3.

(A) $MR_A = 100 - 4A$

$MR_B = 80 - 4B$

$MC = 20$

$TC = 60 \times 40 + 80 \times 30 - 20(40+30)$

$= 2500 = PS$

$TS = 1250 + 2500 = 3750$

$CS = CSA + CSB = 800 + 450 = 1250$

(B)

$Q - 4A + 4B = 180 - 2P$

$\begin{cases} P = 100 - 4A \\ P = 80 - 4B \end{cases}$

$TC = TR - TC$

$= P(Q) \cdot Q - T(Q)$

$= 190 - 0.5Q - 20Q$

$Q^* = 70 \cdot P^* = 55$

$TC^* = 55 \times 70 - 20 \times 70$

$= 2450$

$CSA = 1012.5$

$CSB = 312.5$

(C) 採兩段式訂價

$F = (80 - P) \times \frac{80 - P}{2}$

$TC = 2F + (P - 20)(4A + 4P) = -P^2 + 60P + 2800$

$P = 30, F = 1250, q = 120, \pi = 3700$

$CS = CS_A + CS_B - 2F = 1200$

$TS = 1200 + 3700 = 4900$