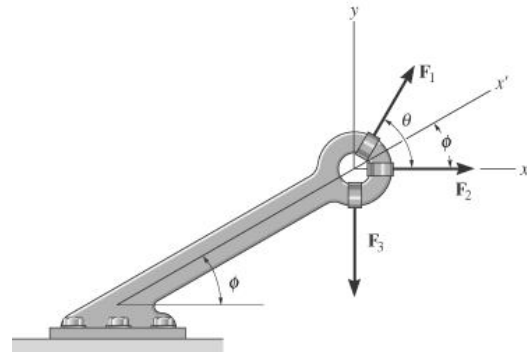
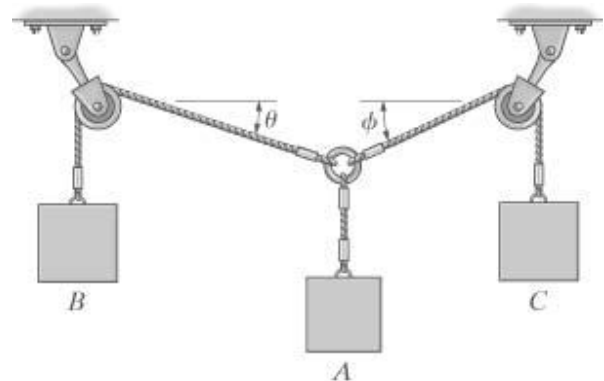
	Alexandria Higher Institute of Engineering & Technology (AIET)	
	General	
	ME001	Mechanics I
	Examiners:	Dr. Rola Afify
		Preparatory Year
		Final, Aug., 23, 2009
		Time: 3 hours

Answer the following questions:

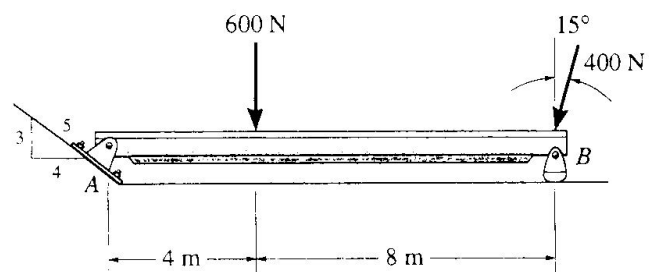
- 1- Express each of the three forces acting on the bracket in Cartesian vector form with respect to the x and y axes. Determine the magnitude and direction Θ of F_1 so that the resultant force is directed to the positive x' axis and has a magnitude of $F_R = 600$ N.



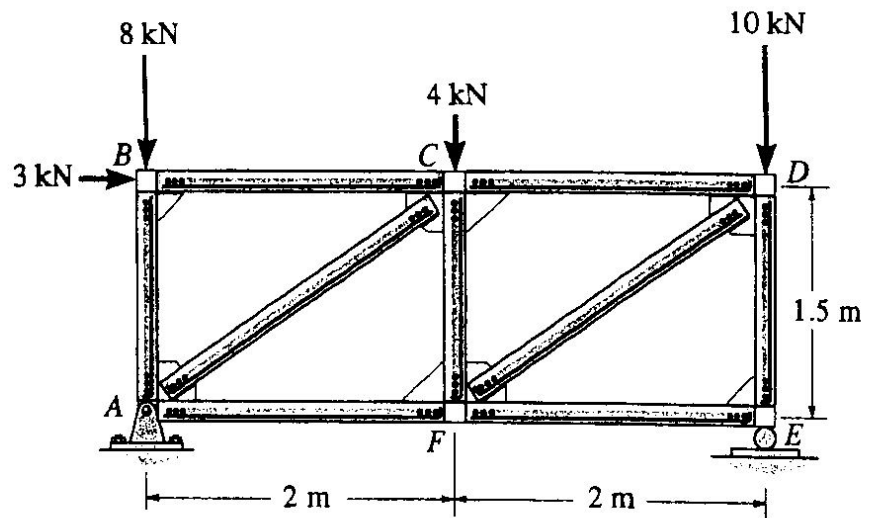
- 2- Three blocks are supported using the cords and pulleys. If they have weights of $W_A = W_C = W$ and $W_B = 0.25W$, determine the angle Θ for equilibrium.



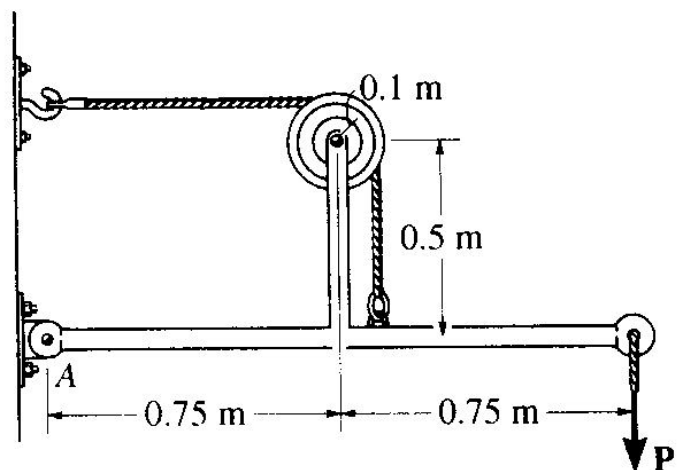
- 3- Determine the magnitude of the reactions on the beam at A and B. Neglect the thickness of the beam.



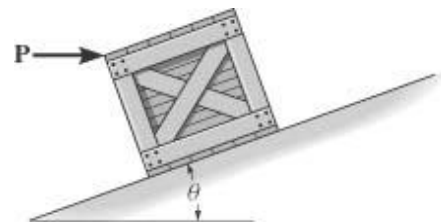
- 4- Determine the force in each member of the truss and state if the members are in tension or in compression.



- 5- In the frame shown, determine the reactions at supports if the force $P = 3 \text{ kN}$.



- 6- If the horizontal force $P = 80 \text{ N}$, determine the normal and frictional force acting on the 300 N crate. Take $\theta = 20^\circ$, $\mu_s = 0.3$ and $\mu_k = 0.2$.



Good Luck