



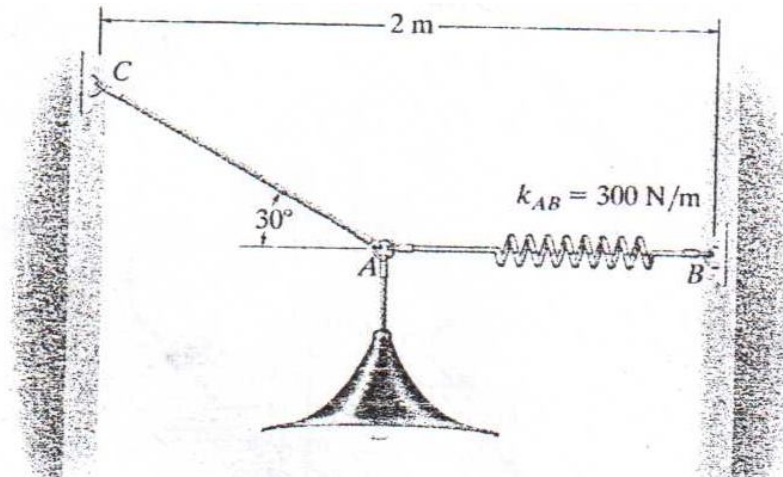
Alexandria Higher Institute of Engineering & Technology (AIET)

Department of: General	Preparatory Year	0 th Year
ME001	Mechanics I	Final, Jan., 10, 2012
Examiners:	Dr. Sayed Hassan and Dr. Rola Afify	Time: 3 hours

Answer the following questions:

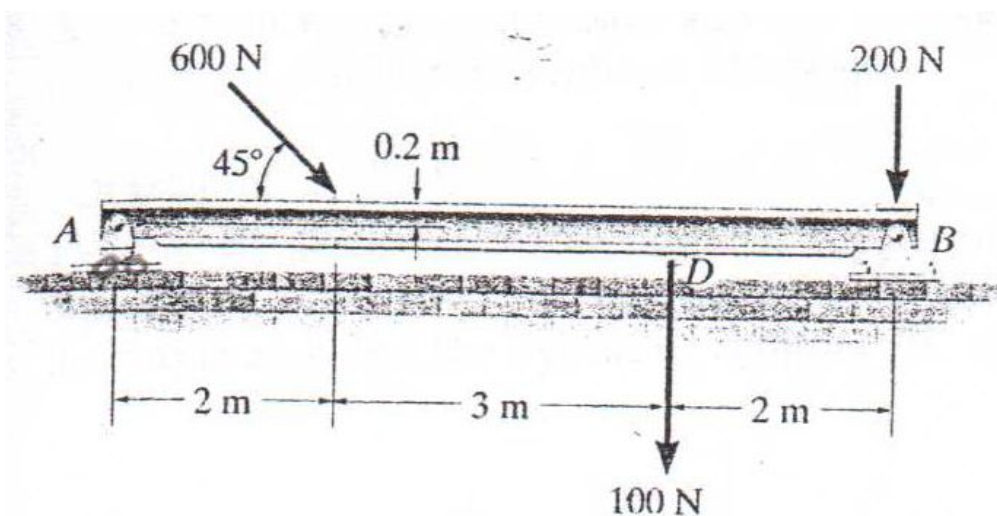
Question one: (12 marks)

Determine the required length of cord AC in figure so that the 8-kg lamp is suspended in the position shown. The un-deformed length of spring AB is 0.4m, and the spring has a stiffness of $k_{AB} = 300 \text{ N/m}$.



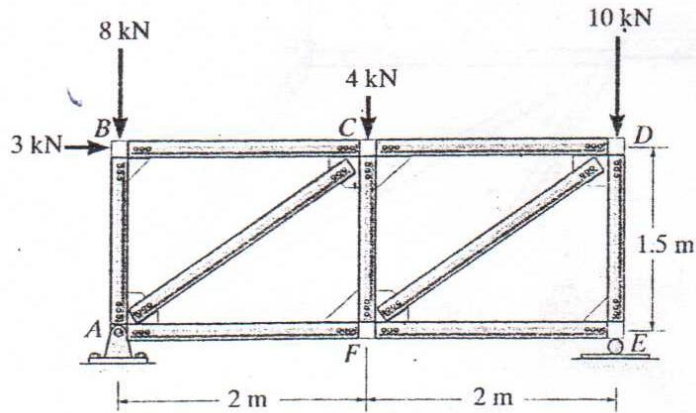
Question Two: (12 marks)

Determine the vertical and horizontal components of reaction on the beam caused by the pin at B and the roller at A, as shown. Neglect the weight of the beam.



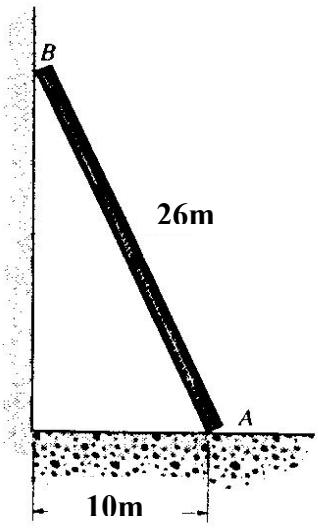
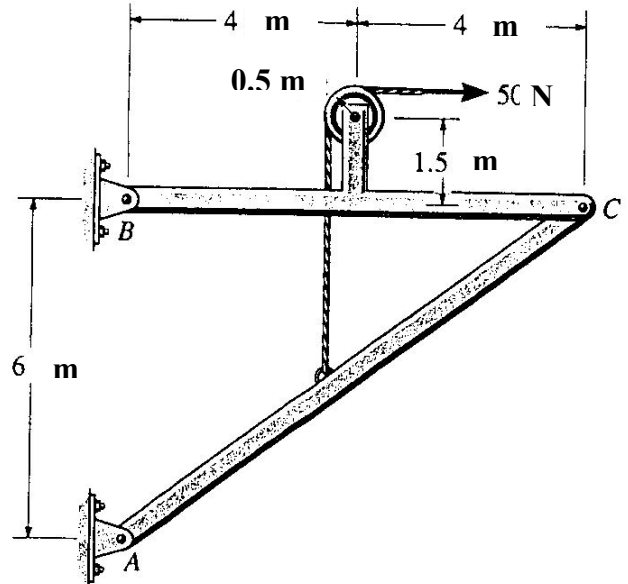
Question Three: (12 marks)

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



Question Four: (12 marks)

In the frame shown, determine the vertical and horizontal components reactions at pins B and C.



Question Five: (12 marks)

The uniform pole has a weight of 30N and a length of 26m. If the it is placed against the smooth wall and on the rough floor in the position shown in figure. Will it remain in this position when it is released? The coefficient of static friction $\mu_s = 0.3$.