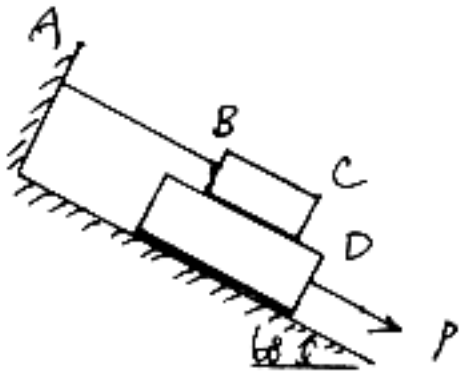
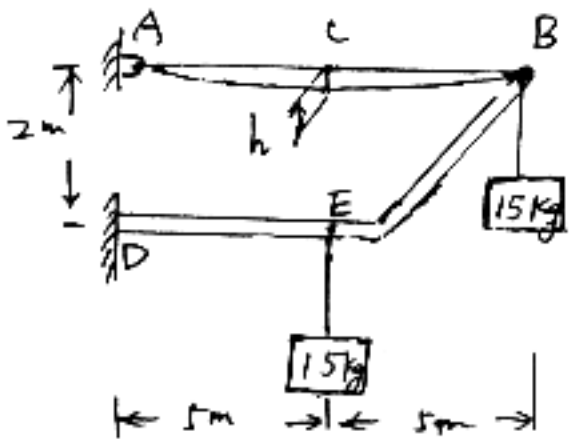
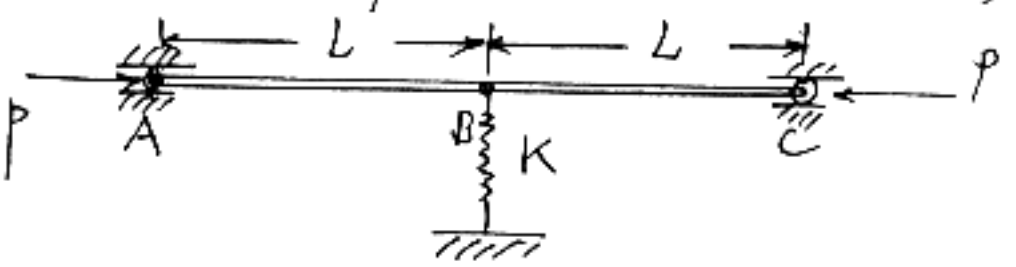
1. The coefficients of friction are $\mu_s = 0.30$ and $\mu_k = 0.25$ between all surfaces of contact. Determine the smallest force P required to start block D moving if (a) block C is restrained by cable AB as shown, (b) Cable AB is removed. (25%)



2. The total mass of cable is 10 kg. Assume that the mass of the cable is distributed uniformly along the horizontal. Determine (a) the sag h, (b) the slope of the cable at A. (25%)



3. Two bars AB and BC of negligible weight are attached to a single spring of constant k which is undeformed when the bars are horizontal. Determine the range of the values of the magnitude P of the two equal and opposite force P and -P for which the equilibrium of the system is stable in the position shown. (25%)



(背面仍有題目,請繼續作答)

>09002C

4. Draw the shear and bending moment diagrams for the beam AB. The distributed load of 40 lb/in. extends over 12 in. of the beam, from A to C, and the 200 lb load is applied at E. (25%)