

## Redox reaction in terms of e<sup>-</sup> transfer

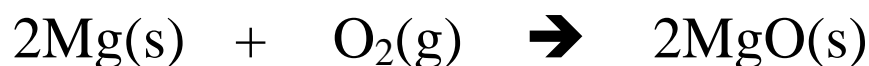
1. What is oxidation?
2. What is reduction?



3. Write the half-equations for the above reaction.
4. Which half-equation is oxidation or reduction?
5. From the half-equations, write the overall eqn.
6. Which is oxidizing agent?
7. Which is reducing agent?

## Redox reaction in terms of O.N.

1. What is oxidation?
2. What is reduction?



3. Calculate the O.N. of each element.
4. Indicate which species are oxidized or reduced.
5. Indicate which species are oxidizing or reducing agents.
6. What are the advantages of using O.N. for predict a redox reaction?

## Assigning O.N.

1. O.N. of element = \_\_\_\_\_  
e.g. N<sub>2</sub>, O<sub>2</sub>, C, K, Fe
2. Group I ions = \_\_\_\_\_
3. Group II ions = \_\_\_\_\_
4. For covalent compounds, H = \_\_\_\_\_  
e.g. HCl(g), H<sub>2</sub>SO<sub>4</sub>(l), CH<sub>4</sub>(g)  
For ionic compounds, H = \_\_\_\_\_  
e.g. LiH, NaH
5. O = \_\_\_\_\_  
except H<sub>2</sub>O<sub>2</sub>, O = \_\_\_\_\_
6. F always = \_\_\_\_\_
7. Cl, Br, and I = \_\_\_\_\_  
except with F or O  
e.g. HOCl where Cl = \_\_\_\_\_
8. For a neutral compound,  
sum of O.N. = 0
9. For a polyatomic ion,  
sum of O.N. = the charge of that ion

## Check-point

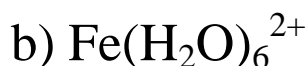
1. Calculate the O.N. of N



2. Calculate the O.N. of P



3. Calculate the O.N. of Fe



## Disproportionation

A chemical Rx, in which single specie undergo both oxidation and reduction simultaneously.



## Balancing Redox Equation in *Acidic Solution*

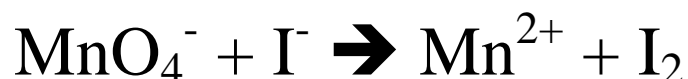
In **acidic** medium, using:

$\text{H}^+$  to balance no. of H atom

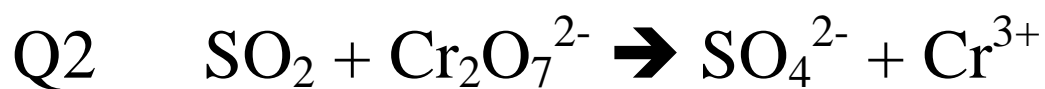
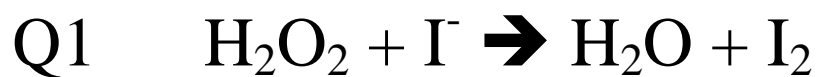
$\text{H}_2\text{O}$  to balance no. of O atom

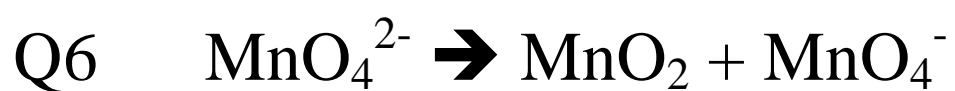
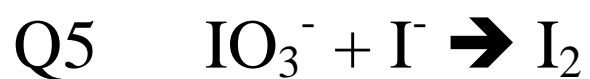
### Example 1

Balance the following equation in *acidic* medium.



## Check-Point





## Balancing Redox Equation in *Alkaline Solution*

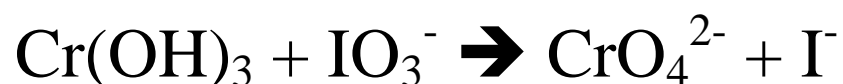
In **alkaline** medium, using:

H<sub>2</sub>O to balance no. of H atom

OH<sup>-</sup> to balance no. of O atom

### Example 1

Balance the following equation in *alkaline* medium.





## Check-Point

