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**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
END TERM EXAMINATION - JUN 2023**

Semester : Semester VI - 2020

Course Code : CSE2066

Course Name : Sem VI - CSE2066 - Computer Graphics

Program : CSG&CST

Date : 16-JUN-2023

Time : 9.30AM - 12.30PM

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.
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PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. What is the use of Horizontal and Vertical Deflection plates in CRT display devices?
(CO1) [Knowledge]
2. What is quadric surfaces?
(CO4) [Knowledge]
3. Define 2D Curves and 3D Space Curves with suitable diagrams.
(CO3) [Knowledge]
4. Describe the applications of Clipping in Computer Graphics.
(CO2) [Knowledge]
5. Describe 3D Composite Transformation with a suitable example.
(CO3) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

(5 X 10 = 50M)

6. Extend the Cohen Sutherland line clipping algorithm to clip the line segment coordinate (30,60) and (60,25) against the clip window whose coordinates are $(X_{wmin}, Y_{wmin})=(10,10)$ and $(X_{wmax}, Y_{wmax})=(50,50)$.
(CO3) [Comprehension]

7. Distinguish between parametric and non-parametric representation for plane curves and surfaces with suitable examples and diagrams.
(CO4) [Comprehension]
8. Explain Two Dimensional viewing pipeline architecture to map world-coordinate scene description to device coordinates with a neat diagram.
(CO2) [Comprehension]
9. Discuss the applications of linear algebra, Matrix Equations, Linear equation, Quadratic equation, Calculus, and differential geometry in various fields of computer graphics with suitable examples.
(CO1) [Comprehension]
10. Explain general three dimensional transformation pipeline from world coordinates to device coordinates with all the steps involved.
(CO3) [Comprehension]

PART C

ANSWER ALL THE QUESTIONS

(2 X 20 = 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. Illustrate Cohen-Sutherland line clipping algorithm and explain the working in detail. Apply Cohen-Sutherland algorithm to clip a line with end points P1(10,30) and P2(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]