

國立虎尾科技大學 106 學年度第一學期博士班資格考試題

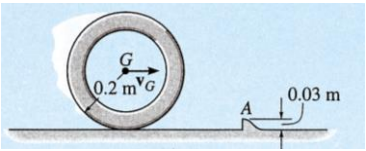
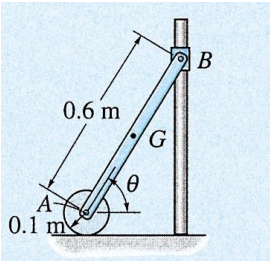
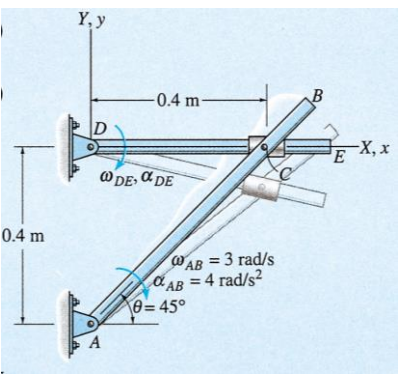
系別：動力機械工程系機械與機電工程博士班

第 1 頁 共 1 頁

科目：動力學

注意事項：

- (1) 本試題共有 4 題，任選 4 題作答，每題 25 分，合計一百分。
- (2) 請依序作答於答案卷上並註明題號，若未註明選答題號及超過規定題數時，謹採計作答順序較前之題目計分。
- (3) 可 使用計算機， close book

1	The 10-Kg wheel shown in Figure has a moment of inertia $I_G = 0.156 \text{ Kg.m}^2$. Assuming that the wheel does not slip or rebound, determine the minimum velocity v_G it must have to roll over the obstruction at A.	
2	The 10-Kg homogeneous disk shown in Figure is attached to a uniform 5-Kg rod AB. If the assembly is released from rest when $\theta = 60^\circ$, determine the angular velocity of the rod when $\theta = 0^\circ$. Assume that the disk rolls without slipping. Neglect friction along the guide and the mass of the collar at B.	
3.	The rod AB, shown in Figure, rotates clockwise such that it has an angular velocity $\omega_{AB} = 3 \text{ rad/s}$ and angular acceleration $\alpha_{AB} = 4 \text{ rad/s}^2$ when $\theta = 45^\circ$. Determine the angular motion of rod DE at this instant. The collar at C is pin-connected to AB and slides over rod DE.	
4	The 2=Kg disk shown in Figure rests on a smooth horizontal surface and is attached to an elastic cord that has a stiffness $k_c = 20 \text{ N/m}$ and is initially unstretched. If the disk is given a velocity $(v_D)_1 = 1.5 \text{ m/s}$, perpendicular to the cord, determine the rate at which the cord is being stretched and the speed of the disk at the instant the cord is stretched 0.2 m.	