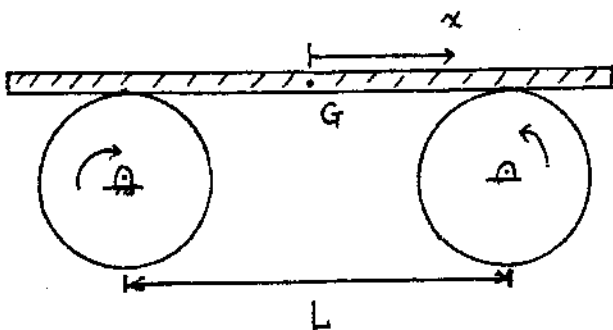


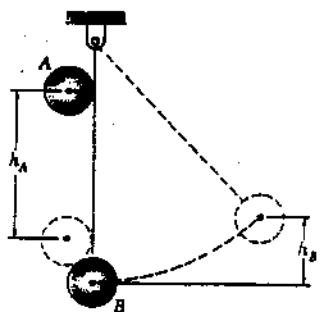
(1) 一平板質量 m 公斤；放在固定滾輪上，兩滾輪之轉動方向正好相反，而平板於兩滾輪上沿 x 方向成週期性左右移動，滾輪與平板間之動摩擦係數為 μ_k ，請列出(a)平板之運動方程式。(b)寫出左右移動之週期。

(25分)



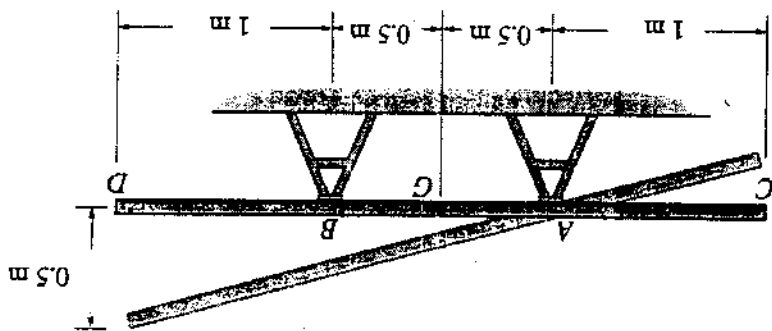
(2) Ball B is hanging from an inextensible cord. An identical ball A is released from rest when it is just touching the cord and drops through the vertical distance $h_A=300\text{mm}$ before striking ball B. Assuming perfectly elastic impact ($e=1$) and no friction. Determine the resulting maximum vertical displacement h_B of ball B

(25分)

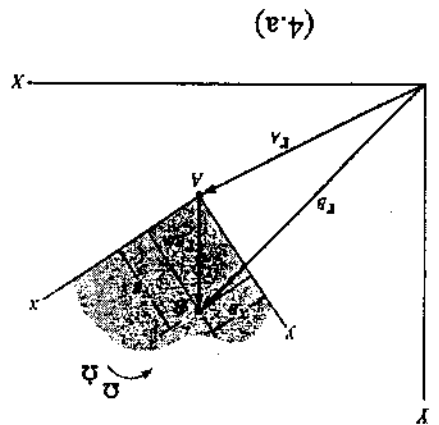


(背面仍有題目,請繼續作答)

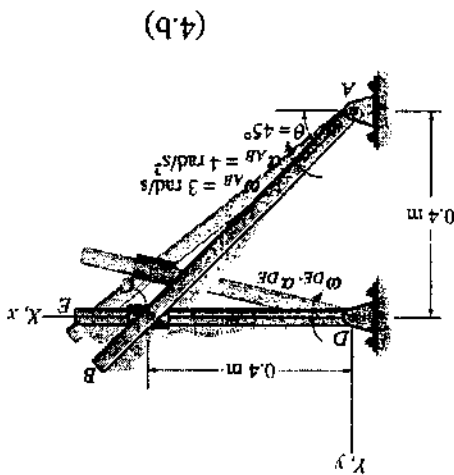
3. The Plank has a weight of 20kg, center of gravity at G, and it rests on the two sawhorses at A and B. If the end D is raised 0.5m above the top of the sawhorses and is released from rest, determine how high end C will rise from the top of the sawhorses after the plank falls so that it rotates clockwise about A, strikes and pivots on the sawhorse at B, and rotates clockwise of the sawhorse at A. 20%



4.a As shown in the figure, the base point A represents the origin of the x , and y coordinate system, which is assumed to be both translating and rotation with respect to the X and Y system. Derive the formulas representing the absolute velocity and acceleration of B in terms of the velocity and the acceleration of A, relative position vector, relative velocity and relative acceleration of B to A. 15%



4.b Determine the angular motion of rod DE by using the above formulas at the instant. The collar C is pin connected to AB and slides over rod DE. 15%



(4.b)

(4.a)