

淡江大學九十學年度日間部轉學生招生考試試題

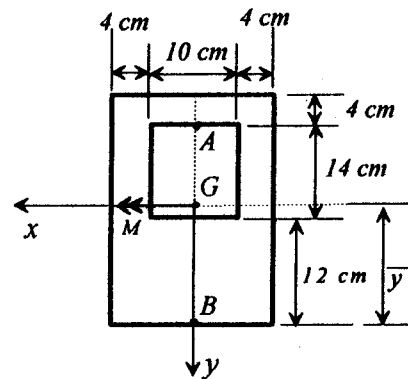
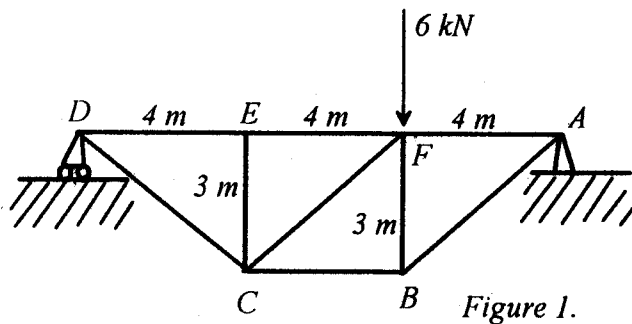
系別：航空太空工程學系三年級

科目：工程力學(含靜力學、材料力學)

准帶項目請打「○」否則打「×」	
計算機	字典
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本試題共 1 頁

1. Given a truss as shown in *Figure 1*, find the force in member *CF*. (20%)
2. The cross section shown in *Figure 2* is subjected to a bending moment $M = 40 \text{ kN-m}$. Determine the normal stress at points *A* and *B*. (20%)



3. A 5 in. diameter shaft is subjected to a torque of 800 ft-lb and a bending moment of 1,000 ft-lb. Determine the maximum principal and shearing stress in the shaft. (20%)
4. A 0.25 X 2 in. flat alloy bar elongates 0.06 in. in a length of 5 ft. under a total axial load of 13,000 lb. The proportional limit of the material is 44,000 psi. Determine :
 - (a) the axial stress in the bar, (5%)
 - (b) what is the modulus of elasticity of this material? (5%), and
 - (c) if Poisson's ratio for the material is 0.32, what will be the total change in each lateral dimension? (10%)
5. A cylindrical rod 6 ft. long must carry an axial tensile load of 1,200 lb. without stretching more than 0.25 in. What size rod is required if it is to be made of steel with the following properties?
 $E = 30 \times 10^6 \text{ psi}$, $\sigma_{\text{yield}} = 35,000 \text{ psi}$, $\sigma_{\text{ultimate}} = 45,000 \text{ psi}$ (20%)