Name:

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# **QUIZ 1**Fall 2016-17

(Monday October 24, 2016)

#### CIVE210 – STATICS CLOSED BOOK, 1 HR 30 MN

<ul> <li>TWO <u>EXTRA</u> SHEETS ARE PR</li> <li>ASK FOR <u>ADDITIONAL</u> SHEE</li> </ul>	D BE PROVIDED ON THE QUESTION SHEETS. ROVIDED AT THE END. ETS IF YOU NEED MORE SPACE. RE MUCH LESS THAN THE SPACE PROVIDED.
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·	<i>VIDED; BUT DO NOT USE FOR ANSWERS.</i> D DRAFT BOOKLET SHOULD BE <u>RETURNED</u> .
	RM THAT YOU HAVE SOLVED A QUESTION.
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MY COMMENT(S)  YOUR GRADE	Problem I:/20

### **Problem I:** (20 points)

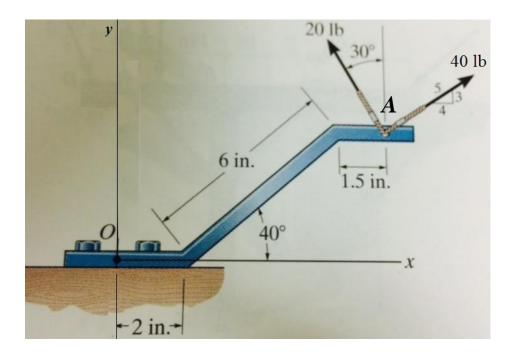


Figure I

Tick Boxes to check that you solved all questions

The pipe system shown in <u>Figure I</u>, subjected to two forces at point A and supported at point O, is in equilibrium is i

1S 1	n equilibrium.
<ol> <li>2.</li> </ol>	Determine the magnitude and direction of the resultant force at point A. What is the resultant force at point O. (10 points)  Compute the moment about point O. What is this moment at point A? (10 points)
	Calculations and/or Diagrams:

Calculations and/or Diagrams (cont'd):

#### **Problem II:** (45 points)

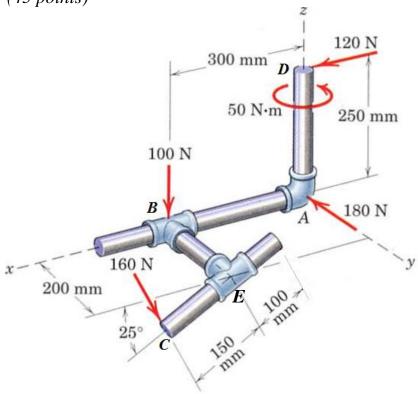


Figure II

The rigid pipe system is subjected to the forces and moment shown in <u>Figure II</u>. Note that EC is in a vertical plane parallel to XZ, the 160 N is a force in this plane and is perpendicular to EC, and the 25 degrees angle is a vertical angle.

Determine the equivalent resultant force (Express in Cartesian vector form, and calculate its magnitude and direction). (13 points)
 Determine the magnitudes of the projected component of the resultant force on AB and AE. (7 points)
 Using whichever method you wish, or a combination of methods, compute the moment produced by the applied loads (forces and moment) at point A (Express in Cartesian form, and calculate its magnitude and direction). Draw it as best as you can as a "vector" on the figure above. (18 points)
 Determine the component of this moment about an axis extending between points A and C. (magnitude only). (7 points)
 Calculations and/or Diagrams:

Calculations and/or Diagrams (cont'd):

Calculations and/or Diagrams (cont'd):

Calculations and/or Diagrams (cont'd):

#### **Problem III:** (35 points)

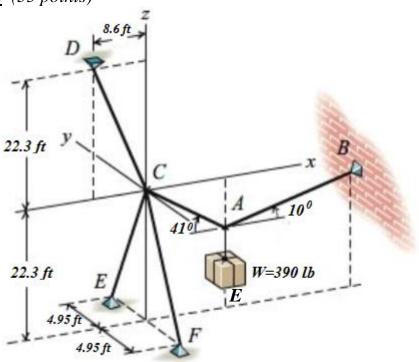


Figure III

A system of cables suspends a crate weighing W =390 lb as shown in <u>Figure III</u>. Note that DCAB is in the vertical plane XZ, and ECF is in the vertical plane YZ, and "think" before you solve.

Determine the force in the cables AB, AC, CD, CE, and CF.	
Calculations and/or Diagrams:	

Calculations and/or Diagrams (cont'd):

Calculations and/or Diagrams (cont'd):

## EXTRA SHEET 1: Continued from page

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Calculations and/or Diagrams:		

## EXTRA SHEET 2: Continued from page

Name:	<u>ID#:</u>	<u>Sec:</u>
Calculations and/or Diagrams:		