淡江大學九十一學年度碩士班招生考試試題

系別：土木工程學系　　　　　　**科目：工程力學(含靜力學、材料力學)**

〔5-1

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

本試題共　之　頁

1. A steel pipe of length L = 4.0 ft, outside diameter d_2 = 6.0 in., and inside diameter d_1 = 4.5 in. is compressed by an axial force P = 140 kips. The material has modulus of elasticity E = 30,000 ksi. It is known that after applying the axial load, the increase in wall thickness is 8.5×10^{-5} in., determine the Poisson's ratio ν of the steel pipe. (20%)

2. A beam of T-section is supported and loaded as shown in the figure. The cross section has width b = 2.5 in., height h = 3 in., and thickness t = 0.5 in. Determine the maximum tensile and compressive stresses in the beam. (20%)

3. A thin walled aluminum tube of rectangular cross section is shown in the figure. (a) Determine the shear stress in the tube due to a torque T = 60 N-m. (b) Determine the angle of twist if the length of the tube is 0.25 m and G = 26 Gpa. (20%)
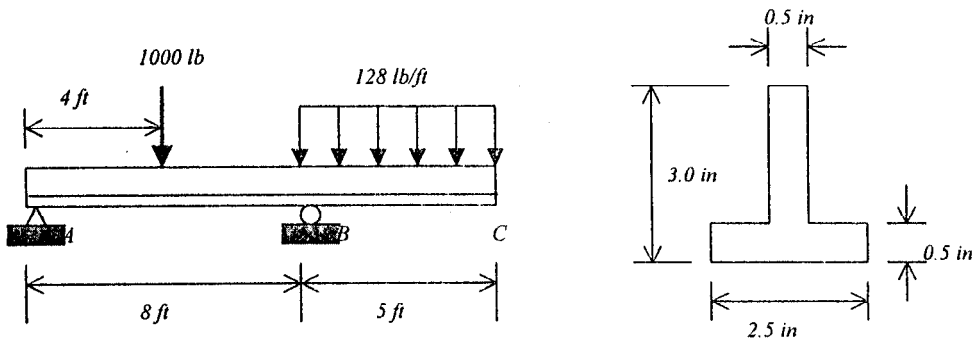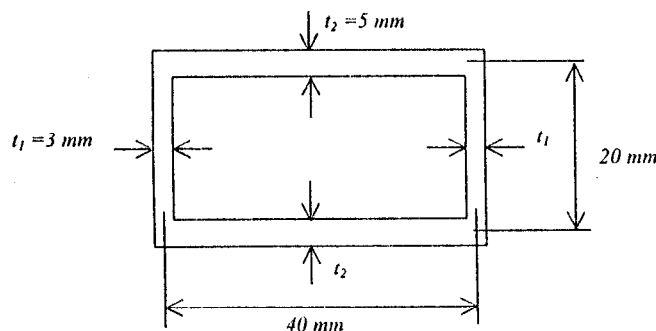

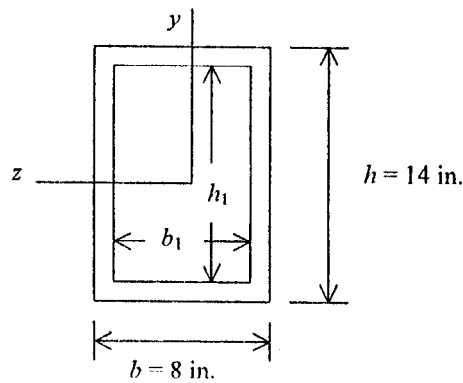◀ 注意背面尚有試題 ▶

淡江大學九十一學年度碩士班招生考試試題

系別：土木工程學系　　　　　　　科目：工程力學(含靜力學、材料力學)

准帶項目請打「○」否則打「×」	
計算機	字典
○	×

55-2

本試題共　之　頁

4. A hollow box beam with height $h = 14$ in., inside height $h_1 = 12.5$ in., width $b = 8$ in., and inside width $b_1 = 7$ in. Assuming that the beam is constructed of steel with yield stress $\sigma_Y = 42$ ksi, calculate moment M that will cause the flange yield but the webs remain linearly elastic. (20%)

5. Determine the moments of inertia of the shaded area with respect to the x axis. (20%)