$P = 100 - Q$, $C = 30 + 20Q$.

(A) 均衡價格、產量、利潤

Max $\pi = TR - TC$ $MR = MC$

$TR = P \cdot Q = (100 - Q) \cdot Q = 100Q - Q^2$

$MR = \frac{dTR}{dQ} = 100 - 2Q$

$TC = 30 + 20Q$ $MC = 20$

$100 - 2Q = 20$
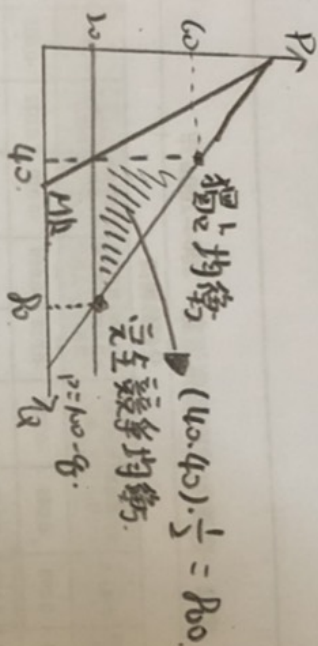$Q^* = 40$
$P^* = 100 - 40 = 60$

$\pi^* = P(Q) \cdot Q - TC$
$= (40 \cdot 60) - (30 + 20 \cdot 40)$
$= 1570$

$P^* = 60$, $Q^* = 40$, $\pi^* = 1570$

(B) 無謂損失

(C) 損失力

$L = \frac{P - MC}{P}$
$= \frac{60 - 20}{60} = \frac{2}{3}$

(D) $MR = MC + 10$

$100 - 2Q = 20 + 10$
$Q^* = 35$ $P^* = 65$

$\pi^* = (35 \cdot 65) - (30 + 20 \cdot 35)$
$= 2275 - 730$
$= 1545$

(E) $MR = (1 + 10\%)MC \Rightarrow (1 - 10\%)MR = MC$

$100 - 2Q = 20$
$Q^* = 41$ $P^* = 59$

$\pi^* = (41 \cdot 59) - (30 + 20 \cdot 41)$
$= 2419 - 850$
$= 1569$

(F) 定額課稅不影響 MC

(G) Max $\pi^* = (1 - t\%)\pi = (1 - t\%)(TR - TC)$

$\Rightarrow 0.8 MR = 0.8 MC$
$\Rightarrow MR = MC$

(H) $P = MC$

$100 - Q = 20$ $Q^* = 80$ $P^* = 20$
$\Rightarrow$ 社會無謂損失 $= (80 \cdot 20) - (30 + 20 \cdot 80) = -30$