

國立中央大學九十一年度碩士班研究生入學試題卷

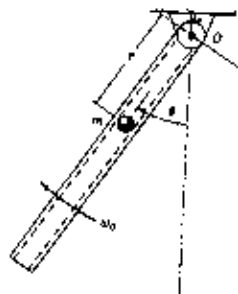
所別: 機械工程學系 甲組 科目: 動力學 共 1 頁 第 1 頁

請詳細寫出計算步驟。

1. (25%) 簡答題

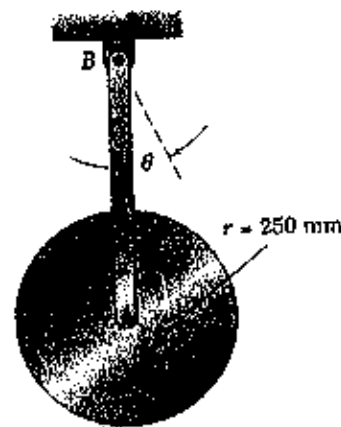
- 圓球於不光滑平面上運動時，請討論摩擦力與球運動方式（純滾動、滾動加滑動、滑動）的關係。(15%)
- 何謂保守力 (conservative force)，保守力有何特性？(10%)

2. (25%) The hollow tube rotates with a constant angular velocity ω_0 about a horizontal axis through end O . At time $t = 0$, the tube passes the vertical position $\theta = 0$, at which instant the small ball of mass m is released with r essentially zero. Determine r as a function of θ .



3. (25%) A uniform disk of radius $r = 250$ mm is attached at A to a 650 mm rod AB of negligible mass which can rotate freely in a vertical plane about B . If the rod is displaced 2° from the position shown and released, determine the magnitude of the maximum velocity of point A , assuming that the disk

- is free to rotate in a bearing at A , (12%)
- is riveted to the rod at A . (13%)



參考用

4. (25%) By pressing down with the finger at B , a thin ring having a mass m is given an initial velocity v_1 and a backspin ω_1 when the finger is released. If the coefficient of friction between the table and the ring is μ , determine the distance the ring travels forward before backspinning stops. (除了寫出解題過程外，請務必以幾行文字具體說明處理此問題的原則或原理)

