每一題皆須於答案卷清楚畫出自由體圖，並列出求解所使用之力學方程式。

Problem 1. (25%)

If each cable segment can support a maximum tension of 360 N, answer the following questions.

a) Which segment has the largest tension?
b) Determine the largest load P that can be applied.

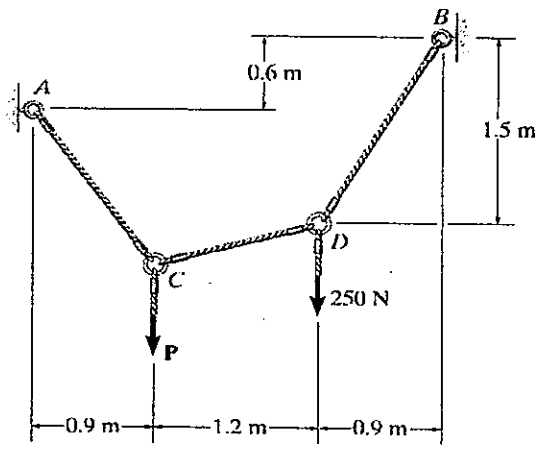

Fig. for Prob. 1

Problem 2. (25%)

The automobile has a mass of 1800 kg and center of mass at G. The brakes of back wheels are locked, and the front wheels are free to roll. Take the coefficient of static friction $\mu_S = 0.3$. Determine the towing force F required to move the car.

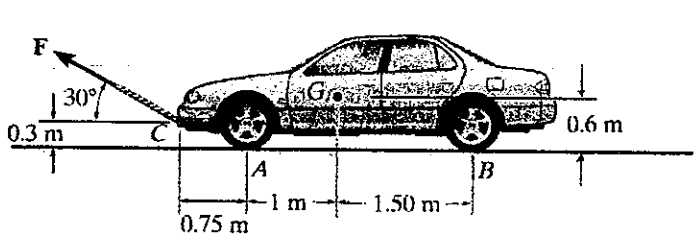

Fig. for Prob. 2

Problem 3. (25%)

If the beam is originally horizontal and the springs are unstretched when the load is removed, determine F_{AC}, F_{BD}, and the angle of tilt of the beam when the load is applied.

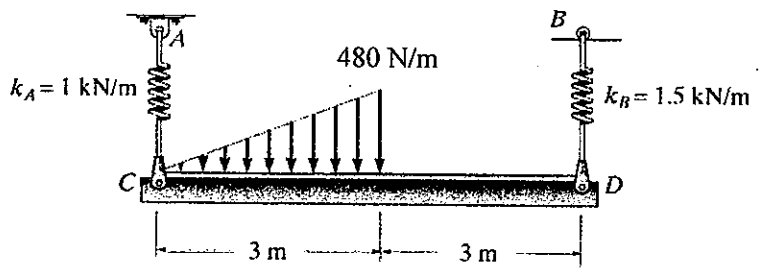

Fig. for Prob. 3

Problem 4. (25%)

The vehicle is designed to combine the feel of a motorcycle with the comfort and safety of an automobile. If the vehicle is traveling at a constant speed of 90 km/h along a circular curved road of radius 100 m, determine the tile angle θ of the vehicle so that only a normal force from the seat acts on the driver. Neglect the size of the driver (considered as a particle).

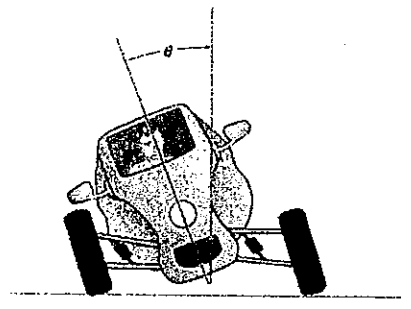

Fig. for Prob. 4

試題隨卷繳回