編號： 137

國立成功大學 106 學年度碩士班招生考試試題

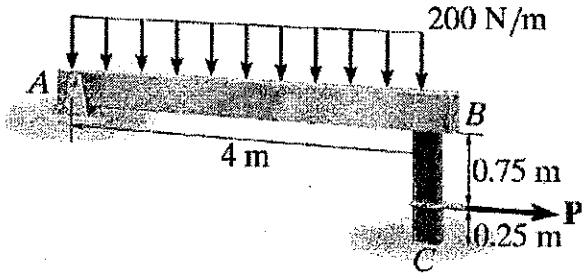
系　　所：航空太空工程學系

考試科目：工程力學

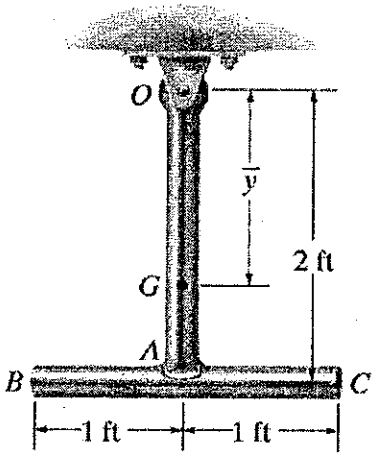
考試日期：0213，節次：2

※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. Beam AB is subjected to a uniform load of 200 N/m and is supported at B by post BC, as shown below. If the coefficients of static friction at B and C are $\mu_B = 0.2$ and $\mu_C = 0.5$, determine the smallest force **P** required to pull out the post out from under the beam. Neglect the weight of the members and the thickness of the beam. (25%)



2. The pendulum shown below consists of two thin rods each having a mass of 10 slug. Determine the pendulum's mass moment of inertia about an axis passing through (a) the pin at O, and (b) the mass center G of the pendulum, respectively. (25%)



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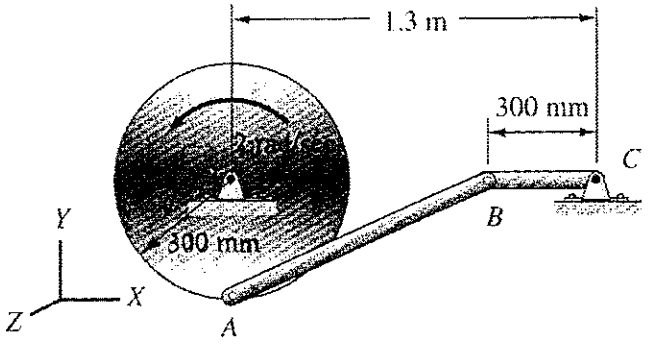
3. In the device, find the angular velocities and angular accelerations of both bars. (25%)



4. A stepped cylinder having a radius of gyration k = .40 m and a mass of 200 kg is shown. The cylinder supports a weight W of mass 100 kg with an inextensible cord and is restrained by a linear spring whose constant K is 2 N/mm. What is the angular acceleration of the stepped cylinder when it has rotated 10° after it is released from a state of rest? The spring is initially unstretched. What are the supporting forces at this time? (25%)