

OGUN DIGICLASS

CLASS: SECONDARY SCHOOL

SUBJECT: CHEMISTRY

**TOPIC: OXIDATION-REDUCTION
REACTION**



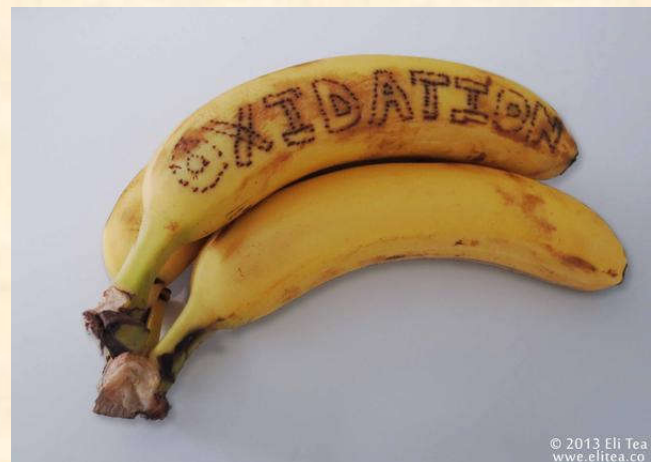
A close-up photograph of a black digital camera's memory card slot. A hand is inserting a memory card into the slot. The card has a yellow label with Japanese text. The camera body features a textured grip, a mode dial with a checkered flag icon, and buttons labeled 'W' and 'T'. The background is a bright, out-of-focus outdoor scene.

DIGITAL
CAMERAS

OXIDATION-REDUCTION REACTION (Redox)

Learning Objectives

- State Meaning of oxidation-reduction
- State Meaning of oxidizing agents and reducing agents
- State Meaning of oxidation number
- State the Uses of oxidation number
- Calculate oxidation number of elements in compounds
- Balance redox equation



Definition

- Oxidation is addition of oxygen
- Reduction is removal oxygen
- Oxidation is the removal of hydrogen
- Reduction is the addition of hydrogen
- Oxidation is the addition of electronegative elements
- Reduction is the removal of electronegative elements

- Oxidation is the removal of electropositive elements
- Reduction is the addition of electropositive elements
- Oxidation is the increase in oxidation number
- Reduction is the decrease in oxidation number
- Oxidation is the loss of electron
- Reduction is the gain of electron

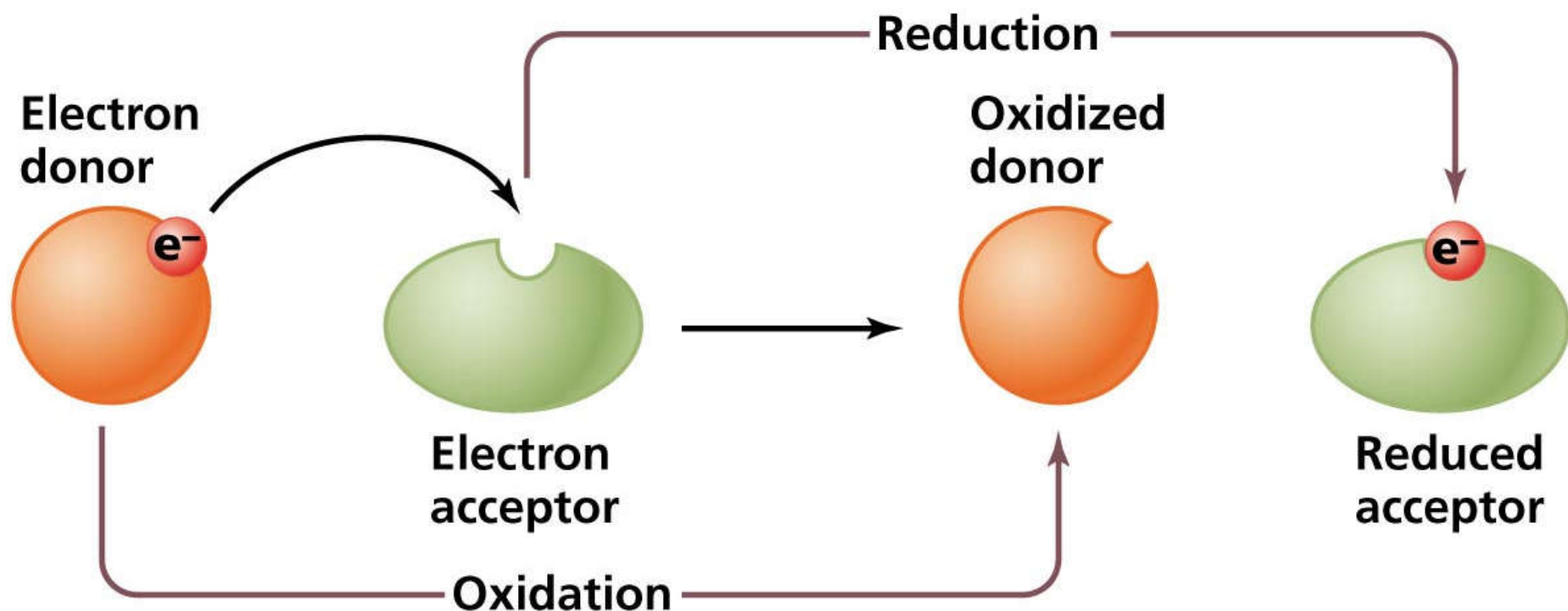
OXIDIZING AGENTS

Oxidizing agents are substances which accept or gain electron(s). That is, they are electron acceptors. Common examples are: acidified KMnO_4 and $\text{K}_2\text{Cr}_2\text{O}_7$.



REDUCING AGENTS

Reducing agents are substances which donate or loss electron(s) . they are electron donors. Examples are: LiAlH_4 , FeCl_2 etc



TEST FOR REDUCING AGENTS

Reducing agents change the solution of acidified potassium tetroxomanganate (vii) from purple to colourless. If acidified potassium heptaoxodichromate (vi) is use, the solution changes from orange to green.



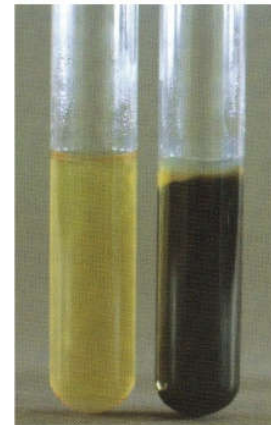
TESTS FOR OXIDIZING AGENTS

Oxidizing agents change solution of iron ii chloride from green to reddish brown or when hydrogen sulphide is through solution of oxidizing agents there will be yellow deposit of Sulphur.

SIM medium: Sulfur test

H₂S-NEGATIVE:

no black
precipitate
formed

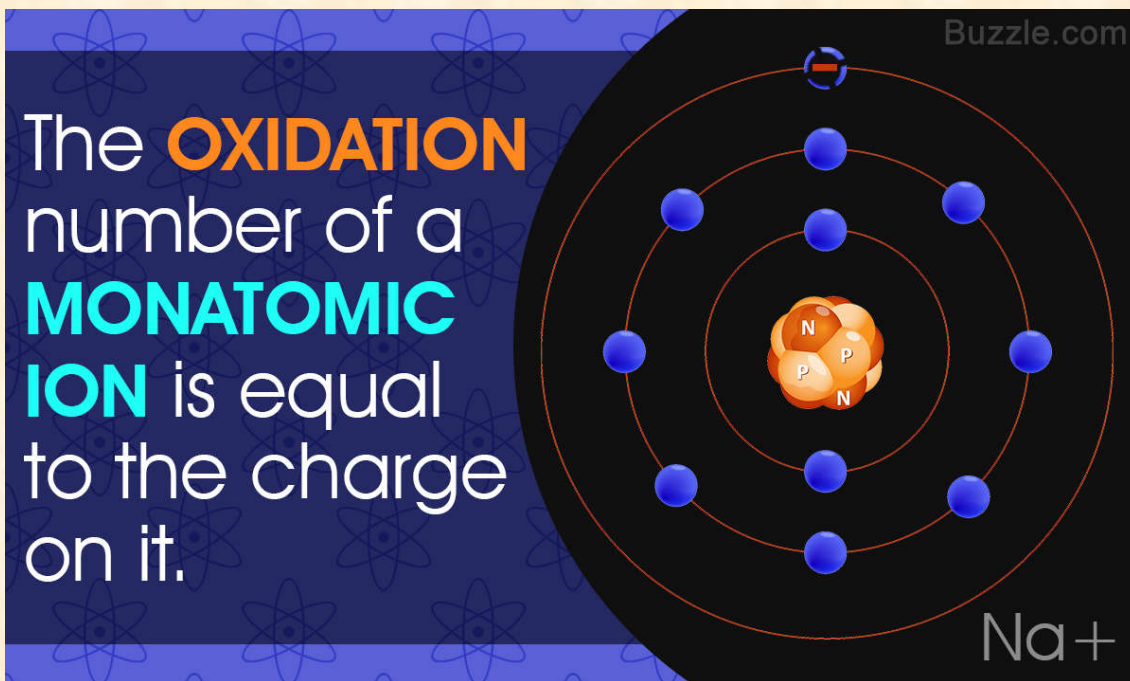


H₂S-POSITIVE:

black precipitate
formed

OXIDATION NUMBER

Oxidation number is the electrical charge on atom of element or group of atoms as determined by set of arbitrary rules.



RULES FOR OBTAINING OXIDATION NUMBER

- Oxidation number of free element is zero.
- Oxidation number of ions is electrical charge on the ions.
- Sum of the oxidation number of elements in a compound is equal to zero, for radical ions , sum of oxidation number of the elements is equal to charge on the ions.



CALCULATION ON OXIDATION NUMBER

Calculate the oxidation number of sulphur in the following compounds/ ions:

- H_2SO_4
- SO_3^{2-}
- SO_2

USES OF OXIDATION NUMBER

Oxidation number is used for the following:

- For naming compounds
- For balancing redox reaction

BALANCING IONIC EQUATIONS

- Break the equation into two half i.e. oxidation half equation and reduction half equation
- Balance each half equation
- Ensure electron loss at oxidation half equation is equal to electron gain at reduction half equation
- Add the two half equations to obtain the balanced ionic equation.

Balance the following ionic equations in acidic medium:



Assignment

Balance the ionic equation

