

QUIZ 1
Spring 2003-2004
 (Wednesday, March 25, 2004)
CIVE311 – STRUCTURES I
CLOSED BOOK, 2 HOURS

Name: _____

ID#: _____

NOTES

- 2 PROBLEMS – 12 PAGES.
- ALL YOUR ANSWERS SHOULD BE PROVIDED ON THE QUESTION SHEETS.
- **ONE 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 FOR YOU TO CONFIRM THAT HAVE SOLVED A QUESTION

YOUR COMMENT(S)

DO NOT WRITE IN THE SPACE BELOW

MY COMMENT(S)

YOUR GRADE

Problem I: ___ /40

Problem II: ___ /60

Other: ___

TOTAL: /100

Problem I: (40 points)

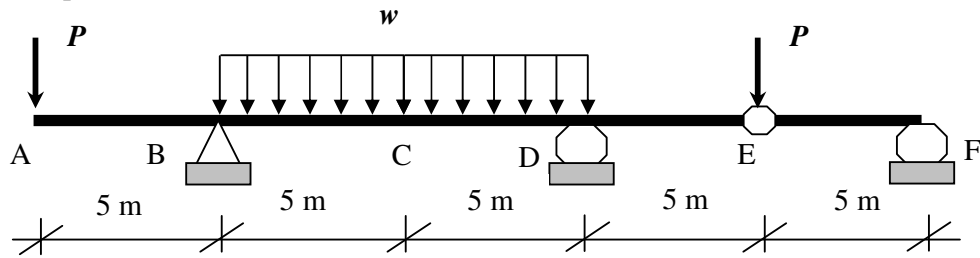


Figure I

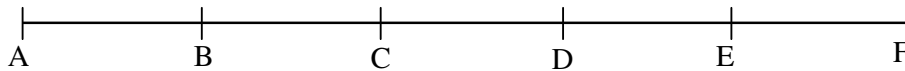
For the beam shown in Figure I, the own weight is neglected.

Your diagrams/sketches should include any feature/value you think is relevant or important.

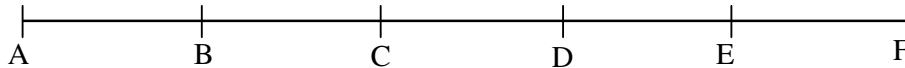
1. Let $w=30 \text{ kN/m}$ and $P=10 \text{ kN}$

- Compute the reactions in the beam, and draw the shear and bending moment diagrams and sketch the deflected shape. (20 points)
- Briefly explain the behavior of member EF. (5 points)
- Compare the vertical deflections at A and E (no calculations) and briefly comment. (5 points)

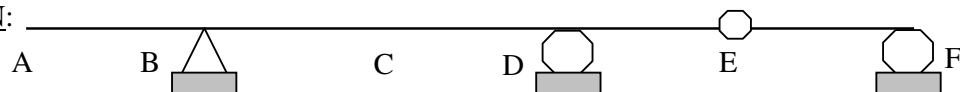
SHEAR:



MOMENT:



DEFLECTION:



Calculations and/or Diagrams (cont'd):

A series of horizontal dashed lines provided for student answers.

2. Let $w=30 \text{ kN/m}$ and $P=0 \text{ kN}$

Explain how the beam behaves (namely part BD), and deduce the reactions at B and D and the moment at C, and sketch the deflected shape of the beam (do not draw shear and moment diagrams). (10 points)



Calculations and Diagrams:

Problem II: (55 points)

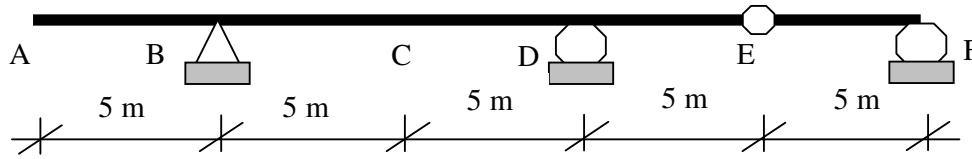


Figure II

1. Referring to Figure II, draw the influence lines for R_B , R_F , V_A , V_D , V_E , M_B , M_C , and M_E . (30 points)



Calculations and Diagrams:

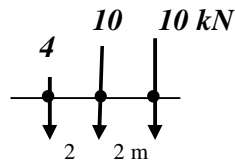
Calculations and Diagrams (cont'd):

A series of horizontal dashed lines for writing calculations and diagrams.

Calculations and Diagrams (cont'd):

A series of horizontal dashed lines intended for writing calculations and diagrams.

3. Compute the maximum positive value for M_C for the following truck moving load, which can travel in one direction as shown, and compute the maximum positive moment that can ever occur between B and D. Compare and comment (15 points)



Calculations and Diagrams:

EXTRA SHEET: Continued from page _____

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Calculations and/or Diagrams:
