

Exercise

HW

11/5/21

A- objective questions.

1. Write true or false for each statement :

(a) The molecules of each substance are identical. - ~~false~~ false

(b) The inter-molecular forces are effective at all distances between the two molecules. - false

(c) The molecules in a substance are in random motion. - True

(d) In a gas, the molecules can move anywhere in space. - True

(e) Liquids are less viscous than gases. - false

2- Fill in the blanks

- (a) All the molecules of a substance are identical
- (b) The inter-molecular spacing is least in solids more in liquids and still more in gases.
- (c) The molecular motion in liquid and gas is in zig-zag path.
- (d) In a solid, the molecules vibrate on either ^{side} but they remain at their fixed positions.
- (e) The inter-molecular forces are the weakest in gases
- (f) A solid exerts pressure downwards on its base
- (g) Gases are least dense
- (h) Solids are most rigid.

3. Select the correct alternative

- a. The diameter of a molecule is approximately
 - iii- 10^{-10} m
- b. The inter molecular forces are strongest in,
 - i- Solids
- c. The molecules
 - iii- In a liquid, move within its boundary
- d. Solids are
 - i- more dense
- e. The inter molecular force in liquids are
 - iii- weaker than in solids

4- Match the following column.

Column-A	Column-B
(a) The molecule is composed of	(i) does not exist free in nature
(b) Ice, water and water vapour	(ii) Can vibrate only upto about 10^{-10} m from their mean positions.
(c) An atom	(iii) atom
(d) Gases	(iv) are the three states of water
(e) The molecules of a solid	(v) occupy space

Answers

- (a) - iii
- (b) - iv
- (c) - i
- (d) - v
- (e) - ii

Answers

B) short / long answer questions

1-A- Matter is defined as anything which occupies space and has mass. ~~Matter~~ It is made up of atom and molecule.

2-A- The three states of matter are solid, liquid and gas.

3-A- A molecule is the smallest particle which can freely exist in nature.

4-A- Example of a monoatomic and a diatomic molecule -:

- i) ~~B~~ monoatomic molecule - neon, argon.
- ii) Diatomic molecule - oxygen, hydrogen.

5-A- The molecules are separated from each other with spaces called inter-molecular spacing.

6-A- We have to take 100 ml of water and we have to add 20 gram of salt. When it dissolve in water it shows that the particles of salt have occupied the space between the particles of water.

7A Inter-molecular force are strong force which are in solids.

8A The force of attraction between the particles of same substances is called the force of cohesion and the force of attraction between the particles of two different substances is called the force of adhesion.

9A The three characteristics of ~~Solid, Liquid and gas~~ which determine its solid, liquid and gas are

Solid	Liquid	gas
<ul style="list-style-type: none"> • A solid has a definite shape and a definite size 	<ul style="list-style-type: none"> • A liquid has a definite volume, but not a definite shape 	<ul style="list-style-type: none"> • A gas has not neither a definite volume nor a definite shape
<ul style="list-style-type: none"> • The molecules in a solid are closely packed 	<ul style="list-style-type: none"> • The molecules in a liquid are loosely packed 	<ul style="list-style-type: none"> • The molecules in a gas are wide apart
<ul style="list-style-type: none"> • The inter-molecular force are very strong 	<ul style="list-style-type: none"> • The inter-molecular force are less strong 	<ul style="list-style-type: none"> • The inter-molecular force are weak

10) A- Solids, liquids and gases differ in their following properties -:

Size	Shape	Density
Solid \rightarrow definite size	Solid \rightarrow definite shape	Solid
Liquid \rightarrow indefinite size	Liquid \rightarrow indefinite shape	Liquid \rightarrow definite volume
Gas \rightarrow indefinite size	Gas \rightarrow indefinite shape	Gas \rightarrow indefinite volume



11-A \rightarrow The molecules in a substance are in motion and they follow a Zig-Zag path to move.

12-A \rightarrow We have to take a breaker and fill it partly with water. We need to add some lycopodium powder in the breaker with a glass rod. Then we should take out few drop of water and place it with a table lamp and we will observe that the fine particles of lycopodium powder move rapidly in a random manner and their path is zig-zag.

13A →

Properties of solid	Properties of liquid	Properties of gas
1) A solid has a definite shape and size	1) Liquids have a definite volume, but no definite shape	1) A gas has neither a definite shape nor a volume
2) A solid can not be compressed	2) Liquids are almost incompressible	2) Gases are highly compressible
3) A solid cannot flow	3) Liquids can flow	3) Gases can flow
4) A solid is highly dense	4) Liquids are viscous	4) Gases are not rigid
5) A solid has its constituent molecules very closely packed	5) Liquids have only one free surface	5) A gas has no free surface

14A → The solid has a definite volume and a ~~definite~~ definite shape because the molecules in a solid are closely packed.

15A → Liquid has no definite shape but has a definite volume because the attractive force between the molecules of a liquid is not as strong as it is in solids, so they are loosely packed and are not fixed.

16A → A gas has neither a definite volume nor a definite shape because the molecules of a gas lie much farther apart than they lie in a liquid or a solid.

17-A →

Molecular model of solid	Molecular model of liquid	Molecular model of gases
1) There is a strong force of attraction between the molecules of a solid. 2) They are closely packed 3) The molecules vibrate on either side	1) The attractive force between the molecules of a liquid is not as strong as it is in solids. 2) The inter-molecular space	1) There is negligible force of attraction between the molecules. 2) The molecules of a gas move
4) The molecules of a solid are packed tightly.	in a liquid is greater than that in a solid. 3) The motion of molecules in a liquid is irregular and random.	much faster than they move in liquids.

18A →

Properties	Solids	Liquids	Gases
(a) Compressibility	Not Compressible	Negligibly Compressible	Highly Compressible
(b) Fluidity	Not possible	Can flow	Can flow
(c) rigidity	highly rigid	less rigid	not rigid
(d) Expansion on heating	low	more than solids	more than liquid.

19A →

The change in state of matter of a substance from solid to liquid or from liquid to gas is brought about by imparting heat energy to it at a constant temperature.

20A →

(a) Solid $\xrightarrow[\text{heat absorbed}]{\text{melting}}$ liquid

(b) liquid $\xrightarrow[\text{heat absorbed}]{\text{boiling}}$ Gas