



Daffodil International University

Faculty of Science & Information Technology

Department of Computer Science & Engineering

Mid Term Examination, Fall 2025

Course Code: CSE421 Course Title: Computer Graphics

Level: 4 Term: 3 Batch: 61

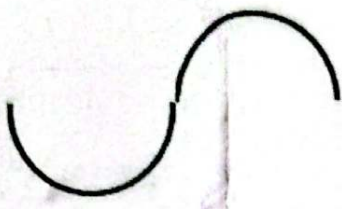
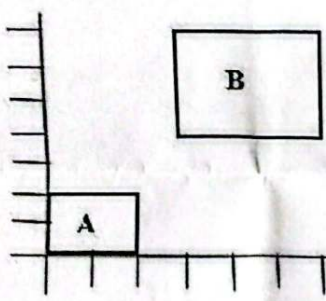
Time: 1:30 Hrs

Marks: 25

Answer ALL Questions

[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	(a) A research team is developing a flight simulator that requires a smooth and realistic graphics display. The team is debating between raster-scan and random-scan display technologies for rendering aircraft and cockpit details. Identify and explain both display techniques and recommend which one is more suitable for this simulator and justify your choice. (b) Analyze the Bresenham Line Drawing Algorithm and derive the equations for calculating the initial decision parameter (P_0) and the next decision parameter (P_{k+1}). Explain each step of your derivation with proper justification.	3+5	CO1
2.	Suppose, from Fig: A, the third line (from the left) for the letter M needs to be drawn. Apply the Bresenham Line Algorithm to determine the decision parameters and intermediate pixel positions step-by-step. Letter "M" in Coordinate Grid (for Line Drawing Algorithm) Fig: A	5	CO2

3.	Suppose we want to draw a shape like "S". For the purpose we have taken two circle having radius 6 and centered at (6, 0) and (-6, 0) respectively. We have trimmed down half of the each circle to look like the following Fig-B. Now, apply circle Algorithm to determine the points of the following shape and plot the tentative shape.  Fig: B	7	CO2
4.	(a) Analyze the relationship between A and B from Fig-C, and identify what transformation process should you follow to transform the rectangle A to B. Justify your choice. (b) Apply the 2D rotation transformation to rotate the both objects by 30° about the Y-axis, and calculate the new coordinates of the transformed points.  Fig: C	2+3	CO2