CHAPTER ONE

MATTER AND THE ATOM:

MATTER:

- Matter is anything which has weight and occupies space, and examples are stone, wood, sand and air.

- Mather can exist or be found in three states and these are:

(i) The solid state.
(ii) The liquid state.
(iii) The vapour or the gaseous state.

THE SOLID STATE OF MATTER:

- A Solid has a definite or a fixed shape and volume, with examples being stone, iron and wood.
- The spaces between the molecules of a solid are very small, and the molecules or particles are tightly packed together.
- In the solid state of matter, the molecules are not free to move about since the attractive forces acting between them are very strong.

THE LIQUID STATE OF MATTER:

- Even though a liquid has a fixed volume, it does not have a definite shape.
- For this reason, a liquid therefore takes the shape of its container.
-The spaces between the molecules within a liquid are greater than those between that of a solid.
- The force of attraction between the molecules of a liquid is not as strong as that between the molecules of a solid.

THE VAPOUR STATE OF MATTER:

- Since a gas has no fixed shape or volume, it always takes the shape of its container. - The spaces between the molecules of a gas, are greater than those between the molecules of a liquid or a solid.

– Because the attractive forces acting between the molecules of a gas are the weakest, a gas always spreads out to fill its container.

CHANGE OF STATE:

- Matter can be changed from one state into another, provided the right conditions are provided.
- For example water can be changed into the vapour state by heating it, and the vapour can be changed back into water by cooling it.

MELTING:

-This is the process in which a solid changes into the liquid state.
- For example if ice which is water in the solid state is removed from the freezer, it melts into water which is a liquid.

VAPOURIZATION OR EVAPORATION:

- This is the process in which a liquid changes into the vapour state.-
- For example if water is heated continuously, it changes into the vapour state.

CONDENSATION:

-This is the process in which a gas or vapour is changed into the liquid state.
- For example if water vapour is cooled, it changes into water and the vapour is said to have been condensed into water.

SUBLIMATION:

- This is the process in which a solid changes directly into the vapour state, without passing through the liquid state.
- There are certain substances such as solid iodine, sulphur and camphor which changes directly from the solid state into the gaseous state, and they are said to have sublimed, or undergone sublimation. - For example if camphor or sulphur is heated, it will be changed directly into the vapour state.

ELEMENT:

- Certain substances such as water are made up of two or more different atoms, i.e. hydrogen and oxygen in the case of water.

- Other substances such as aluminum and oxygen , are made up of only one particular type of atom.
- A substance which is made up of only one particular type of atom is called an element, and elements may exist as solids, liquids or gases.
- While hydrogen is an example of a gaseous element , that of solid is iron and that of liquid is mercury.
- Elements can be represented by one or two letters, and these letters or letter used to represent elements are called chemical symbols.
- Given next are a few of the elements as well as their chemical symbols.

ELEMENT	SYMBOL
Aluminum	Al
Carbon	C
Calcium	Ca
Chlorine	Cl
Gold	Au
Hydrogen	H
Iodine	I
Iron	Fe
Zinc	Zn
Tin	Sn
Sulphur	S
Silver	Ag
Nitrogen	N
Oxygen	O
Potassium	K
Copper	Cu.