BALANCING OF REDOX REACTIONS

BY OXIDATION NUMBER METHOD

FLOW CHART

MAKE THE LIFE EASY

We can asked to balance....

REDOX REACTIONS

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REDOX REACTIONS

NEUTRAL
MEDIUM

We can asked to balance....

REDOX REACTIONS

- NEUTRAL MEDIUM
- ACIDIC MEDIUM

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REDOX REACTIONS

- NEUTRAL MEDIUM
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- ALKALINE MEDIUM

FLOW CHART FOR BALANCING REDOX REACTIONS....

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STEP 7
Balance 'H' atoms.
Attention: If reaction is in neutral medium, Hydrogens will automatically be balanced.

When Medium of Reaction is NOT NEUTRAL.....

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FOLLOW STEPS 1-6
SAME AS FOR
NEUTRAL MEDIUM

When Medium of Reaction is NOT NEUTRAL.....

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- **FOLLOW STEPS 1-6 SAME AS FOR NEUTRAL MEDIUM**
- **STEP A7: Balance 'H' atoms**
  Add H+ Ions to the deficient side to balance 'H' atoms.

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Basic Medium

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- **STEP A7: Balance 'H' atoms**
  Add H+ Ions to the deficient side to balance 'H' atoms.

Basic Medium

- **FOLLOW STEPS 1-6 SAME AS FOR NEUTRAL MEDIUM**
- **STEP B7: Balance 'H' atoms**
  (a) Add H_2O Molecules to 'H' deficient side to Balance 'H' atoms
  (equal to deficient Hydrogens).

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FOLLOW STEPS 1-6 SAME AS FOR NEUTRAL MEDIUM

STEP A7: Balance 'H' atoms
Add H+ Ions to the deficient side to balance 'H' atoms.

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STEP B7: Balance 'H' atoms
(a) Add H_2O Molecules to 'H' deficient side to Balance 'H' atoms
(equal to deficient Hydrogens).

(b) To opposite side, add same number of OH^- ions

Example: Neutral Medium

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Balance the following Reaction by Oxidation Number Method

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$$\overset{0}{Mg}\ (aq) + \overset{+1}{H}\overset{+5}{N}\overset{-2}{O_3}\ (aq) \longrightarrow \overset{+2}{Mg}(\overset{+5}{N}\overset{-2}{O_3})_2 + \overset{+1}{N_2}\overset{-2}{O}\ (g) + \overset{-1}{H_2}\overset{-2}{O}\ (l)$$

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O.S. increases by 2 per atom
Total increase 2

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STEP 3
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O.S decrease by 4 per atom
Total decrease 2x4 = 8

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Total Increase 2 — Total decrease 8

$$4Mg\ (aq) + HNO_3\ (aq) \longrightarrow Mg(NO_3)_2 + N_2O\ (g) + H_2O\ (l)$$

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30 Oxygen Atom

26 Oxygen Atom

Add $4H_2O$ Molecules

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STEP 7

Balance 'H' atoms. (Already Balanced)

Attention: If reaction is in neutral medium, Hydrogens will automatically be balanced.

$$4Mg\ (aq) + 10HNO_3\ (aq) \longrightarrow 4Mg(NO_3)_2 + N_2O\ (g) + 5H_2O\ (l)$$

EQUATION IS BALANCED

Yippie....!

Example: Acidic Medium

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Balance the Reation by Oxidation Number Method in acidic medium

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O.N decrease by 5 per atom, Total 1x5 = 5

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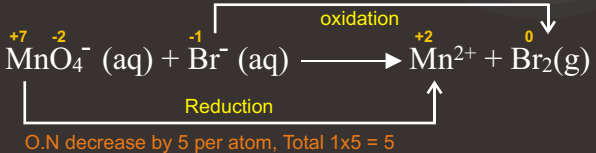

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O.S. increases by 1 per atom, Total 2

oxidation

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STEP 4: Balance change in oxidation number

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Total increase 2

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STEP 5: Balance atoms that are getting oxidized or reduced

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Yippie....!

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THANKS
FOR WATCHING