinguish between parametric and non-parametric representation for plane curves and surfaces with suitable examples and diagrams.
(CO4) [Comprehension]
10. Explain Bezier and Spline curves for curve representations in computer graphics with suitable diagrams.
(CO4) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

2 X 20M = 40M

11. A) Demonstrate 3D Transformations in detail with proper examples and diagrams that include change in Size, Shape, Position and Orientation of any object.
B) Derive the Three Dimensional Transformation matrix for Translation, Rotation and Scaling.
(CO3) [Application]
12. A) Illustrate Cohen-Sutherland line clipping algorithm and explain the working in detail.
B) Apply Cohen-Sutherland algorithm to clip a line with end points $P_1(10,30)$ and $P_2(80,90)$, Let ABCD be the rectangular clip window with $A(20,20)$, $B(90,20)$, $C(90,70)$ and $D(20,70)$. Find the region code for the end points of the line.
(CO4) [Application]