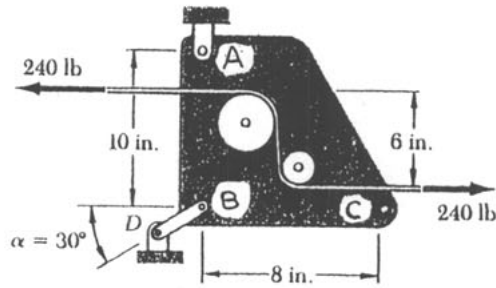
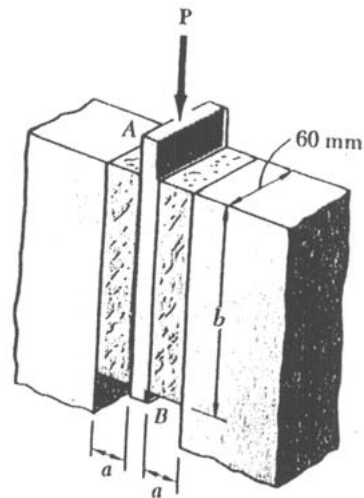


每題 25 分, 共 4 題 合計 100 分。

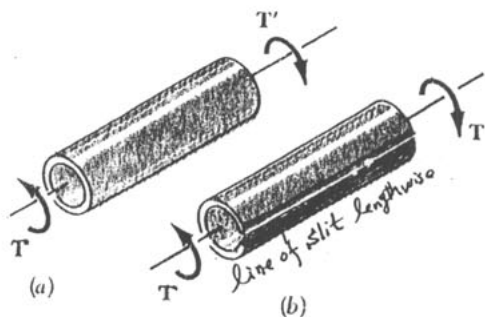
Prob. 1. Determine the normal stress at the midpoint of link  $BD$ , knowing that it has a uniform cross section of  $\frac{1}{8} \times \frac{1}{4}$  in.



Prob. 2. A vibration isolation unit consists of two blocks of hard rubber bonded to plate  $AB$  and to rigid supports as shown. For the type and grade of rubber used  $\tau_{all} = 1.5$  MPa and  $G = 18$  MPa. Knowing that a centric vertical force of magnitude  $P = 27$  kN must cause a 2-mm vertical deflection of the plate  $AB$ , determine the smallest allowable dimensions  $a$  and  $b$  of the blocks.



Prob. 3. Equal torques are applied to thin-walled tubes of the same thickness  $t$  and same radius  $c$ . One of the tubes has been slit lengthwise as shown. Determine the ratio  $\tau_b/\tau_a$  of the maximum shearing stresses in the tubes.



(背面仍有題目, 請繼續作答)

Prob. 4. It is observed that a thin steel strip may be bent into a  $\frac{3}{4}$ -in.-diameter circle without causing any permanent deformation. Knowing that  $E = 30 \times 10^6$  psi, determine (a) the maximum stress in the bent strip, (b) the bending moment required to bend the strip.

