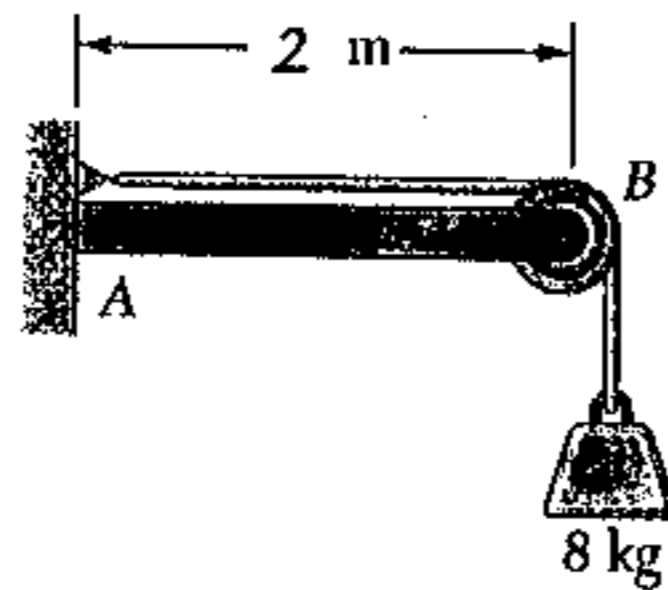


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科目 應用力學 科號 1502 共 3 頁第 1 頁 \*請在試卷【答案卷】內作答

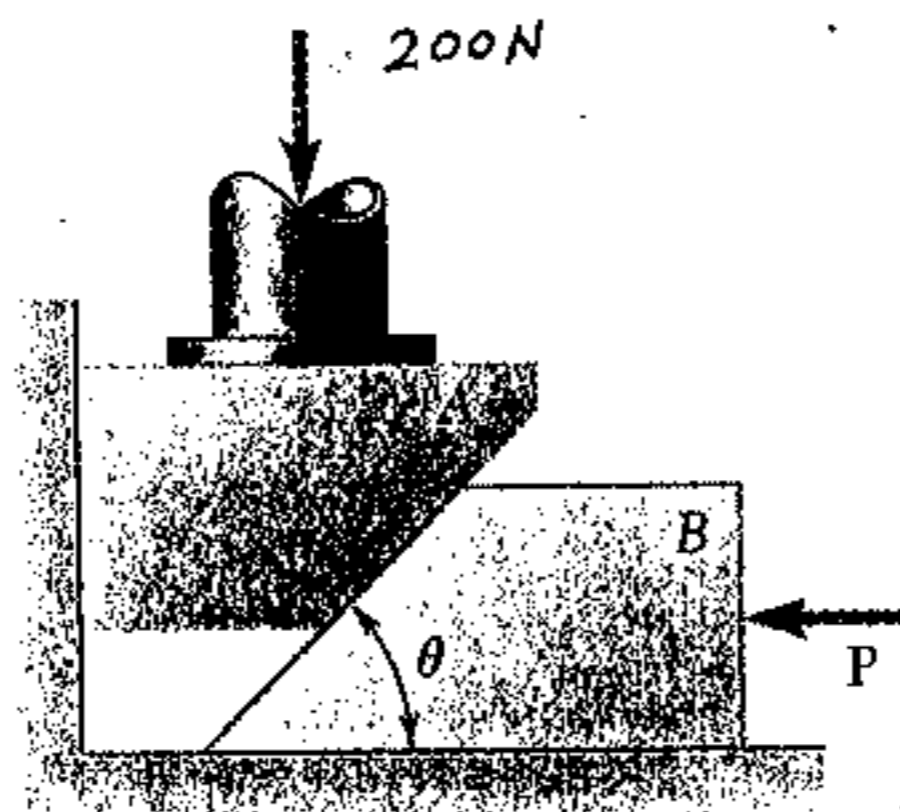
(1)

An 8-kg mass is supported as shown. Knowing the pulley has a 150 -mm radius, determine the reaction at A. (20%)



(2)

Block A supports a pipe column and rests as shown on wedge B. Knowing that the coefficient of static friction at all surfaces of contact is 0.2 and that  $\theta = 45^\circ$ , determine (a) the smallest force P for which equilibrium is maintained and (b) the smallest force P required to raise block A. (20%)

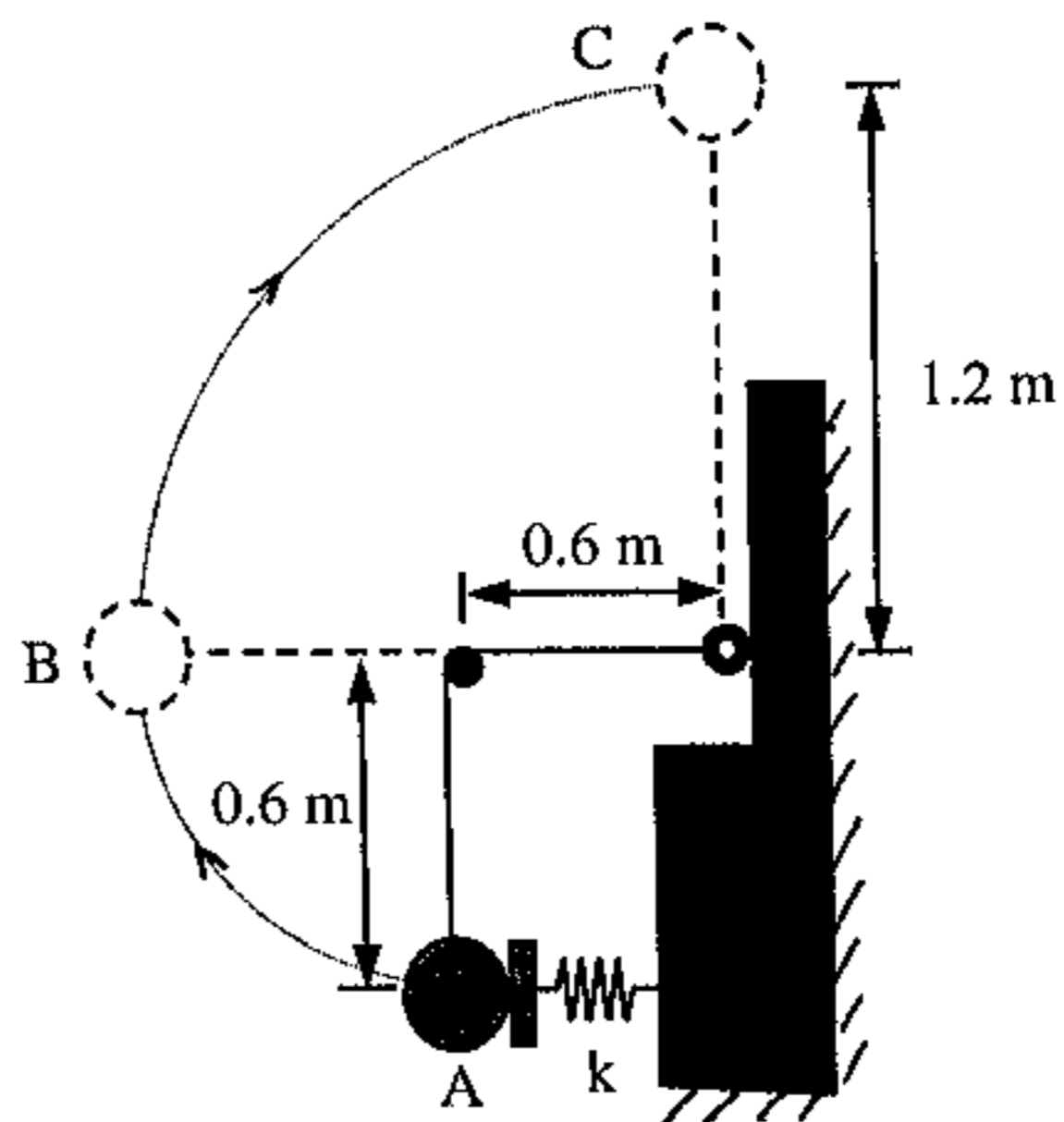


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科目 應用力學 科號 1502 共 3 頁第 2 頁 \*請在試卷【答案卷】內作答

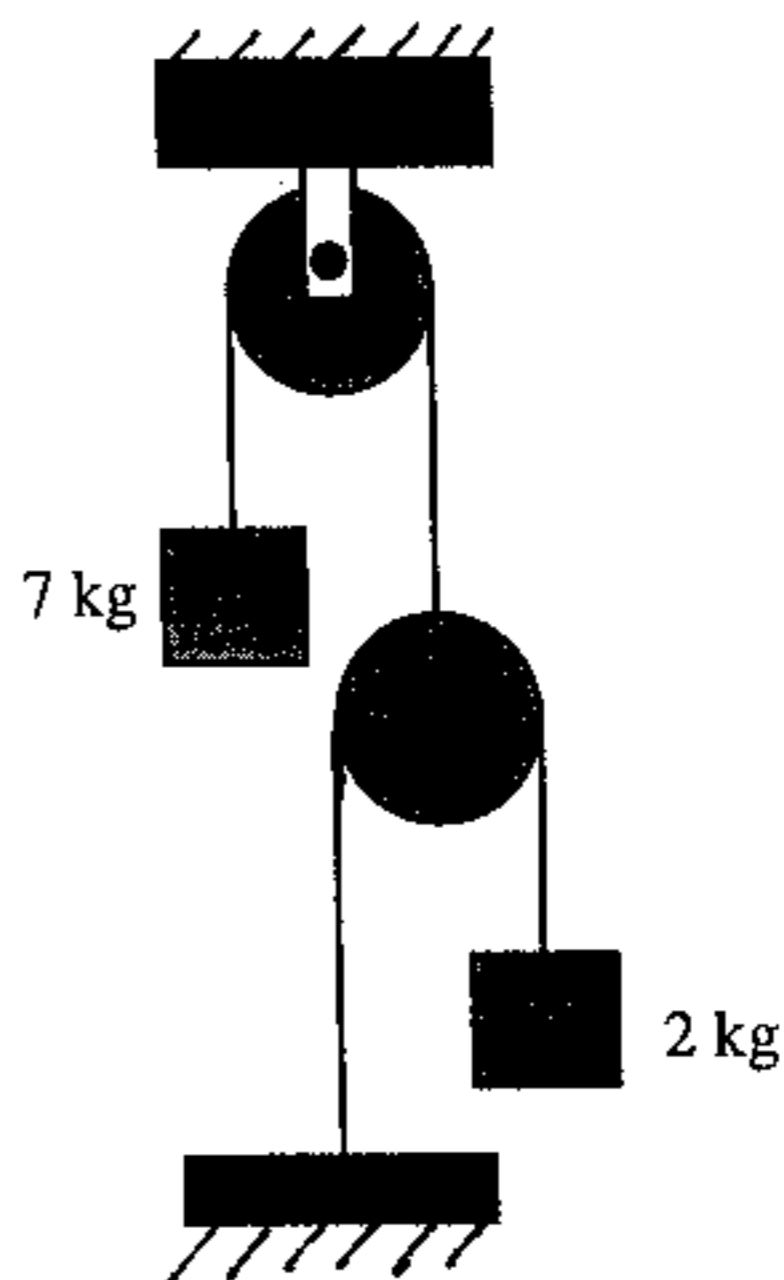
(3)

The bob of a pendulum has a mass of 0.75 Kg. It is fired from position A by a spring which has a stiffness of  $k = 6 \text{ kN/m}$  and is compressed 125 mm. Determine the speed of the bob and the tension in the cord when it is at positions B and C. Point B is located on the path where the radius of curvature is still 0.6m. (15%)



(4)

Determine the tension developed in the two cords and the acceleration of each block. Neglect the mass of the pulleys and cords. (15%)

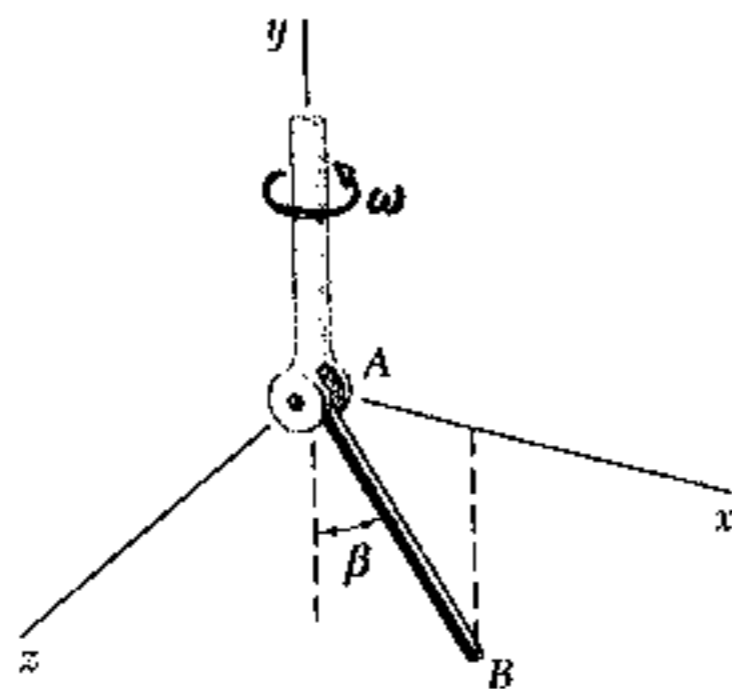


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(5)

Rod AB of length 125mm is attached to a vertical rod that rotates about the y axis at the constant rate  $\omega=5$  rad/s. Knowing that the angle formed by rod AB and the vertical is increasing at the constant rate  $\frac{d\beta}{dt} = 2$  rad/s, determine the velocity and acceleration of end B of the rod when  $\beta=30^\circ$ . (15%)



(6)

The 10kg wheel shown in Fig. has a moment of inertia  $I_G=0.150$  kg·m<sup>2</sup>. Assuming that the wheel does not slip or rebound, determine the minimum velocity  $V_G$  it must have to just roll over the obstruction at A. (15%)

