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題9 A: 權利金 40, B: 權利金 100技術 \rightarrow A: $q = \min\{L/2, K/4\}$ / B: $q = \min\{L/4, K/2\}$ 假設 $\rightarrow w=1, r=2$

ANS:

(A) $TC_A = \text{生產成本} + \text{權利成本}$

$$LTC = wL + rK$$

$$= 1L + 2K$$

$$LTC = wL^* + rK^*$$

$$= 1 \times 2q + 2 \times 4q = 10q$$

$$LTC = wL^* + rK^*$$

$$= 1 \times 4q + 2 \times 2q = 8q$$

$$TC_A = 10q + 40$$

$$TC_B = 8q + 100$$

(補):

成本極小化模型

 \rightarrow 其他不變變下, 固定數量如何用 L, K (B) $q=20$

$$TC_A = 20 \times 10 + 40 = 240$$

 \rightarrow 故買 A 技術

$$TC_B = 20 \times 8 + 100 = 260$$

(C) $q=40$

$$TC_A = 40 \times 10 + 40 = 440$$

 \rightarrow 故買 B 技術

$$TC_B = 40 \times 8 + 100 = 420$$

(D) 令 $TC_A < TC_B$, 則 $q < 30$ 題11 $q = 10L^{0.5}K^{0.5}$, 且 $w=r=10$

ANS:

$$(A) q = 10L^{0.5}K^{0.5} \rightarrow L^* = q^2/100K$$

$$STC = 10L^* + 10K = (q^2/10K) + 10K$$

$$AC = (q/10K) + (10K/q), \quad MC = (q/5K)$$

$$(B) \frac{\Delta STC}{\Delta K} = \frac{-q^2}{10K^2} + 10 = 0 \Rightarrow K^* = \frac{q}{10} \quad \text{代入 STC 函數中}$$

$$TC = STC(K=K^*) = \frac{q^2}{10 \times (q/10)} + 10 \frac{q}{10} = q + q = 2q$$

題12 $q=20$, AC 與 AVC 差 10 元, 產量 40 時, AC 與 AVC 差多少?

$$SAC = SAFC + SAVC$$

ANS:

$$q=20, AC - AVC = AFC = 10 \rightarrow FC = AFC \times q = 10 \times 20 = 200$$

$$q=40, AC - AVC = AFC = FC/q = 200/40 = 5$$