GNG 1105
ENGINEERING MECHANICS

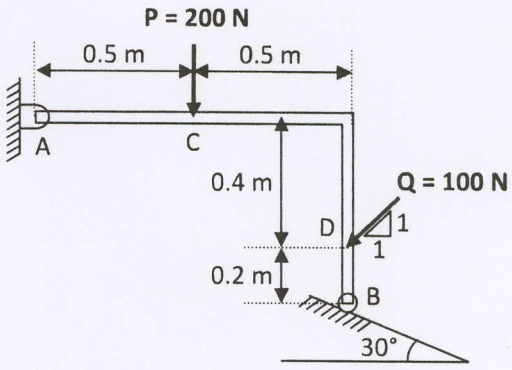
Mid-term exam
October 20, 2011
Time: 80 minutes

Prof. A. Skaff

Closed book examination. Only non-programmable calculators are allowed.

Question 1. 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 A.
c) Calculate the reactions at A and B.



Question 2. The right-angle boom supports a **4 kN** force at point G as shown in the diagram. It is being held in equilibrium by a ball and socket joint at O and by three cables AC, BD, and BE. Note that C, D and E lie in the **vertical x-y plane**.

a) Draw the Free-Body-Diagram of this boom.
b) Write the tension in the cable AC, BD and BE in vector form.
c) Find the reaction in each of the cables AC, BD and BE.