

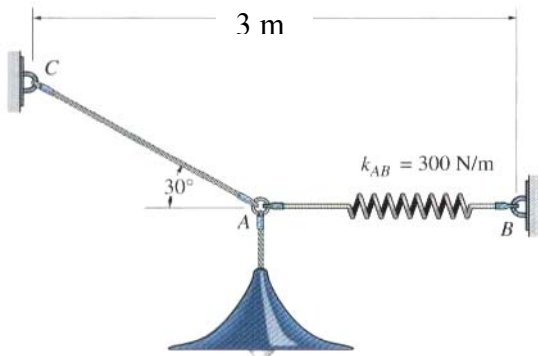
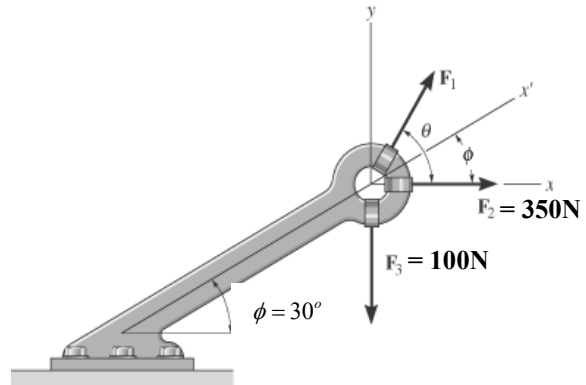


Alexandria Higher Institute of Engineering & Technology (AIET)		
Department of: General	Preparatory Year	0 th Year
ME001	Mechanics I	Final, Jan., 8, 2014
Examiners:	Dr. Rola Afify and committee	Time: 3 hours

Answer the following questions:

Question one: (12 marks)

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.

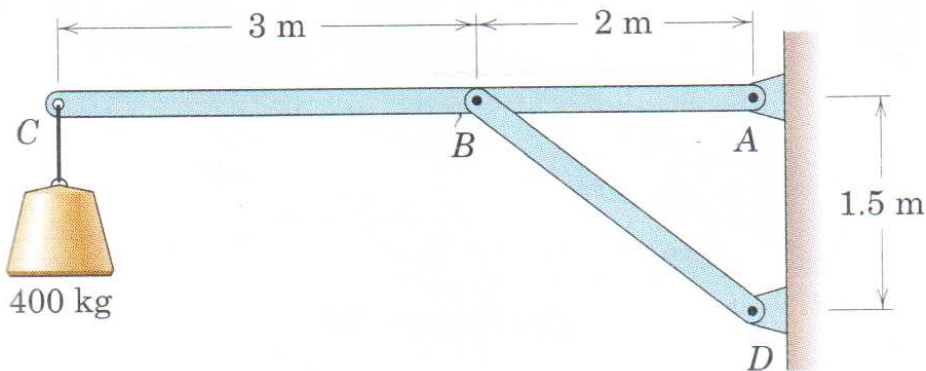


Question Two: (12 marks)

Determine the required length of the cord AC so that the 6-kg lamp is suspended in the position shown. The undeformed length of the spring AB is $l_0 = 0.6$ m, and the spring has a stiffness of $k_{AB} = 300$ N/m.

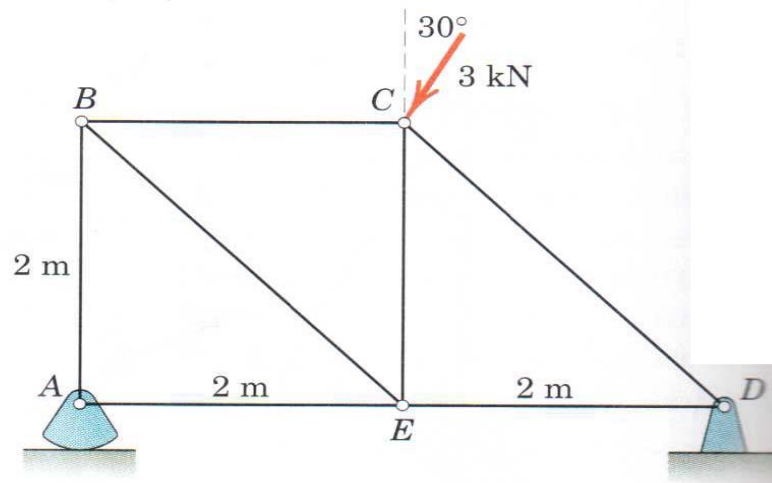
Question Three: (12 marks)

Determine the magnitude of reactions at pins A and strut BD.



Question Four: (12 marks)

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



Question Five: (12 marks)

For the shown frame, determine the magnitude of reactions at pins A, B, and C.

