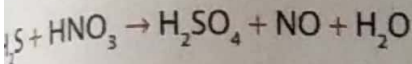




1. Balancea por óxido-reducción las siguientes ecuaciones químicas, teniendo en cuenta los números de oxidación y plantea semirreacciones para cada una, indica quien se oxida y quien se reduce.



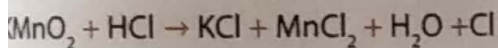
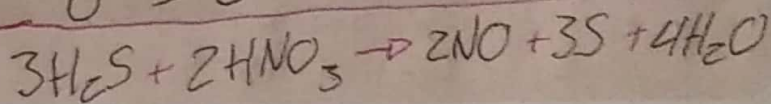
12 izquierda

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

Derrocha

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

$$\begin{aligned} 3 \times 0 + 2 \times 0 &= 3 \times 0 + 2 \times 0 + 4 \times 0 \\ 0 &= 0 \end{aligned}$$



12Q

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

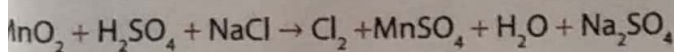
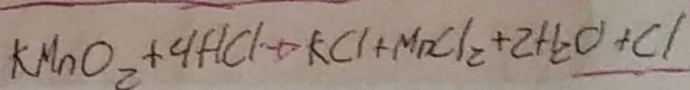
Der

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

$$\text{Cl} = 1 \times 1 + 1 \times 2 + 1 \times 1 = 4$$

$$1 \times 0 + 4 \times 0 = 1 \times 0 + 1 \times 0 + 1 \times 0 + 2 \times 0$$

$$0 = 0$$



12Q2

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

Der

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

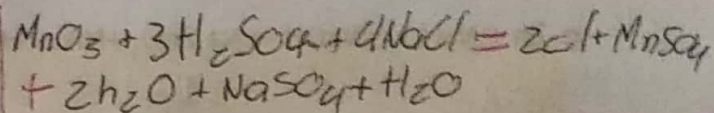
$$\text{O} = 1 \times 4 + 2 \times 1 + 2 \times 4 + 1 \times 1 = 15$$

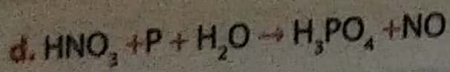
$$\text{H} = 2 \times 2 + 1 \times 2 = 6$$

$$\text{S} = 1 \times 1 + 2 \times 1 = 3$$

$$4 \times 0 + 1 \times 0 + 3 \times 0 = 2 \times 0 + 1 \times 0 + 2 \times 0 + 1 \times 0$$

$$0 = 0$$

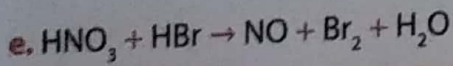
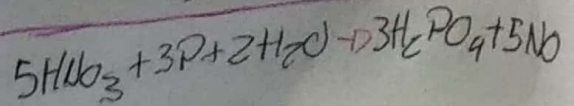




12Q  
 $\text{P} = 3 \times 1 = 3$   
 $\text{H} = 5 \times 1 + 2 \times 2 = 9$   
 $\text{N} = 5 \times 1 = 5$   
 $\text{O} = 5 \times 3 + 2 \times 1 = 17$

Der  
 $\text{P} = 3 \times 1 = 3$   
 $\text{H} = 3 \times 3 = 9$   
 $\text{N} = 5 \times 1 = 5$   
 $\text{O} = 3 \times 4 + 5 \times 1 = 17$

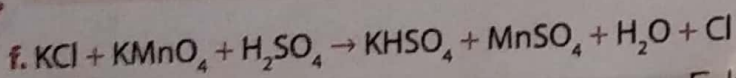
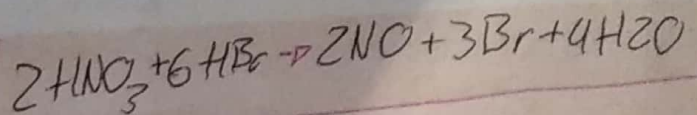
$3 \times 0 + 5 \times 0 + 2 \times 0 = 3 \times 0 + 5 \times 0$   
 $0 = 0$



12Q  
 $\text{H} = 6 \times 1 + 0 \times 1 = 6$   
 $\text{Br} = 6 \times 1 = 6$   
 $\text{N} = 2 \times 1 = 2$   
 $\text{O} = 2 \times 3 = 6$

Der  
 $\text{H} = 4 \times 2 = 8$   
 $\text{N} = 2 \times 1 = 2$   
 $\text{Br} = 3 \times 2 = 6$   
 $\text{O} = 2 \times 1 + 4 \times 1 = 6$

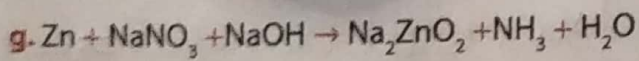
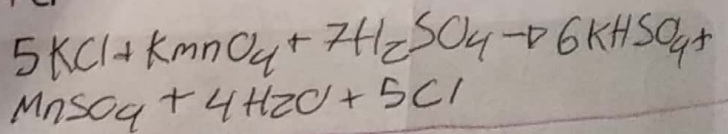
$6 \times 0 + 2 \times 0 = 3 \times 0 + 2 \times 0 + 4 \times 0$   
 $0 = 0$



12Q  
 $\text{K} = 5 \times 1 + 1 \times 1 = 6$   
 $\text{Cl} = 5 \times 1 = 5$   
 $\text{Mn} = 1 \times 1 = 1$   
 $\text{O} = 2 \times 4 + 7 \times 4 = 32$   
 $\text{H} = 7 \times 2 = 14$   
 $\text{S} = 7 \times 1 = 7$

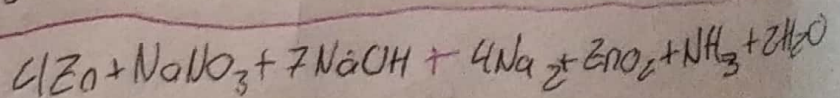
Der  
 $\text{K} = 6 \times 1 = 6$   
 $\text{Cl} = 5 \times 1 = 5$   
 $\text{Mn} = 1 \times 1 = 1$   
 $\text{O} = 1 \times 4 + 6 \times 4 + 4 \times 1 = 32$   
 $\text{H} = 6 \times 1 + 4 \times 2 = 14$   
 $\text{S} = 1 \times 1 + 6 \times 1 = 7$

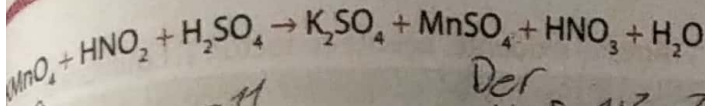
$5 \times 0 + 1 \times 0 + 7 \times 0 = 5 \times 0 + 1 \times 0 + 6 \times 0 + 4 \times 0$   
 $0 = 0$



12Q  
 $\text{Zn} = 4 \times 1 = 4$   
 $\text{Na} = 1 \times 1 + 7 \times 1 = 8$   
 $\text{N} = 1 \times 1 = 1$   
 $\text{O} = 1 \times 3 + 7 \times 1 = 10$   
 $\text{H} = 7 \times 1 = 7$

Der  
 $\text{Zn} = 4 \times 1 = 4$   
 $\text{Na} = 4 \times 2 = 8$   
 $\text{N} = 1 \times 1 = 1$   
 $\text{O} = 4 \times 2 + 2 \times 1 = 10$   
 $\text{H} = 1 \times 3 + 2 \times 2 = 7$





EQ

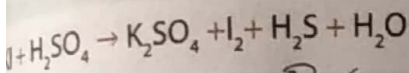
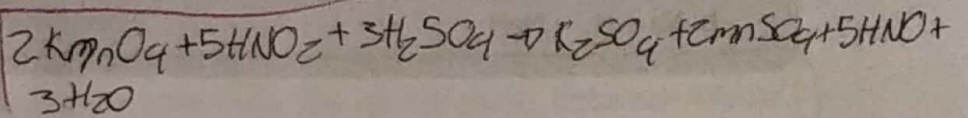
$$\begin{aligned} 5 &= 5 \times 1 + 3 \times 2 = 11 \\ 5 &= 5 \times 1 = 5 \\ 5 &= 5 \times 2 + 2 \times 4 + 3 \times 4 = 30 \\ 5 &= 2 \times 1 = 2 \\ 5 &= 2 \times 1 = 2 \\ 5 &= 3 \times 1 = 3 \end{aligned}$$

Der

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

$$5 \times 0 + 2 \times 0 + 3 \times 0 = 5 \times 0 + 2 \times 0 + 1 \times 0 + 3 \times 0$$

$$0 = 0$$



EQ

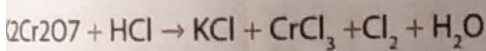
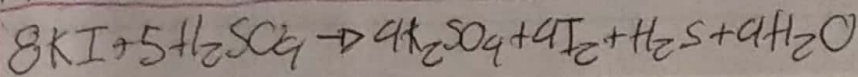
$$\begin{aligned} \text{K} &= 8 \times 1 = 8 \\ \text{I} &= 8 \times 1 = 8 \\ \text{H} &= 5 \times 2 = 10 \\ \text{S} &= 5 \times 1 = 5 \\ \text{O} &= 5 \times 4 = 20 \end{aligned}$$

Der

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

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

$$0 = 0$$



EQ

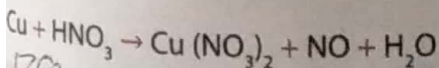
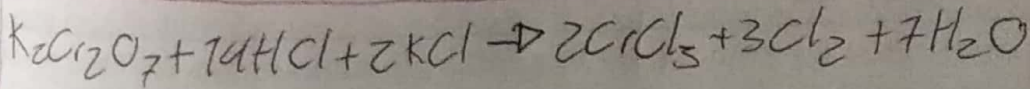
$$\begin{aligned} \text{K} &= 1 \times 2 = 2 \\ \text{Cr} &= 1 \times 2 = 2 \\ \text{O} &= 7 \times 2 = 14 \\ \text{H} &= 14 \times 1 = 14 \\ \text{Cl} &= 14 \times 1 = 14 \end{aligned}$$

Der

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

$$1 \times 0 + 14 \times 0 = 3 \times 0 + 2 \times 0 + 7 \times 0$$

$$0 = 0$$

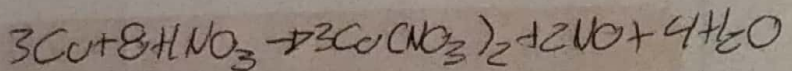


EQ

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

Der

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



$$3 \times 0 + 8 \times 0 = 3 \times 0 + 2 \times 0 + 4 \times 0$$

$$0 = 0$$