Question Paper

Exam Date & Time: 22-Jun-2024 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

SIXTH SEMESTER B.TECH MAKEUP EXAMINATIONS, JUNE 2024

COMPUTER GRAPHICS [ICT 4033]

Ma	rks: 50	Duratio	n: 180 mins.
An	swer all the	questions.	
Inst	ructions to C	andidates: Answer ALL questions Missing data may be suitably assumed	
1)		Assume radius r=10 and origin(0,0). Generate all points using circle drawing algorithm.	(5)
	A)		
	B)	Develop an algorithm to generate all points using DDA line drawing algorithm. Generate the points between $P(4,10)$ and $Q(8,12)$ using the same.	s (3)
	C)	Mention the properties of Bazier curves.	(2)
2)		Develop an object space based visible surface detection algorithm. Also, explain its working with a example.	an (5)
	A)		
	B)	Differentiate between Bazier and Spline curves.	(3)
	C)	Apply even/odd technique to identify point P lies inside/outside the polygon. Give an example	(2)
3)		Given a 2D triangle with coordinate points P(2, 6), Q(5, 7), R(4, 9)	(5)
	A)	i. Apply the reflection on the Y axis and obtain the new coordinates of the object.	
	,	ii. Perform a counter clockwise 45 degree rotation and translation of 4 units on the above mentioned triangle. Assume the origin is at (2,2).	
	В)	Consider the rectangle window with vertices E(20,20), F(90,20), G(90,70), and H(20,70). Determine the region codes for the endpoints and apply the Cohen-Sutherland algorithm to clip the line Q1Q2 where Q1(15,40) and Q2(70,90).	ne (3) 2,
	C)	Apply rotation transformation to a cube shown in Figure Q.3C, then rotate it 90 degrees anticlockwise around the y-axis.	(2)





4)



A)



Figure Q.4A.

B) Compare convex, concave and complex polygons.

(3)

- C) Develop an algorithm to fill the polygon with 4-connected pixels. What are its draw backs ? (2)
- Generate the polygon shown in Figure Q.5A. using OpenGL. Also, mention the applications of (5) OpenGL

A)

5)



Figure Q. 5A

B) Differentiate between scan line and seed fill polygon filling approaches (3)

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 C) Compare refresh type and storage Type CRT(Cathode Ray Tube). (2)

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