

ENCE353: Introduction to Structural Analysis
Exam #1

Name: _____

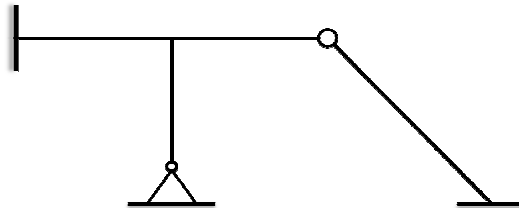
CSI 3117: 9:00-9:50AM, October 6, 2013
Closed book, closed notes, one sheet of notes allowed
Show all work

Problem	Points	Score
1	10	
2	15	
3	25	
Total	50	

Problem 1 (10 Points)

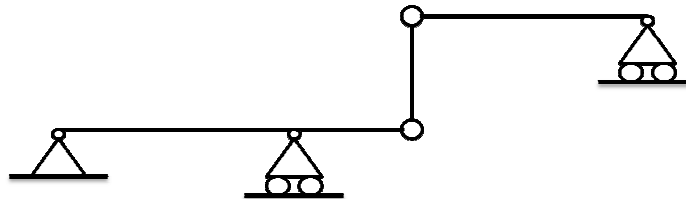
Classify each of the structures as statically determinate, statically indeterminate, or unstable. If indeterminate, specify the degree of indeterminacy.

Part A (5 Points)



Answer:

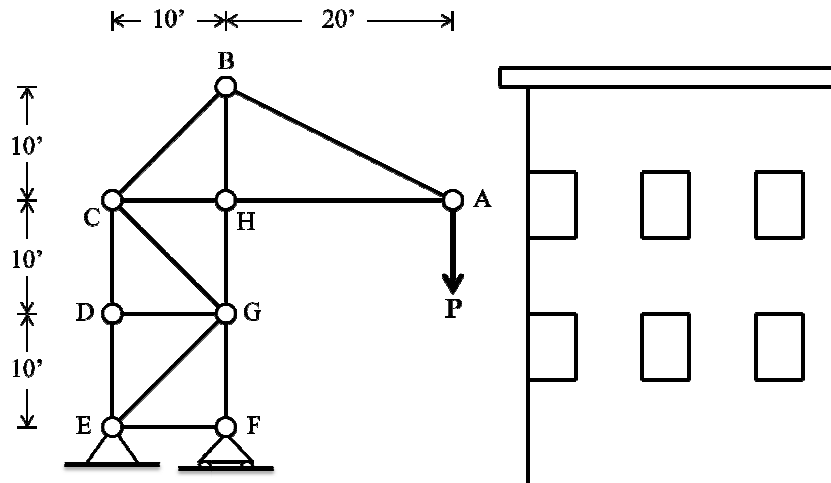
Part B (5 Points)



Answer:

Problem 2 (15 Points)

Caitlin somehow managed to lock herself *inside* her apartment. The only way she can now access puppies is by having them sent up in a basket and delivered through her window (at Point A). A truss structure was built to help make this possible.



Part A: Determine all zero-force members (5 Points)

Zero Force Members:

Part B: Members CD, CG, and GH can each support 250 lb in tension and 200 lb in compression. If each puppy weighs 10 lb, what is the maximum number of puppies that can be sent up at once? Ignore the weight of the basket. Only full puppies count. (10 Points)

Number of Puppies:



Problem 3 (25 Points)

Part A: Determine support reactions (8 Points)

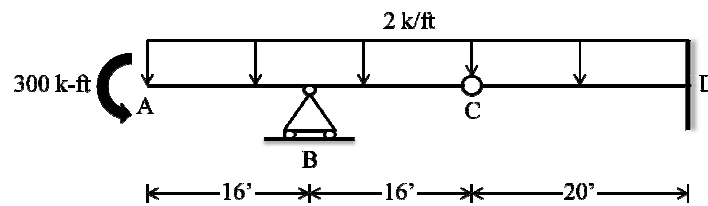
Part B: Determine shear and moment equations as functions of length of the beam (9 Points)

Part C: Draw shear, and moment diagrams (8 Points)

Show whether positive or negative for shear and curvature for moment

Label maximum and minimum values and their locations

(Applied moment at A, roller at B, hinge at C, fixed support at D, distributed load across the length of the beam)



Problem 3 (Continued)