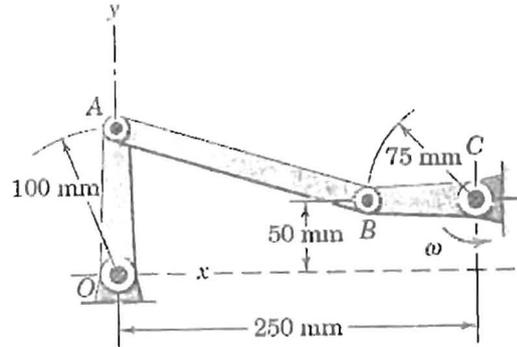


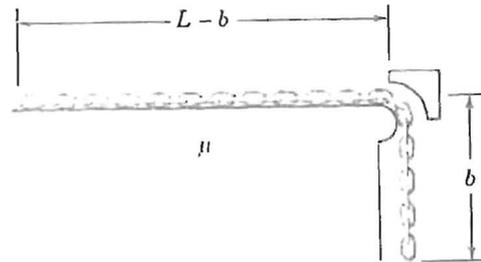
※ 考生請注意：本試題 可 不可 使用計算機

1. (20%) Crank CB oscillates about C through a limited arc, causing crank OA to oscillate about O . When the linkage passes the position shown with CB horizontal and OA vertical, the angular velocity of CB is 2 rad/s counterclockwise. For this instant, determine the angular velocities and angular accelerations of OA and AB .

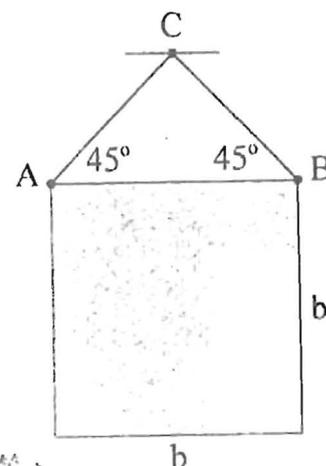


2. (20%) The chain is released from rest with the length b of overhanging links just sufficient to initiate motion. The coefficients of static and kinetic friction between the links and the horizontal surface have essentially the same value μ . Neglect any friction at the corner.

- (1) Determine the velocity v of the chain when the last link leaves the edge by using Newton's Law of motion.
- (2) Determine the velocity v of the chain when the last link leaves the edge by using conservation of mechanical energy.
- (3) How much time does it take?



3. (20%) The uniform 12-kg square panel is suspended from point C by the two wires at A and B . If the wire at B suddenly breaks, calculate the tension T in the wire at A an instant after the break occurs.



(背面仍有題目,請繼續作答)

系所組別： 航空太空工程學系丙組

考試科目： 動力學

考試日期： 0219，節次： 2

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4. Determine the velocity of the 20-kg block A after it is released from rest and moves 2 meters down the slope in figure 4. Block B has a mass of 10 kg and the coefficient of kinetic friction on the slope is $\mu_k=0.2$. Also, what is the tension in the cord. (20%)
5. The T bar, shown in figure 5, has two arms and each has the same mass M and length L . It is held by and swings about the pin joint O in the vertical plane.
 - a. Find the moment of inertia of the T bar about its center of mass G and point O . (10%)
 - b. Write the equation of motion for the bar under the effect of gravity g regardless of any friction. (10%)

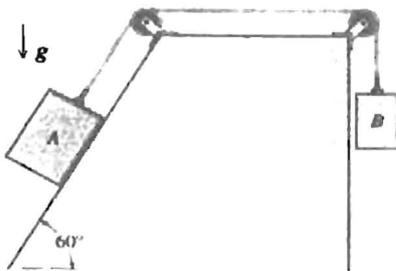


Figure 4

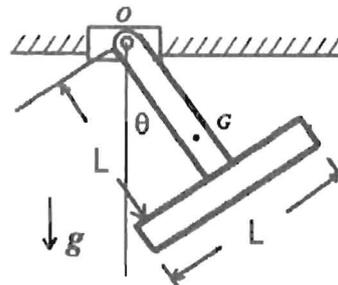


Figure 5