

CEN 202 spring 2012- exam 2

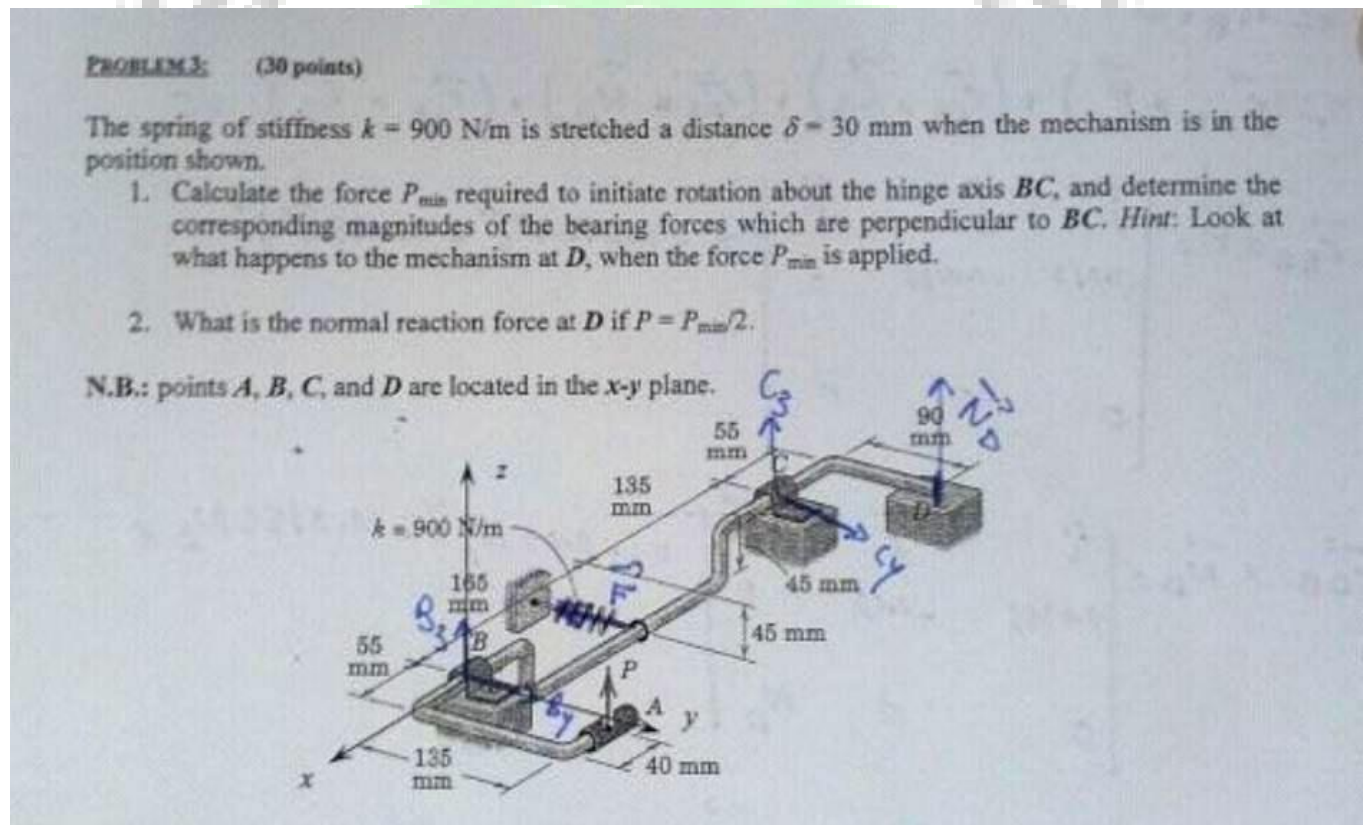
Problem 3:

The spring is stretched a distance $d = 30$ mm when the mechanism is in the position shown

1- calculate the force P_{min} required to initiate rotation about the hinge axis **BC** , and determine the corresponding magnitude of the bearing forces which are perpendicular to **BC**. Hint : Look at what happens to the mechanism at **D** , when the force P_{min} is applied

2- What is the normal reaction force at **D** if $P = P_{min}/2$

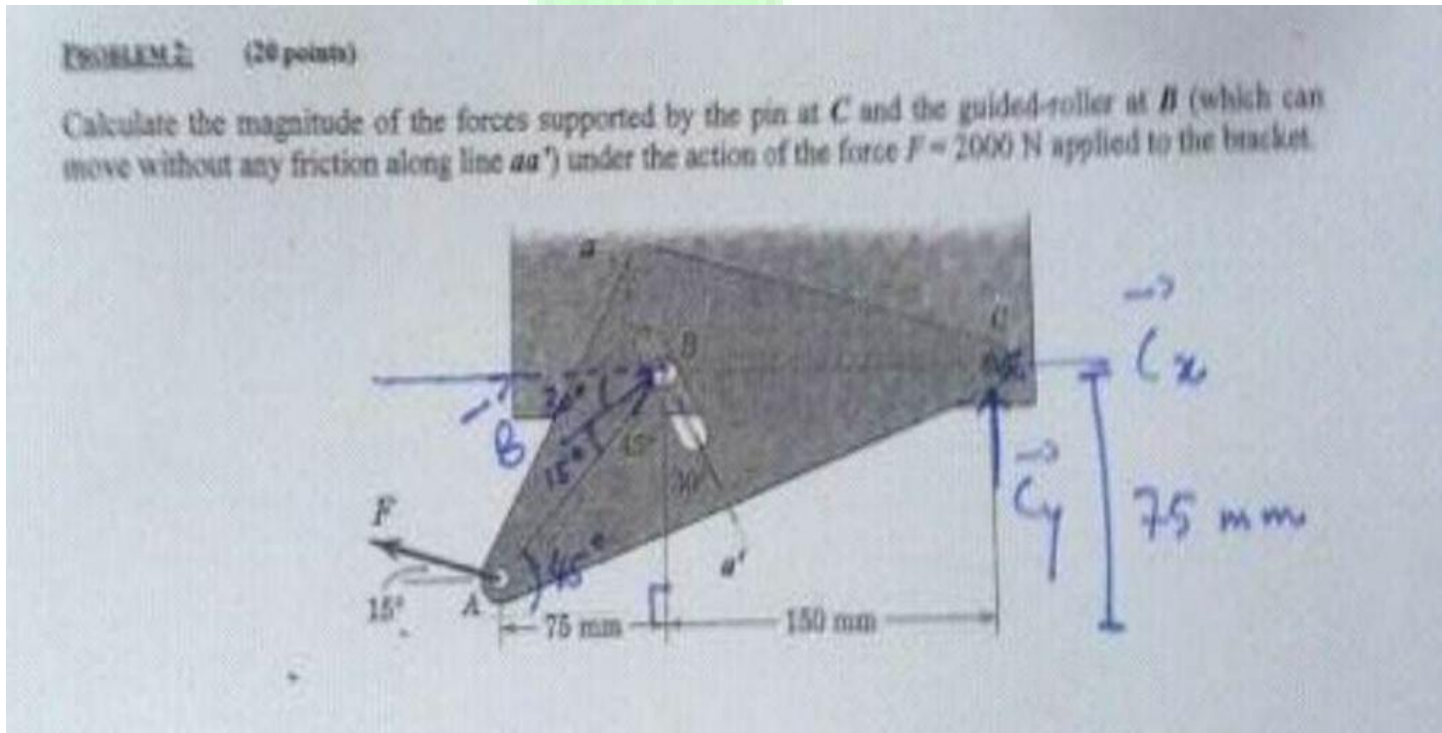
N.B: points A, B ,C and D are located in the x-y plane and $k=900$ N/m





Problem 2 :

Calculate the magnitude of the forces supported by the pin at **C** and the guided roller at **B** (which can move without any friction along line **aa'**) under the action of force $F = 2000$ N applied to the bracket



problem 4 :

a- Determine the reaction at pin support B and roller support E of the beam shown

b- Draw the diagrams of the shear force V , and moment M for the beam

