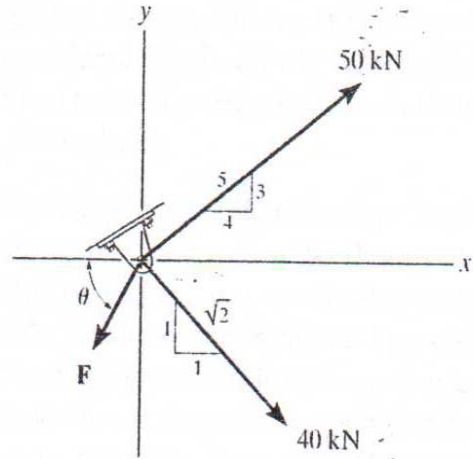**Answer the following questions:**
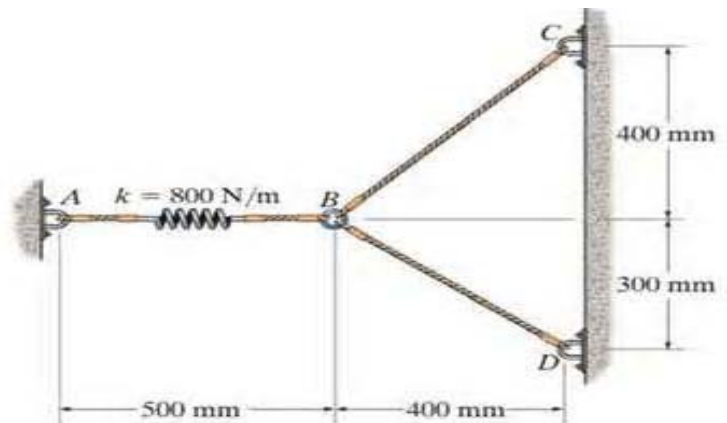
Question one: (10 marks)

If $\theta = 60^o$ and $F = 20$ kN, determine the magnitude of the resultant force and its direction measured clockwise from positive x-axis.
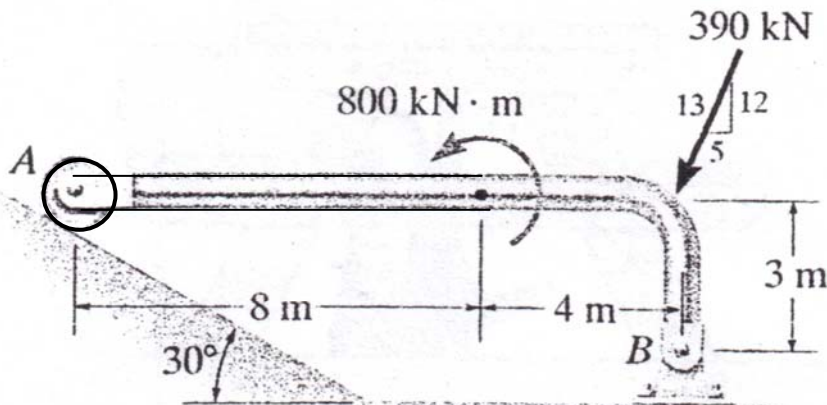

Question two: (10 marks)

The spring has a stiffness of k = 800 N/m and an unstretched length of 200 mm. Determine the force in cables BC and BD when the spring is held in the position shown.
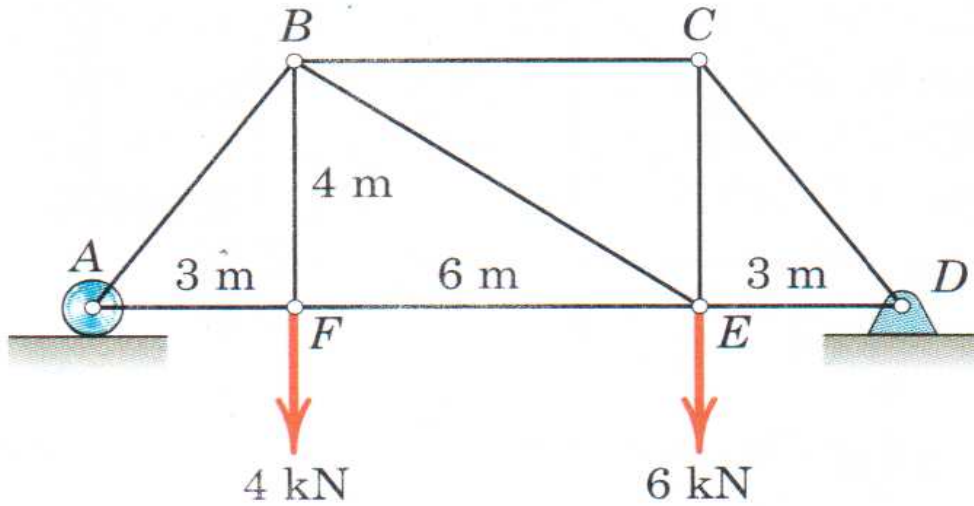

Question Three: (10 marks)

Determine the reactions at roller A and pin B.

1/2

Question Four: (15 marks)

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

Question Five: (15 marks)

The frame supports the 400 kg load in the manner shown. Neglect the weights of the members compared with the forces induced by the load and compute the horizontal and vertical components of all forces acting on each of the members.