

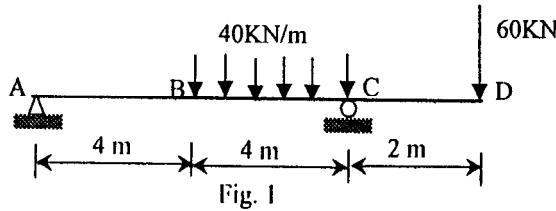
淡江大學九十二學年度轉學生招生考試試題

系別：土木工程學系三年級 科目：工程力學(含靜力學、材料力學)

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○	簡單型計算機

本試題共 / 頁

1. A beam is simply supported at A and C and has an overhang CD (see Fig. 1). The beam is carrying a concentrated load and a uniform load. Draw the shear-force and bending-moment diagrams for this beam. (25%)



2. The beam shown in Fig. 1 is constructed of a T-section. The dimensions of this cross section are indicated in Fig. 2.
- (a) Find the maximum tensile stress and maximum compressive stresses. (15%)
- (b) Find the maximum shear stress. (10%)

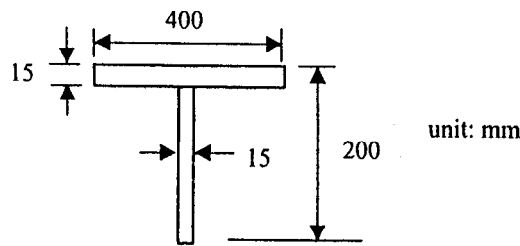


Fig. 2

3. A cantilever beam is subjected to a uniform load and a couple as shown in Fig. 3. Calculate the vertical deflection and the angle of rotation at the free end. The beam has flexural rigidity $EI = 1.5 \times 10^8 \text{ k-in}^2$. (25%)

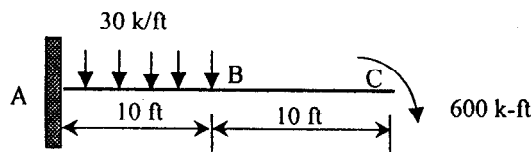


Fig. 3

4. A tubular aluminum bar ($G = 30 \text{ Gpa}$) of square cross section (see Fig. 4) with constant thickness is subjected to a torque. Calculate the allowable torque if the allowable shear stress is 20 Mpa and the allowable rate of twist θ is 0.02 rad/m . (25%)

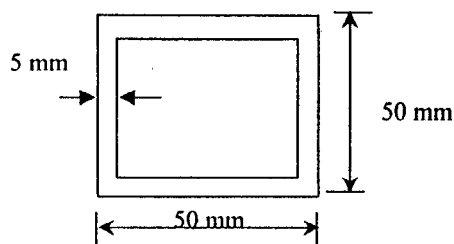


Fig. 4