

MATTER

SOLVED QUESTIONS

1. Tick (✓) the most appropriate answer.

1. Gases have

- (a) infinite free surfaces (b) two free surfaces
(c) one free surface (d) no free surfaces

2. Solids have

- (a) definite volume, but no definite shape
(b) definite shape, but no definite volume
(c) definite shape and definite volume
(d) neither definite shape, nor definite volume

3. The state of matter which can be easily compressed is

- (a) solid (b) liquid (c) gas (d) none of the above

4. The intermolecular spaces are minimum in case of

- (a) solids (b) liquids (c) gases (d) only water

5. The intermolecular forces are maximum in case of

- (a) copper (b) water (c) glycerine (d) hydrogen

6. The kinetic energy of molecules at room temperature is minimum in

- (a) wood (b) alcohol (c) helium (d) carbon dioxide

7. The constituents of a compound

- (a) cannot be separated
(b) can be separated by physical means
(c) can be separated by chemical means
(d) none of the above

8. The smallest independent unit of matter is a/an

- (a) element (b) atom (c) molecule (d) compound

9. An element is made up of

- (a) two kinds of atoms
(b) many kinds of atoms
(c) one kind of atoms
(d) one kind of molecules

10. The symbol of a molecule of nitrogen is

- (a) N (b) N₂ (c) 2N (d) none of the above

Ans. 1. (d) 2. (c) 3. (c) 4. (a) 5. (a) 6. (a) 7. (c) 8. (c) 9. (c) 10. (b)

2. Statements given below are incorrect. Write correct statements:

1. Smallest unit of matter which may or may not have an independent existence, is called a molecule.

Ans.

Smallest unit of matter which may or may not have an independent existence is called an atom.

2. Noble gases can react with each other.

Ans.

Noble gases do not react either with each other or any other elements.

3. A molecule of a compound contains atoms of different elements, combined together in different ratios.

Ans.

A molecule of a compound contains atoms of different elements, combined together in a definite ratio.

3. Find the odd one out. Give a reason for your answer.

1. Magnesium, mercury, manganese and silver.

Ans.

Mercury: Magnesium, manganese and silver are solids at room temperature and mercury is in the liquid state.

2. Hydrogen, oxygen, nitrogen and helium.

Ans.

Helium: Helium is a noble gas while hydrogen, oxygen and nitrogen are not noble gases.

3. Cu, Fe, He and H₂

Ans.

Helium: Helium is an inert gas while copper, iron and hydrogen are reactive elements.

4. Sulphur, phosphorus, graphite and silicon.

Ans.

Graphite: Graphite is a form of carbon which is a good conductor of electricity while sulphur, phosphorus and silicon are elements which are bad conductors of electricity.

5. Solid, vacuum, liquid and gas

Ans.

Vacuum: Solid, liquid and gas are the three states of matter while vacuum is a space with no substances.

4. Match the statements in Column A with those in Column B.

Column A	Column B
1. Melting	a. change from vapour to liquid
2. Evaporation	b. change from liquid to solid
3. Condensation	c. change from solid to liquid
4. Sublimation	d. change from solid to gas
5. Solidification	e. change from liquid to gas

Ans. 1. (c) 2. (e) 3. (a) 4. (d) 5. (b).

5. Give reasons for the following:

1. We need to classify matter.

Ans.

We have a variety of things around us and to study all these individually, it is an impossible task. To simplify the process, we need to classify or group them together. Thus classification makes the study of matter easy, systematic and more scientific.

2. Electricity is not considered as matter.

Ans.

Electricity is not considered as matter because it neither has mass nor occupies space.

3. Milk is a mixture.

Ans.

Milk is an impure substance formed by the physical combination of lactose, sugar, fat and water. So it is a mixture.

4. Mixtures do not have fixed melting or boiling points.

Ans.

Mixtures do not have fixed melting and boiling points because their constituents can be mixed in varying ratios.

5. Constituents of a mixture can be easily separated by physical methods.

Ans.

Constituents of a mixture can be easily separated by physical methods because they are not combined chemically.

6. (i) Define solid.

(ii) On the basis of molecular theory, explain why solids have definite shape and definite volume.

Ans.

(i) Solids are substances which have definite shape and definite volume such that it can have any number of free surfaces.

(ii) In solids, molecules are closely packed and arranged in a fixed pattern. The intermolecular spaces between the molecules are very small and they have strong intermolecular forces of attraction. Thus, solids have definite shape and volume.

7. Why can liquids easily take the shape of a container but not solids?

Ans.

In liquids, molecules are loosely packed hence, they can interchange their positions. Therefore, liquids easily take the shape of the container. Solids have strong intermolecular forces of attraction between their molecules and they cannot interchange their positions. So, they cannot take the shape of the container.

8. Why a cylinder can not be filled with a gas?

Ans.

In gases, the molecules are very far apart from each other. Due to the large intermolecular spaces, intermolecular forces are almost negligible. So, the molecules of gases can move freely in all possible directions and spread out in all directions. Due to this reason gases cannot be filled in a cylinder.

9. (i) State four important properties of metals.

(ii) Write the symbols of the following metals:

(a) Magnesium (b) Potassium (c) Iron (d) Silver (e) Lead (f) Sodium

(iii) Name the metals with the following symbols :

(a) Na (b) Al (c) Mn (d) Ni (e) Pt (f) Au

Ans.

(i) Four important properties of metals are:

(i) They are generally solids at room temperature.

(ii) They are lustrous.

(iii) Metals produce a sonorous sound on being hit.

(iv) Metals are good conductors of heat and electricity.

(ii) Magnesium — Mg, Potassium — K, Iron — Fe, Silver — Ag,
Lead — Pb, Sodium — Na

(iii) Na — Sodium, Al — Aluminium, Mn — Manganese Ni — Nickel,
Pt — Platinum, Au — Gold

10. (i) State four important properties of non-metals.

(ii) Write the symbols of the following atoms of non-metals :

(a) Silicon (b) Hydrogen (c) Chlorine (d) Nitrogen

(iii) What do the following symbols stand for? (a) I (b) O (c) S (d) Br (e) P (f) F

Ans.

(i) Four important properties of non-metal.

(i) Non-metals are gases or liquids or solids at room temperature.

(ii) They have no lustre.

(iii) They do not produce any sonorous sound on being hit.

(iv) They are generally bad conductors of heat and electricity.

(ii)

Non-metals	Symbols (atoms)
Silicon	Si
Hydrogen	H
Chlorine	Cl
Nitrogen	N

(iii)

Symbols	Name	Symbols	Name
I	Iodine	Br	Bromine
O	Oxygen	P	Phosphorus
S	Sulphur	F	Fluorine