

系別：土木工程學系

科目：工程力學(靜力學、材料力學)

准帶項目請打「V」	
V	簡單型計算機

本試題共 1 頁

- The horizontal rigid beam AB is hinged to a support at A and supported by two vertical wires attached at points C and D as shown in Fig. 1. Bars DE and CF have the same cross-sectional area ($A = 12 \text{ mm}^2$) and are made of steel ($E = 200 \text{ GPa}$). ($h = 0.4 \text{ m}$, $c = 0.5 \text{ m}$, $d = 1.2 \text{ m}$, and $L = 1.6 \text{ m}$.) 25%

 - Determine the tensile stresses in both wires due to the load $P = 850 \text{ N}$.
 - Determine the downward displacement at end B of the bar.
- The member AB shown in Fig. 2 has a rectangular cross section. 25%

 - Draw the shear and bending-moment diagrams of the member.
 - Determine the state of stress at point C.
- A gondola on a ski lift is supported by two bent arms as shown in Fig. 3. Each arm is offset by the distance $b = 7.5 \text{ in.}$ from the line of action of the weight force W ($W = 1200 \text{ lb}$). The allowable stresses in the arms are 15000 psi in tension and 7500 psi in shear. What is the required diameter of the arms? 25%
- The propped cantilever beam shown in Fig. 4 is supported at ends A and B. ($EI = 4.0 \text{ MN} \cdot \text{m}^2$, $L = 5 \text{ m}$, $q = 6 \text{ kN/m}$) 25%

 - Determine the reactions at both ends.
 - Draw the shear and bending-moment diagrams of the beam.

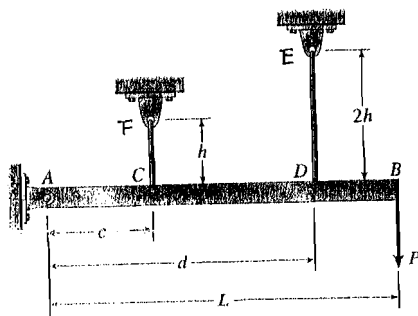


Fig. 1

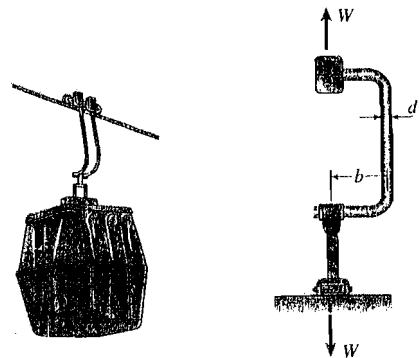


Fig. 3

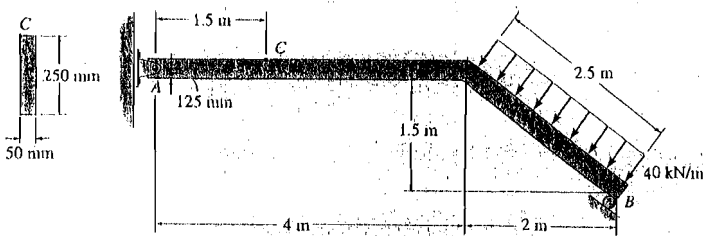


Fig. 2

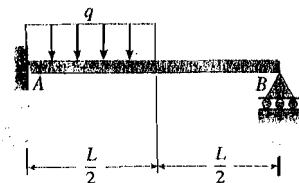


Fig. 4