Roll No											

PRESIDENCY UNIVERSITY
BENGALURU

SCHOOL OF ENGINEERING
END TERM EXAMINATION - JAN 2023

Semester : Semester V - 2020
Course Code : CSE2066
Course Name : Sem V - CSE2066 - Computer Graphics
Program : B.Tech. Computer Science and Engineering

Date : 6-JAN-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.

PART A

ANSWER ALL THE TEN QUESTIONS **10 X 2 = 20M**

1. What is random scan display and where it is used?

(CO1) [Knowledge]

2. Recall what is Raster Scan Display and where it is used?

(CO1) [Knowledge]

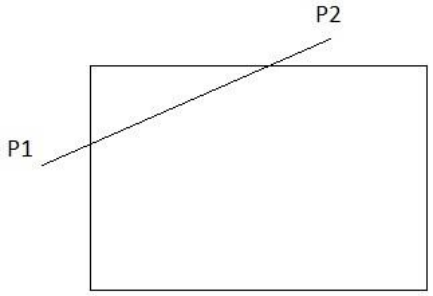
3. How the Bresenham's line drawing algorithm overcomes the drawbacks of DDA?

(CO1) [Knowledge]

4. 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]

5. Write the Cohen-Sutherland region code for the line joining points P1 and P2 as shown below.



(CO2) [Knowledge]

6. What is orthogonal projection. Write the matrix for orthogonal projection.

(CO3) [Knowledge]

7. List the advantages of parametric representation of the curve.

(CO4) [Knowledge]

8. List the input devices which can be used for selection in computer graphics.

(CO1) [Knowledge]

9. How to transform the point P(Xw, Yw) from world coordinate system to view coordinate system P(Xv,Yv)? Write the transformation function for Xv and Yv.

(CO2) [Knowledge]

10. Define the basic 2D transforamtion techniques. Write their matrix representation.

(CO2) [Knowledge]

PART B

ANSWER ALL THE FIVE QUESTIONS **5 X 10 = 50M**

11. OpenGL is the tool used for designing graphical applications. List the features of OpenGL and explain its library types with example.

(CO1) [Comprehension]

12. What is polygon clipping.With suitable example, explain Sutherland-Hodgman's polygon clipping with respect to four case.

(CO2) [Comprehension]

13. Explain perspective projection with a neat diagram and summarize the perspective projection types in detail.

(CO3) [Comprehension]

14. Answer the following questions:
a) Represent 3D transformation techniques in homogeneous coordinate system.
b) With a neat diagram, describe 2D scaling steps about a pivot point.

(CO2,CO3) [Comprehension]

15. How do you define Bezier cureve with suitable diagram. Explain any five properties of Bazier curves.

(CO4) [Comprehension]

PART C

ANSWER ALL THE TWO QUESTIONS **2 X 15 = 30M**

16. Answer the following:
a) Compare Bresenham's line drawing algorithm and DDA line drawing algorithm. List the advantages and disadvantages of each of the algorithm.
b) Given a rectangle with coordinate points A(2, 5), B(4,5), C(4, 2), D(2, 2).
i) Apply the translation with distance 2 towards X axis and 2 towards Y axis.
ii) Apply the scaling parameter 2 towards X axis and 3 towards Y axis and obtain the new coordinates of the object.
iii) Obtain the new coordinates for each of the above cases.

(CO2,CO1) [Application]

17. Answer the following questions:
a) Explain Liang Barsky line clipping algorithm. Apply this algorithm to the line with coordinates (30, 60) and (60, 25) against the window with (Xmin,Ymin) = (10,10) and (Xmax,Ymax) = (50,50).
b) Illustrate DDA algorithm for drawing line between point P1 and P2.

(CO1,CO2) [Application]

*****