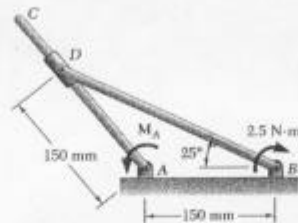


Ph. D. Qualified Examine Basic Solid Mechanics Oct. 2000

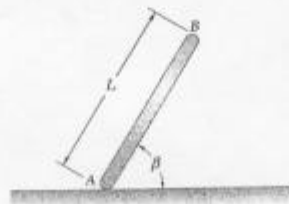
1. Two rods are connected by a slider block as shown. Neglecting the effects of friction, determine the couple M_A required to hold the system in equilibrium. (20 %)



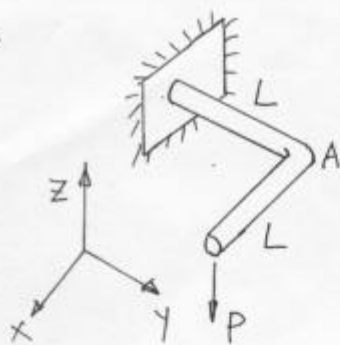
2. An 80 kg man and a 60 kg woman stand at opposite ends of a 130 kg boat, ready to dive, each with a 5 m/s velocity relative to the boat. Determine the velocity of the boat after they have both dived, if (a) the woman dives first, (b) the man dives first. (20 %)



3. The uniform rod AB of weight W is released from rest. Assuming that the friction force is zero between end A and the surface, determine immediately after release (a) the angular acceleration of the rod, (b) the acceleration of the mass center of the rod, (c) the reaction at A. note : rod AB moment of inertia $\bar{I} = \frac{1}{12} mL^2$ (20 %)

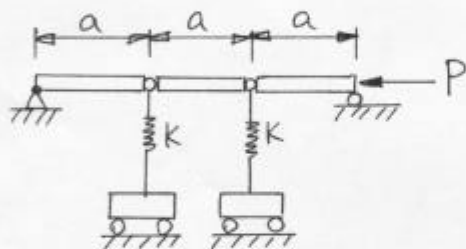


4.



有一段 90° 彎管, 断面為圓形
 截面積均相同 (uniform)
 若考慮彎曲 + 扭轉變形
 請問在 A 點的 θ_x, θ_y 各為何?
 (θ_x : rotation about X axis
 θ_y : rotation about Y axis)
 (20%)

5.



請問左圖的
 critical load 為何?
 (20%)