

$z_1$  A: 40  
 B: 100.

按 A:  $q = \min \left\{ \frac{L}{2}, \frac{K}{4} \right\}$   
 按 B:  $q = \min \left\{ \frac{L}{4}, \frac{K}{2} \right\}$

作交點  $w=1, r=2$

(A)  $TIC = \text{生產成本} + \text{利息成本}$   
 $A: q = \frac{L}{2} = \frac{K}{4} \quad B: q = \frac{L}{4} = \frac{K}{2}$   
 $L^* = 2q \quad K^* = 4q \quad L^* = 4q \quad K^* = 2q$   
 $LTC = (2q + 8q) + 40 = 10q + 40 \quad LTC = (4q + 4q) + 100 = 8q + 100$

(B)  $q = 20$   
 A: 240  $A < B$   
 B: 160 故買 A

(C)  $q = 40$   
 A: 440  $A > B$   
 B: 420 故買 B.

(D)  $TCA < TCB$   
 $10q + 40 < 8q + 100$   
 $2q < 60$   
 $q < 30$

4.  $q = 10L^{0.5} K^{0.5}$   
 $w = r = 10$   
 設 K 固定為  $\bar{K}$ .

(A) 短期成本函數與變動成本函數, 即總成本函數.  
 $q = 10L^{0.5} K^{0.5} \rightarrow L^* = q^2 = 100LK \quad L^* = \frac{q}{10}$

$STC = TVC + TFC = wL + r\bar{K}$   
 $STC = 10L + 10\bar{K} = 10 \times \left( \frac{q^2}{100\bar{K}} \right) + 10\bar{K}$   
 $= \frac{q^2}{10\bar{K}} + 10\bar{K}$

$AC = \frac{q}{10\bar{K}} + \frac{10\bar{K}}{q}$   
 $MC: \frac{2q}{5\bar{K}} = \frac{q}{5\bar{K}}$

(B) 反推總成本函數.  
 $\frac{dSTC}{dK} = \frac{-q^2}{10^2} + 10 = 0 \rightarrow \bar{K} = \frac{q}{10} \rightarrow \text{代入 } STC$   
 $TC = STC(K = \bar{K}) = \frac{q^2}{10 \times (\frac{q}{10})} + 10 \times \frac{q}{10} = q + q = 2q$