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UCS505

Roll Number:_____

Thapar Institute of Engineering & Technology, Patiala

Department of Computer Science &Engineering

Auxiliary Exam

Course Code: UCS505	B. E. 3rd year(COE/CSE)
Course Name: Computer Graphics	
26/08/2023	5:30 PM - 8:30 PM
Time: 3 Hours, M. Marks: 100	Faculty: Dr. Yadwinder Singh

Note: All questions are compulsory to attempt. Attempt all questions in serial order and assume missing data if any.

Q.1.	Write down the Bresenham's Line Drawing Algorithm (For both cases of +ve slope). Calculate the Intermediate points for the line with endpoints (9,18) and (14, 22) using Bresenham's Line drawing algorithm. (Clearly show all the calculations).	**(10)**
Q.2.	a. Rotate a Triangle placed at A(0,0) ,B(1,1) and C(5,2) by an angle 45 degree with respect to point (-1,-1). Give Matrix for all the independent transformations and the composite transformation matrix. Give the final coordinates for the triangle. b. Differentiate between Bresenham and Midpoint circle drawing algorithms.	**(7+3)**
Q.3.	Explain Liang-Barsky Line Clipping Algorithm (2-D). 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).	**(10)**
Q.4.	Define the Interpolating and Approximating Splines. Give example for each. Derive the basis matrix for the cubic Bezier Curves.	**(2+2+6)**
Q.5.	Devise 8-connected boundary fill algorithm for filling the interior regions with the given input set of vertices having seed pixel (2,3).	**(10)**
Q.6.	Define Projections. Explain various types of projections in detail.	**(10)**
Q.7.	Differentiate between Raster Scan and Random Scan System. Explain the working principle of CRT.	**(4+6)**
Q.8.	Explain the difference between Z-Buffer Algorithm and Painter's Algorithm. Discuss by giving suitable example.	**(10)**
Q.9.	Write short note on the following: a. Coherence Properties and it's types b. Resolution, Aspect Ratio and Interlacing c. Sutherland Hodgeman Polygon Clipping d. 3- D Viewing	**(4 * 5)**

Vertex	1	2	3	4	5	6	7	8	9	10	11	12	13
X	1	1	2	2	5	5	7	7	5	5	3	3	1
Y	1	5	5	7	7	5	5	1	1	2	2	1	1