

淡江大學九十三年年度轉學生招生考試試題 42-1

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)

准帶項目請打「○」否則打「×」	
○	簡單型計算機

節次：7 月 14 日第 3 節  
本試題共 1 頁

1. Draw the shear-force and bending-moment diagrams for the beam shown in Fig. 1.  
( $q = 30 \text{ kN/m}$ ,  $P = 80 \text{ kN}$ ,  $L = 8 \text{ m}$ ) 20%
2. The beam shown in Fig. 1 is constructed of a wide-flange section as shown in Fig. 2.  
Determine : (a) The maximum shear stress  $\tau_{max}$  in the web  
20% (b) The minimum shear stress  $\tau_{min}$  in the web  
(c) The shear force  $V_{web}$  carried in the web and the ratio  $V_{web}/V$ .
3. If the beam shown in Fig. 1 is constructed of a T-section as shown in Fig. 3.  
Determine the maximum tensile and compressive stresses in the beam. 20%
4. Determine the angle of rotation  $\theta_A$  at support A and the deflection at point C.  
for the problem 3. ( $E = 210 \text{ Gpa}$ ) 20%
5. A stepped steel ( $G = 14000 \text{ ksi}$ ) shaft has the dimensions and loads shown in Fig. 4. Determine :  
20%  
(a) The maximum tensile stress in section AB of the shaft  
(b) The maximum compressive stress in section BC of the shaft  
(c) The rotation of a section at C with respect to its no-load position

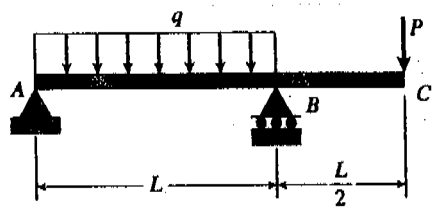


Fig. 1

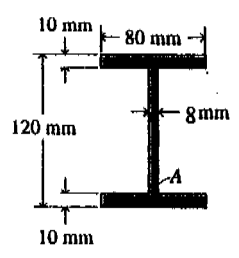


Fig. 2

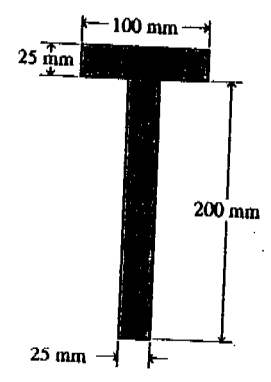


Fig. 3

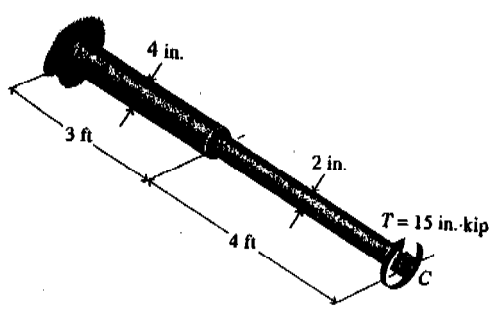


Fig. 4