

# TEST YOURSELF

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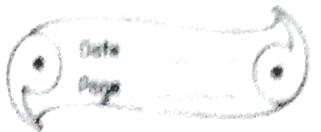
## A. Objective Questions

1. Write True or False for each statement:

- a) The molecules of each substance are identical. [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.
- 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 downward on its base.
- g) Gases are least dense.



n) Solids are most rigid.

3. Select the correct alternative:

(a) The diameter of a molecule is approximately

Ans - iii)  $10^{-10}$  m

(b) The inter-molecular forces are strongest in

Ans - i) solids

(c) The molecule

Ans - iii) in a liquid, move within its boundary.

(d) Solids are

Ans - i) more dense

(e) The inter-molecular forces in liquid are

Ans - ii) weaker than in solids

4. Match the following columns:

Column A

Column B

(a) A molecule is composed  
of

(i) does not exist free in  
nature

(b) Ice water and water  
vapour.

(ii) can vibrate only up to about  
 $10^{-10}$  m from their mean position

(c) An atom

(iii) atoms

(d) Gases

(iv) are the three states of water

(e) The molecules of  
a solid

(v) occupy space

B. Short / long answer questions

i. Define matter. What's its composition?

Ans - Matter is anything that occupies space and has mass.

Q. Matter is composed by a large number of molecule  
Ans.

2. Name the three states of matter

Ans - The three states of matter  
• solid, liquid, gas

3. What is molecule?

Ans - A group of atom joined together is called a molecule.

4. Mention one example each of a monoatomic and a diatomic molecule.

Ans - Ex of mono atomic molecule - Ne

Ex of diatomic molecule - H<sub>2</sub> (Two atoms of Hydrogen)

5. What do you mean by inter-molecular spacing?

Ans - The spacing between molecules of matter is called intermolecular space.

6. Describe a simple experiment to illustrate the existence of inter-molecular spacing.

Ans - Take 100 ml of water in a measuring cylinder. Add 20 grams of salt in water and stir it well so as to dissolve the well in water. It is noticed that the level of water does not change. It shows that the particles of salt have occupied the spaces between the particles of water.

7. What do you mean by intermolecular forces?

Ans - Each particle of matter always attracts other particles in its surroundings. The force of attraction

Between the constituent particles is called inter-molecular force of attraction.

Q. State three characteristics of molecules of matter which determine its solid, liquid and gaseous state.

Ans - 1) They are very small in size.

2) They have spaces between them

3) They are in constant random motion.

10. How do solids, liquids and gases differ in their following properties?

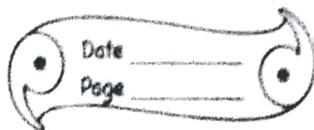
Ans-a) Size: Solid has a definite size (length, area and volume). Liquid more a little bit which is that it has little space and that's why a little bit in size. And gases have a lot of space so they can move anywhere but small in size.

b) Shape: Solid has a definite shape. Liquid doesn't have a definite shape. Gas does not have neither a definite volume nor a definite shape.

c) Density: Solid is highly dense. The liquid that weighs more is more dense. For the gas the density can vary over a wide range because the molecules are free to move.

11. The molecules in a substance are in motion. What type of path do they follow?

Ans - The molecules that are in motion follow the zig-zag path.



Zag path.

- Q2. Describe a simple experiment to illustrate that molecules are not arrest, but they constantly move.

Ans- Put some of water on a glass and tried to move it from side to side. We can see that it move but little bit. It means that things have molecule whether its solid, liquid or gas. It move constantly; never stay an arrest.

- Q3. Write down five general properties of solids, liquids and gases.

→ properties of solid.

Ans- • A solid can not flow.

• A solid is highly dense

• A solid cannot compressed

• A solid has a definite shape

• It has a definite size

→ Properties of liquid.

• Liquid have a definite volume

• Liquid does not have a definite shape.

• Liquids are almost incompressible

• Liquids can flow

• Liquids are less rigid

→ Properties of gases

## DISTINGUISHING PROPERTIES

1. Mass
2. Shape
3. Volume
4. Compressibility
5. Fluidity
6. Rigidity
7. Diffusion
8. Intermolecular Force
9. Packing of molecule
10. Expansion on heating
11. Pressure

## PROPERTIES OF SOLIDS, LIQUIDS,

### SOLIDS

Definite

Definite

Definite

Not compressible

Not possible

Highly rigid

Slow

Strongest

Very closely packed

Low

Only at base downwards

### LIQUIDS

Definite

Acquires the shape of the container

Definite

Negligibly compressible

Can flow

Less rigid

Fast

Slightly weaker than in solids

Less closely packed

More than solids

At all points in all directions inside the boundary of the liquid

Abs., Def.,  
Gases

Definite

Acquires shape of the container

Indefinite  
acquires volume & shape  
Highly compressible

Can flow

Not rigid

Very fast

Negligible

Least closely packed

More than liquids

On the walls of the container  
- or



- Gas does not have a definite shape
- It does not have a definite volume
- Gases are highly compressible.
- Gases are not rigid
- A gas has no free surface.

14. Give the molecular model for a solid and use it to explain why a solid has a definite volume and a definite shape.

Ans - The molecules in solid has a definite shape and volume because it is closely packed.

15. Describe the molecular model for a liquid. How does it explain that a liquid has no definite shape, but has a definite volume?

Ans - It has a definite volume and not a shape but if can move little bit that's why it has a volume.

16. A gas has neither a definite volume nor a definite shape. Describe the molecular model to explain it.

Ans - It has a definite volume and shape because it is free to move.

17. Distinguish between the three states of matter - solid, liquid and gas on the basis of their molecular models.

Ans -

18. Distinguish between solids, liquids and gases on the basis of their following properties:

- (a) Compressibility: Solid is not compressible. Liquid is negligibly compressible. Gas highly compressible.
- (b) Fluidity: Solid is not possible. Liquid and gas can flow.
- (c) Rigidity: Solid is highly rigid. Liquid is less rigid and gas is not rigid.
- (d) Expansion on heating: Solid is low. Liquid is more than solids and gas is more than liquid.
19. What do you mean by change of state of matter?  
Explain:
- (a) The change of a solid into a liquid at a constant temperature: If we will put a ice outside it will melt which is because of a room temperature. If it would be hot it might easily melt.
- (b) If will boil that cold water the steam that get outside is liquid + gas.
- ∴ So from this process we learn that solid is to liquid is to gas.
20. Complete the following:
- a) Solid melting  $\rightarrow$  liquid
- b) Liquid boiling  $\rightarrow$  gas