①

$$m_{CH_4} = 0.3/16 = 0.019 \text{ moli}$$

$$m_{O_2} = 0.3/32 = 0.0094 \text{ moli}$$

$$PV = m_{tot} RT \quad \Rightarrow \quad T = PV/m_{tot} \cdot R$$
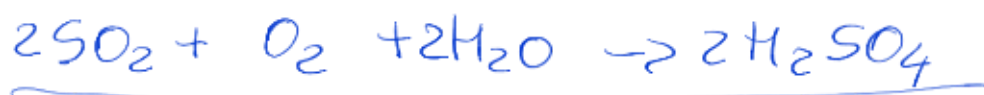
$$T = 257 \,^\circ K \quad \boxed{C}$$

②

$$\Delta T = 0.6 = K \cdot m$$

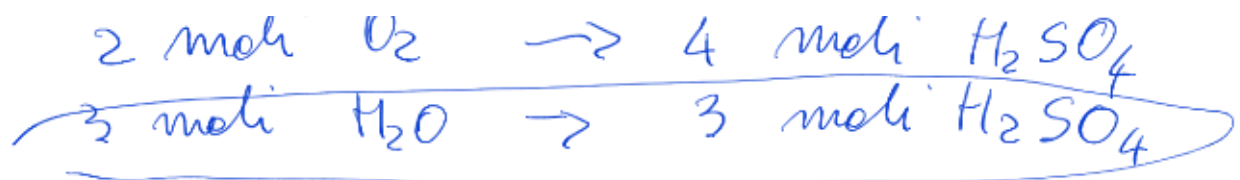$$m_{C_6H_{12}O_6} = 5.0/(96 + 72 + 12) = 0.028 \text{ moli}$$

$$m = 0.028/0.1 = 0.28 \text{ m}$$

$$K = \Delta T/m = 2.14 \,^\circ C/m$$

$$\boxed{A}$$

③

$$SO_2 + \frac{1}{2} O_2 + H_2O \rightarrow H_2SO_4$$

$$2SO_2 + O_2 + 2H_2O \rightarrow 2H_2SO_4$$

$$4 \text{ moli } SO_2 \rightarrow 4 \text{ moli } H_2SO_4$$

$$2 \text{ moli } U_2 \longrightarrow 4 \text{ moli } H_2SO_4$$
$$3 \text{ moli } H_2O \longrightarrow 3 \text{ moli } H_2SO_4$$

H_2O reog. limitante

$$3 \text{ moli } H_2SO_4$$

$$\boxed{B}$$

④ $m_{HCOO^-} = 0.01 \text{ moli} \implies [HCOO^-] = 0.01 M$

$k_b = k_w / k_e$ $[OH^-] = \sqrt{k_b \cdot 0.01} = 7.51 \cdot 10^{-7} n$

$pOH = 6.12$ $pH = 7.88$ $\boxed{C}$

⑤ $\boxed{B}$ $$k = A \, e^{-E_a/RT}$$

⑥

$$\frac{V_2}{V_1} = \frac{7.2 \; 10^3}{3.6 \; 10^3} = 2 \longrightarrow I_2$$

$$\frac{V_3}{V_1} = \frac{1.4 \; 10^4}{3.6 \; 10^3} \approx 4 \longrightarrow H_2$$

$$v = k \, [I_2] \, [H_2]^2$$

ORDINE COMPLESSIVO 3

D