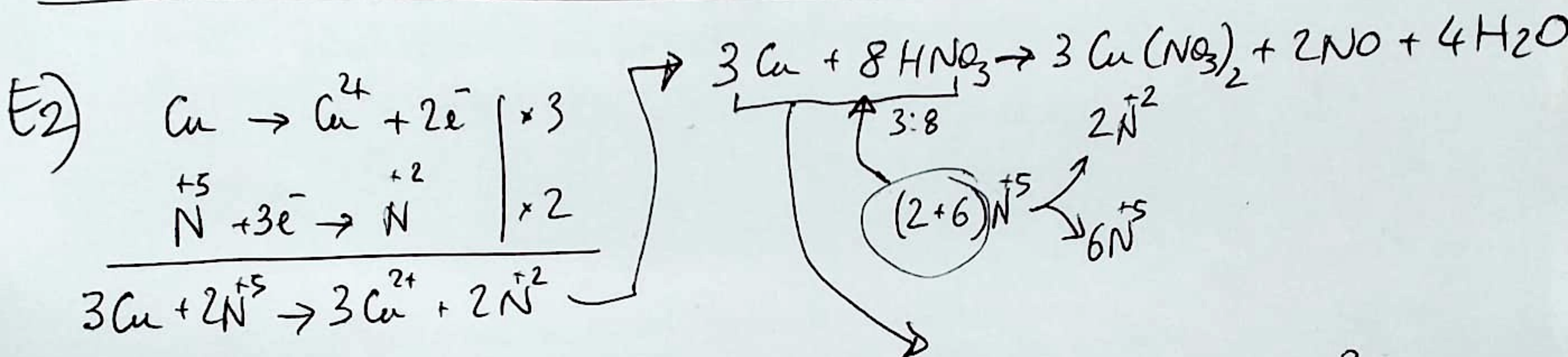


Soluzione degli esercizi della Prova Scritta del 10/9/2024
- BGER, AA 2023-24

E1) Considero 100 g di sostanza $\text{Na}_x\text{P}_y\text{O}_z$ • Avv⁻:

$$\begin{array}{lcl} 34,56 \text{ g Na} \rightarrow 34,56 / 22,99 = 1,50 \text{ mol} & 1,50 / 0,75 = 2 & \\ 23,32 \text{ g P} \rightarrow 23,32 / 30,97 \text{ g/mol} = 0,75 \text{ mol} & 0,75 / 0,75 = 1 & \\ 42,12 \text{ g O} \rightarrow 42,12 / 16,00 \text{ g/mol} = 2,63 \text{ mol} & 2,63 / 0,75 = 3,5 & \end{array} \left. \begin{array}{l} \\ \\ \end{array} \right\} \times 2 \rightarrow \left. \begin{array}{l} 4 \\ 2 \\ 7 \end{array} \right\} \rightarrow$$

→ $\text{Na}_4\text{P}_2\text{O}_7$ (formula minima)



$$n_{\text{Cu}} = \frac{0,500 \text{ g}}{63,55 \text{ g/mol}} = 7,87 \cdot 10^{-3} \text{ mol} ; n_{\text{HNO}_3} = \frac{8}{3} n_{\text{Cu}} = \frac{8}{3} \cdot 7,87 \cdot 10^{-3} \text{ mol} = 0,0210 \text{ mol}$$

$$V = \frac{n(\text{mol})}{C(\text{mol/l})} = \frac{0,0210 \text{ mol}}{1,1 \text{ mol/l}} = 0,019 \text{ l} = \underline{19 \text{ ml}}$$

E3) $\text{C}_6\text{H}_{12}\text{O}_6 \rightarrow$ non elettrolita ($d=0$) → $t_{\text{eb AB}} = t_{\text{eb A}} + K_{\text{eb}} \cdot m$

Per ricavare m , considero 1 l di soluzione.

$$1 \text{ l} \left\{ \begin{array}{l} m_{\text{AB}} = d \cdot V = 1,058 \text{ g/ml} \cdot 10^3 \text{ ml} = 1058 \text{ g} \\ m_{\text{B}} = 0,88 \text{ mol} \times 180,16 \text{ g/mol} = 158,54 \text{ g} \end{array} \right\} m_{\text{A}}(\text{in } 1 \text{ l}_{\text{AB}}) = (1058 - 158,54) \text{ g} = 899,46 \text{ g} = 0,8995 \text{ kg}$$

$$t_{\text{eb AB}} = 100 + 0,502 \cdot 0,8995 = 100,45^\circ\text{C} \approx 100,5^\circ\text{C}$$