Brac University
Department of Computer Science and Engineering

CSE 423: Computer Graphics

Theory Assignment 01 | Full Marks: 30 | Semester: Spring 2025

Answer **all** the following questions.

1.	For a line segment from (5,-15) to (0,-5): a) Using the **Mid-Point line** drawing algorithm, compute all the final pixels of the original zone. Show the present value of d and Δs (derivatives [d updating]) at each stage. **[8]** b) Now, using the **DDA** line drawing algorithm, compute all the pixels. Show all the steps at each stage. **[5]**
2.	A screen has a resolution of 3840 x 2160 and a frame rate of 60fps. a) What is the total number of pixels in one frame? **[2]** b) What is the time taken to generate one frame? **[2]** A GPU can process 50,000 pixels per millisecond. **[3]** c) **Determine** whether the GPU can render 1 entire frame in the required time for 60fps.
3.	A viewing window from (-50 **[xmin]**,-10 **[ymin]**) to (60 **[xmax]**,100 **[ymax]**) is given. Check whether the line segment **(-50,-70) to (40,100)** is accepted/rejected/partially inside using the **Cohen-Sutherland Algorithm. [7]** What is the significance of the AND operation in the **Cohen-Sutherland Algorithm? [3]**