



CLASS 6TH SUBJECT: CHEMISTRY FA1

1. What is Chemistry About?

SHORT-ANSWER QUESTIONS (PAGE No. 09)

1. Chemistry is the science of substances and their transformations.
2. In physical change, there is no change in the substance but in chemical change, the substance changes.
3. Anything that occupies space and has mass is called matter.
4. A base metal is common and inexpensive metal as opposed to a precious metal such as gold, silver and platinum.
5. Elixir is an imaginary liquid that would cure all diseases and help a person live long. And the elixir of life would make a person immortal.
6. Robert Boyle was first to prepare hydrogen. Priestly prepared oxygen for the first time.
7. Antoine Lavoisier disproved the four element theory of the Greeks.
8. Dmitri Mendeleev put forward the periodic table.
9. John Dalton gave atomic theory.

LONG-ANSWERQUESTIONS(PAGENO09)

1. In a physical change, there is no change in the composition of a substance. For example, when ice melts, water freezes or water boils (to form water vapour), the substance remains water in all these changes. So, they are physical changes. But in a chemical change, the chemical composition of a substance changes. Common example is burning. For example, when burnt in air, carbon forms carbon dioxide and Sulphur forms Sulphur dioxide. Thus, these are chemical changes.
2. Alchemists had the following 2 aims in broad.
 - A. **Converting cheaper metals into Gold:** Gold has been greatly valued by human beings ever since it was discovered. So, alchemists made attempts to convert baser metals (cheaper metals) like iron and copper into gold. They tried for centuries and some claimed they had succeeded. And they believed that their success was due to the use of what they called the *philosopher's stone*. Later, all these claims were proved false. The alchemists failed because their attempts were scientifically wrong.
 - B. **Searchingfortheelixirolife:** Elixir is an imaginary liquid that would cure all diseases and help a person live long. And the elixir of life would make a person immortal. Experiments were made for many centuries, obviously without success.

3. Lavoisier proved that by weight, 1 part of hydrogen reacts with 8 parts of oxygen to form 9, (i.e., 1 + 8), parts of water. This proved that hydrogen and oxygen are simpler substances (and hence elements) of which water is made. So water is not an element but a compound. Thus he disproved the four element theory.
4. Dmitri Mendeleev helped chemistry advance in the following ways:
 - a. Mendeleev is best known for the classification of elements. In 1869, Mendeleev put forward his periodic law. And he classified the elements on this basis of his law. He presented the table, called the periodic table of elements, which he himself revised in 1871. He brought the similar elements together in a column, called a group. And he kept dissimilar elements apart (i.e., in different groups).
 - b. His table also helped him predict the existence of three elements, today named scandium, gallium and germanium.
 - c. Mendeleev studied the origin and composition of petroleum, an underground deposit from which we get petrol. He strongly believed that petroleum should be used to obtain chemicals rather than for burning.
 - d. He also studied how liquids expand when heated and gave laws governing their behavior.

OBJECTIVE QUESTIONS (PAGE NO 10)

1. The burning of paper
2. The formation of water vapour
3. Mendeleev
4. Lavoisier

Fill in the blanks (page no 10)

1. Substances, Transformations
2. Space, Mass
3. Physical
4. Chemical
5. Base
6. Classified

Write 'T' for true and 'F' for the false for the following statements (Page no 10)

1. True
2. False. They failed
3. False. Mendeleev classified the elements into eighteen groups
4. False. Dalton gave the atomic theory

2. The Role of Chemistry in Our Lives

SHORT-ANSWER QUESTIONS (PAGE NO 22)

1. Nitrogen, Phosphorous, Potassium.
2. Urea, Diammonium Phosphate, Potassium Chloride, Zinc Sulphate.
3. Pesticides are used to get rid of pests.
4. Sodium Benzoate, Sodium ascorbate.
5. Antipyretic is a medicine used to bring down the fever.
6. Analgesic is a medicine used as pain killer and to reduce pain.
7. Some elements present in a talc are:
Magnesium, Silicon, and Oxygen plus elements of water.
8. Soaps are sodium salts of long- chain fatty acids (i.e., acids containing long chains of carbon atoms) like palmitic and stearic acids.
9. In the process of manufacturing something, if you get something else too, the latter is called a by-product. Glycerine is a by-product of the soap industry.
10. Hydrogen Peroxide is bleaching agent for cloth.
11. A cocoon is made of a thin thread-like substance formed by the hardening of the worm's secretion.
12. To get more wool, crossbreeding is done in Indian sheep farms.
13. Rayon is semisynthetic fibre and Terylene is purely synthetic fibre.

LONG-ANSWER QUESTIONS (PAGE NO 22)

1. Chemistry helps us increase the food production in the following ways:
 - a. **Production of fertilizers:** Plants require adequate amount of a few elements like Nitrogen, Phosphorous, potassium and Zinc for proper growth. These are naturally present in the soil but get depleted with the growth of crops for some years on the same area. Chemical fertilizers help replenish these elements in the soil.
 - b. **Pesticides:** Crops that we grow are usually are damaged by insects and small animals called Rodents. These insects and rodents are together called Pests. We use **insecticides** and **rodenticides** to kill them.
We also use:
 - i. **Fungicides:** to kill the Fungi that cause plant disease.
 - ii. **Herbicides and weedicides:** to kill the unwanted plants and animals. As a group they are called Pesticides.
2. Preservatives keep the food unspoil for longer period of time. The following two classes of preservatives are used.

- a. **Antimicrobepreservatives:** They check the growth of any microbes, also called germs, (e.g., bacteria and fungi) in the food. Some common examples are. Sodium Benzoate for Jams, pickles, sauce. Sulphites and Sulphur dioxide for fruits. Sodium sorbate for cheese and Sodium nitrite for meat.
- b. **Antioxidantpreservatives:** They check the oxidation of the food i.e., the reaction of the food with oxygen, which is present in air. Ascorbic acid (i.e., vitamin C) and sodium ascorbate are common antioxidants, generally used to preserve cheese.

3. Medicines are classified into different types according to their use. Some common types are mentioned below.

Type	Use	Example
Antipyretic	Bringing down fever	Aspirin Paracetamol
Analgesic	Relieving or killing pain	
Antimalarial	Curing malaria	Quinine and related compounds
Antiallergic	Preventing reaction to the cold, and also to dust, smoke, etc.	Cetirizine
Antibiotic	Destroying microorganisms causing diseases like dysentery, typhoid, tuberculosis, etc., and also curing infections	Penicillin, chloromycetin, ciprofloxacin, ampicillin, rifampicin

4. Soaps are sodium salts of long- chain fatty acids (i.e., acids containing long chains of carbon atoms) like palmitic and stearic acids.

Soaps are obtained when oils and fats are heated with caustic soda (sodium Hydroxide). The process is called saponification. Glycerine is set free in the process as a byproduct of this process. The by-product glycerine can be separated. Glycerine is good for skin and when not separated from the soap, we get a glycerine soap, which is more expensive than ordinary soap.

5. There are broadly two kinds of fibres, natural and synthetic (artificial).

I. **Naturalfibres** again are of two kinds, plant fibres and animal fibres.

a. **Plant Fibres** - Plant fibres are obtained from the plants like cotton, flax and jute.

b. **Animal Fibres** - Fibres obtained from animals are animal fibres. Silk and wool are common animal fibres. Silk is obtained from silkworms and wool from hairy animals like sheep, camels and yaks.

II. **Artificial or Synthetic Fibres** - Fibres like cotton, silk and wool belong to a class of substances called polymers, a polymer is a giant molecule formed by the end-to-end joining of small parts, or units, called monomers. Artificial fibres are further classified into two types.

a. Semisynthetic fibres: These are made by modifying some natural polymers. E.g. Rayons, which are made from cellulose.

b. Purely synthetic fibres: These are made from chemicals by polymerization. Polyesters, nylons, acrylics are common examples.

6. Cotton is planted in the early spring. In about two months, white or yellowish flowers come up, slowly turning pink and then red. After about three days, the petals fall off, leaving behind a green seed-like structure called boll. The boll grows slowly. When fully mature, it bursts, revealing white fluffy cotton containing brown seeds inside. Cotton is picked by machines. Seeds are combed out from cotton on a machine called a gin. The ginned cotton is pressed into bundles, called bales. A bale weighs 200 kg. The bales are transported to cloth mills. The fibres are spun into yarn and the yarn is woven to make cloth.

7. Silk is produced from silk worms. A female moth lays about 200-500 eggs and dies. The eggs are preserved. The worms come out when the eggs hatch. They are fed on mulberry leaves. When the worms are fully grown, they build their own protective covering called cocoons. A cocoon is made of a thin thread-like substance formed by the hardening of the worms' secretion. Finally, the worm becomes a moth. The cocoon is now kept in hot air so that the moth inside it is killed. If the moth comes out, the cocoon is damaged and the threads, or silk filaments, break. A silk filament we get from a cocoon is 600-800 meters long. Twisting the fibres into silk threads is called throwing. After being thrown, the silk is bleached, dyed (if required) and woven into cloth. The important kinds of silk are eri, mulberry, tassar and mooga. Different kinds of moths give different kinds of silk.

8. Fibres like cotton, silk and wool belong to a class of substances called polymers. A polymer is a giant molecule formed by the end-to-end joining of small parts, or units, called monomers. As the monomer repeats itself throughout the whole polymer, it is also called the repeating unit of the polymer. *Starch and cellulose are common examples of naturally found polymers.* The monomers are small units containing six carbon, ten hydrogen and five oxygen atoms. *Haemoglobin and proteins are also natural polymers.*

9. Cellulose (say cotton) is dissolved in a mixture of sodium hydroxide (also called caustic soda) and carbon disulphide. A viscous liquid (i.e., a liquid that cannot flow freely) called viscose is obtained. Viscose is forced through spinnerets (which have very small holes) into an acid bath and the filaments of viscose rayon are obtained.

1. A fertilizer
2. Sucralose
3. Goitre
4. Nitrogen
5. Polyesters

Fill in the blanks (page no 23)

1. Nitrogen
2. Preservative
3. An antiseptic
4. Seeds
5. Wool
6. Stronger

Write 'T' for true and 'F' for false for the following statements (page no 23)

1. True
2. True
3. False. Talc is a silicate mineral
4. False. Penicillin is an antibiotic
5. False. Gin was invented in India
6. False. A silk moth lays 200 - 500 eggs at one time
7. False. The wool obtained from a live sheep is clipped wool, and the wool obtained from a dead sheep is pulled wool
8. True
9. False. Nylon 6 is a purely synthetic fibre

