Thursday

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. 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

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

1. Define matter. What is its composition?

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

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1. Matter is composed by a large number of molecules.

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 monoatomic molecule - Neon
Ex of diatomic molecule - H_2 (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 gram of salt in water and stir it well so as to dissolve the salt 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 intermole-cular 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 alot of space so they can more anywhere but small in size.

b) Shape: Solid has a definite shape. Liquid doesn't have a definite shape. Gas does have neither a definite volume or a definite shape.

c) Density: Solid is highly dense. The liquid that weigh 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 rig-

zag path.

12. Describe a simple experiment to illustrate that molecules are not at rest, 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 a little bit. ~~now~~ It means that things have molecule weather its solid, liquid or gas. It move constantly, never stay an at rest.

13. 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	SOLIDS	LIQUIDS	GASES
1. Mass	Definite	Definite	Definite
2. Shape	Definite	Acquirees the shape of the container	Acquirees the shape of the container
3. Volume	Definite	Definite	Indefinite / acquirees the volume available
4. Compressibility	Not compressible	Negligibly compressible	Highly compressible
5. Fluidity	Not possible	Can Flow	Can Flow
6. Rigidity	Highly rigid	Less rigid	Not rigid
7. Diffusion	Slow	Fast	Very Fast
8. Intermolecular Force	Strongest	Slightly weaker than in solids	Negligible
9. Packing of molecule	Very closely packed	Less closely packed	Least closely packed
10. Expansion on heating	Low	More than solids	More than Liquids
11. Pressure	Only at base downwards	At all points in all directions inside the boundary of the liquid	On the walls of the container

- 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~~ because it 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 gas 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) It will boil that cold water the steam that get outside is liquid to gas.

∴ So from this process we learn that solid is to liquid is to gas.

20. Complete the following:

a) Solid melting > liquid

b) Liquid boiling > gas