AUTUMN HOLIDAY HOMEWORK

CHEMISTRY
Camlin Page
Date / /

Multiple choice questions

1- The branch of science which deals with the different forms of energy e.g. light and sound. option-b: Physics

2- The scientists who formulated the periodic table. option-c: Demitri Mendeleev

3- The inter-molecular force is maximum in option-a: solids

4- Rapid conversion of water into steam is an example of option-a: evaporation

5- The temperature at which a liquid get converted into its vapour state is called its option-b: boiling point

6- Predecessors to the modern chemist who created philosopher's stone' option-b: alchemists

7- What is an element? option-a: A substance that is made up of one type of atom can't be reduced to simpler substances.

8- A metallic apparatus which supports the wire gauze. option-a: A tripod stand

9- A long glass apparatus closed at one end used for collecting gases. option-b: Gas Jars

10- A modern apparatus with an air regulator, used for heating purposes. option-b: Bunsen burner

Fill in the blanks:

11- From the elements nitrogen, chlorine, bromine, the element present in the atmosphere is nitrogen.

12- An element is a pure substance which cannot be broken down by physical or chemical methods.

13- Evaporation takes place at 100°C temperature.

14- Freezing process is just the reverse of melting.

15- Sublimation is a process that involves direct conversion of solid into its vapour on heating.

16- Preservatives added to food or beverages. Explain why?

Ans: Preservatives are added to food or beverages for the following reasons:

i- Prevent decomposition by bacteria or microbes.
ii- Reduce risk of food borne infections and also preserved nutritional quality of food.

17- Alchemy was considered as pseudo science. Give reason
Ans: Towards the end of 17th century the scientific process involving modern chemistry started paving paths and alchemy today is considered a pseudoscience and chemistry regain its rightful position as a serious scientific field.

18- What happens to water if
(a) it is kept in a deep freezer
(b) It is heated
Explain the phenomenon of change of state of water.

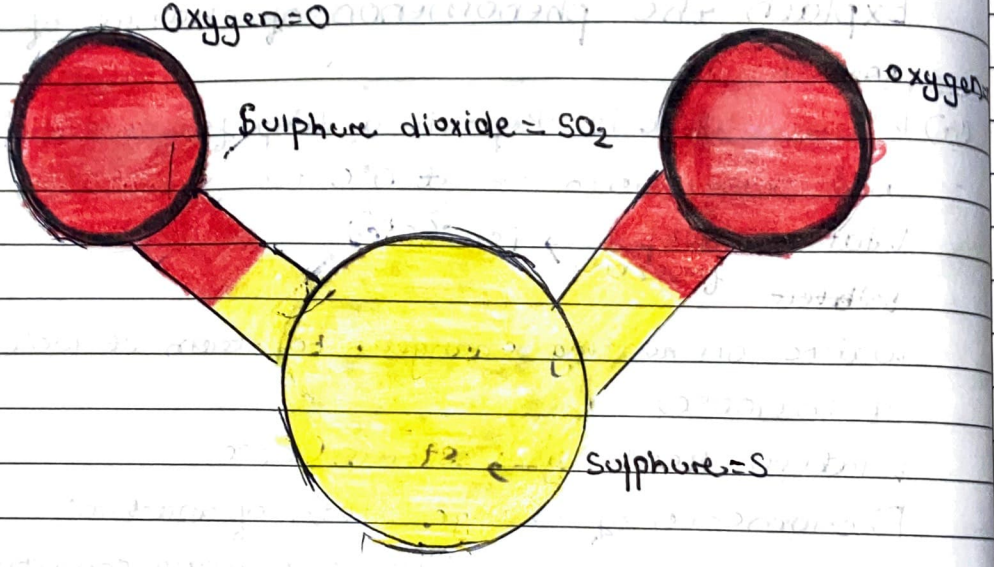
(a) When water is kept in a deep freezer, it gets cooled and changes into ice at 0°C ice.
Water $\xrightarrow{\text{deep freezer}}$ ice (0°C)
~~Water~~
Water on heating changes into steam at 100°C water
steam (100°C)
Water $\xrightarrow{\text{heating}}$ Steam (100°C)
Phenomenon of change state of water:
Water is liquid under ordinary conditions, but when it is kept in a deep freezer, it changes into ice at 0°C and when ice is kept at room temperature again changes back into liquid water.
Similarly, water heating change into steam at 100°C, which on cooling changes back into liquid water. But there is no change in the chemical composition of water. When its state changes from liquid to solid or liquid to gaseous state.
Ice $\underset{\text{cool}}{\overset{\text{Heat}}{\rightleftharpoons}}$ water $\underset{\text{cool}}{\overset{\text{Heat}}{\rightleftharpoons}}$ steam
(solid) (liquid) (Gas)

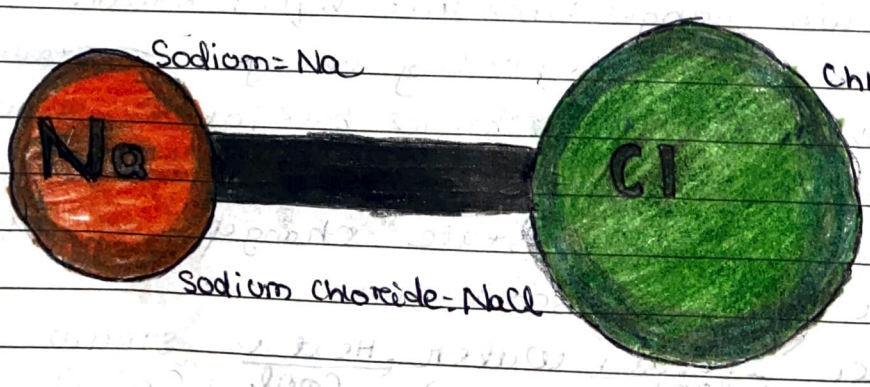
19- State two characteristics of water which proves that it is a compound.

Ans: Elements in a compound are present in a definite proportion. Example: 2 atoms of hydrogen combine with 1 atom of oxygen to give 1 molecule of water (compound) $H_2 + O = H_2O$ (water)

2- Compounds have a definite set of properties.
Example: The properties of the compound water are different from the properties of the elements of hydrogen and oxygen in the water.

20- Show diagrammatic representation of sulphur dioxide molecule and sodium chloride molecule.





Camlin Page
Date / /

1- Differentiate between the terms - food preservatives and food processing with appopriate examples. State the contributions of (a) Dimitri Mendeleev
(b) Antoine Lavoiser
(c) John dalton - towards the development of chemistry.

Food preservatives

Food preservatives are substances or chemicals that are added to food or beverages.

The purpose of adding these preservatives is to:

- Prevent decomposition by bacterial or microbes.
- Reduce risk of food borene infections.
- Preserves nutritional quality of food.

Preservatives:

- Benzoic acid
- Nitrates
- Sulphur compounds.

Food processing

Food processing is the transformation of agricultural products into food or one form of food into other forms.

Food items:

- Jams, pickles, carbonated drinks.
- Meat products
- Beverages, wines etc.

The contributions of Dmitri Mendeleev towards the development of chemistry.

(a) Formulated the periodic table of elements.
(b) Mendeleev arranged the dozens of know elements by atomic weights and also predicted the properties of certain unknown elements.
(c) He also discovered the periodic law.

Contribution of Antoine Lavoiser:

(a) In 1778 he recognised and named oxygen.
(b) In 1783 he recognised and named hydrogen.
(c) He wrote the first extensive list of elements and

to reform chemical nomenclature.
- In 1774, he focused on the phenomenon of combustion. He conducted an experiment in which he heated pure mercury in a swan necked retort leading to the discovery of oxygen.

Contribution of John Dalton:

(a) In 1803, he compiled his theory named as Dalton's atomic theory.

(b) In his theory he discovered Matter that consists of particles called atoms which are invisible and cannot be created or destroyed. Later, this theory was contradicted in certain aspects by "Modern Atomic theory".

22- Explain the terem compounds. Give the example of compound containing

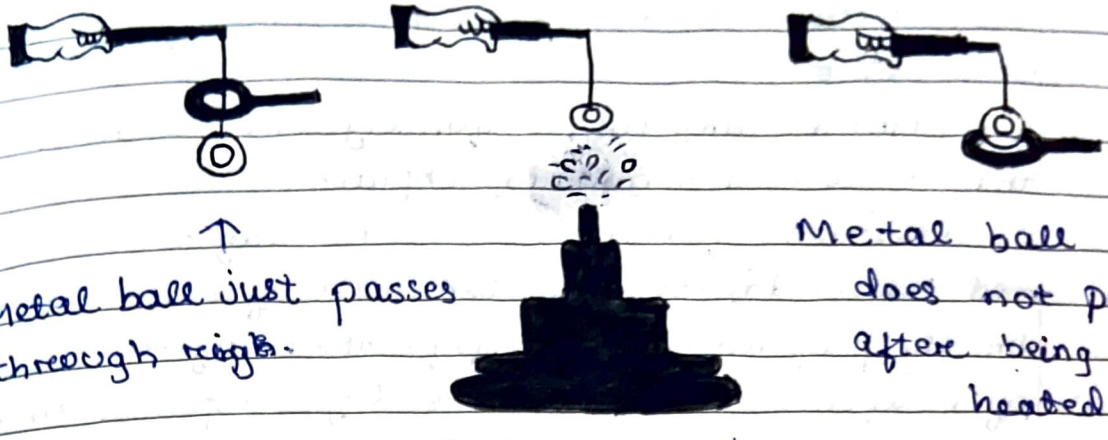
(a) hydrogen and oxygen
(b) Carbon and oxygen
(c) Nitrogen and oxygen
(d) Calcium and Oxygen

Ans: A pure substance made up of two or more different elements combined chemically in a specific ratio called a compound.

(a) Hydrogen and oxygen: Water - H_2O
(b) Carbon and oxygen: Carbon dioxide - CO_2
(c) Nitrogen and oxygen: Nitrogen dioxide - NO_2
(d) Calcium and oxygen: Calcium oxide - CaO

23- With the help of a simple diagram how would you show that - solid expand on heating.

Ans:



24- All medicines must be taken under proper doctors supervisions and in the correct dose. Give reason.

Ans: All medicines must be taken under proper doctors supervisions and in the correct dose because some medicine has side effect as aspirin not taken in propere dose may cause stomach ulcers. Similarly paracetamol if taken in high dose may cause liver problems.

25- Write the uses of following elements and compounds.

(a) Gold, platinum, silver

(b) Copper, aluminium

(c) Plastic

Ans: (a) Platinum, gold and silver are used to make jewellery because these are low reactive metals. So, they rarely corrode and hence do not lose their shine lustures. They also do not tarnish in air.

(b) Copper and aluminium are good conductors of heat and electricity. They can be drawn into wires and beaten into sheets. Therefore, they are used to make electric wires.

(c) Plastic is used across almost every sector, including to produce packaging. In building and construction, industries, consumer products, transportation, electrical

and Electronics and industrial machinery.

26- Give reason why.

(a) Wet clothes dry more quickly on a warm day than on a cold humid day. Explain.

Ans: Clothes dry more quickly on a warm day than on a cold humid day because the rate of evaporation is directly proportional to temperature. Higher the rate of evaporation on the hot day compared to the cold days.

(b) Water in a dish evaporates faster than in a bottle. Give reason.

Ans: Rate of evaporation is more when the area of the exposed surface is more. As the area exposed in a dish is more, evaporation is also more.

(c) Why are volatile liquids such as alchohol and spirit stored in tightly closed bottles?

Ans: Rate of evaporation depends on the nature of the liquid. The more volatile liquids like alcohol and spirit evaporate easily, hence they are stored in tightly closed bottles to avoid their evaporation.

27- Give reason.

(a) A philosopher's stone is not exactly a stone.

Ans: Philosopher stone is a legendary substance capable of turning expensive metals like lead or mercury into gold and silver.

(b) Food processing is an important procedure for obtaining marketable food products.

Ans: Food processing involves physical or chemical processes, to transform or change the raw ingredients in food into easy usuable forms of food available in markets. Raw materials in food to marketable food products.

(c) Cosmetics may contain preservatives, one of them

ingredients.

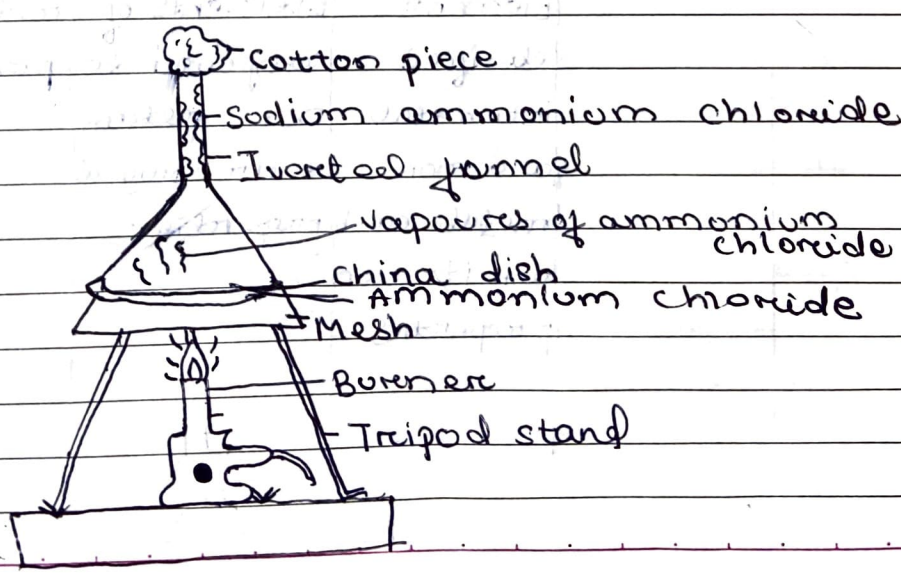
Ans: They extend the shelf life of a cosmetic and may prevent the growth of microorganisms.

28- What do you mean by sublimation? Why does the size of napthalene balls decrease when left open? Describe an expereiment to demonstreate the process of sublimation.

Ans: Sublimation is the process by which a substance change from solid state to gaseous state directly without passing through the liquid state. For example: dry, napthalene balls etc.

When napthalene balls are left open, due to sublimation they change to vapours and their size decreases.

Experiment: Take some Ammonium Cloride powder in a china dish. Cover the china dish with an inverted funnel and put a cotton plug in the end of the funnel so that vapors do not escape. Set up the apparatus as shown. Heat the dish with a burner. Solid ammonium chloride changes into vapours. Which when coming in contact of the walls of funnel get cooled and change to solid and get desposited there.



29- Tabulate a comparative chart - to differentiate between elements, compounds and mixtures. Differentiate them (a) with reference to
(b) the term
(c) existence
(c) properties.

Ans:

	Elements	Compounds	Mixtures
(a) The term	Pures substance made up one kind of atoms only.	Pures substance made up of two or more different elements	Impures substance made up of two or more elements or compounds.
(b) The existence	- Elements i.e. atoms are present on their own.	- Components in a compound present in a definite proportion.	- Components in a mixtures present in any proportion
(c) properties	- Elements have a definite set of properties Elements classified into metal and non metals each with its own properties	- Compounds have a definite set of properties. Elements of compound do not retain their original properties.	- Mixtures not have a definite set of properties components of a mixtures do retain their original properties.

Q.1 Give reasons for the following:

(a) Solids have a definite shape and are highly rigid while gases have no definite shape and are least rigid.

Ans: In solids, the intermolecular spaces are negligible and the atoms move about in their own position which gives solids a definite shape and make them rigid, while in gases the intermolecular spaces are large which allows the atoms to the move around freely and hence, they are least rigid and have no definite shape.

(b) Sugar can be distinguished from talcum powder using water.

Ans: Sugar dissolves in water while talcum powder does not dissolve.

(c) Water on freezing turns into ice.

Ans: As the temperature falls the energy of the particles becomes less and they become tightly bonded to each other and that is why water on freezing turn into ice.