GEN_ENG 205-2 ENGINEERING ANALYSIS 2: Statics and Dynamics

SPRING QUARTER 2020

MIDTERM II- May 19, 2020

A. Alarcón

Name and Declaration

Name (in print): _____   NetID: _____

I attest to the fact that this is my own work, completed in accordance with the instructions below. I have adhered to the Policies on Academic Integrity of both Northwestern University and the McCormick School of Engineering & Applied Science and uphold McCormick's values of integrity, honor, and dignity.

Signature: _____   Date: _____

- You must be logged into a Zoom session while testing. You should stay in the Zoom meeting until you are done uploading your exam.
- **You have 50 min to work and 20 min** to upload your solutions on Crowdmark. Use your time wisely. **Allow sufficient time to upload your exam.**
- **Crowdmark accepts pdf, jpeg and png. Please rotate your work so that it can be graded.**
- You may not communicate with anyone (electronically or in person) during this exam. In particular, you may not be in the same room with anyone that is a current/past student of EA2 or current/past course staff EA2.
- Be sure to show all your work for partial credit. Do not forget units and box your answer.
- Write legibly. Illegible answers will receive no credit.
- The exam is open book and open notes.
- Read the problems carefully. While the test is in progress, we will not answer questions concerning the test material. If you think that there is an ambiguity, clearly state your assumption and continue to answer the question.

If you're having issues during the uploading process and worried about meeting the upload deadline, please reach out to me at arancha.alarconfleming@northwestern.edu
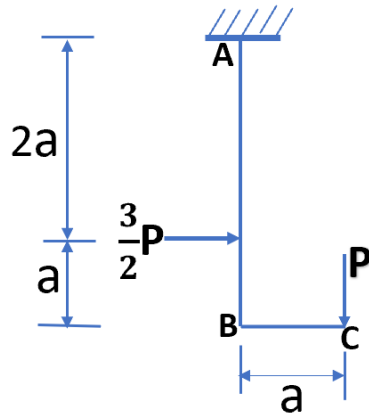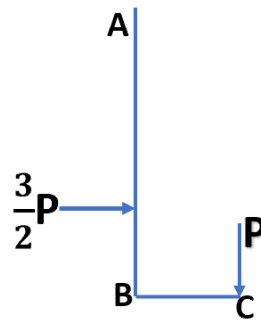
Good luck!

A. Alarcón

Problem	Points	
1	12	
2	15	
3	24	
Total	51	

Problem 1 (12 Points)

a) Determine the reactions at support A in terms of load P and distance a (P and a are known). (9 points)

b) Fill out the figure at b) drawing the reactions with correct signs.   (3 points)

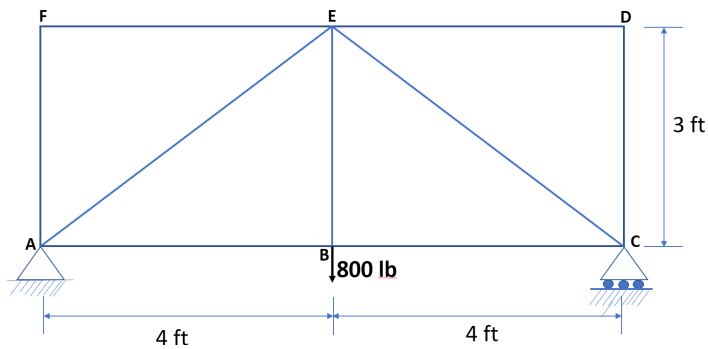(a)   (b)

Problem 2 (15 Points)

For the truss shown in the figure

    a) Calculate its reactions clearly including their signs (3 points).
    b) Determine the force in members FE, FA, AE and DC and state if the members are in tension or compression (12 points).

Member	Magnitude (lb)	Tension/Compression
FE		
FA		
AE		
DC		

Problem 3 (24 points)

The continuous beam shown in the figure is pin connected at C and has an applied load of 50 kN at the angle shown.

a) Write the unknowns of the problem (6 points)

b) Calculate the reactions at A, B, C and D. (12 points)

c) Draw the beam and show reactions with their correct signs. (6 points)