4.(A) $MR = 100 - 2q = 20 = MC$

$\Rightarrow q^* = 40,\ P^* = 60,\ M_L = \frac{60-20}{60} = \frac{2}{3}$

$\pi = (40 \times 60) - (30 + 20 \times 40) = 1570$

(B)

無謂損失 $= \frac{1}{2}(40 \times 40) = 800$

(C) 獨占力 $= \frac{P-MC}{P} = \frac{60-20}{60} = \frac{2}{3}$

(D) $MR = MC + 10$

$100 - 2q = 30 \Rightarrow q^* = 35,\ P^* = 65$

$\pi = (35 \times 65) - (30 + 20 \times 35) - (10 \times 35) = 1195$
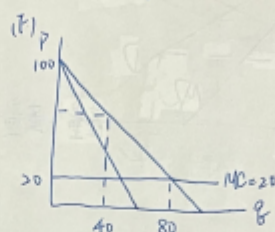
(G) 利潤稅對產出、價格均無影響，故

$q^* = 40,\ P^* = 60$

稅後利潤 $= (0.8 \times 稅前利潤) = 0.8 \times 1570$

$= 1256$

(乙) $(1-10\%) MR = MC \Rightarrow 0.9(100 - 2q) = 20$

$q^* = \frac{450}{9},\ P^* = \frac{550}{9}$

$\pi^* = (\frac{450}{9} \times \frac{550}{9} \times 0.9) - 30 - (20 \times \frac{450}{9}) = 1331$

(丙)

$q^* = 40,\ P^* = 60$

$\pi^* = 1570 - 1000 = 570$

(H) $P = MC \Rightarrow 100 - 2q = 20,\ q^* = 80,\ P^* = 20$

虧損 $= (80 \times 20) - (30 + 20 \times 80) = -30$

無謂損失 $= 0$

5. $MR = P(1 - \frac{1}{E_d}) \Rightarrow MR = 4MC(1 - \frac{1}{E_d}) \Rightarrow MC = 4MC(1 - \frac{1}{E_d}) \Rightarrow E_d = \frac{4}{3}$

6. Yes, 設 $P = a - bq$，則 $MR = a - 2bq$，$\Rightarrow MR = MC + t \Rightarrow a - 2bq = k + t \Rightarrow q^* = \frac{a-(k+t)}{2b}$

$P^* = a - \frac{a-(k+t)}{2} = \frac{a+(k+t)}{2}$，當 $t = 0 \Rightarrow P_0 = \frac{a+k}{2}$，$P^* - P_0 = \Delta P = \frac{t}{2}$

7. $MC_A = MC_B = MR$，$4q_A = 8q_B = 280 - 2q_A - 2q_B \Rightarrow q_A = 40,\ q_B = 20$

$P = 220$