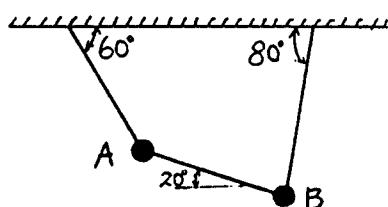


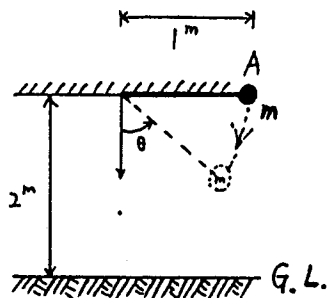
一. 解釋: (15%)

1. particle and rigid body.
2. internal and external force.
3. principle of transmissibility.

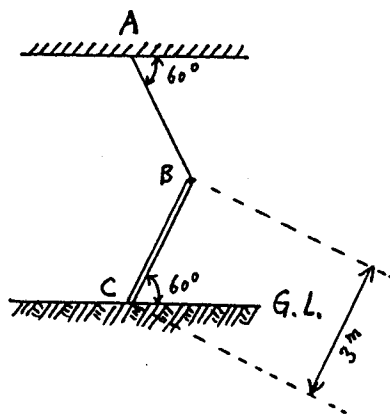
二. 圖示 A, B 兩球, 由三繩索支撐於天花板上而平衡. 不計繩索重量. 試求其質量比值 m_A/m_B . (15%)



1. A 1-kg ball is connected to the ceiling by a 1-m string having a cross section area of 1-mm^2 , and a tensile strength of 147.15 N/mm^2 , if the ceiling is above the ground by 2-m, and the ball is initially located position A, from where the ball is released from rest as shown in the following figure.
 (Neglect the weight of the string)
 Questions : (a) Can this ball hit the ground ? why?
 (b) If it can, at where will this ball hit the ground ? (15%)

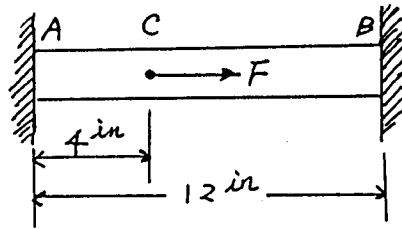


2. A 10-kg rod having a length of 3-m is connected to the ceiling by a string AB as shown in the following figure. Suppose that there is no friction existing between the rod and the ground, and the weight of the string is neglected, determine the tensile force in the string AB at the instant when it is released from rest. (15%)

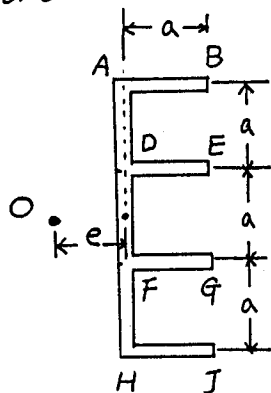


國立成功大學 75 學年度土木工程研究所考試 (材料力學部分試題)

1. Bar AB has a cross-sectional area of 2.0 in^2 and is made of a mild steel which is assumed to be elastoplastic with $E = 30 \times 10^6 \text{ psi}$ and $\sigma_y = 40,000 \text{ psi}$, knowing that the force F increases from 0 to 140 kips and then decreases to zero, determine (a) the permanent deflection of point C, (10%), (b) the residual stress in the bar (10%).



2. Determine the location of the shear center O of a thin-walled beam of uniform thickness having the cross section shown. (10%)



3. The 1000-lb force is applied at point C and acts in a horizontal plane. At point K, determine (a) the principal stresses, (5%) (b) the maximum shearing stress. (5%)

