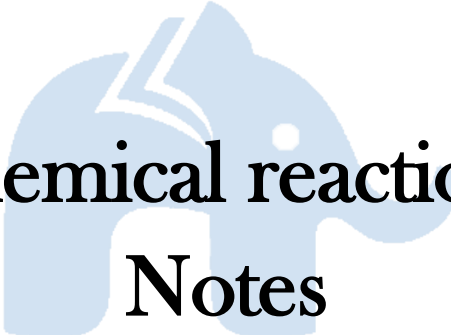


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Class 8 - ICSE

CHEMISTRY

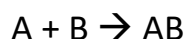
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Chemical reactions
Notes

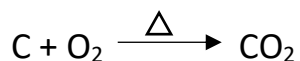
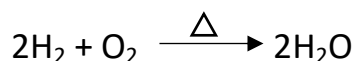
Direct Combination/ Synthesis reaction

2 or more substances combine to form single substance.

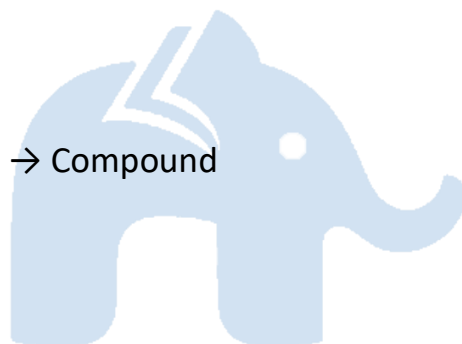
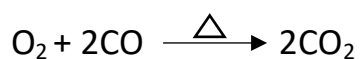
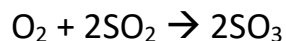


Examples:

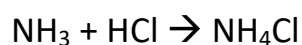
1) Element + Element \rightarrow Compound



2) Element + Compound \rightarrow Compound



3) 2 or more Compounds \rightarrow Compound



b) Decomposition

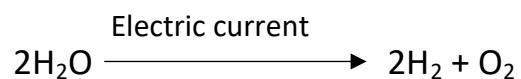
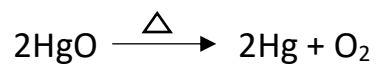
➤ Breakdown of single compound into elements or simple compounds or both such that these products do not recombine to form original compound.

❖ Decomposition may occur due to heat or light or electric current.

❖ Decomposition due to heat \rightarrow Thermal Decomposition

➤ Examples

✓ Compound → 2 or more elements

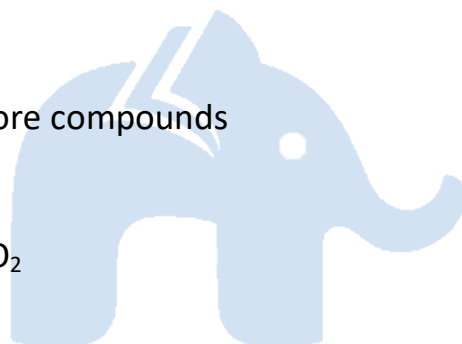
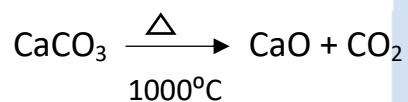


(acidified)

✓ Compound → Elements & Compounds

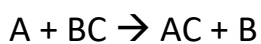


✓ Compound → 2 or more compounds



c) Displacement

➤ More reactive element displaces less reactive element from its salt solution/compound.



A → More reactive element

B → Less reactive element

➤ Examples



ICSE Class 8 Chemistry | Chemical reactions | Notes



➤ By taking similar examples, following activity series can be prepared.

Metals:

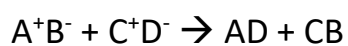
K	↓ Most reactive Reactivity decreases Least reactive
Na	
Ca	
Mg	
Al	
Zn	
Fe	
Pb	
[H]	
Cu	
Hg	
Ag	
Au	

Non-metals:

Fluorine	F	↓ <i>Most active</i> <i>Least active</i>
Chlorine	Cl	
Bromine	Br	
Iodine	I	

d) Double Displacement/ Double Decomposition

➤ Two compounds in solution give 2 new compounds by mutual exchange of radicals.



❖ 2 Types

✓ *Precipitation*

Two compounds in solution give rise to insoluble compound as one of the product.

*Insoluble compound \rightarrow Precipitate (ppt)

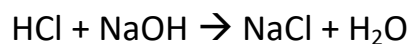
➤ Examples



✓ *Neutralization*

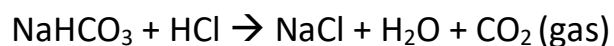
Acid & base reacts to form salt & water only

➤ Examples



*Double Displacement reactions may also occur with evolution of gas.

➤ Examples



Energy Changes in Chemical Change/Reaction

➤ In Chemical reaction $\text{R} \rightarrow \text{P}$

✓ Bonds break between atoms of reactants \rightarrow Energy is required

i.e Energy is absorbed

✓ Bonds are formed between atoms to give products \rightarrow Energy is released

➤ By considering values of both energies, we come to know that either energy is

✓ Absorbed or released

✓ If Energy is absorbed by reactants to form products $\rightarrow P > R$

✓ If Energy is released when products are formed $\rightarrow P < R$

➤ In every chemical reaction \rightarrow Difference in energy between Reactants & Products

➤ In a chemical reaction, energy which is absorbed or released can be in form of heat energy.

➤ Depending on whether heat energy is absorbed or released, reactions are of 2 types

✓ Exothermic reactions

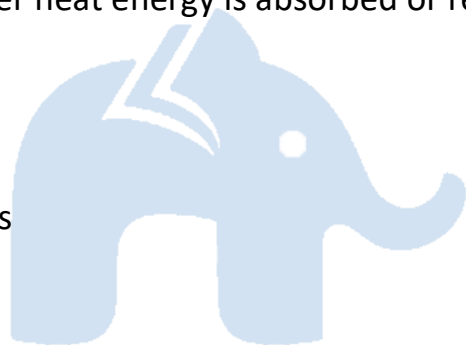
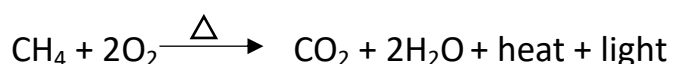
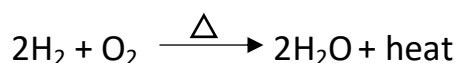
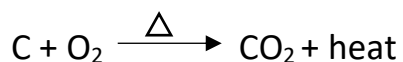
✓ Endothermic reactions

✓ **Exothermic reactions**

\rightarrow Heat energy is released

Reactants \rightarrow Products + Heat

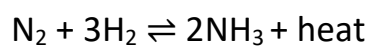
Examples:





➤ Reaction can continue without supply of energy from external source.

e.g.,



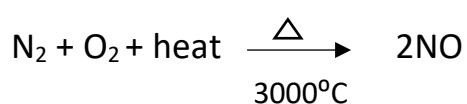
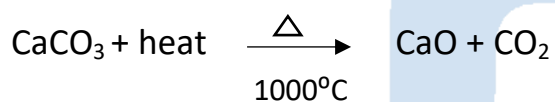
Heat evolved along with products is used to maintain the temperature required for the reaction

✓ Endothermic reactions

➤ Heat energy is absorbed

➤ Reaction cannot continue without external supply of energy

Reactants + Heat → Products



Oxides

➤ O + Element

e.g.,

✓ Metallic

✓ Non-metallic

Metallic oxides

➤ O + Metal

➤ Most metallic oxide → Basic nature → Basic oxides

✓ (Some) Basic oxides + water → Alkali (water-soluble bases)

✓ Basic oxides + Acids → Salt + water

➤ ZnO, PbO, Al₂O₃ → Amphoteric oxides

✓ React with both acids as well as bases → salt + water

Non-metallic oxides

➤ O + Non-metal

➤ Most non-metallic oxides → Acidic nature → Acidic oxides

✓ Acidic oxides + water → Acids

✓ Acidic oxides + Bases → Salt + water

➤ NO, CO, N₂O, H₂O → Neutral oxides

✓ Neither acidic nor basic
