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9.

(A) A技術之成本函數(TC_A) = 生產生本 + 權利成本

生產成本 $q = L/2 = K/4 \Rightarrow L = 2q, K = 4q \Rightarrow C \times 1 \times 2q + 2 \times 4q = 10q$

$$TC_A = 10q + 40$$

(B) $q = 20, TC_A = 240, TC_B = 260$ 故應買A技術

(C) $q = 40, TC_A = 440, TC_B = 420$ 故買B技術

(D) 令 $TC_A < TC_B$ 則 $q < 30$ 即產量低於30單位, 應買A技術

11. (A) $q = 10L^{0.5}K^{0.5} \Rightarrow L = q^2/100K$

(B) $\frac{\partial STC}{\partial K} = \frac{-q^2}{10K^2} + 10 = 0 \Rightarrow K = \frac{q}{10}$, 代入STC函數中

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

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

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

13. $VC(10) = \int_0^{10} 10q dq = 5q^2 \Big|_0^{10} = 500, TC = VC + FC = 500 + 100 = 600$