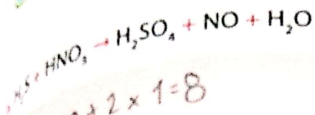


1. Balancea por óxido-reducción las siguientes ecuaciones químicas, teniendo en cuenta los números de oxidación y plantea semirreacciones para cada una, indica quien se oxida y quien se reduce.

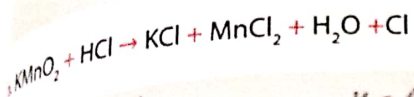
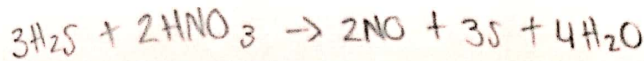


$$\begin{aligned} \text{H} &= 3 \times 2 + 2 \times 1 = 8 \\ \text{S} &= 3 \times 1 = 3 \\ \text{N} &= 2 \times 1 = 2 \\ \text{O} &= 2 \times 3 = 6 \end{aligned}$$

$$\begin{aligned} \text{H} &= 4 \times 2 = 8 \\ \text{S} &= 3 \times 1 = 3 \\ \text{N} &= 2 \times 1 = 2 \\ \text{O} &= 2 \times 1 + 4 \times 1 = 6 \end{aligned}$$

$$3 \times 0 + 2 \times 0 = 3 \times 0 + 2 \times 0 + 4 \times 0$$

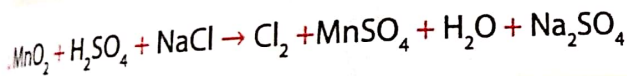
$$0 = 0$$



$$\begin{aligned} \text{K} &= 1 \times 1 = 1 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 2 = 2 \\ \text{H} &= 4 \times 1 = 4 \\ \text{Cl} &= 4 \times 1 = 4 \end{aligned}$$

$$\begin{aligned} \text{K} &= 1 \times 1 = 1 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 2 \times 1 = 2 \\ \text{H} &= 2 \times 2 = 4 \\ \text{Cl} &= 1 \times 1 + 1 \times 2 + 1 \times 1 = 4 \end{aligned}$$

$$1 \times 0 + 4 \times 0 = 1 \times 0 + 1 \times 0 + 1 \times 0$$



$$\begin{aligned} \text{Na} &= 4 \times 1 = 4 \\ \text{Cl} &= 4 \times 1 = 4 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 3 + 3 \times 4 = 15 \\ \text{H} &= 3 \times 2 = 6 \\ \text{S} &= 3 \times 1 = 3 \end{aligned}$$

$$\begin{aligned} \text{Na} &= 2 \times 2 = 4 \\ \text{Cl} &= 2 \times 2 = 4 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{O} &= 1 \times 4 + 2 \times 1 + 2 \times 4 + 1 \times 1 = 15 \\ \text{H} &= 2 \times 2 + 1 \times 2 \\ \text{S} &= 1 \times 1 + 2 \times 1 \times 1 = 3 \end{aligned}$$

$$0 = 0$$



$$\text{P} = 3 \times 1 = 3$$

$$\text{N} = 5 \times 1 + 2 \times 1 = 7$$

$$\text{H} = 5 \times 1 = 5$$

$$\text{O} = 5 \times 3 + 2 \times 1 = 17$$

$$\text{P} = 3 \times 1 = 3$$

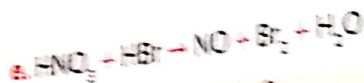
$$\text{N} = 3 \times 3 = 9$$

$$\text{H} = 5 \times 1 = 5$$

$$\text{O} = 3 \times 4 + 5 \times 1 = 17$$

$$3 \times \text{O} + 5 \times \text{O} + 2 \times \text{O} = 3 \times \text{O} + 5 \times \text{O}$$

$$\text{O} = \text{O}$$



$$\text{H} = 6 \times 1 + 2 \times 1 = 8$$

$$\text{Br} = 6 \times 1 = 6$$

$$\text{N} = 2 \times 1 = 2$$

$$\text{O} = 2 \times 3 = 6$$

$$\text{H} = 4 \times 2 = 8$$

$$\text{Br} = 3 \times 2 = 6$$

$$\text{N} = 2 \times 1 = 2$$

$$\text{O} = 2 \times 1 + 4 \times 1 = 6$$

$$6 \times \text{O} + 2 \times \text{O} = 3 \times \text{O} + 2 \times \text{O} + 4 \times \text{O}$$

$$\text{O} = \text{O}$$



$$\text{K} = 5 \times 1 + 1 \times 1 = 6$$

$$\text{Cl} = 5 \times 1 = 5$$

$$\text{Mn} = 1 \times 1 = 1$$

$$\text{S} = 7 \times 1 = 7$$

$$\text{H} = 7 \times 2 = 14$$

$$\text{O} = 1 \times 4 + 7 \times 4 = 32$$

$$\text{K} = 6 \times 1 = 6$$

$$\text{Cl} = 5 \times 1 = 5$$

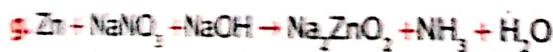
$$\text{Mn} = 1 \times 1 = 1$$

$$\text{S} = 1 \times 1 + 6 \times 1 = 7$$

$$\text{H} = 6 \times 1 + 4 \times 2 = 14$$

$$\text{O} = 1 \times 4 + 6 \times 4 + 4 \times 1 = 32$$

$$5 \times \text{O} + 1 \times \text{O} + 7 \times \text{O} = 5 \times \text{O} + 1 \times \text{O} + 6 \times \text{O} + 4 \times \text{O}$$



$$\text{Zn} = 4 \times 1 = 4$$

$$\text{NO} = 1 \times 1 + 7 \times 1 = 8$$

$$\text{N} = 1 \times 1 = 1$$

$$\text{H} = 7 \times 1 = 7$$

$$\text{O} = 3 \times 1 + 7 \times 1 = 10$$

$$\text{Zn} = 4 \times 1 = 4$$

$$\text{NO} = 4 \times 2 = 8$$

$$\text{N} = 1 \times 1 = 1$$

$$\text{H} = 3 \times 1 + 2 \times 2 = 7$$

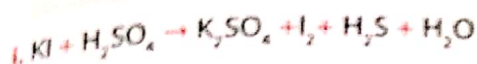
$$\text{O} = 4 \times 2 + 2 \times 1 = 10$$





$$\begin{aligned} \text{K} &= 2 \times 1 = 2 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{S} &= 3 \times 1 = 3 \\ \text{N} &= 5 \times 1 = 5 \\ \text{H} &= 5 \times 1 + 2 \times 4 = 13 \\ \text{O} &= 5 \times 2 + 2 \times 4 + 3 \times 4 = 30 \end{aligned}$$

$$\begin{aligned} \text{K} &= 1 \times 2 = 2 \\ \text{Mn} &= 1 \times 1 = 1 \\ \text{S} &= 2 \times 1 + 1 \times 1 = 3 \\ \text{N} &= 5 \times 1 = 5 \\ \text{H} &= 5 \times 1 + 3 \times 2 = 11 \\ \text{O} &= 5 \times 3 + 2 \times 4 + 1 \times 4 + 3 \times 1 = 30 \end{aligned}$$



$$\begin{aligned} \text{K} &= 8 \times 1 = 8 \\ \text{S} &= 5 \times 1 = 5 \\ \text{I} &= 8 \times 1 = 8 \\ \text{H} &= 5 \times 2 = 10 \\ \text{O} &= 5 \times 4 = 20 \end{aligned}$$

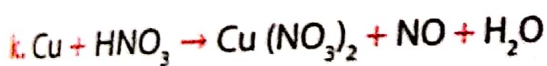
$$\begin{aligned} \text{K} &= 4 \times 2 = 8 \\ \text{S} &= 1 \times 1 + 4 \times 1 = 5 \\ \text{I} &= 4 \times 2 = 8 \\ \text{H} &= 1 \times 2 + 4 \times 2 = 10 \\ \text{O} &= 4 \times 4 + 4 \times 1 = 20 \end{aligned}$$

$$8 \times 0 + 5 \times 0 = 4 \times 0 + 1 \times 0 + 4 \times 0 + 4 \times 0$$



$$\begin{aligned} \text{K} &= 1 \times 2 = 2 \\ \text{Cr} &= 1 \times 2 = 2 \\ \text{Cl} &= 14 \times 1 = 14 \\ \text{H} &= 14 \times 1 = 14 \\ \text{O} &= 1 \times 7 = 7 \end{aligned}$$

$$\begin{aligned} \text{K} &= 2 \times 1 \\ \text{Cr} &= 2 \times 1 \\ \text{Cl} &= 3 \times 2 + 2 \times 3 + 2 \times 1 = 14 \\ \text{H} &= 7 \times 2 = 14 \\ \text{O} &= 7 \times 1 = 7 \end{aligned}$$



$$\begin{aligned} \text{Cu} &= 3 \times 1 = 3 \\ \text{N} &= 8 \times 1 = 8 \\ \text{H} &= 8 \times 1 = 8 \\ \text{O} &= 8 \times 3 = 24 \end{aligned}$$

$$\begin{aligned} \text{Cu} &= 3 \times 1 = 3 \\ \text{N} &= 3 \times 2 + 2 \times 1 = 8 \\ \text{H} &= 4 \times 2 = 8 \\ \text{O} &= 3 \times 6 + 2 \times 1 + 4 \times 1 = 24 \end{aligned}$$

