

**Brac University**  
**Department of Computer Science and Engineering**  
**CSE423: Computer Graphics**  
**Assignment 02**

1. Given a line segment from  $(-5, 2)$  to  $(25, 40)$ , construct the parametric equation  $P(t)$  of the line. Using the parametric equation, determine the coordinates of the point where  $t = 2/3$ . Also, mention whether the point corresponding to  $t = 5$  lies inside the line segment. [2]
  - b) What is the role of the parametric equation in the Cyrus-Beck algorithm? [2]
  - c) A viewing window from  $(-15, 5)$  to  $(60, 120)$  is given. Using the Cyrus-Beck algorithm, determine whether the line segment from  $(20, 30)$  to  $(90, 80)$  is fully accepted, rejected, or needs to be clipped. If it needs to be clipped, find out the clipped line's endpoints. [6]
2. a) In which scenarios does the Cohen-Sutherland Algorithm fail? What are the drawbacks of this algorithm? [4]
  - b) A clip region from  $(-40, -20)$  to  $(20, 30)$  is given. Check whether the line segment  $(-10, -50)$  to  $(15, 25)$  is fully accepted, rejected, or partially inside using the Cohen-Sutherland Algorithm. If it's partially inside, run the algorithm to calculate new endpoints for the line segment that is inside the viewing window. [6]