Université d'Ottawa
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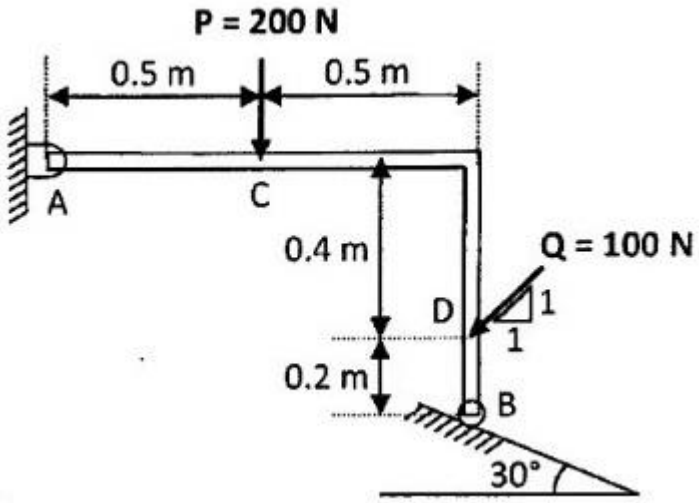
GNG 1105 A- Engineering Mechanics

Mid-Term Exam — 05 November 2020
Professor A. Skaff — Time: 80 min.

(8 marks) An L-shaped bracket AB is being acted upon by forces **P=200 N** and **Q=100 N** as shown.

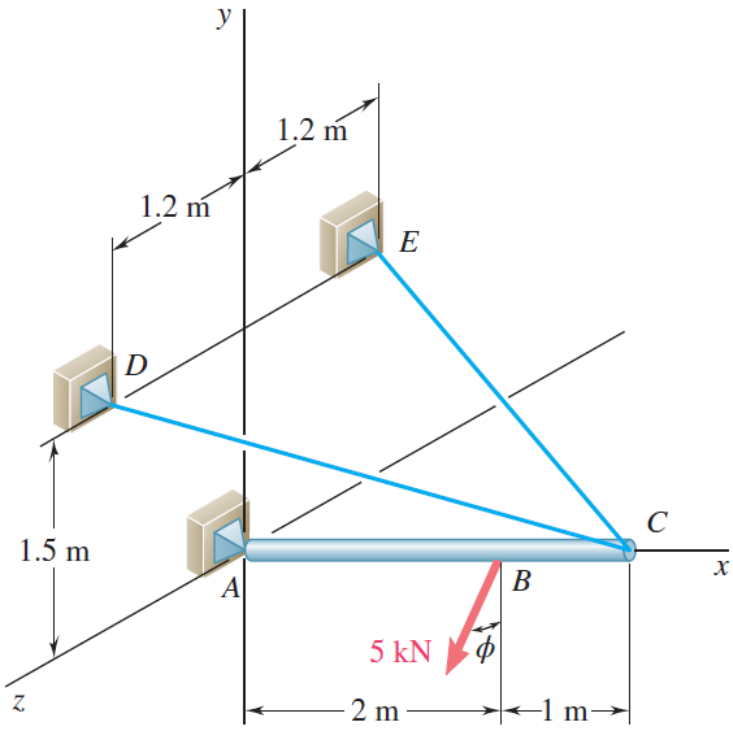
It is being held in place by a pin joint at **A** and a roller at **B**.

a) Draw the Free-Body-Diagram of this bracket.
b) Reduce the forces **P** and **Q** into a force-couple system at point **A**.
c) Calculate the reactions at **A** and **B**.



(12 marks) A 3-m pole is supported by a ball-and-socket joint at A and by the cables CD and CE. Knowing that the line of action of the 5-kN force which lies in the x-y plane at an angle of $\phi = 30°$ with the y-axis, determine:

a) Draw the Free-Body-Diagram of the pole AC,
b) The tension in cables CD and CE,
c) The reaction at A.



Good luck,
Stay Safe