

# REDUCTION/OXIDATION REVISION EXERCISES

1) What is the O.N. of the atoms in the following **elements**?

- a) Cl<sub>2</sub>      b) O<sub>2</sub>      c) H<sub>2</sub>      d) Fe      e) Zn      f) C  
0            0            0            0            0            0

2) What is the O.N. of the atoms in the following **monatomic ions**?

- a) Cl<sup>-</sup>      b) O<sup>2-</sup>      c) H<sup>+</sup>      d) Fe<sup>3+</sup>      e) Zn<sup>2+</sup>      f) Fe<sup>3+</sup>  
-1            -2            +1            +3            +2            +3

3) What is the O.N. of the Bolded atoms in the following **molecules**?

- a) H<sub>2</sub>O      b) HCl  
**+1**            -1

- c) CH<sub>4</sub>      d) CCl<sub>4</sub>  
**-4**            +4

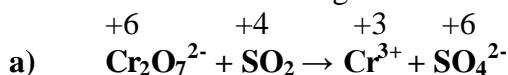
4) What is the O.N. of the Bolded atoms in the following **polyatomic ions**?

- a) NO<sub>3</sub><sup>-</sup>      b) SO<sub>4</sub><sup>2-</sup>  
+5            +6

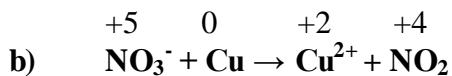
- c) OH<sup>-</sup>      d) CO<sub>3</sub><sup>2-</sup>  
+1            +4

- e) SO<sub>3</sub><sup>2-</sup>      f) PO<sub>4</sub><sup>3-</sup>  
+4            +5

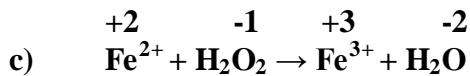
5) Write the oxidation numbers above the atoms in the following equations and identify the atom being oxidised and the atom being reduced.



Atom oxidised: S \_\_\_\_\_ Atom reduced: Cr \_\_\_\_\_



Atom oxidised: Cu \_\_\_\_\_ Atom reduced: N \_\_\_\_\_



Atom oxidised: Fe \_\_\_\_\_ Atom reduced: O \_\_\_\_\_

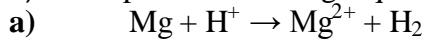
6) From the equations in exercise 5 identify the **reductant** and the **oxidant**.

a) oxidant: Cr reductant: S

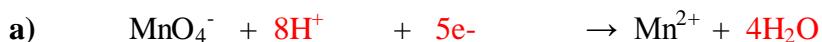
b) oxidant: N reductant: Cu

c) oxidant: O reductant: Fe

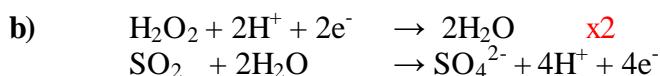
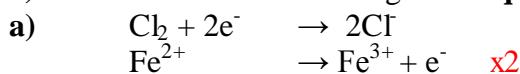
7) Split the following equations into **half equations**.

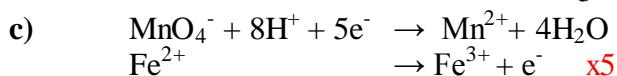


8) Balance the following **half equations**.

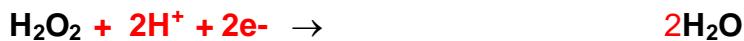


9) Combine the following **half equations**.





10) Write balanced half equations for each oxidising agent, state any observations



Yellow gas to colourless solution



Orange to green

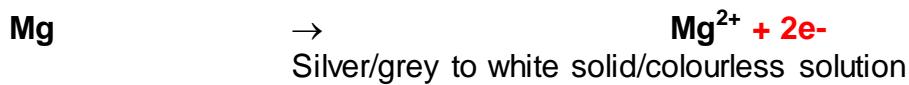
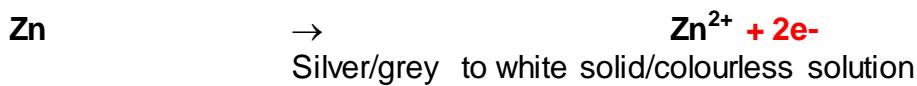


Green to orange



Purple to colourless

11) Write a balanced half equation for each reducing agent, state any observations



Colourless to brown/orange



Colourless to orange



Silver/grey to orange