

LN 2: PHYSICAL AND CHEMICAL CHANGES

EXERCISE:

1. a). Define

1. a physical change
2. a chemical change

b). Give two examples for each of the above two changes

1. Physical change: A temporary change in which no new substance is formed, the composition of substance remains the same, though its state, shape and size may change.
2. Chemical change : A permanent change in which new substances are formed whose composition and properties are completely different from those of the original

2. What are reversible and irreversible changes? Give one example for each.

1. **Reversible change** : When a change in a substance can be reversed by changing the conditions, it is said to be a reversible change.

Example : Melting of ghee or wax.

2. **Irreversible change** : When a substance can not be brought back to its original state after a change, it is said to be an irreversible change.

Example : Souring of milk.

3. Mention a changes which is always

1. Desirable : Changes that are useful to man are desirable changes, e.g. change of milk into curd.
2. Undesirable : Change that brings about destruction is an undesirable change, e.g. floods and epidemics are undesirable changes.
3. Periodic : Changes that are repeated at regular intervals of time are called periodic changes, e.g. change of day and night.

4. Is burning a physical change or a chemical change?

Ans: Burning is a chemical change as new substance is formed with new properties and it cannot be reversed.

5. A burning candle shows both physical and chemical changes. How?

Ans: A burning candle produces wax vapours which solidify and form wax again is physical change. At the same time wax on burning produces water vapours and carbon dioxide which escape into the atmosphere which are new substances with new properties. It is a chemical change. Hence burning of candle shows both physical and chemical changes.

6. State three differences between evaporation and boiling.

Evaporation	Boiling
a. Evaporation is a slow process. b. Evaporation takes place from the surface of the liquid. c. Evaporation takes place at all temperature	a. Boiling is a fast process. b. Boiling takes place from all parts of the liquid c. Boiling takes place at a fixed temperature on heating.

7. State four differences between physical and chemical changes

Physical change	Chemical change
1. No new substances with new properties are formed. 2. It can be reversed by simple physical methods. 3. It is temporary change. 4. Energy is neither needed nor produced.	1. New substances with new properties are formed. 2. Change cannot be reversed by simple physical methods. 3. It is permanent change. 4. Energy is either needed or evolved.

8. What do you observe when?

1. Water is boiled

Ans: On boiling water changes into steam (gas) physical change.

2. A piece of paper is burnt

Ans: On burning piece of paper produces carbon dioxide and ash is left behind. It is a chemical change.

3. Some ice cubes are kept in a glass tumbler

Ans: Ice cubes (solid) turn into water (liquid) only state changes (physical)

4. An iron nail is kept in tap water for few days

Ans: Solid ammonium chloride on heating changes into vapours (change of state) is physical change.

5. A spoon of sugar is heated in a pan

Ans: We observe reddish brown coating on the nail called rust (entirely new

substance) is chemical change

6. Solid ammonium chloride is heated.

Ans: When a spoon of sugar is heated in a pan, black (charred sugar) (carbon) is seen. Is a chemical change.

7. A lighted match stick is brought near the mouth of the test tube containing hydrogen gas.

Ans: We observe that hydrogen burns at the mouth of test tube with blue flame and pop sound is heard. It is chemical change.

8. Quick lime is dissolved in water

The following two observations will be observed

(i) A hissing sound is observed.

(ii) The mixture starts boiling and lime water is obtained.

9. Little amount of curd is added to a bowl containing warm milk kept for five hours.

Ans: When a little amount curd is added to a bowl containing warm milk and kept for five hours, a permanent change occurred. The milk will change to curd. On boiling water changes into steam (gas) physical change.

9. Name a chemical change which takes place in presences of:

Heat :

1. Burning of paper.

2. Cooking of food need heat.

Light :

1. Formation of food by plants i.e. photosynthesis need light.

2. Hydrogen and chlorine react in presence of light

Electricity :

1. Water breaks into hydrogen and oxygen on passing electricity.

2. Sodium chloride solution breaks up into its components sodium and Chlorine on passing electric current through sodium chloride solution.

10. Fill in the blanks.

a. A new substance is always formed in a **chemical** change.

b. Melting of ice is a **physical** change.

c. When a candle burns, wax melts. Melting of wax is a **physical** change.

d. Chemical change occurs as a result of **rearrangement of atoms** between two substances.

- e. Burning of a fuel is a **Chemical** change
- f. Revolution of the earth around the sun is a **natural periodic** change.
- g. Growing of a seedling into a plant is **chemical** change.

11. State whether the following are physical or chemical changes.

- a. Glowing of a bulb - physical change
- b. Burning of sugar - chemical change
- c. Heating of water - physical change
- d. Growing of a piglet into a pig - chemical change
- e. Burning of wood - chemical change
- f. Passing electric current through a heater s rod - physical change
- g. Water cycle in nature - physical change
- h. Respiration in living beings - chemical change
- i. Shaping a piece of glass - physical change
- j. Lightning - chemical change
- k. Dissolving sugar in water - physical change
- l. Heating a mixture of iron filings and sulphur - chemical change
- m. Mixing oil with water - physical change
- n. Cutting wood into small pieces - physical change
- o. Photosynthesis - chemical change
- p. Digestion of food - chemical change
- q. Melting of wax - physical change
- r. Boiling of an egg - chemical change
- s. Slaking of lime - chemical change

Additional questions

I. Write short answers.

1. Name two reversible changes.
 - Melting of ice
 - Dissolving of salt in water.
2. Give two examples of periodic changes.
 - a. Swinging in pendulum
 - b. Rising and setting of the sun.
3. Give an example of desirable change which can also be undesirable
Ans: Using a car to cover a long distance is a desirable change but car Emissions can lead to air pollution which is undesirable.
4. What is man-made change?
Ans: Man-made changes are those that occur because of human activities e.g. changing the direction of flow of a river by building a dam.
5. Sublimation is classified as a physical change. Why?
Ans: Physical changes are those in which no new substance is formed. In sublimation there is direct conversion of solid into gas and vice versa. Thus the substance remains the same.

II. Give reasons for the following.

1. Dissolving salt in water is a reversible change.
Ans: Dissolving salt in water is a reversible change because salt and water can be again obtained by distillation process.
2. Ripening of fruits is a desirable change.
Ans: Ripening of fruits is a desirable change because this change is beneficial for mankind and we desire it to happen.
3. Melting of solid is a physical change.
Ans: Melting of solid wax is a physical change because no new substance is formed during this change.
4. Chemical changes are accompanied by changes in energy.
Ans: In a chemical change, molecules and atoms rearrange themselves to form new substances. This rearrangement involves some energy changes. It can either be absorption or evolution of energy.
5. Photosynthesis cannot take place at night.
Ans: Photosynthesis requires sunlight which is not available at night time. Therefore the process stops at night.

LN 3: ELEMENTS, COMPOUNDS AND MIXTURES

EXERCISE: 1

1. Write the symbols of helium, silver, krypton, antimony, barium.

Element	Symbol
Helium	He
Silver	Ag
Krypton	Kr
Antimony	Sb
Barium	Ba

2. Write the names of the following elements Na, C, Kr, U, Ra, Fe, C

Symbol	Element
Na	Sodium
C	Carbon
Kr	Krypton
U	Uranium
Ra	Radium
Fe	Iron
Co	Cobalt

3. Define:

a). Elements:

Ans: An element is the basic form of matter that cannot be broken down into simpler substances by chemical reactions.

b). Compounds:

Ans: A compound is a pure substance formed by the chemical combination of two or more elements in a fixed ratio by mass.

4. Name the main metal present in the following:

- a) Haemoglobin - Iron
- b) Chalk Calcium - Calcium
- c) Chlorophyll - Magnesium
- d) Chocolate wrappers - Aluminium

5. Give four examples of non-metallic elements.

Ans: Examples : Hydrogen, oxygen, nitrogen, carbon, chlorine, sulphur, phosphorus, etc.

6. What do you understand by

Metalloids : Metalloids are those substances which have some properties of metals and some of non-metals e.g. boron, silicon.

Noble gases : Noble gases are those which do not react chemically

with other elements or compounds e.g. helium, neon, etc.

7. Select elements and compounds from the following list:

Iron, plaster of paris, chalk, common salt, copper, aluminium, calcium oxide, cane sugar, carbon, silica, Sodium sulphate, uranium, potassium carbonate.

Element	compounds
1. Iron	1. Plaster of paris
2. Copper	2. Chalk
3. Aluminium	3. Common salt
4. Carbon	4. Calcium oxide
5. Uranium	5. Cane sugar
6. Silver	6. Silica
	7. Sodium sulphate
	8. Potassium carbonate
	9. Carbon dioxide

EXERCISE - II

1. State four differences between compounds and mixtures.

Compound	Mixture
<ol style="list-style-type: none">1. A compound is a pure substance.2. Compounds are always homogeneous.3. A compound has a fixed composition, i.e., it is formed when two or more pure substances chemically combine in a definite ratio by mass.4. Formation of a compound involves change in energy.5. Compounds have specific set of properties.6. Components of compounds can be separated only by complex chemical process.	<ol style="list-style-type: none">1. A mixture is an impure substance2. Mixture may be homogeneous or heterogeneous.3. A mixture has no fixed composition, i.e., it is formed by mixing two or more substances in any ratio with any chemical reaction.4. Formation of a mixture does not involve any change in energy.5. Mixture do not have any specific set of property.6. Components of mixtures can be separated by simple physical methods.

2. What are the characteristic properties of a pure substance? Why do we need them?

Pure substance :

Pure substances have a definite set of properties such as boiling point, melting point, density, etc. They are all homogeneous i.e., their composition is uniform throughout the bulk. Both elements and compounds are pure substances.

Pure substances are needed to :

- Manufacture medicines.
- To prepare chemicals in industry.
- For scientific purposes.
- To maintain the good health of human beings.

3. Give two examples for each of the following:

- a) Solid + Solid mixture
- b) Solid + Liquid mixture
- c) Liquid + Liquid mixture

a). Solid + Solid mixture : Sand and sugar,

- a. Sand and stone,
- b. sand and sugar.

b). Solid + Liquid mixture :

- c. Sand and water,
- d. Charcoal and water.

c). Liquid + Liquid mixture :

- e. Oil in water,
- f. Alcohol and water.

4. Define:

a). **Evaporation:** Is the process of converting a liquid into its vapours state either by exposing it to air or by heating.

b). **Filtration:** The process of separating solid particles from liquid by allowing it to pass through a filter paper is called filtration.

c). **Sublimation:** The process in which a solid changes directly into its vapours on heating is called sublimation.

d). **Distillation :** Distillation is the method of getting a pure liquid from a solution by evaporating and then condensing the vapours.

e). **Miscible liquids :** Homogeneous liquid-liquid mixtures are called miscible liquids.

f). **Immiscible liquids :** Heterogeneous liquid-liquid mixtures are called immiscible liquids

5. Name the process by which the components of following mixtures can be separated.

1. Iron and sulphur

Ans: Magnetic separation.

2. Ammonium chloride and sand

Ans: Sublimation

3. Common salt from sea water

Ans: Evaporation

4. Chaff and grain

Ans: Winnowing separates chaff (lighter) from heavier grains in two different heaps

5. Water and mustard oil

Ans: Mustard oil and water is liquid-liquid immiscible mixture and is separated

by separating funnel. Water being the heavier forms the lower layer.

6. Sugar and water

Ans: By evaporation in this process of converting a liquid into its vapour state by heating. Liquid is heated and water evaporates and sugar is obtained

7. Cream from milk

Ans: Centrifugation.

8. How will you separate a mixture of common salt, chalk powder and powdered camphor? Explain.

Ans: Camphor with sublimation. Chalk powder by Alteration then the residual left is common salt

9. How is distillation more advantageous than evaporation?

Ans: The advantage of distillation is that both components of the solid and liquid

10. Answer the followings.

1). What is chromatography?

Ans: The process of separating different dissolved constituents of a mixture by their absorption on an appropriate material is called chromatography

2). Why is it named so?

Ans: It is named so, because earlier it was used to separate mixtures containing coloured components only but these days this technique is applied to colourless substances too.

3). What are the advantages of chromatography?

a) A very small quantity of the substance can be separated.

- b) Components with very similar physical and chemical properties can be separated.
- c) It identifies the different constituents of a mixture.
- d) It also helps in quantitative estimation of components of a mixture.

4). Name the simplest type of chromatography .

Ans: The simplest type of chromatography is “Paper chromatography”.

5). On what principle is this method based?

Ans: Chromatography is based on differential affinities of compounds towards two phases i.e stationary and mobile phase.

6). What is meant by stationary phase and mobile phase in chromatography?

Ans: The filter paper acts as “stationary phase” while the solvent act as “mobile phase”.

9. On what principle are the following methods of separation based? Give one example of a mixture for each of the methods mentioned in which they are used.

Sublimation : Change of solid into vapours directly on heating and change of vapours into solid again

Example : Salt from ammonium chloride.

Filtration : The process of separating insoluble solid particles from a liquid by allowing it to pass through a filter is called Filtration. These filters allow liquids to pass through them but not solids. The insoluble solid left on the filter is called the residue, while the liquid which passes through the filter is called the filtrate.

Mixtures like chalk and water, clay and water, tea and tea leaves, sawdust and water, etc., are separated by this method.

Sedimentation and decantation : The settling down of suspended, insoluble, heavy, solid particles in a solid- liquid mixture when left undisturbed is called sedimentation. The solid which settles at the bottom is called sediment while the clear liquid above it is called supernatant liquid.

The process of pouring out the clear liquid, without disturbing the sediment, is called decantation.

Example : A mixture of sand and water.

Solvent extraction method : This method is used when one of the solid components is soluble in a liquid.

Example: A mixture of sand and salt can be separated by this method. Salt gets dissolved in water while sand settles down in the container. The salt solution is then decanted. Salt is separated from the solution by evaporation. In this way, they

can be separated.

Magnetic separation : This method is used when one of the components of the mixture is iron. Iron gets attracted towards a magnet and hence can be separated. Mixtures of iron and sulphur, iron and sand, etc., can be separated by moving a magnet over them. Iron gets attached to the magnet and is separated.

By using a separating funnel : It is a simple device used to separate the components of a liquid-liquid heterogeneous mixture.

Example: Kerosene oil and water. The mixture is placed in a separating funnel and allowed to stand for sometime. The components form two clear layers. Water being heavier forms the lower layer and oil being lighter forms the upper layer.

When the stopper of the funnel is opened, the heavier liquid trickles out slowly and is collected in a vessel. The stopper is closed when the bottom layer is entirely removed from the funnel. In this way, the two liquids are separated.

Fractional distillation : The process of distillation is used for separating the components of a homogeneous liquid-liquid mixture, like water and alcohol. This is based on the fact that alcohol boils at a lower temperature than water. The vapour of alcohol is collected and cooled while water is left behind in the original vessel. Thus, two liquids having different boiling points can be separated by distillation provided that difference in their boiling points must be 25°C or more.

10. Fill in the blanks:

1. Elements are made up of same kind of atoms.
2. Elements and compounds are pure substances.
3. In a mixture the substances are not combined chemically.
4. Clay is separated from water by the method called loading and decantation.
5. Crystallisation is a process to obtain a very pure form of a solid dissolved in a liquid.
6. Camphor and ammonium chloride can sublimate.

11. Give one word answers for the following:

- a. The solid particles which remain on the filter paper after the filtration residue.
- b. The liquid which evaporates and then condenses during the process of distillation distillate.
- c. The process of transferring the clean liquid after the solid settles at the bottom of the container decantation.
- d. The process by which two miscible liquids are separated fractional distillation.

Additional questions

1. Is food that we eat a mixture?

Ans: Yes food that we eat is a mixture of carbohydrates, proteins, fats, minerals and vitamins.

2. Name two methods by which solid-solid mixtures can be separated

- Winnowing
- Hand Picking

3. How can you separate iron metal from non-magnetic impurities?

Ans: We can separate iron metal from non-magnetic impurities by the method of magnetic separation.

4. Name the substance you will add to speed up sedimentation.

Ans: Alum

5. What is the difference between a pure substance and a mixture?

A pure substance consists of only one kind of matter, that is, all the particles are the same. It has a definite composition and constant properties. It cannot be split into simpler substances by physical means. All pure substances have characteristic melting and boiling points. A pure substance is either a compound or an element.

A Mixture contains two or more substances in any proportion which can be separated by physical methods.

Mixtures are generally of two types : Homogeneous and Heterogeneous.

In a mixture, the constituents can be present in any ratio. They do not have characteristic melting and boiling points. In a mixture each constituent retains its original properties. These can be separated by physical means.

6. What are the different types of mixtures?

Mixtures are basically of two types :

- **Homogeneous Mixtures** : The composition of these mixtures is uniform throughout the mixture. Besides the properties of the mixture are the same in all the parts of the mixture, e.g. sugar dissolved in water.
- **Heterogeneous Mixtures** : A heterogeneous mixture composition is not uniform throughout the mixture. The properties of the mixture are different in different parts of mixture e.g. chalk dissolved in water.

7. Why is filtration a better technique than sedimentation and decantation?

Ans : Filtration is a better technique than sedimentation and decantation

because it can separate very fine insoluble particles as compared to the latter. Besides the filtrate obtained is generally pure solvent. In decantation when we pour out supernatant liquid there are chances of their getting mixed up with solute particles.

8. How is distillation method different from evaporation?

Ans: In distillation and evaporation both the solution is allowed to boil by giving heat. Evaporation does not involves the collection of vapour thus obtained. Distillation involves the condensation of the vapour obtained to obtain pure solvent. This is done in specially designed condensation chamber.

9. What is centrifugation? Also write the principle on which it works.

- **Centrifugation** : It is a technique used to speed up sedimentation of fine particles suspended in a solid-liquid mixture.
- **Principle** : The principle of centrifugation is that an object, when spun at high speed, experiences an outward force away from the centre of rotation.

LN 4: ATOMS, MOLECULES AND RADICALS

EXERCISE:

1. Define the following terms:

c) Atom:

Ans: An atom is the smallest indivisible unit of matter. An atom is the smallest unit of matter.

d) Molecules

Ans: Molecule is the smallest unit of a compound (or an element) which always has an independent existence.

e) Radicals:

Ans: A radical is an atom of an element or a group of atoms of different elements that behaves as a single unit with a positive or negative charge on it.

f) Valency : It is the number of electrons donated or accepted by the valence shell of an atom during chemical combination.

g) Periodic table :

Ans: Periodic table represents the tabular arrangement of elements in horizontal rows called periods and vertical columns called groups in order to classify the elements and their systematic study.

2. Write the names of the elements present in the following compounds.

1. **Common salt** : Sodium, chlorine.
2. **Ammonia** : Nitrogen, hydrogen.
3. **Sulphuric acid** : Hydrogen, sulphur, oxygen.
4. **Glucose** : Carbon, hydrogen, oxygen.
5. **Sodium hydroxide** : Sodium, oxygen, hydrogen.
6. **Acetic acid** : Carbon, hydrogen, oxygen.

3. What does each of the following represent?

- e) 2CO_2 = 2 molecules of carbon dioxide.
- f) $2\text{H}_2\text{S}$ = 2 molecules of hydrogen sulphide.
- g) $5\text{H}_2\text{SO}_4$ = 5 molecules of sulphuric acid.
- h) 6NaNO_3 = 6 molecules of sodium nitrate.

4. Write the symbols and valencies of the following radicals:

Element	Symbol	Valency
h) Magnesium ion	: Mg^{2+}	2
i) Ammonium	: NH_4^+	1
j) Carbonate	: CO_3^{2-}	2
k) Nitrate	: NO_3^-	2
l) Oxide	: O^{2-}	2
m) Bisulphate	: HSO_3^-	1
n) Aluminium ion	; Al^{3+}	3

5. Name of the following radicals:

- 1. SO_4^{2-} = Sulphate
- 2. HCO_3^- = Bicarbonate
- 3. OH^- = Hydroxide
- 4. $\text{Cr}_2\text{O}_7^{2-}$ = Dichromate

6. Answer the following.

a). Name one ion for each of the valencies +1, +2, and +3

- 1. +1 = Sodium Na^+
- +2 = Calcium Ca^{2+}
- +3 = Aluminium Al^{3+}

b). Name one ion for each of the valencies -1, -2 and -3

- 2. -1 = Chlorine Cl^-
- 2 = Oxygen O^{2-}
- 3 = Nitrogen N_3^-

7. The valency of calcium is 2 Write the valencies of other radicals in the following compounds:

- a). CaO : $\text{O} = 2$ b). $\text{Ca}(\text{OH})_2$: $\text{OH} = 1$
- c). CaCO_3 : $\text{CO}_3 = 2$ d). CaCl_2 : $\text{Cl} = 1$

8. Write the name of the following compounds:

- a). $(\text{NH}_4)_2\text{SO}_4$: Ammonium sulphate
- b). $\text{Ca}(\text{NO}_3)_2$: Calcium nitrate
- c). FeS : Iron sulphate

- d). Na_3PO_4 : Sodium phosphate
 e). NH_4OH : Ammonium hydroxide
 f). CuCO_3 : Calcium carbonate
 g). HgO : Mercury oxide
 h). ZnCl_2 : Zinc chloride
 i). ZnS : Zinc sulphide
 j). H_2S : Hydrogen sulphide

9. Write the molecular formulae of : .

Compound	Formulae
a) Magnesium sulphide	Mg_2S
b) Magnesium oxide	MgO
c) Calcium chloride	Ca(OH)_2
d) Hydrogen chloride	HCl
e) Sulphuric acid	H_2SO_4
f) Iron (II) sulphide	FeS
g) Iron (III) sulphate	$\text{Fe}_2(\text{SO}_4)_3$
h) Nitric acid	HNO_3
i) Calcium phosphate	$\text{Ca}_3(\text{PO}_4)_2$
j) Aluminium sulphate	$\text{Al}_2(\text{SO}_4)_3$
k) Magnesium nitride	Mg_3N_2

10. The valency of sodium is one, write the molecular formula for the following

compounds of sodium.

- f) Sodium oxide : Na_2O
 g) Sodium sulphate : Na_2SO_4
 h) Sodium carbonate : Na_2CO_3
 i) Sodium hydroxide : NaOH
 j) Sodium nitrate : NaNO_3

11. What is variable valency? Give two examples of elements showing variable

valency?

Ans: There are some elements with more than one valency. They are said to have

variablevalency, e.g. Iron, copper.

12. Give the group number of following elements present in periodic table

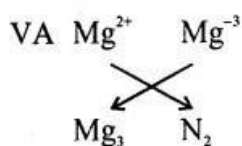
- a) Magnesium : IIA
- b) Carbon : IVA
- c) Sulphur : VIA
- d) Neon : Zero

13. An element belongs to VA what would be its valency? Name two such elements.

Ans: Elements of group VA has valency 3. Two elements : Nitrogen and phosphorus

14. An element belongs to group II. What would be its valency? write the formula of molecules of compounds it will form with elements in VA, VIA and VIIA

Valency 2.



VIA

Symbols		Valencies	
Magnesium	Oxide	Magnesium	Oxide
Mg	O	2^+	2^-

groups.

(i) Write the symbols

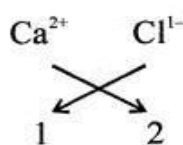
On the left hand side	On the right hand side
Calcium	Chloride
Ca	Cl

(ii) Write the valency of the symbols

At the top right corner	At the top right corner
Positive ion	Negative ion
Ca^{2+}	Cl^{1-}

(iii) Interchange the valency number

(Ignore the (+) and (-) signs)



(iv) Write the interchanged numbers at the base

But ignore the + and the - signs



Objective type questions.

1. Fill in the blanks:

- a) Atoms are **neutral**.
- b) An ion with positive charge is called **cation**.
- c) An ion with negative charge is called **anion**.
- d) 2H_2 means two **atoms** of hydrogen.
- e) **Ozone** is a triatomic molecule.
- f) Metals have **variable** valency.
- g) Chemical name of caustic soda is **sodium hydroxide** NaOH.

3. State the term for the following:

- b. The number of atoms present in a molecule of an element **atomicity**
- b.** The symbolic representation of a molecule **molecular formulae**
- c.** A group of atoms that react as a single unit **molecule**.
- d.** The combining capacity of an element **valency**.
- e.** The tabular arrangement of element in horizontal rows and vertical columns **periodic table**.

Additional questions

Answer the following

1. What does an atom consist of? Explain.

Ans: An atom consists protons, electrons and neutrons. Protons are positively charged, electrons have negative charge while neutrons have no charge.

2. Name two particles found inside the nucleus. What are they collectively called?

valence shell?

Ans: Protons and Neutrons. Mass number.

3. What you understand by the following terms valency, valence electrons and valence shell?

Valency : The capacity of the atom of an element to form chemical bond

Valence electron : The electrons present in the valence shell are called valence electrons.

Valence shell : The outermost shell of an atom is known as its valence shell.

4. State Dalton's atomic theory.

1. Matter is made up of tiny particles called atoms
2. Atoms are indivisible.
3. Atom can be neither be created nor destroyed.
4. Atoms of same element are identical in mass and properties
5. Atoms of different elements differ in mass and properties

5. Write the first twenty elements names , symbol and valency

Element	Symbol	Valency
1. Hydrogen	H	1
2. Helium	He	0
3. Lithium	Li	1
4. Beryllium	Be	2
5. Boron	B	3
6. Carbon	C	4
7. Nitrogen	N	3
8. Oxygen	O	2
9. Fluorine	F	1
10. Neon	Ne	0
11. Sodium	Na	1
12. Magnesium	Mg	2
13. Aluminium	Al	3
14. Silicon	Si	4
15. Phosphorous	P	3
16. Sulphur	S	2
17. Chlorine	Cl	1
18. Argon	Ar	0
19. Potassium	K	1
20. Calcium	Ca	2