
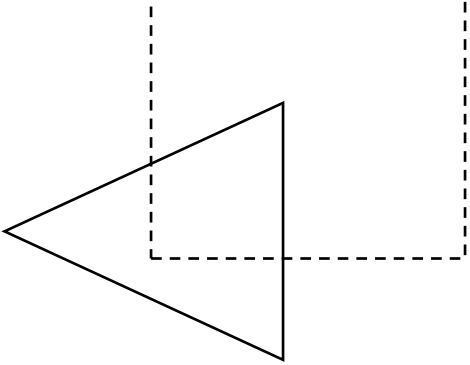


Name:			
Enrolment No:			
UNIVERSITY OF PETROLEUM AND ENERGY STUDIES End Semester Examination, December 2022			
Course: Computer Graphics Program: MCA Course Code: CSEG-8005		Semester: III Time : 03 hrs. Max. Marks: 100	
Instructions: Attempt all questions			
SECTION A (5Qx4M=20Marks)			
S. No.		Marks	CO
Q1	Compare Vector and Random Scan display.	4 marks	CO1
Q2	Explain the basic design of CRT with a diagram and bring out the difference between the working mechanism of CRT and Colored CRT.	4 marks	CO1
Q3	If we are to plot only $(1/8)^{\text{th}}$ of a circle using mid-point circle generation algorithm then write down the steps required to do so.	4 marks	CO2
Q4	Bring out the differences between 2D and 3D transformations in OpenGL.	4 marks	CO2
Q5	Contrast between Z-buffer and Depth buffer algorithms.	4 marks	CO3
SECTION B (4Qx10M= 40 Marks)			
Q6	Explain the Cohen- Sutherland Line clipping algorithm with proper example and diagram representation.	10 marks	CO3
Q7	Using Mid-Point Ellipse Algorithm to determine raster positions for the radius values $R_x=8$ and $R_y=6$.	10 marks	CO4
Q8	Consider the line from (5,5) to (13,9). Use the Bresenham's algorithm to rasterize the line.	10 marks	CO4
Q9	State the differences between Phong model and Gouraud model and Determine curve parameters for a Bezier curve having the points $B_0(0,10)$, $B_1(10,50)$, $B_2(70,40)$ and $B_3(70,-20)$. OR After rotation of a point from position (x, y) to position (x1,y1) through an angle θ relative to the co-ordinate origin. The original angular displacement of the point from x-axis is ϕ then what would be the rotation matrix.	10 marks	CO4

SECTION-C
(2Qx20M=40 Marks)

Q10	Explain rotation about an arbitrary axis in 3D. Also rotate a rectangular parallelepiped by -90° about x axis having lengths on x axis, y axis and z axis as 3,2 and 1 respectively.	20 marks	CO5
Q11	<p>Using Sutherland-Hodgeman Polygon Clipping, clip the polygon shown below showcasing all the steps involved.</p> <div style="text-align: center;"></div> <p style="text-align: center;">OR</p> <p>Explain Composite transformation method. And Translate the square ABCD whose coordinates are A(0,0) , B(3,0) , C(3,3), D(0,3) by 2- units in both directions and then scale it by 1.5 units in x- direction and 0.5 units in y direction.</p>	20 marks	CO5