

QUIZ 1
Spring 2012-13
 (March 13, 2013)
CIVE210 – STATICS
CLOSED BOOK, 1 HR 30 MN

Name: _____

ID#: _____

NOTES

- 4 PROBLEMS– 13 PAGES.
- ALL YOUR ANSWERS SHOULD BE PROVIDED ON THE QUESTION SHEETS.
- **THREE EXTRA SHEETS ARE PROVIDED AT THE END.**
- **ASK FOR ADDITIONAL SHEETS IF YOU NEED MORE SPACE.**
- SOME ANSWERS MAY REQUIRE MUCH LESS THAN THE SPACE PROVIDED.
- ***DO NOT*** USE THE BACK OF THE SHEETS FOR ANSWERS.
- DRAFT BOOKLET WILL BE PROVIDED; *BUT DO NOT USE FOR ANSWERS.*
- BOTH QUESTION SHEETS AND DRAFT BOOKLET SHOULD BE RETURNED.
- CHECK BOXES ARE TO CONFIRM THAT YOU HAVE SOLVED A QUESTION.



YOUR COMMENT(S)

DO NOT WRITE IN THE SPACE BELOW

MY COMMENT(S)

YOUR GRADE

<i>Problem I:</i>	---	/35
<i>Problem II:</i>	---	/20
<i>Problem III:</i>	---	/20
<i>Problem IV:</i>	---	/25
<i>Bonus/Extras – Organization, Neatness, Special, ...:</i>	---	

TOTAL: _____ /100

Problem I: (35 points)

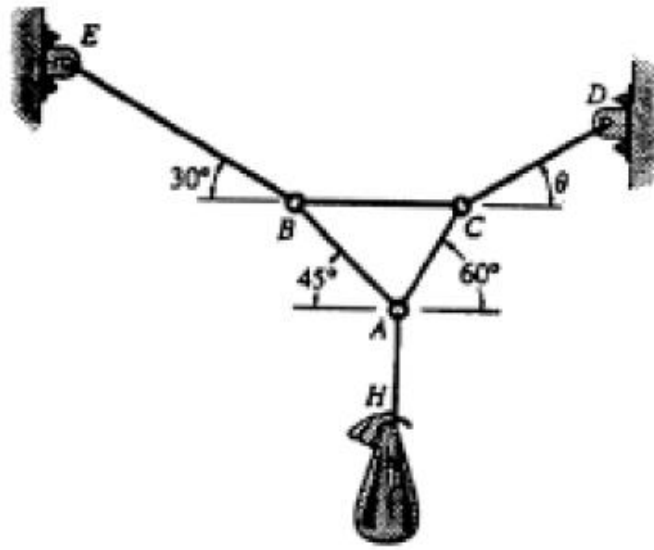


Figure I

Tick Boxes to check that you solved all questions

Referring to Figure I, where the forces in all six identical cables will be in tension:

- 1- Calculate force in each of the six cables if the weight of the bag applied at H is 400 lbs and determine the angle theta. (25 points)
- 2- If the maximum tension force that a cable can take is 200 lbs, determine the largest weight of the bag that the system can hold (short question). (10 points)

Calculations and/or Diagrams:

This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Calculations and/or Diagrams (cont'd):

Calculations and/or Diagrams (cont'd):

Problem II: (20 points)

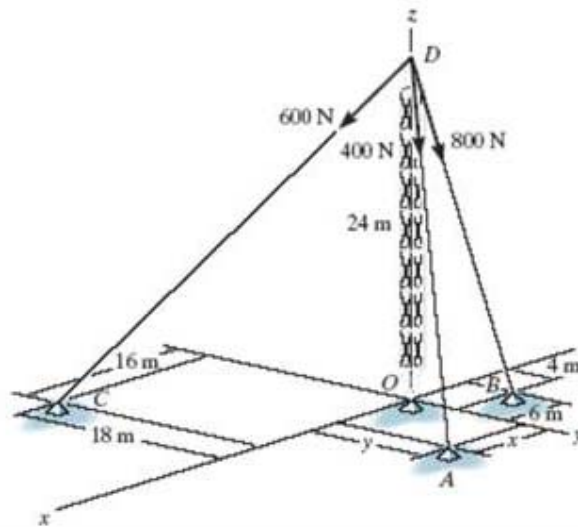


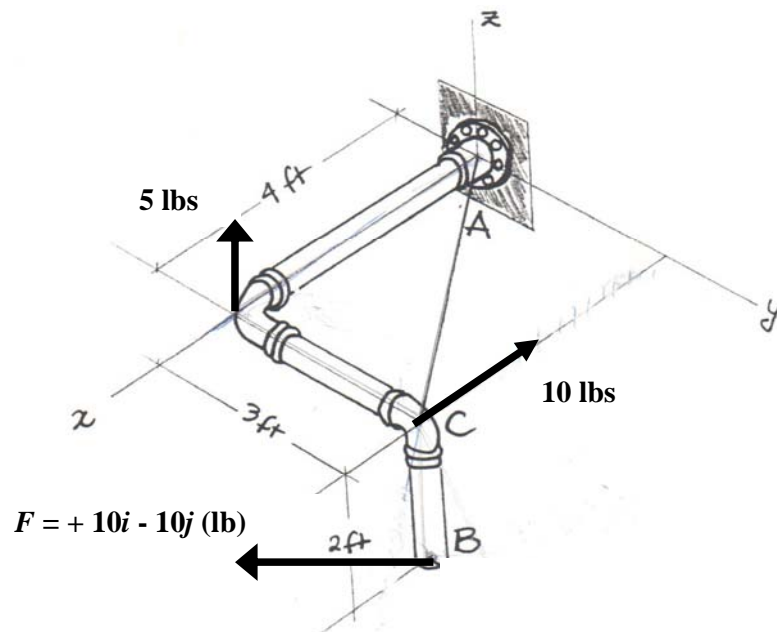
Figure II

Referring to Figure II, the tower OD is held by the three cables DA, DB, and DC. The tension force in each cable is shown in the figure. Use $X_A=+20$ m and $Y_A=+15$ m (note that the dimensions are not to scale). Determine the resultant force from the three cables in vector form, its magnitude, and its direction angles. (25 points)

Calculations and/or Diagrams:

This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Calculations and/or Diagrams (cont'd):

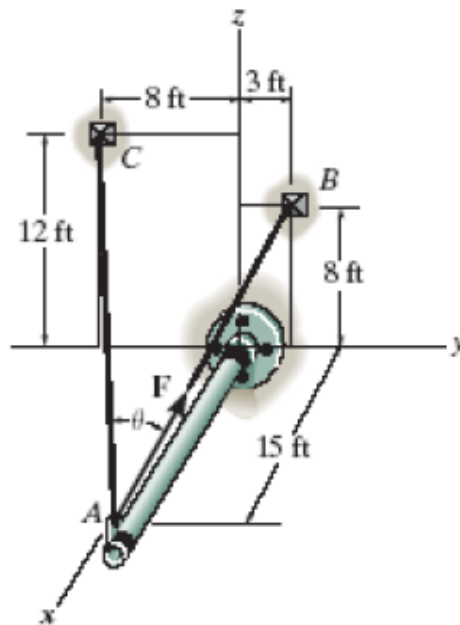
Problem III: (20 points)**Figure III**

The rigid pipe system is subjected to the forces shown in Figure III.

1. Compute the moment from the three forces at the support A in and express in vector form. (12 points). ☐
2. Determine the component of this moment about an axis extending between points A and C. Express the results as Cartesian vectors. (8 points) ☐

Calculations and/or Diagrams:

Calculations and/or Diagrams (cont'd):

Problem IV: (25 points)**Figure IV**

In Figure IV, let O be the origin of axes (not shown in figure). Points B and C are on the YZ plane, and the shaft AO is on the X axis (i.e. A has coordinates of $X=15$ ft, $Y=0$, $Z=0$).

If the tension force F in cable AB has a magnitude of 55 lb, determine the magnitude of its projected components acting along the X-axis and along the cable AC. Determine also the angle theta between cables AB and AC. (25 points) □

Calculations and/or Diagrams:

Calculations and/or Diagrams (cont'd):

EXTRA SHEET 1: Continued from page _____

Name: _____

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Calculations and/or Diagrams:

EXTRA SHEET 2: Continued from page _____

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Calculations and/or Diagrams:

EXTRA SHEET 3: Continued from page _____

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Calculations and/or Diagrams: