

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 121
Examination: Second Major
Date (Day): November 27, 2012 (Tuesday)
Time: 07:00 – 09:00 p.m.

Section	1 & 2	3	4	5	6	7	8 & 10	9	11
Instructor	Malack	Schowdhury	Amoudi	Hussein	Gadhib	Vohra	Senan	Sharif	Ghamdi
Time	07:00 & 08:00	08:00	09:00	10:00	09:00	11:00	13:10 & 11:00	10:00	09:00
Tick									

Student's Name :

Student's ID :

Problem	Assigned Grade	Earned Grade
1	25 (Points)	
2	25 (Points)	
3	25 (Points)	
4	25 (Points)	
Total	100 (Points)	

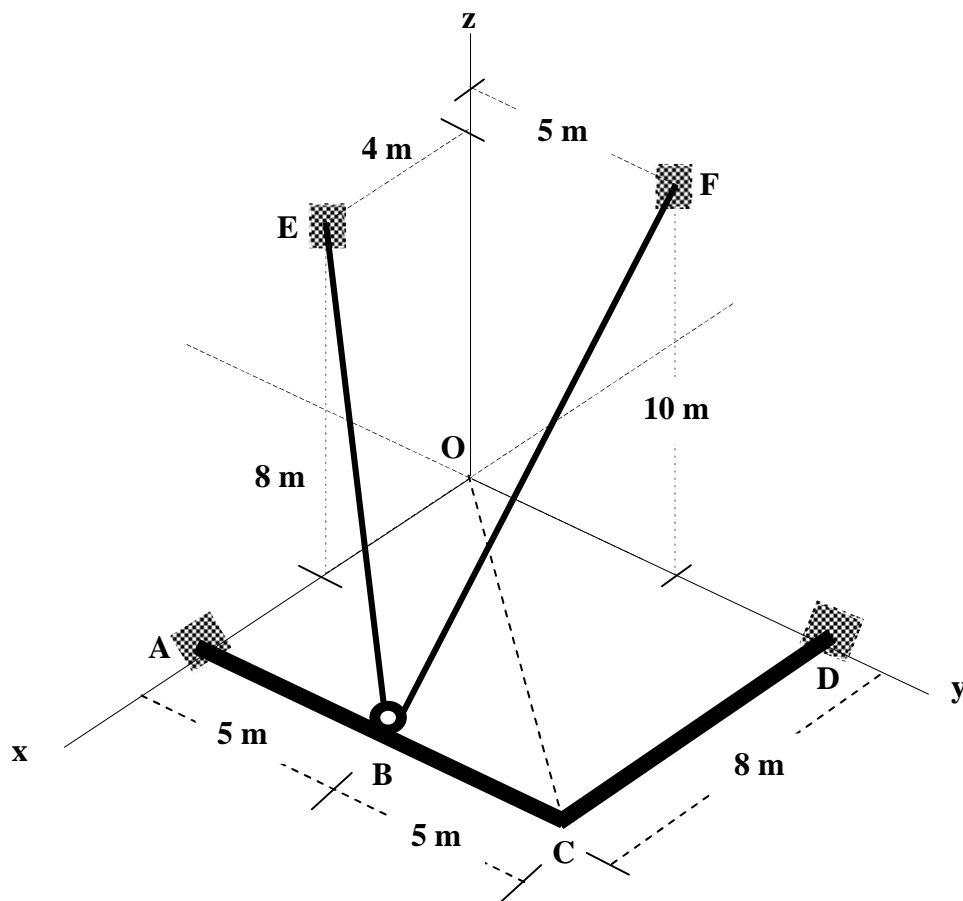
Good Luck

Problem 1A (15 Points)

The pipe segment ABCD, laid in the x-y plane, is supported by two fixed supports at A and D and two cables BE and BF at ring B. If the tensions in cables BE and BF are 100 N and 150 N, respectively, determine:

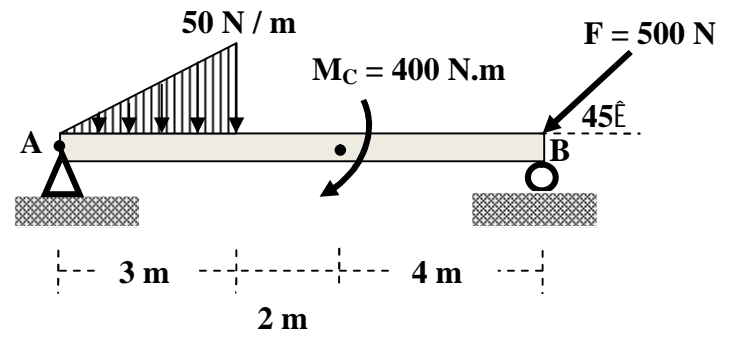
(10 Points) 1. The moment produced by tension BF about the line OC

(5 Points) 2. The perpendicular distance between cable BF and the line OC



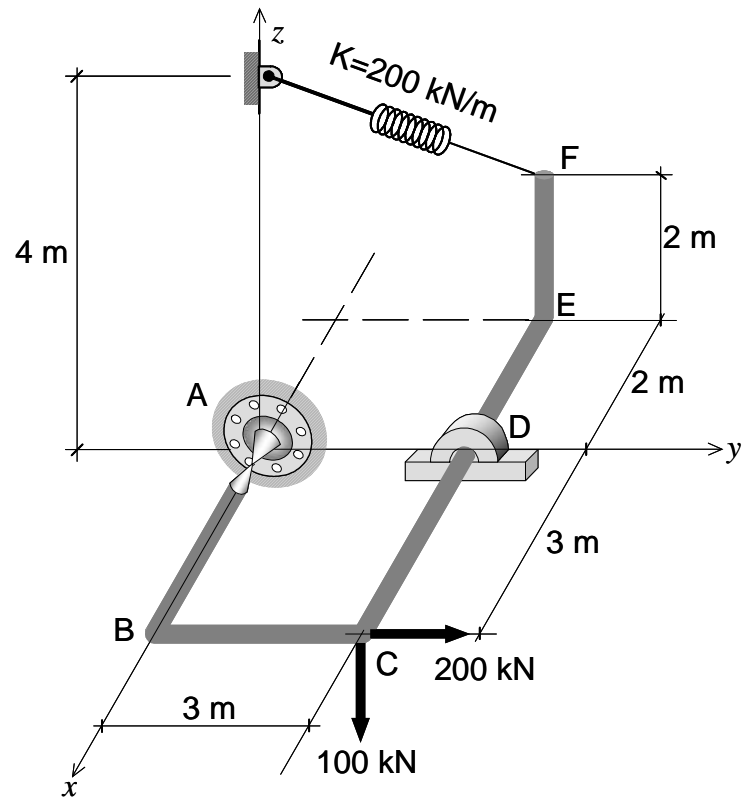
Problem 1B (10 Points)

Replace the force and couple system acting on beam AB by an equivalent force and couple moment acting at point A.



Problem 2 (25 Points)

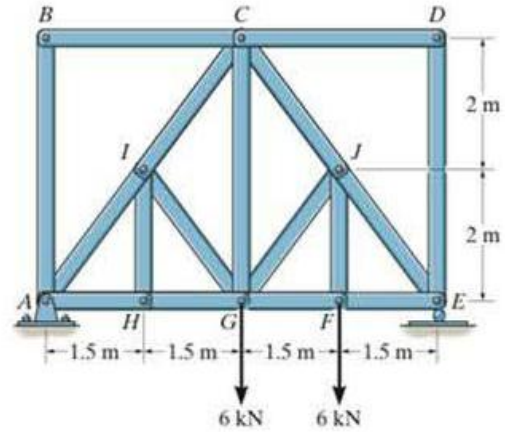
The pipe ABCDEF is supported by ball and socket at A, smooth journal bearing at D and a spring at F. Determine the spring force F_s and the reactions at the ball and socket at A (NO REACTION MOMENTS at support D).



Problem 3 A (6 Points)

Identify, by inspection, the zero-force members in the truss shown below.

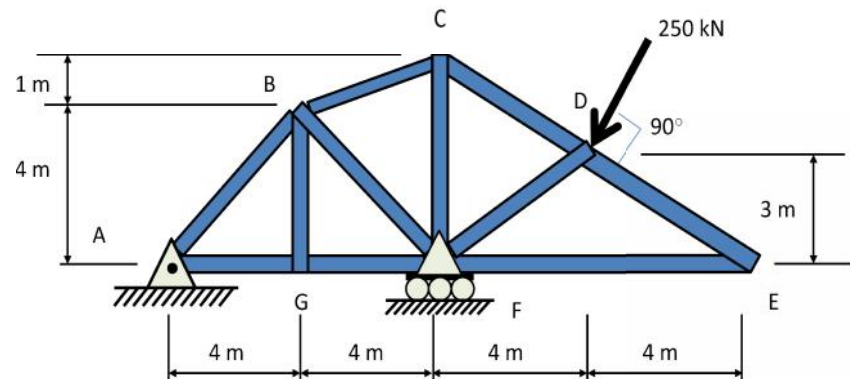
Note: There is a penalty of 1 point for each wrong answer.



Problem 3 B (9 Points)

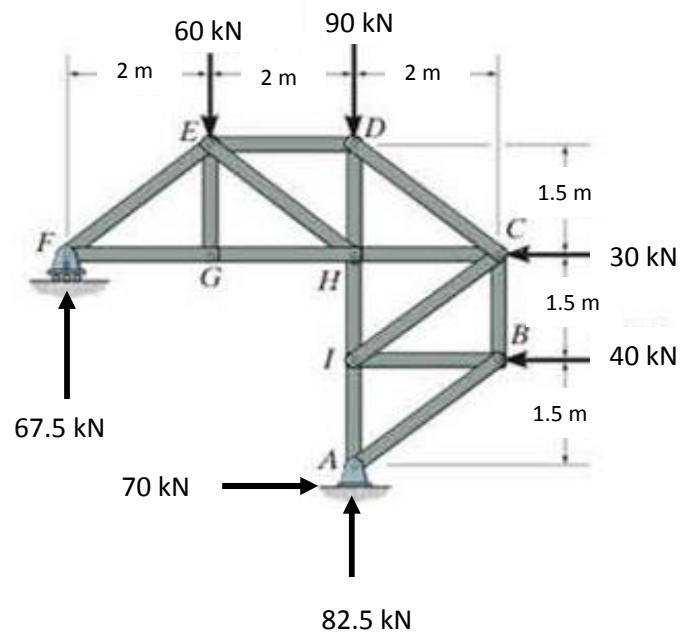
In the truss shown below, determine:

- (3 Points) 1. The support reactions at A and F.
- (6 Points) 2. The force in member DF of the truss by the **method of joints**, and indicate whether the member is in tension or compression.



Problem 3 C (10 Points)

Determine the force in members ED and GH of the truss shown below using the **method of sections**. Indicate if the members are in tension or compression.



Problem 4 (25 Points)

The four-member frame shown below is supported by pins at E and F. Determine the horizontal and vertical components of reactions at pins A, B, C and D of the frame.

