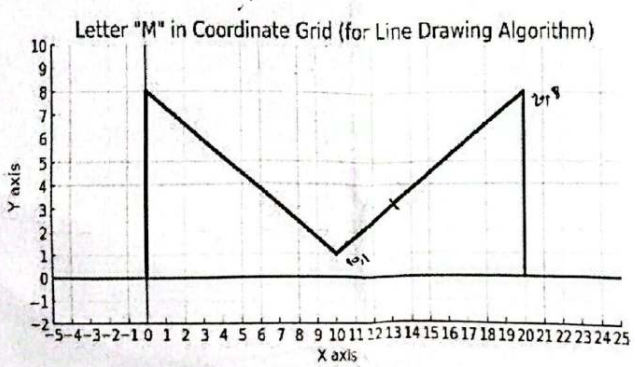
Daffodil International University

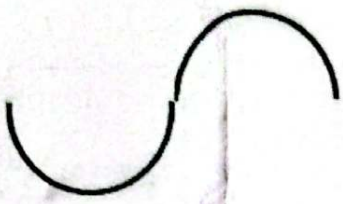
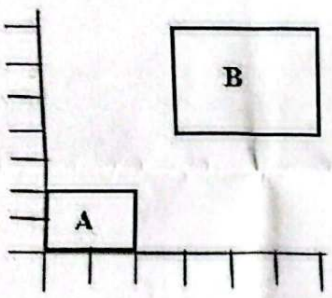
Faculty of Science & Information Technology
Department of Computer Science & Engineering
Mid Term Examination, Fall 2025
Course Code: CSE421 Course Title: Computer Graphics
Level: 4 Term: 3 Batch: 61

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.  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