UNIVERSITÉ Concordia UNIVERSITY

Faculty of Engineering and Computer Science

ENGR 242/2 T STATICS Fall 2015

Test 1 (October 7th, 2015)

Instructions:

1. Time allowed: **60 minutes**.
2. Answer all **four** questions.
3. Any missing data should be reasonably assumed with sufficient explanation.
4. Only non-programmable calculators are permitted.
5. Test includes **six** pages.
6. Write on both sides of the test, if needed.

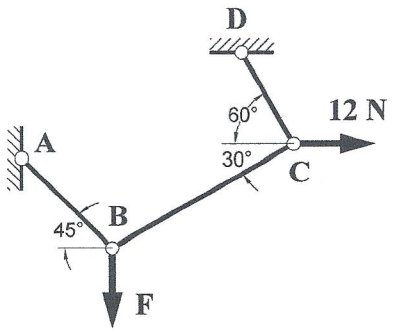
Name: Solution of the Test

Student ID: .....

Signature: .....

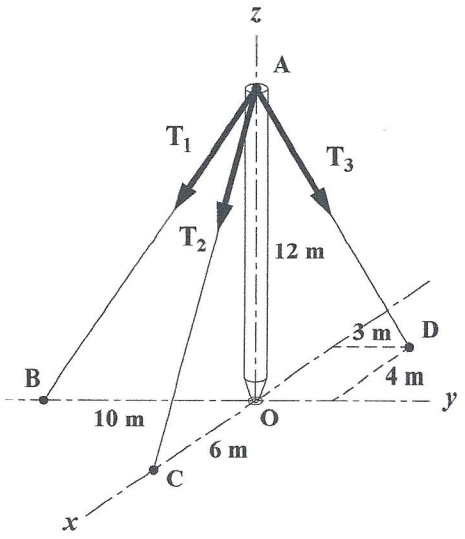
Question 1 (20 marks)

Determine the force F so that the tension in cable AB equals $9\sqrt{2}$ N.



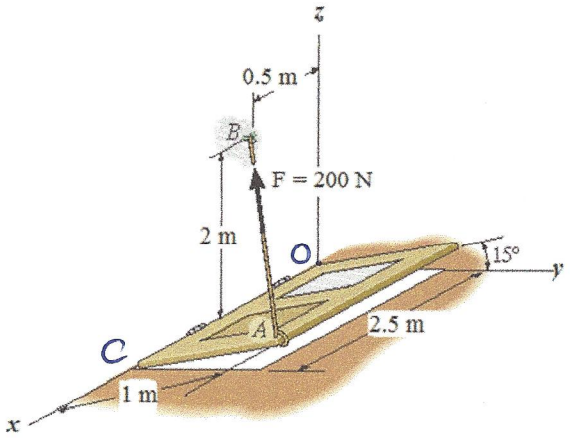
Question 2 (30 Marks)

Three cable tensions $\mathbf{T}_1$, $\mathbf{T}_2$, and $\mathbf{T}_3$ act at the top of the flagpole. Given that the resultant force for the three tensions is $\mathbf{R} = -400\mathbf{k}$ N, find the magnitudes of the cable tensions.



Question 3 (30 Marks)

Determine the magnitude of the moment produced by the force F = 200 N about the hinged axis (the x axis) of the door.



Question 4 (20 Marks)

A couple of magnitude M = 54 kN . m and three forces are applied as shown.
(a) Find the resultant of this system of forces;
(b) Locate the points where the line of action of the resultant intersects line AB and line BC.