

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 151
Examination: Second Major
Date (Day): November 20, 2015 (Friday)
Time: 01:00 – 03:30 p.m.

Section	1	2	3	4	5	6	7	8
Instructor	Al-Malack	Al-Malack	Vohra	Al-Osta	Al-Attas	Essa	Al-Amoudi	Chowdhury
Time	07:00	08:00	08:00	09:00	10:00	11:00	13:10	07:00
Tick								

Student's Name :
Student's ID :

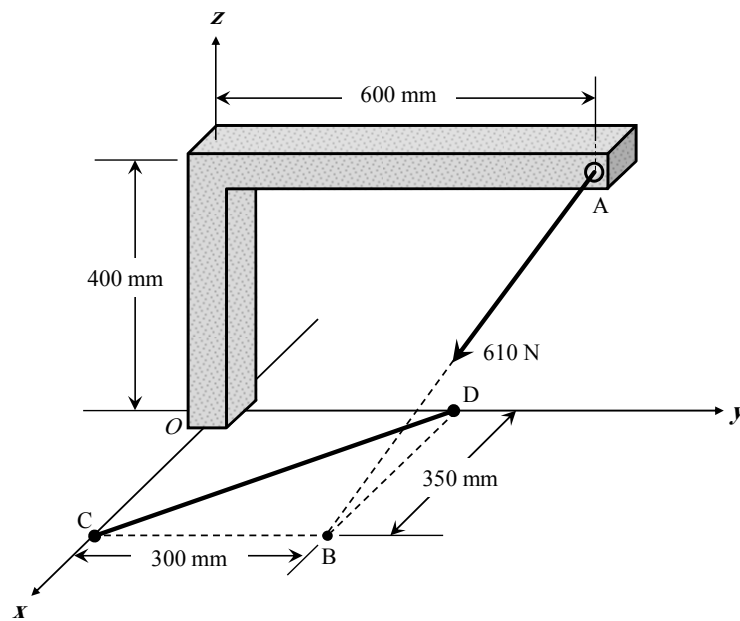
Problem	Assigned Grade	Earned Grade
1A	12 (Points)	
1B	13 (Points)	
2	25 (Points)	
3	25 (Points)	
4	25 (Points)	
Total	100 (Points)	

Good Luck

Problem 1A (12 Points)

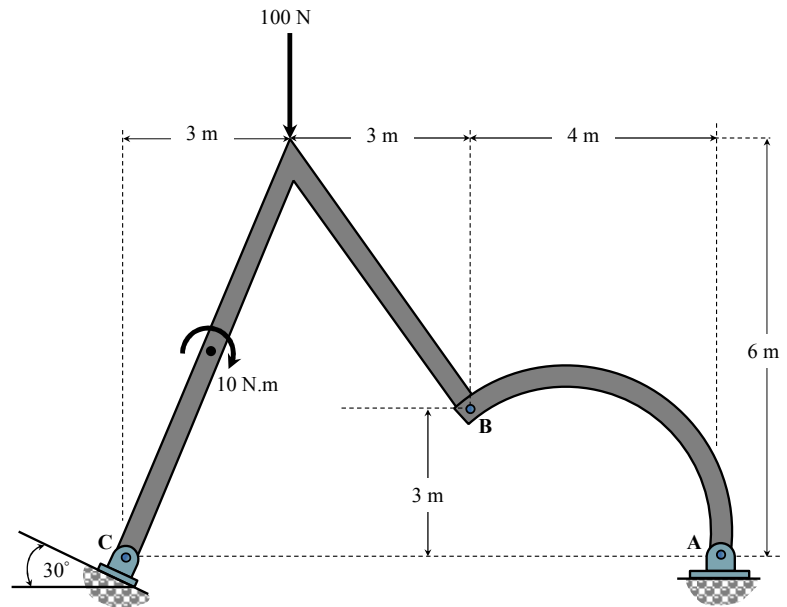
The bracket, shown in the figure below, is subjected to a 610 N force (F_{AB}), Determine:

- The moment of the force about an axis extending between **C** and **D**. Express the results as a Cartesian vector. **(10 Points)**
- The perpendicular distance between the force (F_{AB}) and line **CD**. **(2 points)**



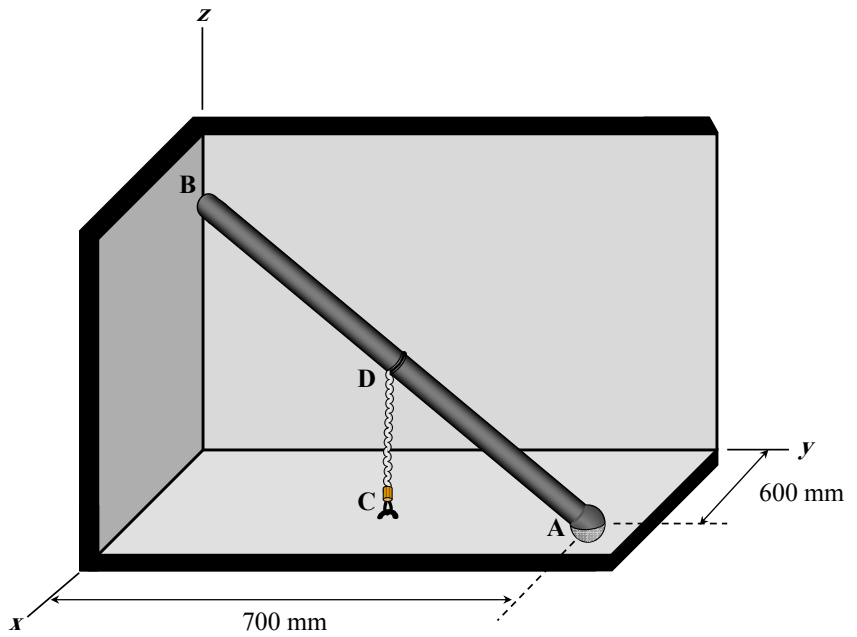
Problem 1B (13 Points)

A 100 N force and a 10 N-m couple moment act on member **CB**, as shown in the figure below. Determine the horizontal and vertical components of reaction at the pins **A**, **B** and **C** required for equilibrium.



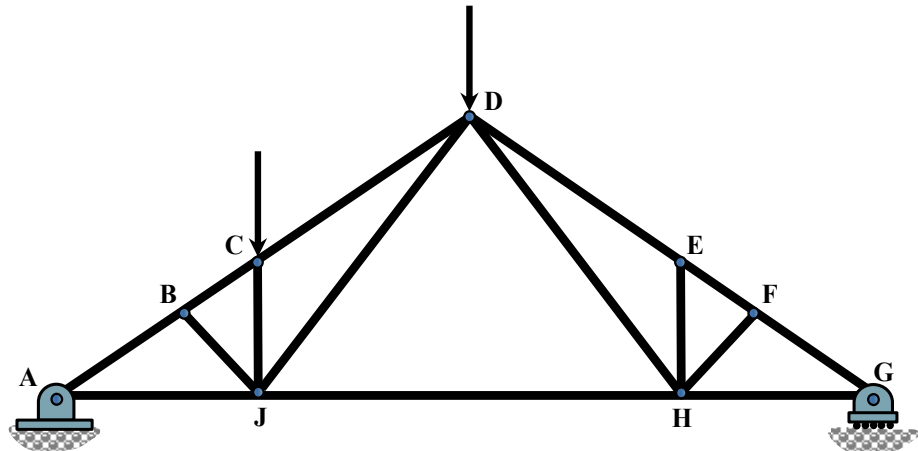
Problem 2 (25 Points)

The 1.1-m bar (**AB**) is supported by a ball and socket (**at A**) and two smooth walls (**at B**). If the tension in the vertical cable **CD** is 1 kN, determine the reactions at **A** and **B**. Point **D** is mid-way between points **A** and **B**.



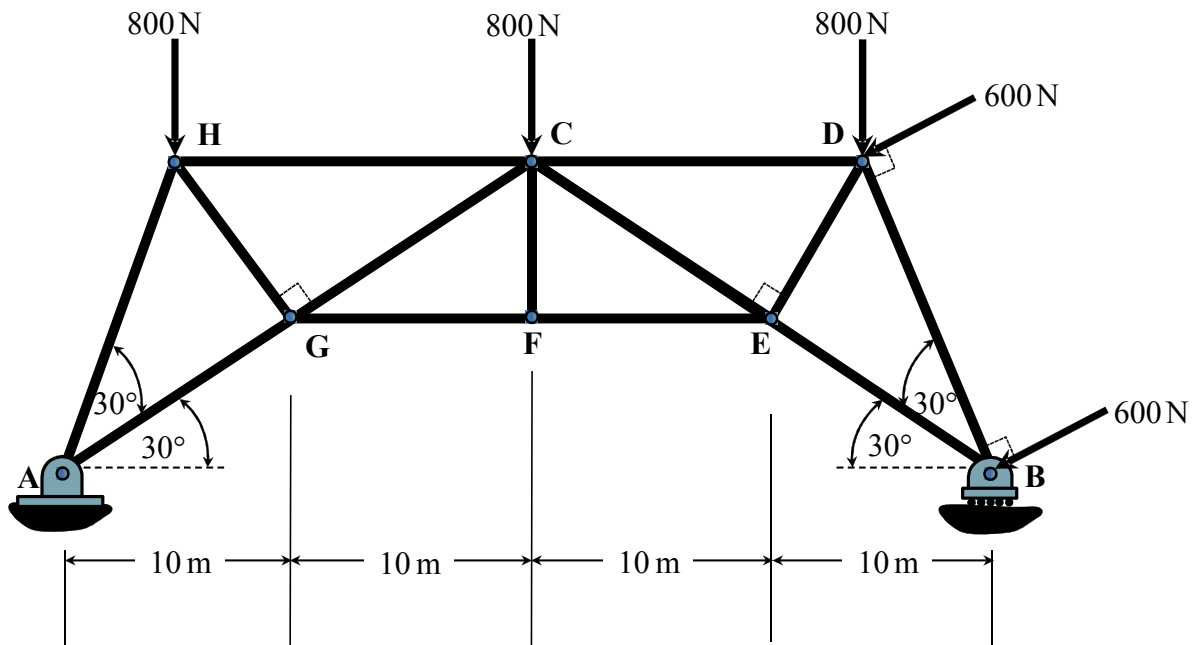
Problem 3 (25 Points)

A. Find the zero force members by inspection in the truss below. Negative marks for each wrong answer.



B. In the truss shown below that is supported by pin at **A** and roller at **B**, determine:

- Reactions at the supports
- Forces in members **CD**, **CE** and **GF** using the **Method of Sections**



Problem 4 (25 Points)

The frame shown below is composed of 3 members (**ABC**, **CDE**, and **BD**) and supported by a pin at **A** and a roller at **E**. Determine the horizontal and vertical components of reaction at **A**, **B**, **C**, **D** and **E**.

