

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 131
Examination: Second Major
Date (Day): November 26, 2013 (Tuesday)
Time: 07:00 – 09:00 p.m.

Section	1	2	3	4	5	6	7	9	10
Instructor	Al-Malack	Al-Malack	Schowdhury	Vohra	Hussain	Al-Attas	Al-Amoudi	Al-Osta	Hajyaseen
Time	07:00	08:00	08:00	09:00	10:00	11:00	11:00	10:00	09:00
Tick									

Student's Name :
Student's ID :

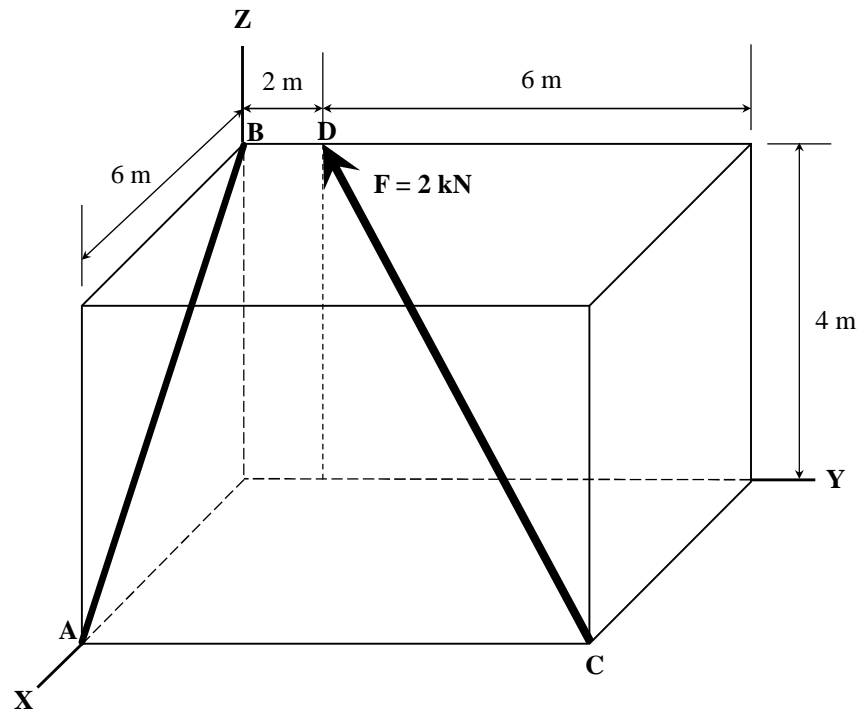
Problem	Assigned Grade	Earned Grade
1 – A	10 (Points)	
1 - B	15 (Points)	
2	25 (Points)	
3	25 (Points)	
4	25 (Points)	
Total	100 (Points)	

Good Luck

Problem 1-A: (10 Points)

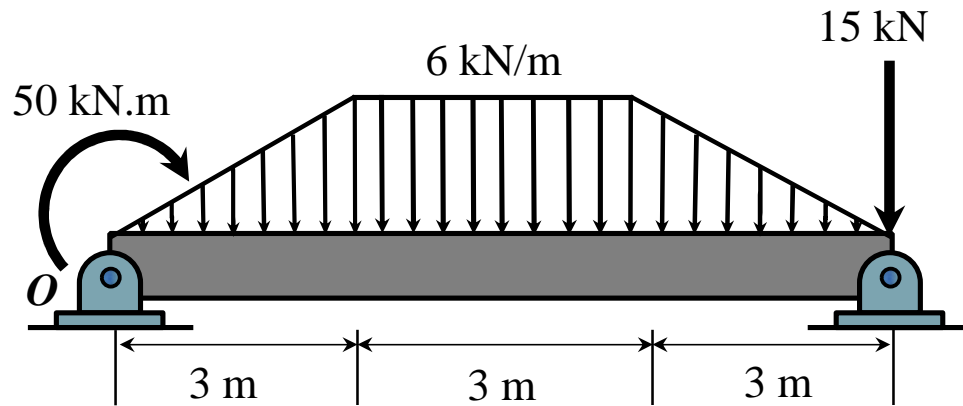
A 2 kN force acts along the line CD as shown in the figure below.

- Determine the moment of the force about the axis AB (Express the moment in Cartesian form)
- Determine the perpendicular distance between the force and axis AB.



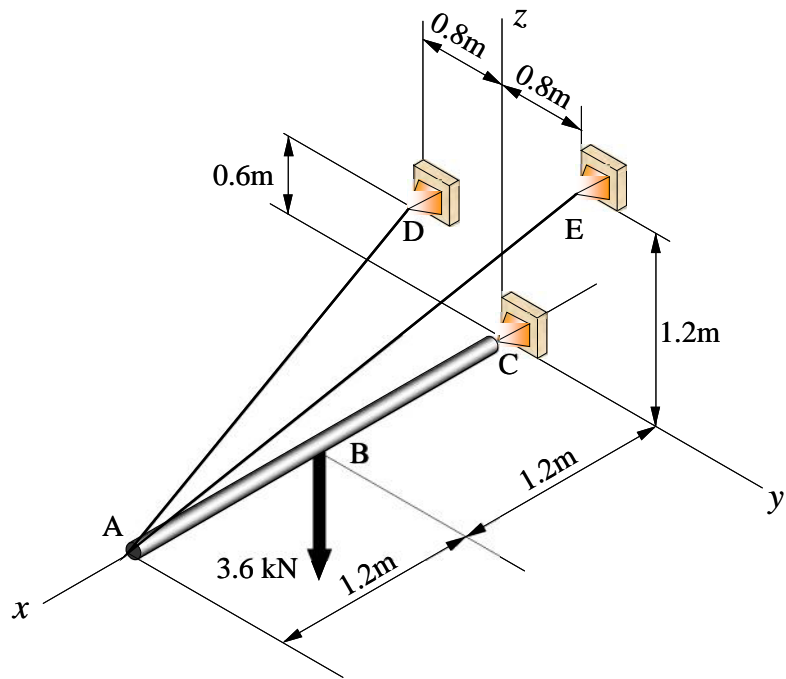
Problem 1-B (15 Points)

The beam shown below is supported by a two pins. Replace the force and couple system acting on the beam by an equivalent force and couple moment acting at point O. Show all steps of solution.



Problem 2 (25 Points)

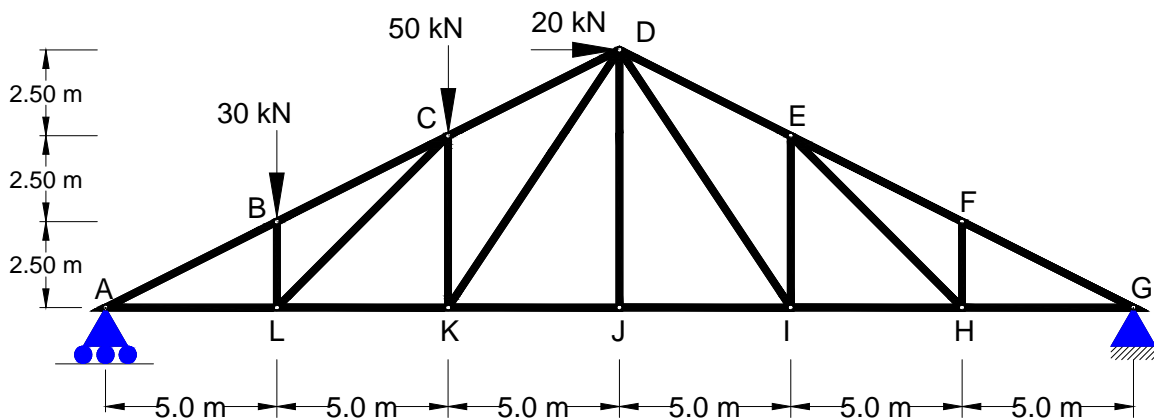
A 2.4-m boom is held by a ball-and-socket joint at C and by two cables AD and AE. Determine the tension in each cable and the reactions at C. The 3.6 kN force is in the direction of the z-axis.



Problem 3 (25 Points)

In the truss shown below:

- (3 Points) 1. Determine the support reactions at **A (roller)** and **G (pin)**.
- (7.5 Points) 2. Identify, by inspection, the zero-force members in the truss shown below. **Note: There is a penalty of 1.5 point for each wrong answer.**
- (8.5 Points) 3. Determine the force in members **BL** and **LC** of the truss by the **method of joints**. Indicate if the members are in tension or compression.
- (6 Points) 4. Determine the force in member **KJ** of the truss shown below using the **method of sections**. Indicate if the member is in tension or compression.



Problem 4 (25 Points)

The frame shown below is composed of three members (ABCDE, CFG and DF). Determine the horizontal and vertical components of reactions at pins A, B, C, D, E, F and G of the frame.

Note: Neglect the weight of all members and the pulley and assume that the members are joined with smooth pins.

