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

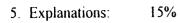
科目:材料力學

准帶項目請打「○」否則打「× 」	
計算機	字典
0	L X

本試題共 / 頁

- 1. The horizontal rigid beam ABCD is supported by vertical bars BE and CF and is loaded by vertical forces $P_1 = 100 \text{ k}$ and $P_2 = 110 \text{ k}$. Bars BE and CF are made of steel (E=29×10⁶ psi) and have cross-sectional areas $A_{HE} = 18 \text{ in}^2$. and $A_{CF} = 19.2 \text{ in}^2$. Determine the vertical displacements at points A, B, C, and D. 20% (Fig. 1)
- 2. A cantilever beam AB loaded by a uniform load and a concentrated load is constructed of a channel section. Find the maximum tensile stress and maximum compressive stress. (Neglect the weight of the beam) 20% (Fig.2)
- 3. A sign is supported by a pipe having outer diameter 100 mm and inner diameter 75 mm. The wind pressure against the sign is 2.0 kPa. Determine the maximum in-plane shear stress due to the wind pressure on the sign at points A, B, and C, located on the outer surface at the base of the pipe.

 25% (Fig. 3)
- 4. Find the angle of rotation θ_n and deflection δ_n at the free end B of a cantilever beam ACB supporting a uniform load of intensity q acting over the right-hand half of the beam. (Use moment-area method) 20% $(\mathcal{F}^{3}, \mathcal{A})$



- (a) Flexural rigidity
- (b) Statically indeterminate structure
- (c) Brittle material

