

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 142
Examination: First Major
Date (Day): March 1, 2015 (Sunday)
Time: 07:00 – 09:30 p.m.

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

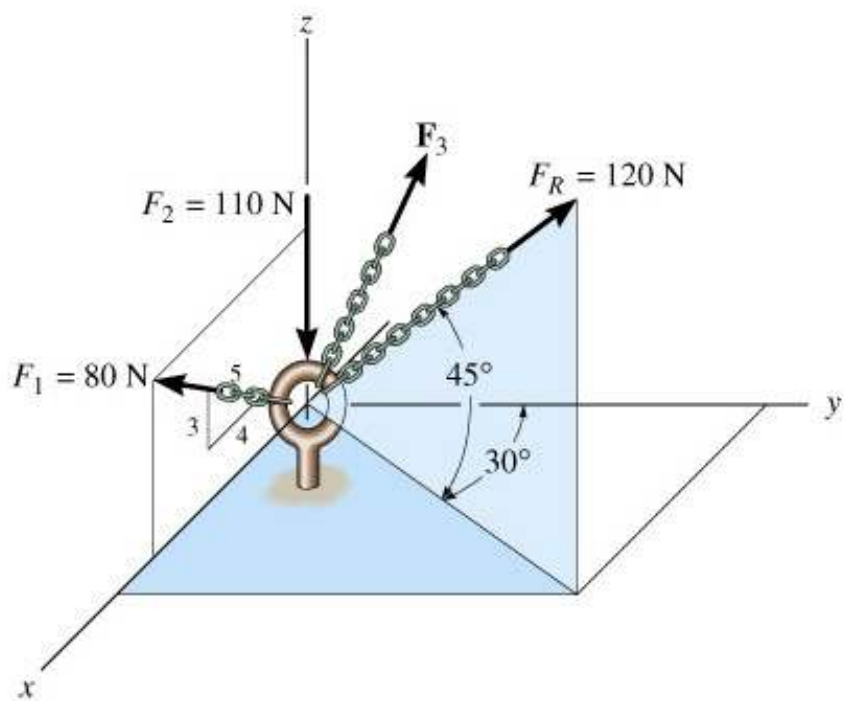
Student's Name :
Student's ID :

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

Good Luck

Problem 1 (25 Points)

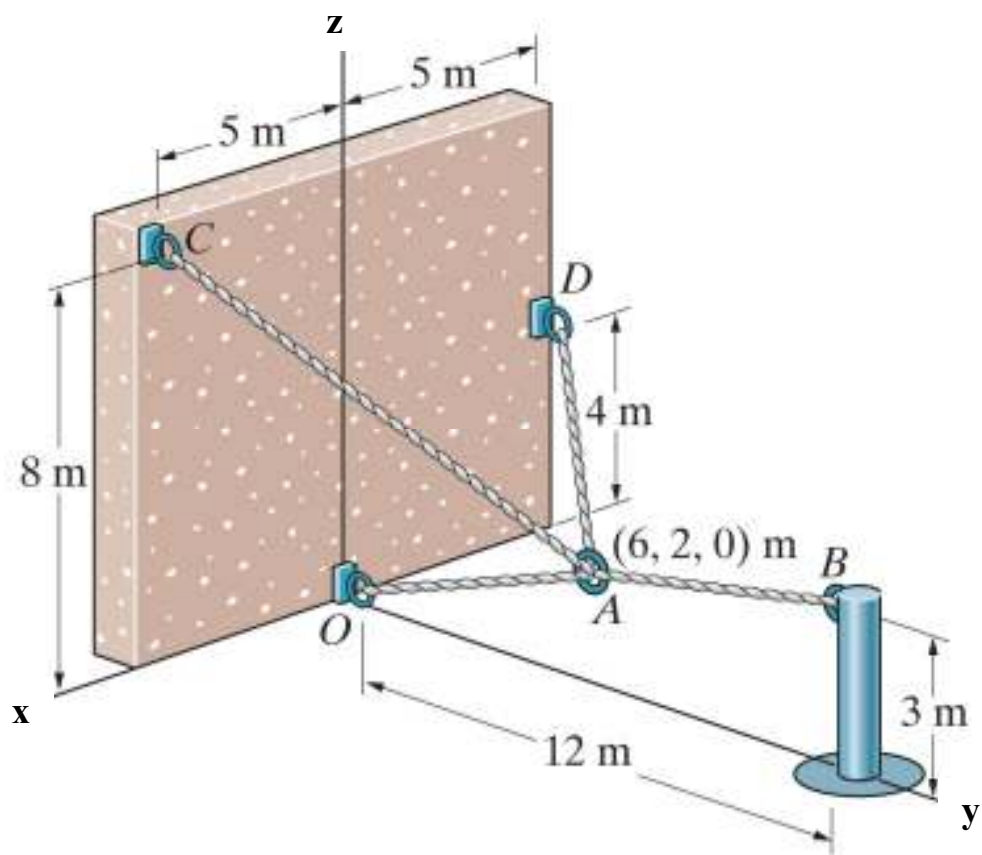
Three forces act on the ring. If the resultant force \mathbf{F}_R has a magnitude and direction as shown in the below figure, determine the magnitude and the coordinate direction angles of force \mathbf{F}_3 .



Problem 2 (25 Points)

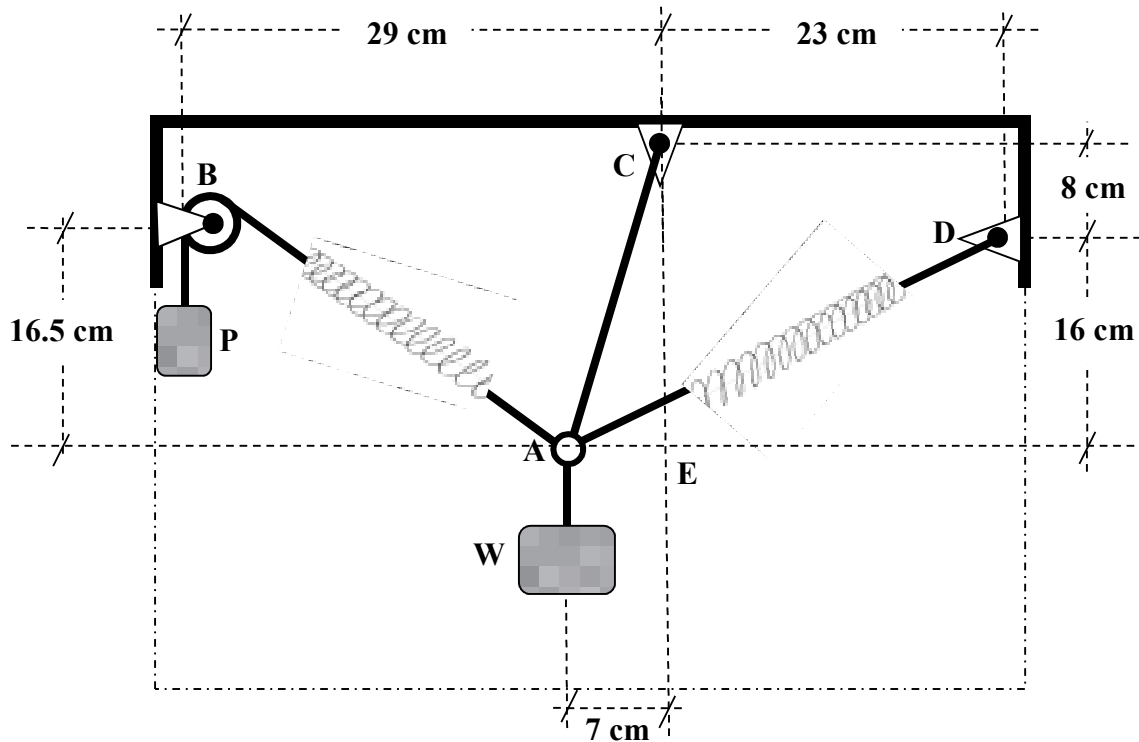
If $T_{AD} = 800 \text{ N}$ and $T_{AC} = 1000 \text{ N}$, determine:

1. Angle between cables AD and AC , using the **dot product**
2. Projection of T_{AD} along AB , using the **dot product**
3. Projection of T_{AC} along a line that is perpendicular to AD



Problem 3 (25 Points)

Blocks of weights **W** and **P** are suspended by cord (AC) and two springs (AB and AD). The original length of each of the two springs is 22.5 cm. The stiffness coefficients of the two springs are $k_{AB} = 900 \text{ N/m}$ and $k_{AD} = 300 \text{ N/m}$. Determine the weight of block **W**, the weight of block **P** and the tension in cord (AC). [Note that **A** is a ring and **B** is a pulley]



Problem 4 (25 Points)

The weight of the cylinder (**W**) is maintained in equilibrium with the support of cables **AB** and **AC**, and a 100 N force at **A**. (Note: Cable **AD** is parallel to the **y**-axis)

- Draw the **FBD** in the box below
- Determine the tension in cables **AB** and **AC**, and the weight **W**.

