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Class 6 - ICSE CHEMISTRY

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Introduction to Chemistry

Revise Notes

Topics:

I) Meaning of Chemistry

II) Development of Chemistry

III) Importance of Chemistry – Food, Cosmetics, Clothing, Medicines, Industries

IV) Notable Chemists/Scientists contributions to Chemistry

Meaning of Chemistry

Branch of Science which deals with the study of composition and physical & chemical properties of various forms of matter.

Development of Chemistry

1) Chemistry is developed from 'Alchemy'.

2) Word 'Alchemy' is derived from Greek word 'Khemeia' which means 'art of transmuting metals'.

3) People who were practising Alchemy are known as 'Alchemists'. (considered as early chemists)

4) Alchemists were trying to find mythical & magical substance known as Philosopher's stone (literally not stone but in form of wax, liquid or powder) which on heating with metals like Iron or copper would turn Iron or copper into 'Gold'. But they failed to find such magical substance.

5) They also tried to find substance which would give immortality but again failed.

6) But Alchemists were to some extent successful in developing processes to extract metals & make alloys. (Alloys are formed by mixing metals with other metals & substances)

7) They were the first to isolate Zinc & phosphorus.

8) Phenomenal work of Alchemists in India is Iron pillar near Qutab Minar.

a) Iron pillar is 1600 years old & does not rust.

b) Iron pillar is Notable for its rust resistant composition (Iron + high % of Phosphorus).

9) Alchemists developed many chemicals, ink, paints, cosmetics, medicines, ceramic wares.

10) Alchemists used all general techniques of chemistry in healing humans & their contribution proved valuable to society & in the advancement of civilisation.

11) Alchemy was both scientific & spiritual.

12) Alchemy lacked standardized scientific practice.

13) By 18th Century Modern Chemistry was separated from Alchemy. Still, Modern Chemistry owes a great deal to alchemy.

14) Alchemy had initially developed in Egypt & China. In 8th Century it appeared in Europe.

15) In India it was mainly practised for medicines. These medicines are now known as Ayurvedic Medicines.

Importance of Chemistry

1) Chemistry plays a vital role in progress of mankind.

2) Directly or indirectly all human activities depend on knowledge of Chemistry.

3) It has wide range of applications in day-to-day life as well as in Industries.

4) Now let's see the applications of Chemistry in some major fields:

A) Food

We get food from Agriculture & Chemistry has helped farmers by providing them Agrochemicals like:

a) Fertilisers

Chemicals which provide nutrients to crops & increase their yield.

e.g., Urea, Ammonium phosphate, Sodium nitrate, Calcium nitrate, potash

b) Pesticides

Chemicals used to kill pests which destroy crops & fruits.

e.g., Malathion, Parathion, Aldrin

c) Insecticides

Chemicals used to kill insects which destroy crops & fruits

e.g., DDT, BHC

d) Fungicides

Chemicals used to kill fungi or prevent growth of fungi.

e.g., Bordeaux mixture, Sulphur

Chemistry also has its application in Food Preservation & Food Processing:

a) Food Preservation:

Many chemicals like Sodium meta bisulphate, Sodium benzoate, salicylic acid, Vinegar are used to preserve food.

b) Food Processing:

Raw food materials are processed by using physical & chemical processes and converted into marketable food Products.

e.g., Cheese, potato chips, jams, jelly, bread

B) Industry

1) Chemicals from simple to complex are used in Industries in production of toothpaste, paints, soap, shoe polish, plastic, detergent, dye.

2) Knowledge of Chemistry has helped to improve efficiency of Industrial processes

C) Medicines

1) Chemicals are used to synthesize medicines.

2) Medicines cure diseases & have thus increased the life span of humans.

e.g., Paracetamol, Aspirin, Antiseptics, Antibiotics like Penicillin

D) Cosmetics

1) Cosmetics are products used to cleanse, protect & enhance the appearance of external parts of body. e.g., Talcum powder, lipsticks, soap, face wash, perfumes, deodorant, skin care creams.

2) Chemicals are used to synthesize cosmetics.

3) Talcum powder is made of mineral called talc which contains elements like Magnesium, Silicon, Oxygen.

E) Clothing

1) Chemistry is used in textile industries which manufacture clothes.

2) First step in manufacturing clothes is conversion of fibres into fabric.

3) Journey of making clothes started first by using natural fibres like cotton, wool, silk.

4) Later with development in chemistry, chemicals were used to produce fibres which are called as synthetic fibres. e.g. Nylon

5) Now-a-days along with natural fibres, synthetic fibres are also used on large scale to produce clothes.

6) Advantages of Nylon clothes

a) Rugged durability

b) Stretch and elasticity

c) Resistant to tears and abrasions

d) Resistant to water

e) Melts instead of catching fire

Notable Chemist's/Scientist's Contribution to Chemistry

1) Antoine Lavoisier

a) Determined that oxygen was a key substance in combustion, and he gave the element its name.

b) He developed the modern system of naming chemical substances.

c) He is also called the "father of modern chemistry" for his emphasis on careful experimentation.

2) John Dalton

He stated that Matter is made of small indivisible particles called 'atom'.

3) Dmitri Mendeleev

a) He gave 1st Periodic Law in 1869.

b) Developed Periodic table of elements which is called as Mendeleev's Periodic table.

4) Joseph Priestley - Discovered Oxygen

5) Daniel Rutherford - Discovered Nitrogen

6) Henry Cavendish - Discovered Hydrogen

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