一、$Q^d = 2000 - 10P$，$n = 40$.

$STC = q^2 + 50q + 100$.

(1)、# $P > AVC$ 的 MC 曲線.

$P \geq MC = 2q_1 + 50$

$AVC = q_1 + 50$

$P \geq AVC$

$2q_1 + 50 > q + 50$ (恆成立)

$\rightarrow P = 2q_1 + 50$

$q_1 = \frac{P}{2} - 25$ #

(2). 市場供給曲線

個別水平加總.

$Q = \sum^{40} q_1$

$= 40(\frac{P}{2} - 25)$

$= 20P - 1000$ #

(3). 市場均衡價格，數量.

$S = P$.

$20P - 1000 = 2000 - 10P$

$P^* = 100$

$Q^* = 1000$ #

(4). 廠商最適量，利潤.

$q_1 = \frac{P}{2} - 25$.

$= \frac{100}{2} - 25 = 25$ #

$\pi = TR - TC$.

$= 100 \cdot 25 - (25^2 + 50 \times 25 + 100)$.

$= 525$ #

延伸① $Q^d = 3500 - 10P$，$STC = q_1^2 + 50q_1 + 100$，$n = 4$.

(1) $MC = 2q_1 + 50 = P$.

$AVC = q_1 + 50$.

$q_1 = \frac{P}{2} - 25$ #

(2). $Q = \sum^{40} q_1$

$= 20P - 1000$ #

(3). $20P - 1000 = 3500 - 10P$

$P^* = 150$，$Q^* = 2000$ #

(4) $q_1 = \frac{P}{2} - 25$

$= \frac{150}{2} - 25 = 50$ #

$\pi = 150 \cdot 50 - (50^2 - 50 \cdot 50 + 100)$

$= 2400$ #.

延伸② $Q^d = 2000 - 10P$，$n = 40$

$STC = q_1^2 + 80q + 30$.

(1) $MC = 2q + 80 = P$.

$AVC = q_1 + 80$

$q_1 = \frac{P}{2} - 40$ #

(2) $Q = \sum^{40} q_1$

$= 40(\frac{P}{2} - 40)$

$= 20P - 1600$ #.

(3). $20P - 1600 = 2000 - 10P$.

$P^* = 120$，$Q^* = 800$ #.

(4) $q_1 = \frac{P}{2} - 40$.

$= \frac{120}{2} - 40 = 20$ #

$\pi = 120(20) - (20^2 - 80 \times 20 + 300)$

$= 100$ #