

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATION- 2024

B.Tech-V Semester (CSE)

COURSE CODE (CREDITS): 18B11CI515 (3)

MAX. MARKS: 25

COURSE NAME: Computer Graphics

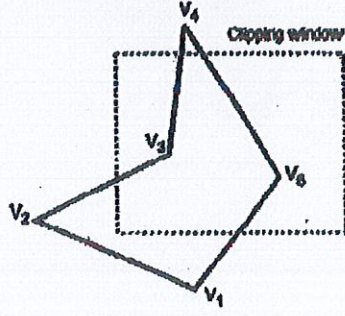
COURSE INSTRUCTORS: Dr. Anita, Mr. Prateek Thakral, Ms Seema

MAX. TIME: 90 Min

Note: (a) All questions are compulsory.

(b) Calculator not allowed

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1	<p>Consider the triangle ABC with coordinates A (0, 0), B (2, 2), and C (10, 4). You are required to magnify the triangle four times its original size using the following conditions:</p> <ol style="list-style-type: none"> Magnify the triangle with respect to the origin. Magnify the triangle, while keeping point C (10, 4) fixed. <p>Show the step-by-step calculation and write new vertices of triangle.</p>	CO-3	(2+3)
Q2	<p>Write the four possible cases of the Sutherland-Hodgeman algorithm when clipping a polygon against a clipping window and Based on these cases, clip the polygon shown in the given figure using the Sutherland-Hodgeman algorithm, and demonstrate the step-by-step process of clipping each edge of the polygon.</p> 	CO-2	(4)
Q3	<p>Let R be a rectangular window with lower left corner coordinates A (0, 100) and upper right corner coordinates C (50, 200). Using Liang-Barsky line clipping, clip the line segment PQ with coordinate points P (30, 75) and Q (45, 215).</p>	CO-2	(4)
Q4	<p>(a) With the help of a suitable diagram, derive the equations and matrix used to perform basic two-dimensional rotation of a point P (x, y) about origin. (b) Use these derived equations to rotate a triangle with coordinate</p>	CO-3	(2+2)

	points A (2, 2), B (5, 5) and C (8, 2) by 90° about origin. Draw the original triangle and the rotated triangle thus obtained.		
Q5	(a) What is the significance of Inside- Outside Tests in Polygon scan line filling algorithm. Explain with an example. (b) Write down pseudo code to convert or split any concave polygon into two or more convex polygons	CO-2	(2+2)
Q6	(a) Assuming an 8 way symmetry topology, show stack elements of seed pixel(x, y) using boundary fill algorithm for any polygon. How scan line polygon filling is helpful in filling color in the same polygon. Write all the steps. (b) Show inverse transformation of rotation and scaling of any object in 2D.	CO-2 and CO-3	(3+1)

ALL THE BEST

JUIT TEST-2 EXAMINATION- OCT-2024