HH 10
19/10/21

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Holiday Homework

1) What are the three states of matter? Define each of them with two examples?

The three states of matter are:-

→ Solid :- A solid has a definite shape and a definite volume.
Ex - wood, stone, iron, ice etc.

→ Liquid :- A liquid has a definite volume but no definite shape. Ex - water, alcohol, mustard oil, fruit juice etc.

→ Gases :- A gas has neither a definite shape nor a definite volume. Ex - air, hydrogen etc.

2) Define interconversion of states of matter. What are the two factors responsible for the change of state of matter?

The Phenomenon of change of one state of matter into another and then back to the original state, without any

change in its chemical composition is called interconversion of the states of matter.

Two factors responsible for the change of state of matter are:-
(i) change in temperature
(ii) change in pressure.

If what happens to water if:-
(a) It is kept in a deep freezer.
(b) It is heated

a) When water is kept in a deep freezer, it gets cooled and change into ice at 0°C ice.

b) when water is heated, it evaporates

Explain the phenomenon of change of state of water.

Water is a liquid under ordinary condition 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.

4) Define :-

a) Diffusion
(b) Brownian motion.

a) The intermixing of two or more substances due to the motion of their particles in order to get a uniform mixture is called diffusion

b) The haphazard, random motion of suspended particles ~~which are also in random motion~~ on the surface of a liquid or in air is called Brownian motion.

5) a) State the law of conservation of mass.
The law of conservation of mass state that in a chemical reaction mass is neither be created nore be destroyed.

b) What do you observe when barium chloride solution is mixed with a sodium sulphate solution.

When barium ~~chloride~~ sulphate reacts with sodium ~~sulphate~~ chloride, it results in the formation of Barium Sulphate and sodium chloride. The reaction can be as

BARIUM CHLORIDE + SODIUM SULPHATE ⟶ BARIUM SULPHATE + SODIUM CHLORIDE

6) Give your difference between physical and chemical changes.

Physical Change	Chemical Change
1) No new substances are formed and the chemical composition of the substance remains the same.	1) A new substance is formed with entirely different chemical composition and properties are formed
2) The change can be reversible or irreversible	2) The chang is permanent.
3) The change can be reversed by simple physical methods	3) The change cannot be reversed by simple physical methods
4) Heat may or may not be released or absorbed	4) Heat or light energy are given out or absorbed

3) Give reason :-

(a) Freezing of water to ice and evaporation of water are physical changes

Freezing of water to ice and evaporation of water are physical changes because water can be brought back to its original form by

1) We can heat the ice to bring it back to water.

2) We can cool down the vapour to bring it back to water.

b) Burning of a candle is both a physical and chemical change.

Burning of candle melts the wax and hence physical state of wax has changed from solid to liquid. Again the wax combines with the atmosphere oxygen and changes to carbon dioxide

c) Burning of paper is a chemical change. This is because when we burn a paper it undergo the combustion

reaction and during the combustion state of the substance it changes from its solid state or ~~substance it changes from its solid~~ liquid state to gaseous state.

d) Cutting of a cloth piece is a physical change though it cannot be recovered
When we cut a cloth, there is only a change in the physical state because there is only the cutting of a cloth which does not involve any chemical change. shape or size change

8) Explain. making chapati from flour is Both physical and chemical change
The physical changes occurred during the making

10) Differentiate between

a) Pure and impure substance

Pure substances

1) Pure substances have definite composition and definite physical and chemical properties.
2) They are all homogeneous
3) Examples: Elements and compounds.

Impure Substances

1) Impure substances are made up of two or more pure substances mixed together in any proportion
2) They may be homogeneous or heterogeneous
3) Ex - air, sea water, petroleum etc.

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b) Homogeneous And Heterogeneous mixtures

Homogeneous Mixtures	Heterogeneous Mixtures
1) Homogenous mixtures have a uniform composition throughout the mixtures	1) Heterogeneous have a mixed composition which may vary from point to point.
2) Components are not visible to the naked eye	2) Components can be seen easily
3) The whole mixtures is in the same phase	3) Substances can be of two phase and layers may separate.
4) Particles size is often at atomic or molecular level.	4) Heterogeneous mixtures have large particles sizes.

11) How is sodium chloride different from its constituent elements?

The properties of sodium chloride are completely different from those of sodium and chlorine. Sodium is soft, highly reactive metal. Chlorine is a poisonous non-metallic gas while sodium chloride is a very useful non-poisonous compound which is added to our food to get minerals and also to add taste it.

12) Give one example for each of the following types of mixtures

a) Solid - Solid homogenous mixture
alloy of metals

b) Solid - Liquid heterogeneous mixtures:
Sand and water

c) Miscible liquids
water and ethanol

d) Tap water.

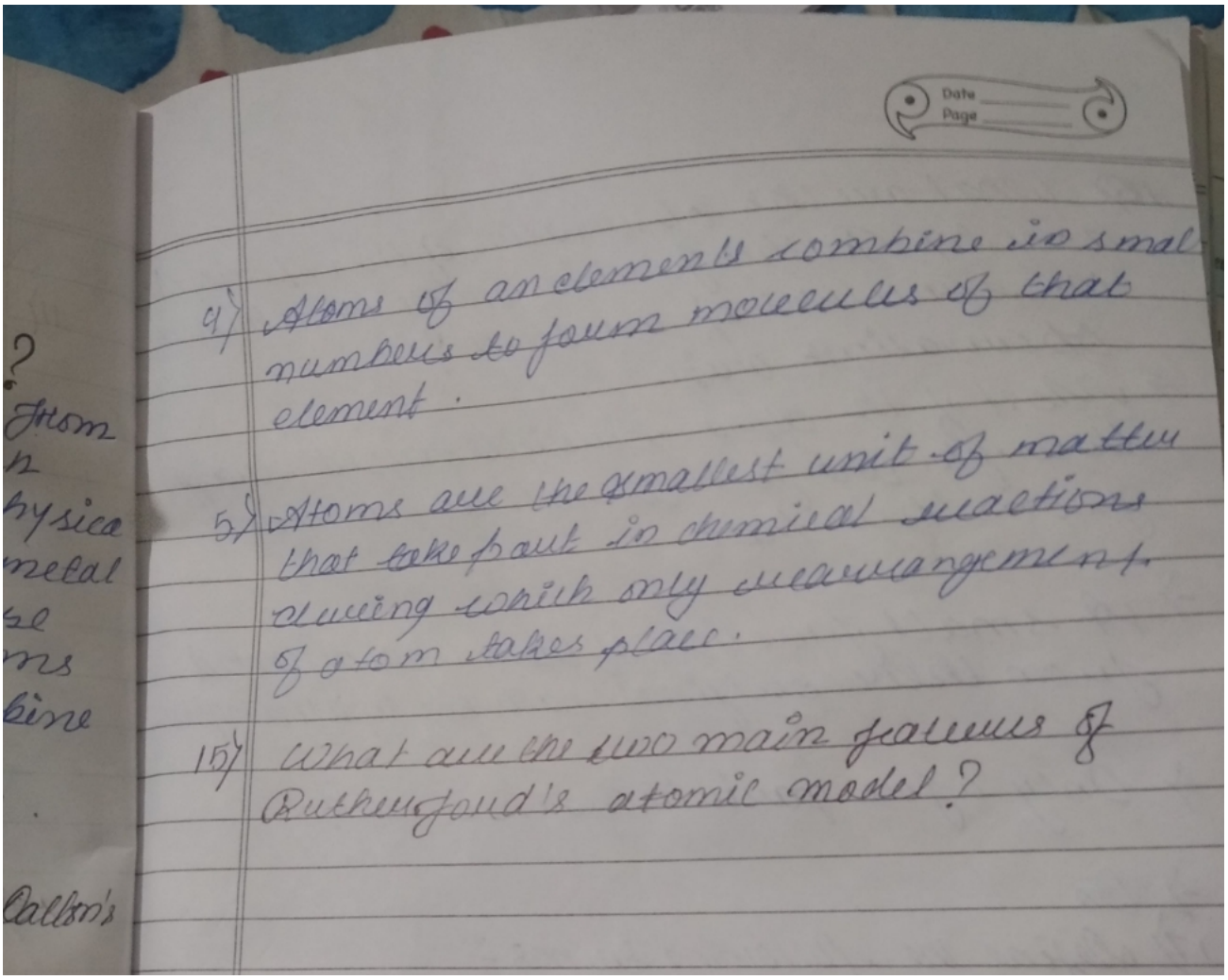
13) Why is iron-sulphide a compound?
Iron and sulphur are both elements from the periodic table of elements. As such each one has its own unique set of physical and chemical properties. Iron is a metal while sulfur is a nonmetal. When these two are heated together, the iron atoms combine with the sulphur atom combine with the sulphur atoms to make a compound known as iron sulphide.

14) Mention briefly the salient features of Dalton's atomic theory?

1) Matter consists of very small and indivisible particles called atom

2) Atoms can neither be created nor be destroyed

3) The atoms of an elements are identical in all ~~as~~ respects



4) Atoms of an elements combine in small numbers to form molecules of that element.

5) Atoms are the smallest unit of matter during which any rearrangement of atom takes place.

15) What are the two main features of Rutherford's atomic model?

16) What are the observation of the experiment done by Rutherford in order to determine the structure of an atom?

Observations are:-

→ Most of the alpha particles passed straight through the foil without any deflection from their path.

→ A small fraction of them were deflected from their original path by small angles.

→ Only a few particles bounced back.

17) Define the following terms:-

a) Atomic number:-

The numbers of protons present in the nucleus of the atom of an element is is called its atomic number.

b) Mass number:-

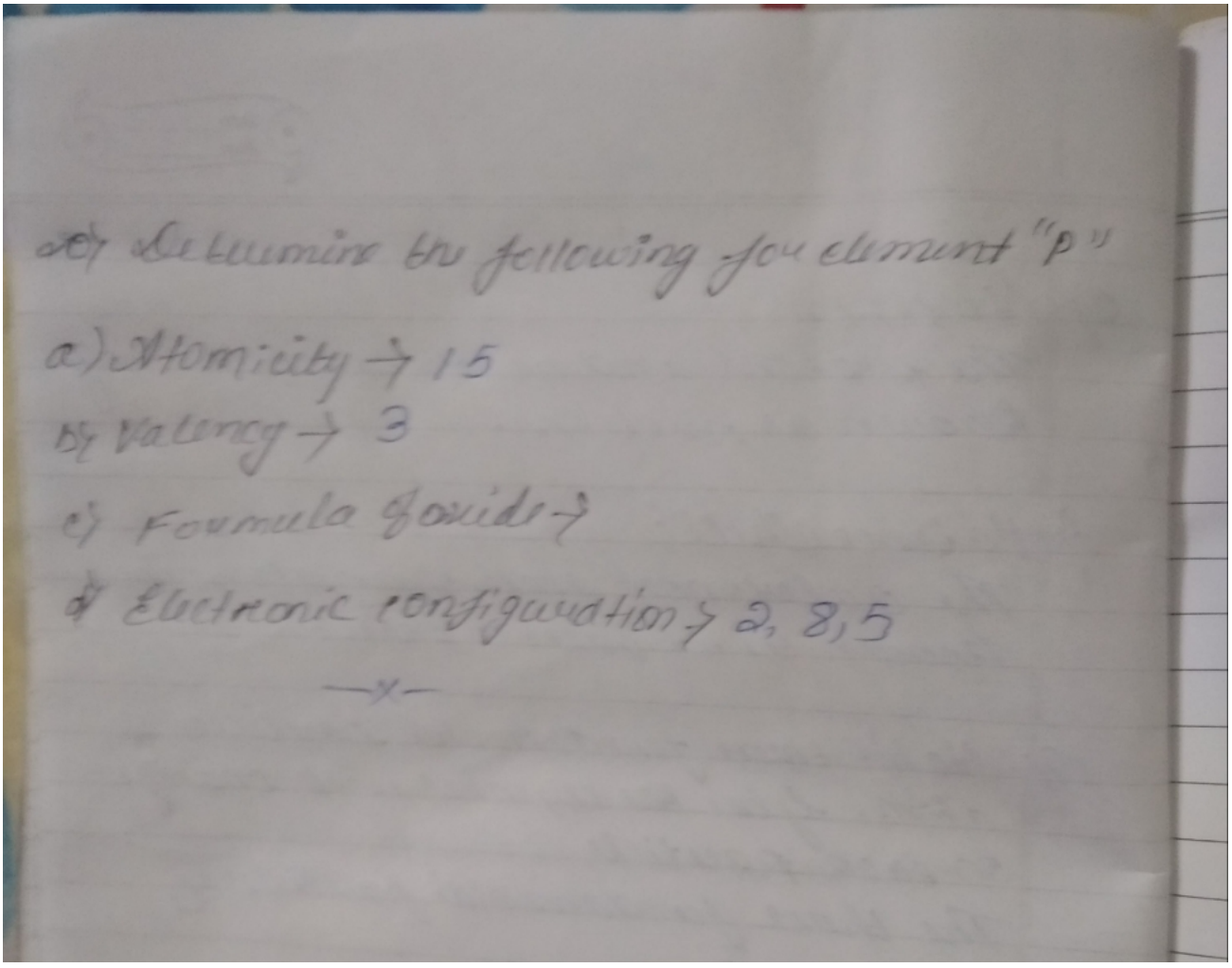
The sum of the number of protons and the number of neutrons in the nucleus of the atom of an element is called the mass number of that element.

c) Nucleons :-
The protons and neutrons collectively known as nucleons.

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

18) Name three fundamental particles of atom. Give the symbol with charge on each particle
The three fundamental particles of atom are :-
→ Electron (e^-)
→ Proton (p^+)
→ Nucleons (n^0)

19) Name the following elements :-
a) An element containing half the electrons in third shell than second shell.


Determine the following for element "P"

a) Atomicity → 15

b) Valency → 3

c) Formula of oxide →

d) Electronic configuration → 2, 8, 5

—x—