

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 122
Examination: Second Major
Date (Day): April 16, 2013 (Tuesday)
Time: 07:00 – 09:00 p.m.

Section	1	2	3	4	6	7	8	9
Instructor	Al-Malack	Al-Malack	Schowdhury	Al-Attas	Al-Shayea	Hussein	Arifuzzaman	Al-Attas
Time	07:00	08:00	09:00	09:00	10:00	11:00	13:10	10:00
Tick								

Student's Name :
Student's ID :

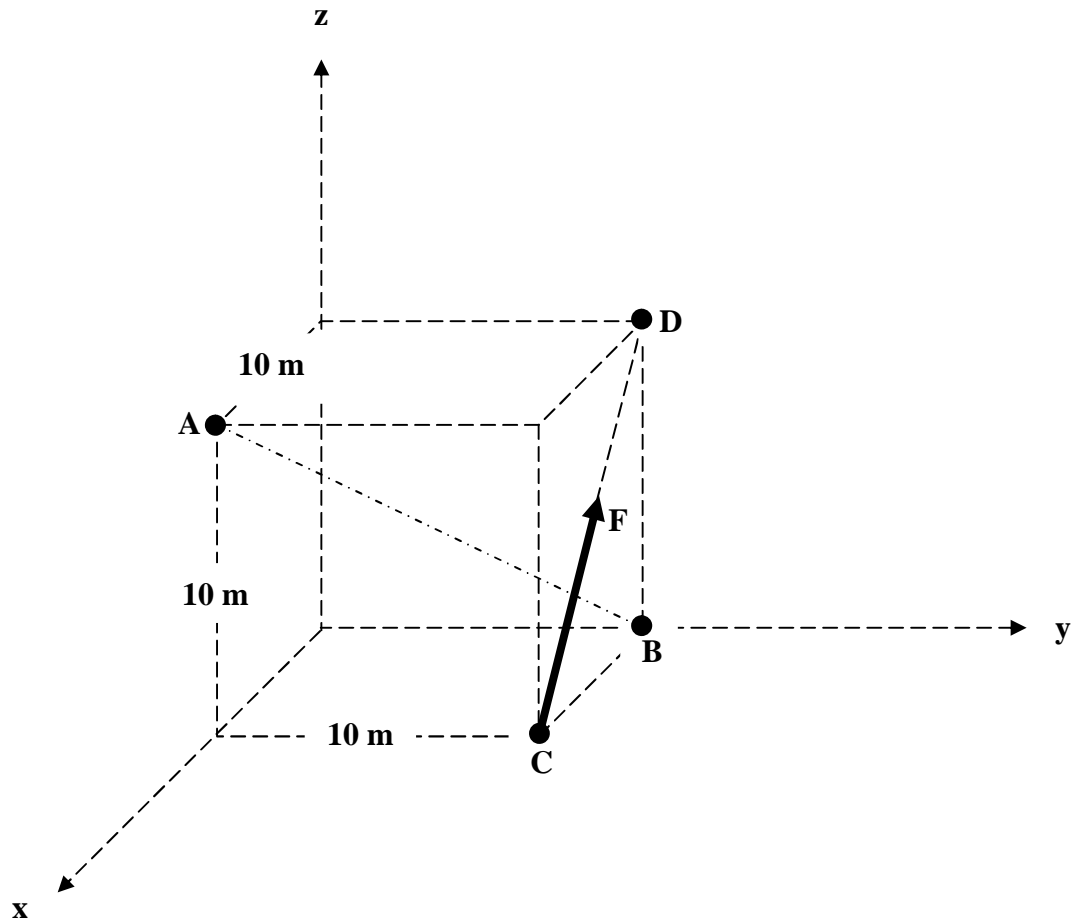
Problem	Assigned Grade	Earned Grade
1-a	15 (Points)	
1-b	15 (Points)	
2	20 (Points)	
3	25 (Points)	
4	25 (Points)	
Total	100 (Points)	

Good Luck

Problem 1-a (15 Points)

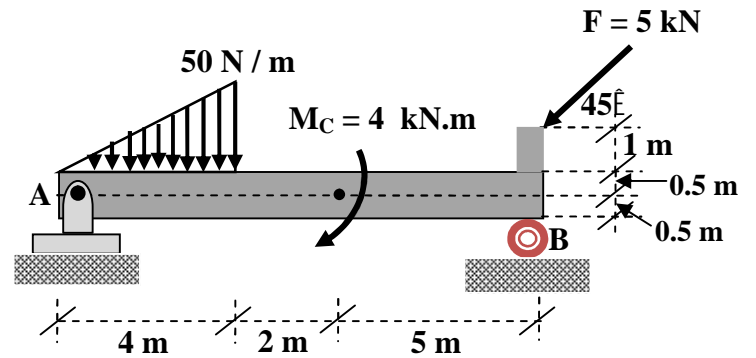
For the force ($F = 50 \text{ kN}$) shown below:

- (10 Points) 1. Determine the moment of the force about the line passing through points A and B.
- (5 Points) 2. Determine the perpendicular distance between the force F and the line AB.



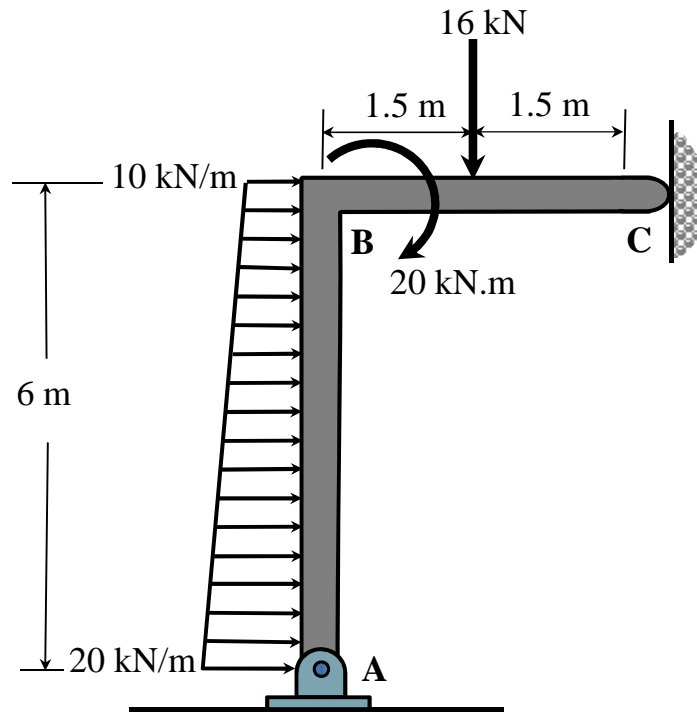
Problem 1- b (15 Points)

Beam AB is supported by a pin at A and roller at B. Replace the force and couple system acting on beam AB by an equivalent force and couple moment acting at point A. Show all steps of solution.



Problem 2 (20 Points)

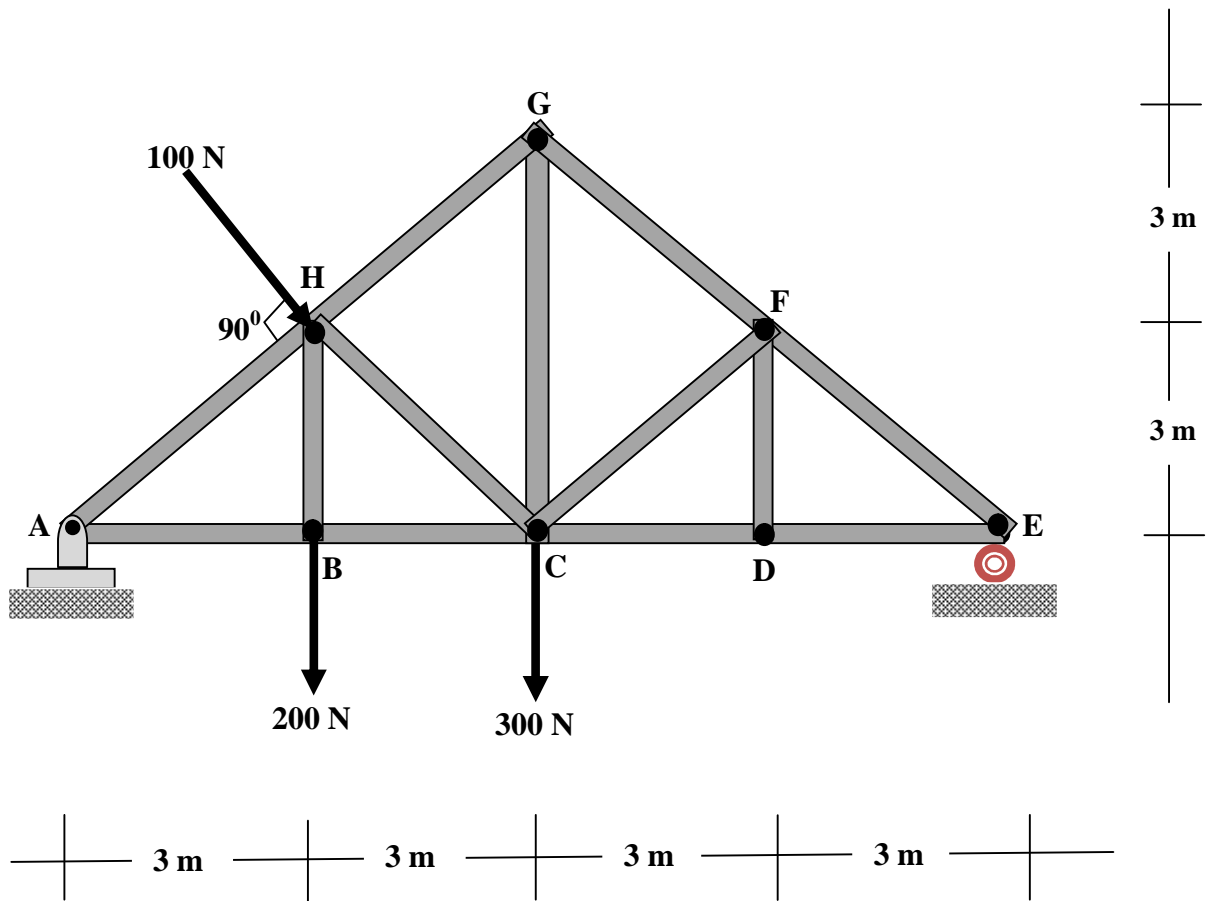
Determine the support reactions at the pin (A) and the smooth contacting surface (C) necessary for equilibrium.



Problem 3 (25 Points)

For the truss shown below:

- Identify, by inspection, the zero-force members. (**Note:** There is a penalty of 1 point for each wrong answer) (2 Points)
- Determine the support reactions at A and E. (5 Points)
- Determine the forces in members CD and GF of the truss by the **method of joints**, and indicate whether the members are in tension or compression. (9 Points)
- Determine the forces in members HC and HG of the truss using the **method of sections**. Indicate if the members are in tension or compression. (9 Points)



Problem 4 (30 Points)

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

