

I.1. The branch of science ~~that deals~~ which deals with the different forms of energy e.g. light and sound.

Ans → B) Physics

2. The scientist who formulated the Periodic Table.

Ans → C) Dmitri Mendeleev

3. The inter-molecular forces is maximum in

Ans → A) Solids

4. Rapid conversion of water into steam is an example of

Ans → D) Vapourisation

5. The temperature at which a liquid gets converted into its vapour state is called

Ans → B) Boiling point

6. Predecessors to the modern chemist who created the 'Philosopher's stone'.

Ans → B) Alchemists

7. What is an element?

Ans → A) A substance that is made up of one type of atom and can't be reduced to simpler substances.

8. A metallic apparatus which supports the wire gauze.

Ans → A) A tripod stand

9. A long glass apparatus closed at one end used for collecting gases.

Ans → B) Gas jar

10. A modern apparatus with an air regulator, used for heating purposes.

Ans → Bunsen Burner

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 room temperature temperatures.
14. Freezing process is just reverse of melting.
15. Sublimation is a process that involves direct conversion of solid into its vapour on heating.
16. Preservatives are added to food or beverages. Explain why?

Ans → Preservatives are added to food or beverages to

① Prevent the growth of microbes which would otherwise spoil the food.

⑪ Keep the food fresh with its nutritional value for a longer time.

⑫ Reduce the food borne infection.

17. Alchemy was considered a pseudoscience.
Give reason.

Ans → Alchemy was considered a pseudoscience as it was partly based on experimentations and partly on spiritual discipline and most of its principles are not proved.

- 18) What happens to water if
- It is kept in a deep freezer
 - It is heated

Explain the phenomenon of changes of state of water.

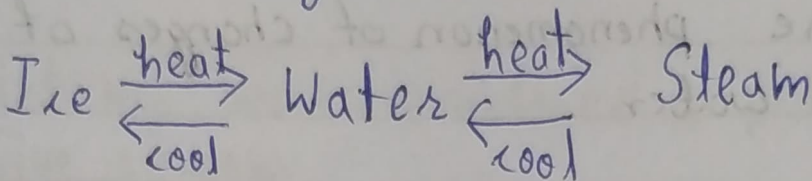
Ans:

- When water is kept in a deep freezer it changes into ice as the temperature in the deep freezer goes less than 0°C .
- When water is heated it changes into steam as the temperature increases gets more than 100°C .

Water at room temperature is a liquid, but, when it is kept in the deep freezer, it changes to ice at 0°C and when ice is kept at room temperature, it will again turn into water.

Similarly, water when heated, it changes to steam at 100°C and when steam is cooled, it will again turn into water.

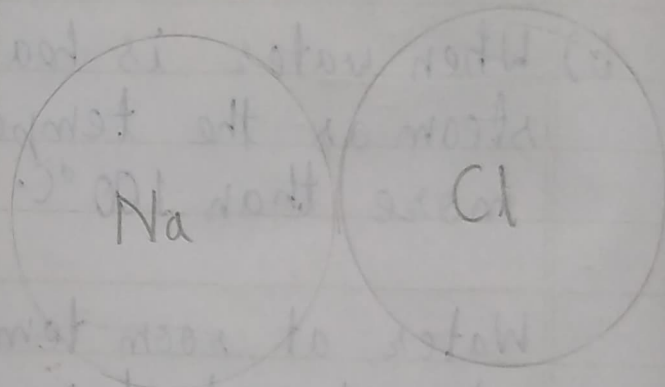
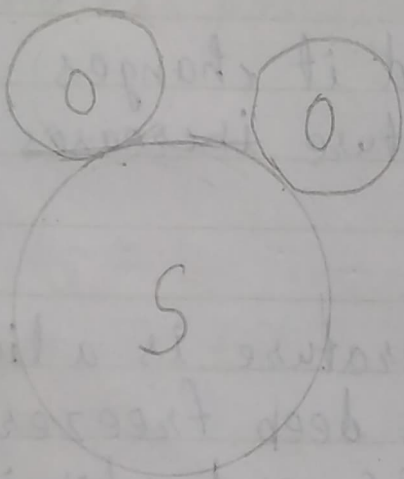
The conversion of state either from solid to liquid or liquid to gas, it doesn't involve any chemical change:



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

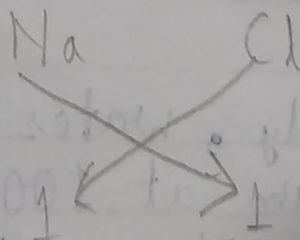
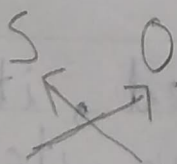
Ans → Sulphur dioxide is represented as - SO_2

Sodium chloride is represented as - NaCl



Sulphur dioxide = SO_2

Sodium chloride - NaCl



19. State two ~~char~~ characteristics of water which prove that it is a - compound.

Ans) Two characteristics of water which prove that it is a - compound are:-

- (i) Water has entirely different properties from its constituent elements. It is a liquid and extinguishes fire, i.e. ^{it is made up of} hydrogen a gas which catches fire and oxygen a gas supporter of combustion.
- (ii) Energy is needed to form water ~~whi~~ on combining H_2 with O_2 .
- (iii) We cannot separate the constituents of water by simple physical means.

21) Differentiate between the terms - food preservatives and food processing with appropriate examples.
State the contributions of

- a) Dmitri Mendeleev
- b) Antoine Lavoisier
- c) John Dalton - towards the development of Chemistry.

Ans) Food preservatives

- ① Preservatives are chemicals added to food and beverages to:
- Prevent the growth of microbes, which would otherwise spoil the food.
 - Keep the food fresh with its nat. nutritional value for a long time.
 - Reduce the food borne infection.

② Ex - Sodium benzoate, salicylic acid etc.

Food processing

- ① Food process is the transformation of raw food materials by physical or chemical means into marketable food product that can be easily prepared and served to the consumers.

② Ex - Cheese, Bread, Jams etc.

The contributions so of the scientists are:-
a) Dmitri Mendeleev.

Dmitri Mendeleev was a Russian chemist, best know for his discovery of "Periodic Law".

in 1869 and ~~formulated~~ the formulation of "Periodic Table of elements". He was passionate about chemistry. His deepest wish was to find a better way of organizing the substances.

b) Antoine Lavoisier:

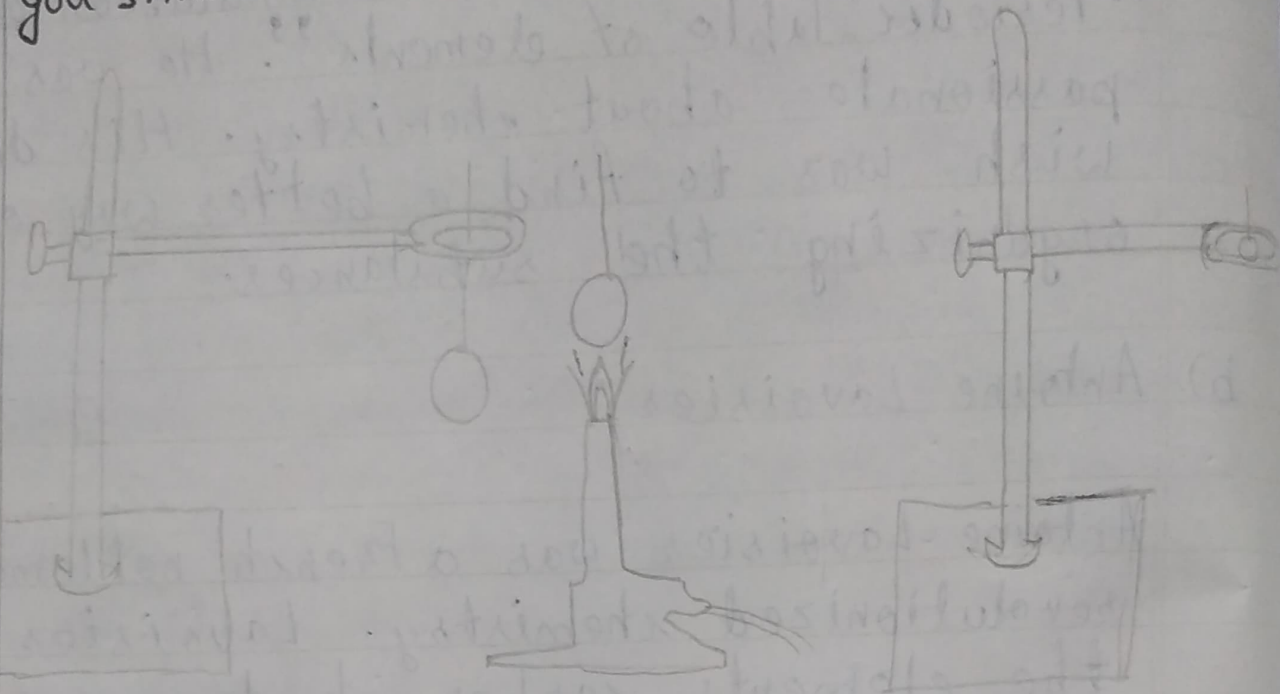
Antoine Lavoisier was a French nobleman. He revolutionized chemistry. Lavoisier named the elements carbon, hydrogen and oxygen and discovered the role of oxygen in combustion and respiration.

c) John Dalton:

John Dalton proved that matter consists of small indivisible particles called atoms and his atomic theory is proved called "Dalton's atomic theory".

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

Ans



The metal ball passes through the ring.

Metal ball is heated.

The metal ball is unable to pass through the ring after being heated.

This shows that solids expand on heating.

- 22) Explain the term compounds. Give the example of a compound containing
- hydrogen and oxygen
 - carbon and oxygen
 - nitrogen and oxygen
 - calcium and oxygen.

Ans A compound is defined as a pure substance that is formed by the chemical combination of two or more elements in a definite proportion by mass.

- hydrogen and oxygen - Water (H_2O),
Hydrogen peroxide (H_2O_2)
- carbon and oxygen - Carbon monoxide (CO),
Carbon dioxide (CO_2)
- nitrogen and oxygen - Nitrous oxide (N_2O)
Nitric oxide (NO)
- calcium and oxygen - Calcium oxide (CaO)
Calcium diperoxide (CaO_2)

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

Ans All medicines must be taken under proper doctors supervision and in the correct dose as many medicines have side effects and if not taken in the correct dose as prescribed by the doctor can cause severe health problems like death.

Ex- If we take paracetamols of very high power it can cause severe liver problems.

25) Write the uses of following elements and compounds.

a) Gold, platinum, silver

b) Copper, aluminium

c) plastic

Ans a) Gold, platinum and silver are lustrous. They shine and look very attractive. They can remain in free state. They don't tarnish in air. Therefore these metals are used to make ornaments and jewellery.

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

Copper is used to mixed with metals like tin and zinc to make mixtures like brass bronze and brass which are more stronger and durable. They are used to make statues, utensils, door knobs, parts of a machine, taps, electrical fittings etc.

c) Plastic is a non conductor, used as an insulator. There are different types of plastics materials to make bags, shoes, bats, balls, tyres, ^{pipes} taps, unbreakable utensils, non-stick cookware etc.

26. Give reason why.

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

Ans → Wet clothes dry more quickly on warm day than on a cold humid day as the rate of

evaporation depends on the temperature of the atmosphere. ~~The~~ On warm days the rate of ~~evaporations~~ evaporation is more than ~~the~~ the cold humid days.

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

Ans → The rate of evaporation is more when the exposed surface area is more. The water in the dish evaporates faster than in a bottle as the exposed surface area of the dish is more than the exposed surface area of bottle.

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

Ans → The rate of ~~evaporati~~ evaporation depends on the nature of liquids. The more the liquids are volatile, more is their rate of evaporation. So, ~~liquids like~~ volatile liquids like alcohol and spirit are ~~to~~ stored in tightly closed bottles to stop their evaporation.

27. Give reason.

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

Ans → The goal of Alchemy was to find a magical, mythical substance of some wax, liquid or powder which on heating with a base metal iron or copper would turn into gold, the purest form of matter. This was called Philosopher's Stone. So, philosopher's stone is not exactly a stone.

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

Ans → Food processing is the process of transformation of raw food materials by physical and chemical means into marketable food materials that can be easily prepared and kept fresh for a long time.

Ex - Bread, Cheese, Jams, Jellies etc.

c) Cosmetics may contain preservatives, as one of their ingredients.

Ans → Preservatives may be used in ~~computers~~ cosmetics to prevent the growth of bacteria and mould. Parabens and formaldehyde-releasing cosmetics are most commonly used in cosmetics and personal care products.

29. What do you mean by sublimation? Why does the size of naphthalene balls decrease when left open? Describe an experiment to demonstrate the process of sublimation.

Ans → The size of naphthalene balls decrease when left open due to sublimation.

Sublimation is the process in which a solid directly changes to vapour directly on heating without going an intermediate liquid state.

Aim of the experiment: To prove that some solids sublime, the process of sublimation.

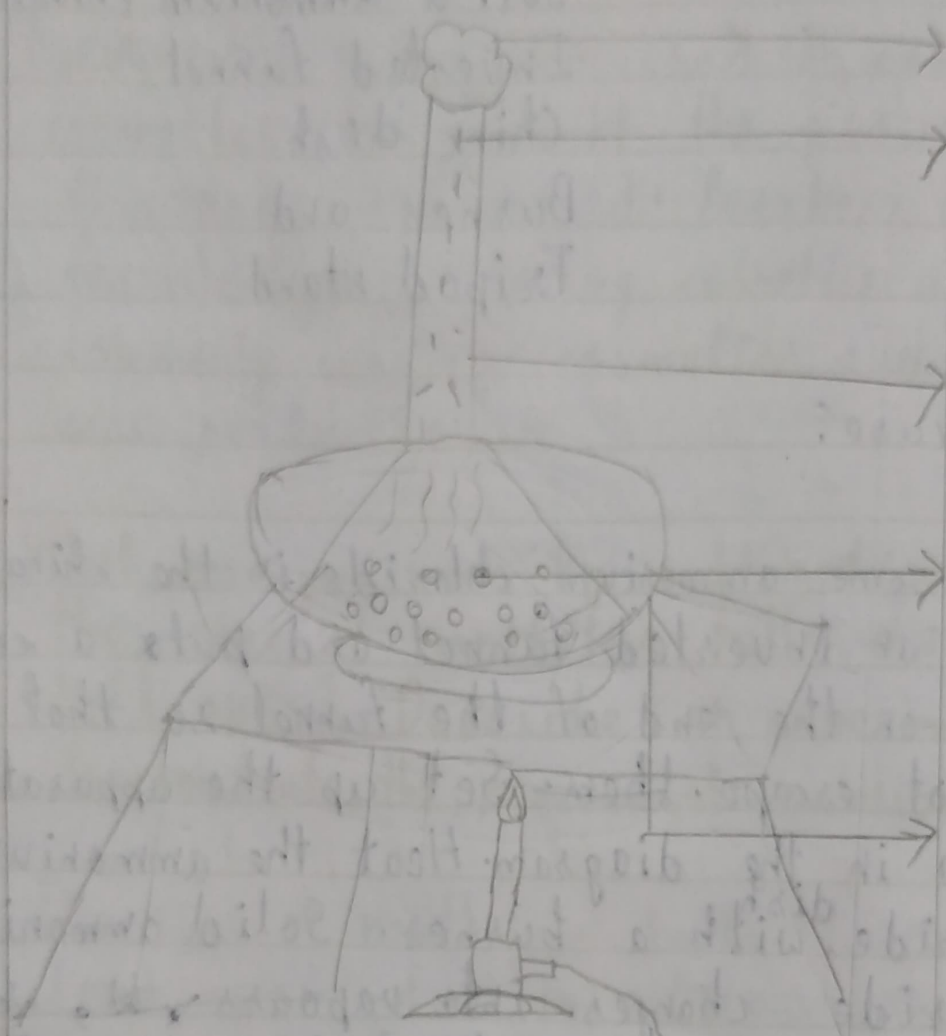
Materials required: Cotton, Sol
Solid ammonium chloride
Inverted funnel
China dish
Burner and
Tripod stand

Procedure:

Take some ammonium chloride in the china dish. Take an inverted funnel and put a cotton plug on the end of the funnel so that vapours do not escape. ~~them~~ Set up the apparatus as show in the diagram. Heat the ammonium chloride ^{dish} with a burner. Solid ammonium chloride changes into vapours ~~to~~, which when come in contact of the walls of the funnel gets cold and changes to solid and gets deposited there.

Observation:

The solid ammonium chloride ~~is~~ changed directly to vapours ~~on~~ without going an intermediate liquid state on heating.



- Cotton Plug
- Sublimate
(Ammonium Chloride)
- Inverted Funnel
- Solid Ammonium Chloride
- Evaporator Dish

Sublimation of Ammonium Chloride

The solid ammonium chloride is heated in a dish. It changes into vapour and is carried up into the inverted funnel. On the inner surface of the funnel, it changes back into solid ammonium chloride.

Conclusion: This proves that ammonium chloride sublimes on heating.

29. Tabulate a comparative chart - to differentiate between elements, compounds and mixtures. Differentiate them with ~~refe~~ reference to

- the term
- existence
- properties

Ans →	<u>Elements</u>	<u>Compounds</u>	<u>Mixtures</u>
a) the term	Pure substances made up of one kind of atoms only. Ex - Iron (Fe), Sulphur (S)	Pure substances made by the chemical combination of two or more elements. Ex - Iron sulphide (FeS)	Impure substances made up of two or more different elements or compounds. Ex - Air, Milk, Mixture of iron and sulphur

Elements

existence

Atoms are present on their own.

Ex- Iron and Sulphur exist on their own as elements of Iron and Sulphur.

Compounds

Components are present in definite proportions.
Ex- Iron and Sulphur chemically combine in a fixed ratio to form iron-sulphide.

Mixtures

Components are present in any proportion.
Ex- Iron and Sulphur are mixed in any ratio in the mixture of iron and sulphur.

properties

Definite set of properties.
Classified into metals, non-metals, metalloids and noble gases on the basis of their properties.

Definite set of properties.
Elements of a compound do not retain their original properties.

Do not have definite set of properties.
Components of a mixture retain their original properties.

30) 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 ~~Solid~~ The molecules of the solid are very tightly packed. They have the strongest intermolecular force of attraction and least intermolecular space while the molecules of a gas are very loosely packed. They are not bounded by a inter strong force and have the largest intermolecular space. So, solids have a definite ~~volume~~ shape and are highly rigid while gases have no definite shape and are least rigid.

b) Sugars can be distinguished from talcum powder using water.

Ans Sugar can be distinguished from talcum powder using water as sugar is completely soluble in water whereas talcum powder is insoluble in water and forms sediment when added to water.

c) Water on freezing turns into ice.

Ans Every pure substance has a fixed freezing point. When water gets cold enough the expanding water molecules began to form ice crystals. So, water on freezing turns into ice.