



# MADHAV INTERNATIONAL SCHOOL

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## GRADE-6

### Chapter 1: Development of Chemistry

#### Unit 2: Notes on development of chemistry

**Que-1: What is base metal?**

Ans: - Base metal is a cheaper metal than gold or Silver, For example, Zinc, iron, lead, tin etc are base metal.

**Que-2: Give the chemical name for salt with oil of vitriol.**

Ans: - Sulphuric acid.

**Que-3: Match the following:**

**Column A**

1. Paracelsus
2. Glauber
3. Chinese alchemists
4. Jabir alchemists

**Column B**

- 16<sup>th</sup> Century
- 17<sup>th</sup> Century
- 9<sup>th</sup> Century
- 8<sup>th</sup> Century

**Que: -4: Match the following (discovery).**

**Column A**

1. Glauber
2. Chinese alchemists
3. Jabir Ibn

**Column B**

- Sodium Sulphate
- Gun powder
- Anesthesia

**Que: -5: Answer the Following question.**

**(i) State the preparation of Glauber salt by Glauber.**

Ans: Glauber heated common salt with oil of vitriol in a glass flask and obtained sodium sulphate and hydrochloric acid gas. This gas on dissolving in water formed hydrochloric acid.

**(ii) (a) State the preparation of Gun powder.**

**(b) Where it is used?**

Ans: (a) Chinese alchemists discovered gun powder in 9<sup>th</sup> century by mixing powder charcoal, sulphur and nitre in certain fixed proportion.

(b) Gun powder is used in fire work.

**Que: - 6: Answer the following question.**

**(i) Define food science.**

Ans: Food Science deals with the production, processing, preparation and utilisation of food.

**(ii) Who is food chemist?**

Ans: Food chemists work with plants that have been harvested for food. They also work with animals which are useful to humans.

**(iii) How does chemistry help in food production?**

Ans: Chemistry helps in the production of safe and healthy food.

**Que: - 7: Answer the following question:**

1. Who are animal scientists?
2. Who is a flavour chemist?
3. What is the role of food chemists?
4. State the role of nutritional chemists?
5. Who are molecular gastronomists?
6. What is the role of soil and plant chemists?

**Ans: -**

1. Animal chemists conduct research on animal nutrition, efficient means of food production by studying animal genetics, nutrition reproduction, diseases and growth.
2. Flavour chemists use knowledge of the chemistry of food ingredients and create new and improved flavours.
3. Food chemists help in processing, packaging, preserving, storing and distributing foods and drinks to make them safe.
4. Nutritional chemists perform research on the physical and chemical properties of nutrients.
5. Molecular gastronomists work on applying scientific principles to the practice of cooking.
6. Soil and plant chemists examine the composition of soil and its effects on plant growth and develop methods to conserve and manage the fertility of soil.

**Que: - 8: - Answer the following question:**

- (i) Which metal was used maximum for the construction of Qutub – minar around 400 AD.

- (ii) What is the weight and height of this minar?
- (iii) Since how long pillar has not rusted?
- (iv) Give reason for that?

**Ans: -**

- (i) Iron
- (ii) 73 m tall and Weight 6 tonnes.1
- (iii) 6<sup>th</sup> Centuries
- (iv) It is likely because of the formation of a thin film of magnetic oxide of iron [ $\text{Fe}_3\text{O}_4$ ] on its surface as a result of the finishing treatment given to the pillar by painting it with a mixture of different salts then heating and quenching in water.

**Que:-9: Answer the following question:**

- (i) Cosmetic is excellent example of which branch.
- (ii) What are common compositions of any common Cosmetics?
- (iii) Give examples of cosmetics.
- (iv) Define Cosmetics.
- (v) The Egyptian queen bathed in milk as a way to keep her skin beautiful and soft. Give reason?

**Ans: -**

- (i) Cosmetics are an excellent example of how discoveries in chemistry are part of our day to day lives.
- (ii) Water, emulsifiers, preservatives, thickeners, pH stabilisers, dyes and fragrances, combined in different ratios for different purposes.
- (iii) All kinds of powders, creams, lipsticks, cleansing lotions, nail polishes, soaps, detergents etc are cosmetic.
- (iv) Cosmetics are chemical compounds which are used to improve our appearance. They also help us to live in a clean environment.
- (v) It is because, lactic acid found in milk acts on the deeper layer of the epidermis, promoting the removal of dead cells and skin renewal.

**Que:-10:- Answer the following question:**

- (i) Which industry was first to adapt the new features of nanotechnology.
- (ii) What is the aim to adapt the new feature?
- (iii) Where Titanium dioxide nano particles are used?
- (iv) How solid lipid nano particles used by of cosmetic?

**Ans: -**

- (i) Cosmetic industries.

- (ii) To improve the quality of the products and satisfy the desires of customers.
- (iii) Titanium dioxide nano particles in sunscreens that give complete protection without any effect on exposed layer of skin.
- (iv) The use of solid lipid nano particles for slow release of fragrance in perfumes or creating nano vesicles as carriers to provide a penetration of the active ingredients on the skin.

**Que:-11: Answer the following question:**

**(i) What is the main contribution of polymer chemistry?**

Ans: Polymer chemistry has contributed to clothing technology by providing man – made to replace natural polymers such as silk, cotton, wool etc.

**(ii) Answer the following question based on rayon silk:**

**a. What is the second name artificial silk?**

Ans: Rayon

**b. What is the raw material for the production of rayon?**

Ans: Pure cotton or wood cellulose.

**c. Why Rayon is called regenerated fibers?**

Ans: Because it is produced by modifying the natural fibers.

**d. Why Rayon is not a truly artificial fiber?**

Ans: Because its raw material is natural fibers. However for all practical purposes it is included into man- made fiber or synthetic fibers. The filament of rayon can be woven like any other natural fibers. They have a feel and texture of natural silk.

**e. State the uses of rayon.**

Ans: → Its filaments are blended with wool for the manufacture of carpets.

- It is used for making bed sheets.

- Long filaments of rayon are used for making reinforced automobile tyres.

**Que: -12: Answer the following question:**

- (i) Name / State one superior type of synthetic fiber.
- (ii) Nylon is prepared by the polymerization of which molecules.
- (iii) State how this molecule is obtained?
- (iv) State the properties of nylon fibers?
- (v) State the uses of nylon fibers.

**Ans:-**

- (i) Nylon is a superior type of synthetic fiber which is truly artificial.
- (ii) Amide- molecules.
- (iii) The amide molecules are obtained from petroleum products by complex chemical process.
- (iv) The nylon fibers are elastic, strong and water resistant.
- (v) Uses of nylon:

1. It is used for making fabric for clothing and parachutes.
2. It is used for making stockings, ropes for rock climbing and fishing.
3. It is used for making common household articles such as tooth brushes, combs, Zip - fasteners, hooks etc.
4. Tyres Cords, small parts of machine such as washers, pulleys etc. are made from nylon fibers.

**Que:-13: Answer the following question:**

- (i) Which molecule is used to form polyester fiber?
- (ii) How this molecule is obtained?
- (iii) Which polyester molecule has superior quality than nylon?
- (iv) State the uses of polyester.
- (v) State uses of Terylene.

**Ans: -**

- (i) Ester molecule.
- (ii) Esters are compounds formed when alcohol is made to react with organic acids such as acetic acid, phthalic acid.
- (iii) Terylene.
- (iv) Used for making fabrics for shirts, trousers etc.
- (v) For making sails for sailing boats, fire hoses and conveyor belt.

**Que:-14: Answer the following question:**

- (i) Give another name of Acrylon fiber.
- (ii) Which molecule is polymerised to form acrylic fiber?
- (iii) Write the features of this fiber.
- (iv) State the use of acrylic fibers.

**Ans: -**

- (i) Orion
- (ii) Molecule of acrylonitrile.
- (iii) -Very light and soft like wool.  
-They are resistant to weathering.
- (iv) They are used for making yarn for hand knit sweaters, blankets, shawl etc.

**Que:-15: Answer the following question:**

- (i) State the characteristics of Koroseal.
- (ii) Write uses of Koroseal.
- (iii) When they can be used maximum.
- (iv) What is the contribution of dye chemistry?

**Ans: -**

- (i) It is water proof as well as air proof.
- (ii) It is used for coating fabrics of silk, rayon or cotton to make them water proof.
- (iii) Water proof fabrics obtained used on rainy days or as bathroom curtains.
- (iv) Dye chemistry has contributed to clothing technology by providing permanent colour to the new hydrophobic polymers suitable for making garment.

**Que:-16: Answer the following questions:**

- (i) In olden day man was dependent on which natural product for medicine.
- (ii) What is the role of chemist in developing medicine?
- (iii) Give example of new medicines.
- (iv) Quinine is extracted from which part of the plant.

**Ans: -**

- (i) Man has been dependent on medicinal plants right from the dawn of civilisation. He used leaves roots, seeds or fruits of medicinal plants to cure himself from common disease.
- (ii) A) Chemists have developed methods to identify the active molecules in a medicinal plant. Thus by extracting these molecules from plants better medicines are prepared.  
B) Chemists have also developed methods, to prepare such molecules artificially there by reducing dependence on medicinal plants.  
C) Even new molecules with better properties have been made in laboratory which has helped to cure a number of incurable diseases.
- (iii) Penicillin, tetracycline, sulphadiazine etc.
- (iv) From the bark of a plant.

**Que: -17: Answer the following question:**

- (i) How does chemistry help in medicine?
- (ii) Give example of medicine.
- (iii) Write scientific name of pain killers.
- (iv) How chemistry has helped in new research of medicine?

**Ans: -**

- (i) Chemistry plays a huge role in the development of synthetic drugs.
- (ii) Antibiotics, antimalarials, and analgesics.
- (iii) Analgesics.
- (iv) New research is being done on possible ways so that chemistry can be used to target cancer. Cells without killing the healthy cells around the cancer growth.

**Que:-18: Answer the following questions:**

- (i) What is an industrial chemical?

- (ii) What are stain removals?
- (iii) Name the chemical compound found in household bleach.
- (iv) Write the names of two chemicals used for removing stains and dyes.
- (v) Which organic compound is used to remove some glues, nail polish, ink stains etc.

**Ans: -**

- (i) Chemicals used in industry to process the raw materials so as to improve their properties are called industrial chemicals.
- (ii) Stain removal is the process of removing a spot left by one substance on a fabric. A solvent or detergent is generally used to remove the stain.
- (iii) Hydrogen peroxide.
- (iv) Sodium hydrosulphite and sodium hypochlorite.
- (v) Acetone.

**Que: -19: Answer the following questions:**

- (i) Which chemical compound is present in lemon juice that acts as a bleaching agent?
- (ii) How can its action be accelerated?
- (iii) Which other chemicals can remove stains caused by rust?
- (iv) Write the chemical name of vinegar.

**Ans: -**

- (i) Citric acid
- (ii) By exposing the stain to sunlight.
- (iii) Boric acid, vinegar are used to remove stains caused by rust.
- (iv) Acetic acid.

**Que:-20: Answer the following question:**

- (i) Give two names of chemicals used in drain cleaners.
- (ii) For which types of stain removals are these chemicals used?
- (iii) Which chemical is used to soften 'set' stains especially on wool and non-water washable fabric.

**Ans:-**

- (i) Sodium hydroxide and Potassium hydroxide.
- (ii) It allows grease and other oils to dissolve in water.
- (iii) Glycerin

**Que: -21: For which type of stains is boiling water used for removal?**

**Ans: -**Boiling water can be used to remove fruit juice stains.

**Que:-22: State careers that are possible in chemistry.**

**Ans:** -The career that is possible in chemistry are as follows:

1. Pharmaceutical Companies.
2. Food manufacturing companies
3. Paint and plastics industries
4. Personal, baby care and household care products companies
5. Petroleum industry
6. Career in education
7. Forensic Scientists

**Que:-23: How does chemistry helps forensic scientists?**

**Ans:** -Forensic scientists work for police departments to analyse crime scene evidences. It includes testing of blood, body fluids, finger prints, hairs fibers, car tyres track, and foot wear marks etc. Their knowledge of chemistry helps to detect the cause of crime.

**Scientist name and Discovery:**

❖ **Henry Cavendish (1731 - 1810):**

- He was a British scientist.
- He discovered hydrogen.
- He was the first person to accurately measure the Earth's mass and density.
- He investigated the products of fermentation a chemical reaction that splits complex organic compounds into simple substance.

❖ **Antoine Lavoisier (1743 - 1794):**

- He Was a French chemist who helped to develop the metric system in order to ensure uniform Weights and measures.
- He stated the Law of conservation of Mass.
- In 1787 Lavoisier published "Method of chemical Nomenclature", which included the rules for naming chemical compounds.

❖ **Dmitri Mendeleev (1834 - 1907):**

- He was a Russian scientist who classified the elements and developed the first periodic table.
- He felt that there was some type of order to the elements and he spent more than 13 years of his life collecting data and assembling the concept.
- He found recurring pattern, or periodicity of properties within groups of elements.
- He built up a systematic periodic table of all the 66 elements known at that time based on atomic mass.
- He predicted the locations within the table of unknown elements together with their properties. He even predicted the likely properties of three yet to be discovered element, scandium, gallium and germanium.

❖ **Robert Boyle (1627 – 1691):**

- He was an Irish by birth.
- He was a great scientist of England of his time.

- He had proposed the law of gases known as Boyle's law of gaseous volume.
  - According to him "The volume of a given mass of gas is inversely proportional to the pressure, keeping the temperature constant.
- ❖ **John Dalton (1766 - 1844):**
- He was a British physicist and chemist.
  - He gave the atomic theory and later it was called as Dalton's atomic theory.
  - The basic concept of the theory is that matter consists of small indivisible particles called atoms.

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