

經濟二甲 A10826000 黃詩哲

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4. (A) $Q = 10L^{0.5}K^{0.5} \Rightarrow L^* = \frac{Q^2}{100K}$, $STC = 10L^* + 10K = \frac{Q^2}{10K} + 10K$

$$AC = \frac{Q}{10K} + \frac{10K}{Q}, MC = \frac{Q}{5K}$$

(B) $\frac{\partial STC}{\partial K} = \frac{-Q^2}{10K^2} + 10 = 0 \Rightarrow \tilde{K} = \frac{Q}{10}$ 代 STC

$$TC = STC(K = \tilde{K}) = \frac{Q^2}{10 \times \frac{Q}{10}} + 10 \frac{Q}{10} = Q + Q = 2Q$$

7. (A) $AFC = \frac{FC}{Q} = \frac{50}{10} = 5$

(B) $AVC = Q^2 - 12Q + 1 \Rightarrow \frac{dAVC}{dQ} = 2Q - 12 = 0 \Rightarrow Q = 6$

(C) $AVC \uparrow$, $AP_L \downarrow$, 故 $Q \geq 6$

(D) $MC = 3Q^2 - 24Q + 1 \Rightarrow \frac{dAVC}{dQ} = 6Q - 24 = 0 \Rightarrow Q = 4$

$MC \uparrow$, $MP_L \downarrow$, 故 $Q \geq 4$