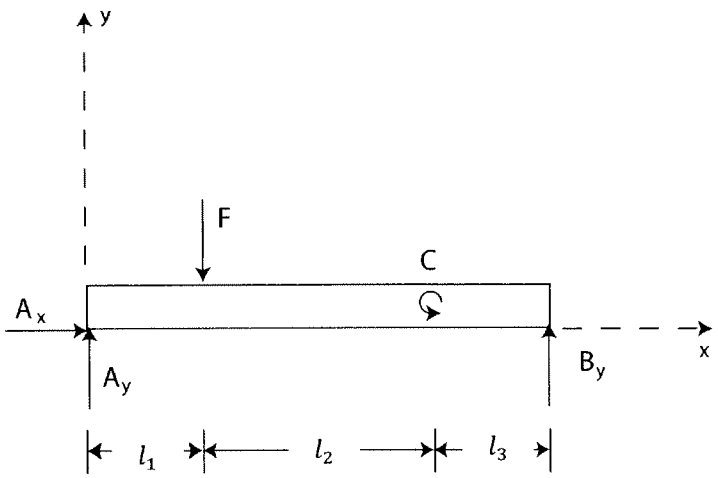
Problem 1 – Short Answer -- *20 points*

(a) Consider the Free Body Diagram shown below:



Here

F = 200 lb

C = 1000 ft-lb

l_1 = 1 ft

l_2 = 2 ft

l_3 = 1 ft

The sum of the moments about point A for this FBD should be written as:

(i) $-Fl_1 + B_y(l_1 + l_2 + l_3) = 0$

(ii) $-Fl_1 + C(l_1 + l_2) + B_y(l_1 + l_2 + l_3) = 0$

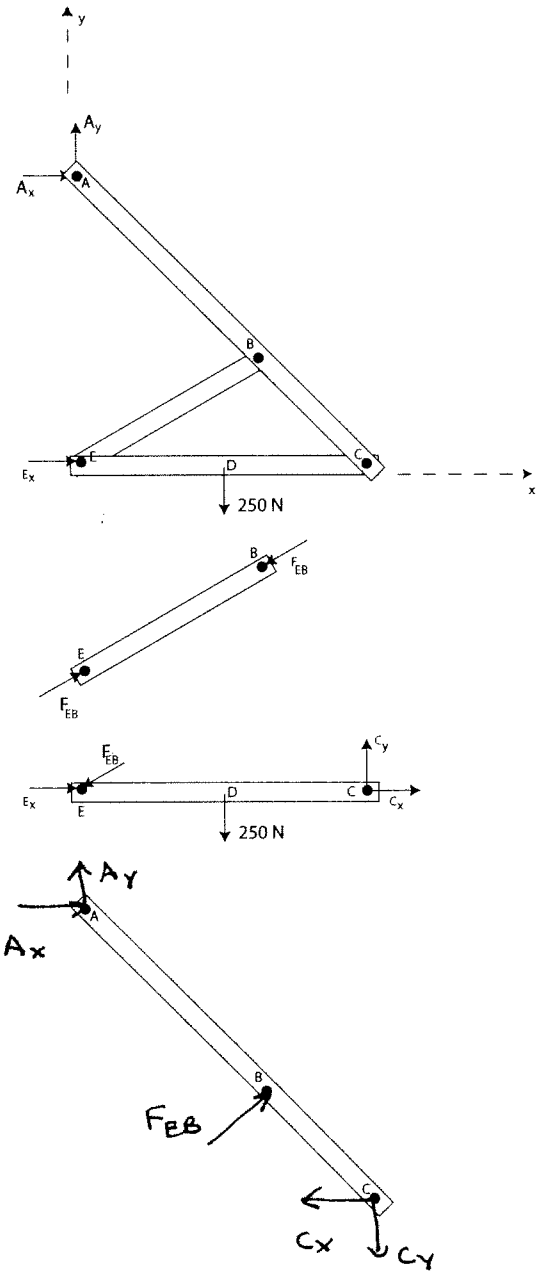
(iii) $-Fl_1 + C + B_y(l_1 + l_2 + l_3) = 0$

5 pts (all or nothing)

(iv) $-Fl_1 - C + B_y(l_1 + l_2 + l_3) = 0$

(v) None of these. The correct answer is_____

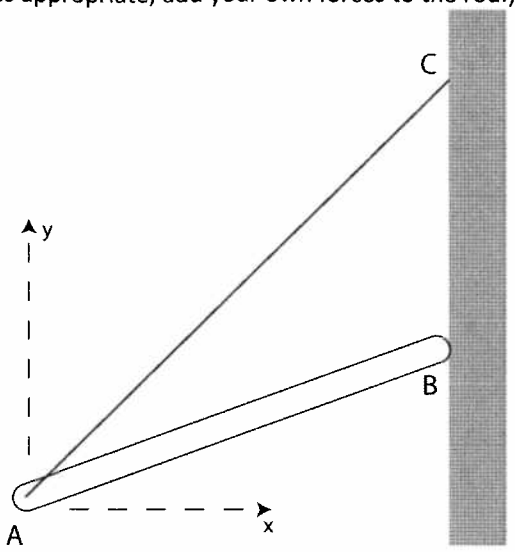
(b) The frame ABCDE has the free body diagram shown below. In addition, we have drawn free body diagrams of members EB and EDC. Add the appropriate forces and labels to the free body diagram of member ABC. Make sure that the forces and labels are consistent with the existing free body diagrams.



10 pts

2 for each force that is correct and in the correct direction

(c) A slender rod of length L and weight W is held in equilibrium as shown below, with one end against a frictionless wall and the other end attached to a cord. Circle the free body diagram for AB which is most appropriate for this problem. (If none of the pre-drawn FBDs is appropriate, add your own forces to the rod.)



5 pts