NAME:
STUDENT'S NUMBER:

GNG1105 (W' 2008) - ENGINEERING MECHANICS

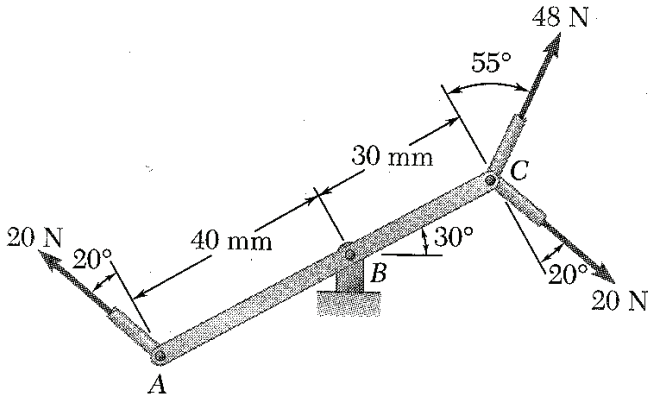
Mid-term Examination
February 29, 2008
Professor Y. Haddad

Duration: 80 minutes

CLOSED BOOK. Only Non-programmable calculators are allowed. Write your solutions on this document. Full mark is 30.

---

1) **(15 points)** Three control rods rigidly welded to a lever *ABC*. The formed rigid body is exerted upon by the forces shown.
   (a) Replace the three forces with an equivalent force-couple system at *B*. **(6 points)**
   (b) Determine the single force which is equivalent to the force-couple system obtained in part (a) above, and obtain its point of application on the lever. **(6 points)**
   (c) Determine the force-couple system that could be applied at point C to keep the lever at rest **(3 points)**



NAME:
STUDENT'S NUMBER:

GNG1105 W'2008 - ENGINEERING MECHANICS

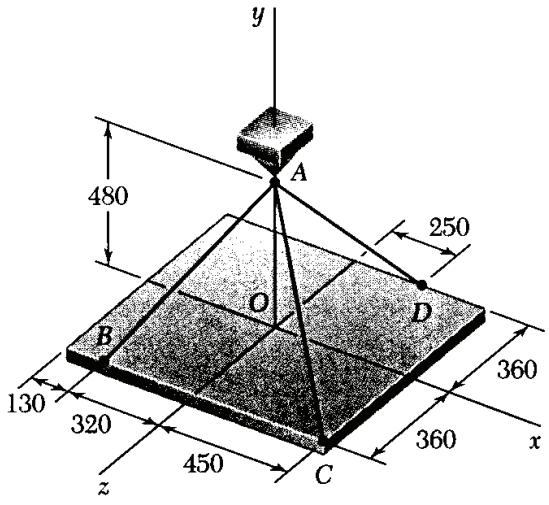
Mid-term Examination
February 29, 2008
Professor Y. Haddad

Duration: 80 minutes

CLOSED BOOK. Only Non-programmable calculators are allowed. Write your solutions on this document. Full mark is 30.

---

2. **(15 points)** A rectangular steel plate of weight **W** is held in the horizontal position by three cables as shown in the figure. The force in each cable is 100 N. All dimensions are in mm.
(a) Express the forces acting on A in a vectorial form **(5 points)**
(b) Assuming that the weight **W** can be expressed by the sum of the vertical components of the tensions in the three cables, what would be the resultant of all forces acting on A? **(5 points)**
(c) Determine the force-couple system acting at point O and equivalent to the system of forces acting on A **(5 points)**



Dimensions in mm