

# 淡江大學九十學年度碩士班招生考試試題

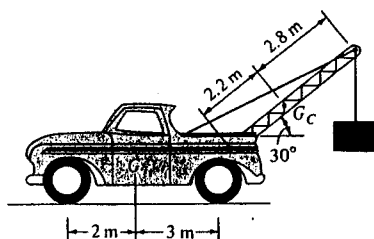
系別：運輸管理學系

科目：力學（動力學及靜力學）

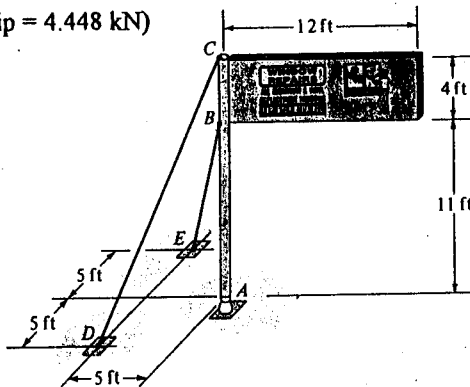
准帶項目請打「○」否則打「×」	
計算機	字典
○	○

本試題共 2 頁

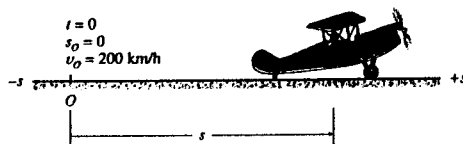
1. A craft weighting 30 kN is being lifted by a crane attached to the bed of a truck. Determine the reactions being exerted on the front and rear axles of the truck. The truck weights 75kN and the crane boom weights 2.5kN. The centers of gravity of the truck and the boom are located at G and  $G_c$ , respectively, as shown in the figure.



2. A sign weighting 2 kip is attached to a pole. Determine the tensions in the cables BE and CD and the reactions at the ball-and-socket support at A. Neglect the weighting of the pole. (1 kip = 4.448 kN)



3. An airplane lands on a straight runway with touchdown speed of 200 km/h, whereupon the brakes are applied causing a deceleration proportional to the velocity of the plane,  $a = -150v$ . Determine the time required for the plane to reduce its velocity to 20 km/h after touchdown, and the distance traveled during that period.



◀ 注意背面尚有試題 ▶

# 淡江大學九十學年度碩士班招生考試試題

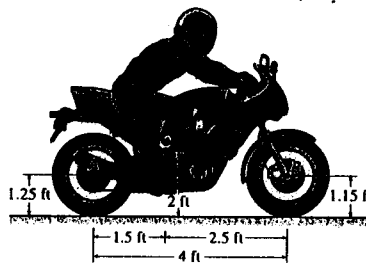
系別：運輸管理學系

科目：力 學（動力學及靜力學）

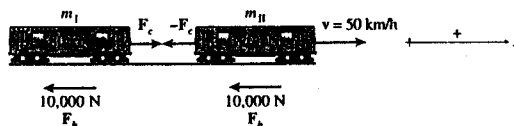
准帶項目請打「○」否則打「×」	
計算機	字典
○	○

本試題共 2 頁

4. The collective weight of the motorcycle and its rider is 500 lb. When the brakes are suddenly applied, the motorcycle begins skidding along a straight line. The coefficient of kinetic friction between the tires and the ground is 0.6. Determine the acceleration of the motorcycle and the frictional forces acting on each wheel.



5. A subway train is made of two cars as shown. It travels at a speed of 59 km/h. When the brakes are applied, a braking force of 10,000 N is applied to each car. Determine (a) the time required for the train to stop after the brakes are applied; and (b) the brake force in the coupling between cars.



本試題雙面印製