

# 大同大學 100 學年度轉學入學考試試題

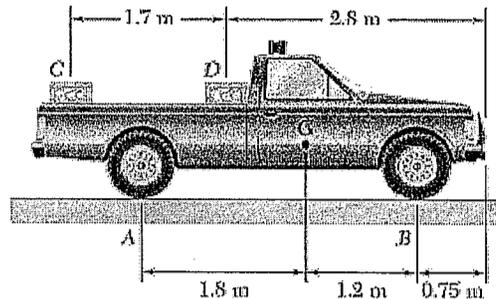
考試科目：工程力學

系別：機械工程學系

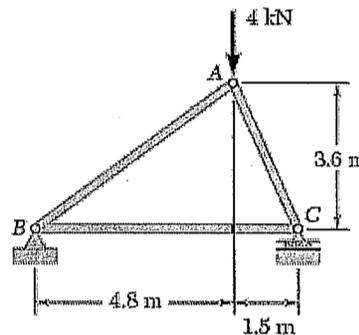
第 1/1 頁

註：本次考試 不可以參考自己的書籍及筆記； 不可以使用字典； 可以使用計算器

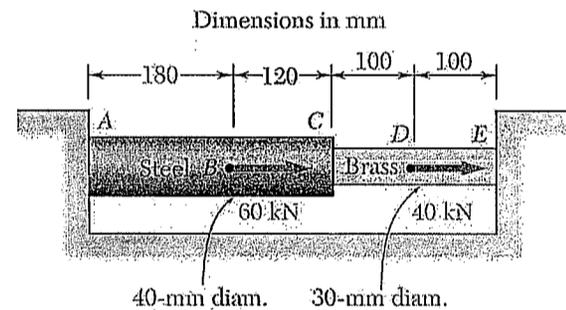
- (1) Two crates, each of mass 400 Kg, are placed as shown in the bed of a 1500-kg pickup truck. Determine the reactions at each end of the two (a) rear wheels A, (b) front wheels B. (15%)



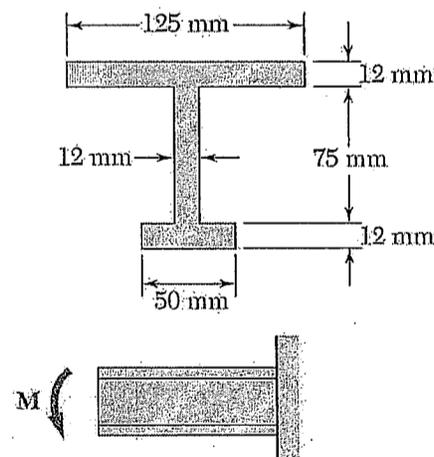
- (2) Using the method of joints, determine the force in each member of the truss shown. State whether each member is in tension or compression. (20%)



- (3) Two cylindrical rods, one of steel and the other brass, are jointed at C and restrained by rigid supports at A and E. For the loading shown and knowing that  $E_{\text{steel}}=200 \text{ GPa}$  and  $E_{\text{brass}}=100 \text{ GPa}$ , determine (a) the reactions at A and E (b) the deflection of point C (20%)



- (4) For the beam and loading shown, determine the maximum tensile and compressive stress of the beam. Knowing that the applied couple  $M=5 \text{ kNm}$ . (20%)



- (5) For the beam and loading shown, design the cross section of the beam, knowing that the grade of timber has an allowable normal stress of 15 MPa and an allowable shear stress of 10 MPa. (25%)

