

King Fahd University of Petroleum & Minerals

Department of Civil and Environmental Engineering

CE 201 – Statics

Semester: 151
Examination: First Major
Date (Day): October 10, 2015 (Sunday)
Time: 07:00 – 09:00 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 :

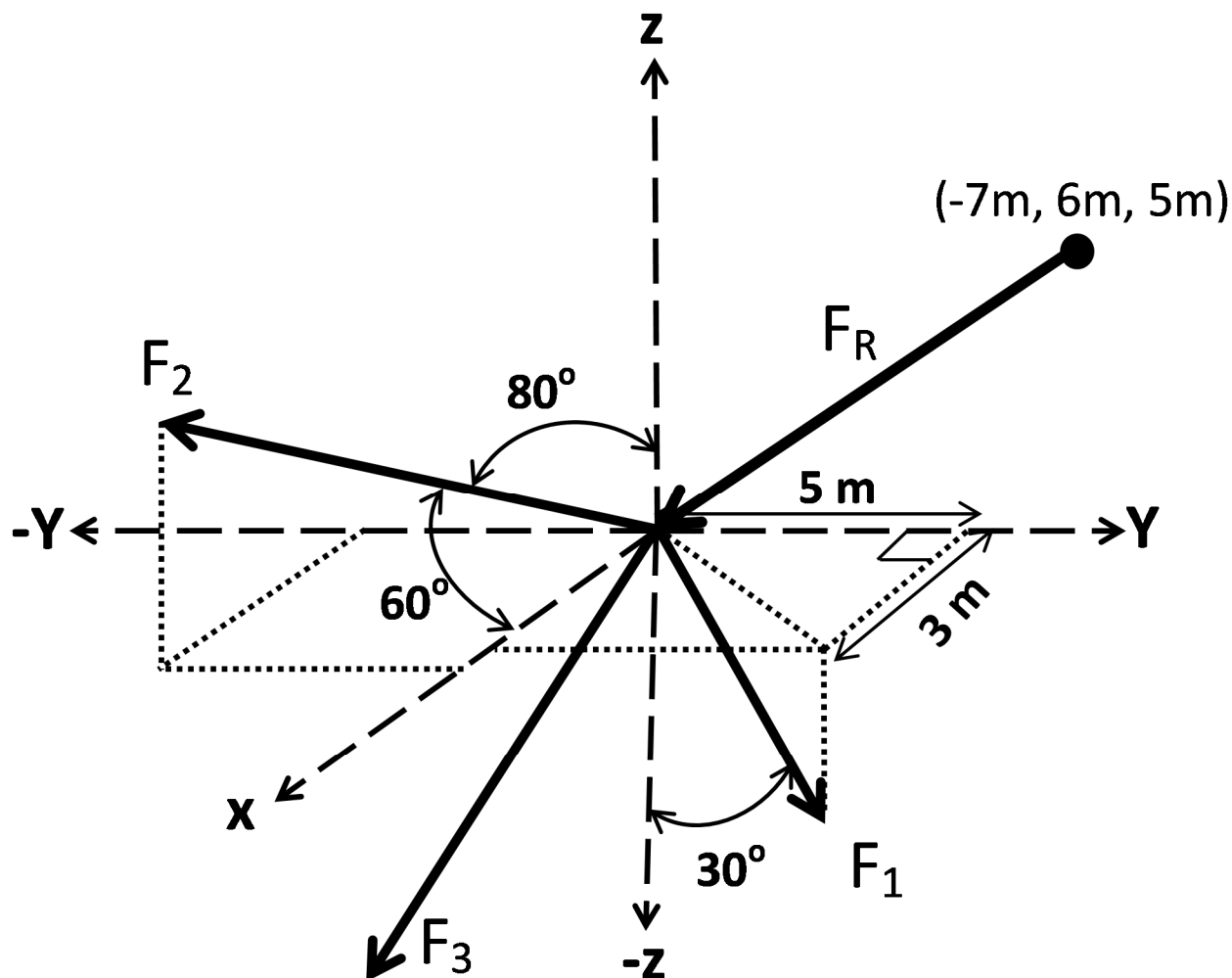
Problem	Assigned Grade	Earned Grade
1	25 (Points)	
2	25 (Points)	
3	25 (Points)	
4	25 (Points)	
Total	100 (Points)	

Good Luck

Problem 1 (25 Points)

Using Cartesian Vector Formulation, Find the magnitude and directional angles of \mathbf{F}_3 of the forces shown in the figure if:

- $F_1 = 100 \text{ kN}$;
- $F_2 = 200 \text{ kN}$;
- The resultant force F_R of the F_1 , F_2 and $F_3 = 400 \text{ kN}$

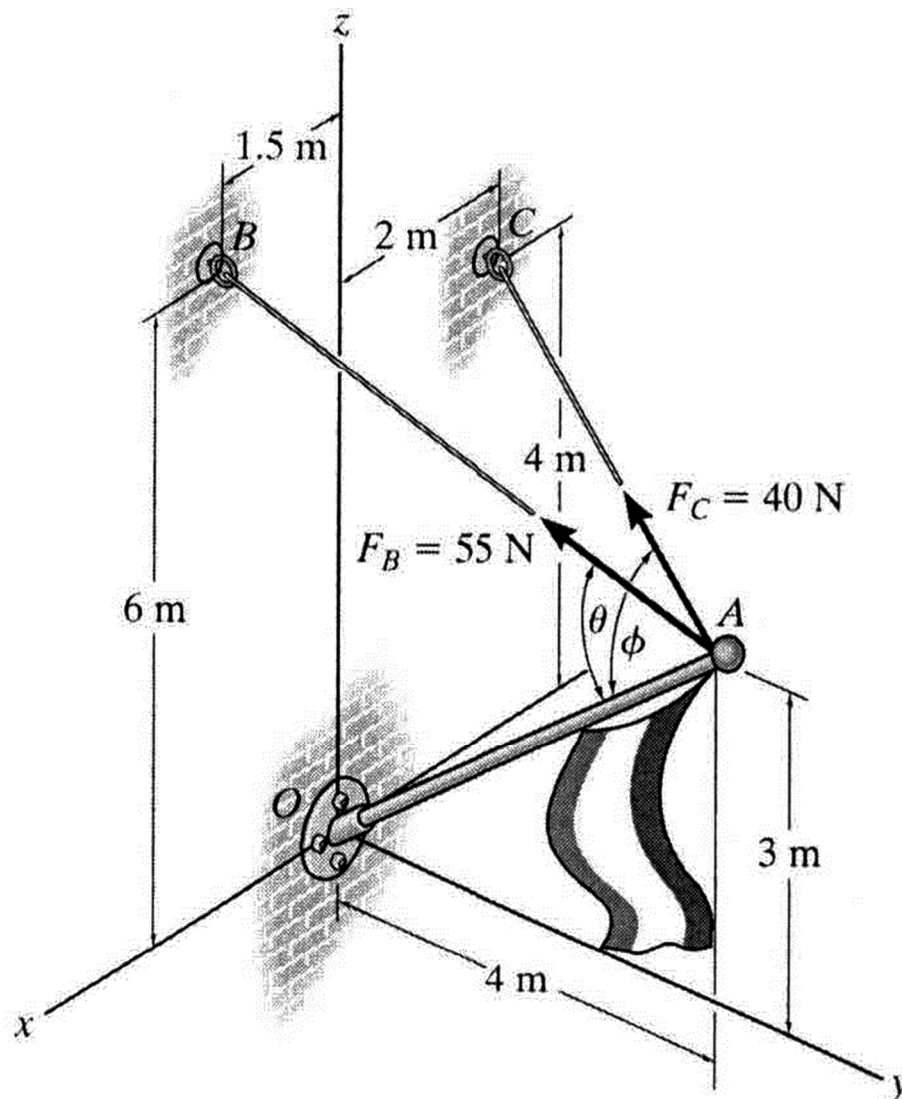


Problem 2 (25 Points)

For the figure shown below:

Use the **DOT PRODUCT** to determine the angles θ between the axes OA of the flag pole and cable AB.

Use the **DOT PRODUCT** to determine the projection of force \mathbf{F}_B along cable AC



Problem 3 (25 Points)

In the figure shown below, If tensions in Cables BC and BE are:

$$T_{BC} = 0.35 \text{ kN}$$

$$T_{BE} = 0.22 \text{ kN}$$

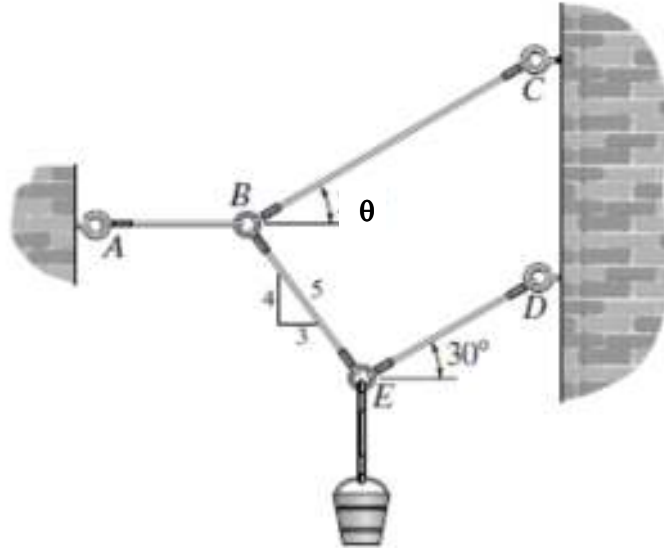
Find:

A. T_{AB}

B. T_{ED}

C. Weight of the bucket

D. Angle θ



Problem 4 (25 Points)

The system shown below is supporting a mass of 200 kg. The spring OC has stiffness k value of 0.7 kN/m. Determine:

- A. Tensions in cables OA and OB.
- B. Stretch of spring OC.

