CHEMISTRY

BOOKS - ICSE

MATTER

Check Your Progress Write True Or False Correct The False Statements

1. Molecules in motion possess energy called kinetic energy.

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2. Fill in the blank spaces.

The empty space between the molecules is called_____space.(molecular/ intermolecular)

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3. Write true or false for the following statements.

The force of attraction between molecules is called intermolecular force of attraction.

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4. State whether it is True or False: The intermolecular force of attraction in liquids is as strong as that in solids.

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5. The molecules in gases frequently collide with each other and the sides of the container in which they are kept.

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Exercise Tick The Most Appropriate Answer

1. In which of the following is the intermolecular space between molecules the least?

A. solids

B. liquids

C. gases

D. none of these

Answer:

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2. What happens to the intermolecular force of attraction as the intermolecular space between molecules decreases?

A. It decreases.

B. It increases.

C. It does not change.

D. It may increase or decrease.

Answer:

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3. In which of the following is the intermolecular force the weakest?

A. solids

B. liquids

C. gases

D. none of these

Answer:

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4. Which form of energy do the molecules of a substance gain when it is heated?

A. electrical

B. chemical

C. water

D. kinetic

Answer:

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5. Which of the following statements is false with respect to the law of conservation of mass?

A. Matter is neither created nor destroyed during a chemical reaction.

B. There is no change in mass during a chemical reaction.

C. The mass of the products equals the mass of the reactants in a chemical reaction.

D. There is a change in mass during a chemical reaction.

Answer:

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Exercise Fill In The Blanks

1. Fill in the blank spaces.

The empty space between the molecules is called_____space.(molecular/ intermolecular)

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

The force of attraction between similar kind of molecules is called force of adhesion.

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3. The force of attraction between molecules of different kinds is called _____

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4. The collisions between the molecules and container exert _____ on the walls of the container

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5. When a solid is heated, what happens to its molecules?

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6. Matter is neither _____ nor _____ during a chemical reaction.

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Exercise Write True Or False Correct The False Statements

1. The molecules of a substance collide with each other.

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2. In solids, molecules move randomly.

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3. As the temperature of a substance increases, its molecules move faster and thus

the kinetic energy of the molecules increases.

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4. State whether it is True or False: The intermolecular force of attraction in liquids is as strong as that in solids.

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5. State whether this is true or false? The intermolecular force of attraction is the

strongest in gases.

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6. When a solid is heated, its molecules lose kinetic energy and become very active.

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Exercise Match The Columns

1. Match the columns

1. Solids	a. force of attraction between molecules of the same kind
2. Liquids	b. varies with temperature
3. Cohesive force	c. strongest intermolecular force
4. Kinetic energy	d. largest intermolecular space
5. Gases	e. more intermolecular space than solids
	f. force of attraction between molecules of different kinds

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Exercise Name The Following

1. The energy possessed by a body due to motion is called:

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2. The theory that enables us to understand the behaviour of molecules of solids, liquids and gases

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3. Fill in the blank spaces.

The empty space between the molecules is called_____space.(molecular/ intermolecular)

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4. What is the force of attraction between the molecules of a substance called?

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5. The law that states that the mass of the products equals the mass of the reactants in a chemical reaction.

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Exercise Answer The Following In Short

1. Fill in the blank spaces.

The empty space between the molecules is called_____space.(molecular/ intermolecular)

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2. What is the force of attraction between the molecules of a substance called?

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3. What is cohesive force?

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4. What is adhesive force?

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5. When a solid is heated, what happens to its molecules?

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6. When a gas is cooled, what happens to its molecules?

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Exercise Answer The Following In Detail

1. List the main postulates of the kinetic molecular theory of matter.

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2. Distinguish between cohesive and adhesive forces.

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3. Explain the nature of molecules in solids, liquids and gases.

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4. Explain the change of state of matter on cooling.

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5. Define the law of conservation of mass. How is it applicable to chemical reactions?

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Exercise Complete These Word Equations

1. magnesium + _____ $\rightarrow$ magnesium oxide

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2. _____ + hydrogen $\Leftrightarrow$ ammonia

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3. barium chloride + sodium sulphate $\rightarrow$ ____ + _____

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Think And Answer

1. A liquid flows easily . Why ?

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2. The intermolecular space between the molecules in solids is the least. Explain.

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3. A solid changes to a liquid on heating. Why?

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4. A gas changes to a liquid on cooling. Why?

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5. As magnesium burns in oxygen to produce magnesium oxide, there is no change in mass. Explain.

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6. when water is cooled , it changes to ice . Why

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7. Give reasons :Gas fills completely the vessel in which it is kept.

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Exercise

1. Explain the meaning of the term 'matter'.

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2. Matter in any state is composed of small particles - molecules, atoms or ions. Differentiate the terms above in italics.

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3. Differentiate between the two characteristics of matter - 'mass' & 'weight'.

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4. State which of the three states of matter i.e. solids, liquids or gases - have

a] No definite volume b] A definite shape c] High density e] No free surfaces f] Particles - which diffuse very easily.

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5. List the main postulates of the kinetic molecular theory of matter.

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6. State in which of the following examples i.e. a piece of wood, water, a light gas is the -

a] Inter-particle space maximum

b] Inter-particle attraction maximum

c] Energy possessed by particles of matter, very large.

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7. In which of the three states of matter - solids, liquids or gases is the movement of atoms about their own position. Give a reason for the same.

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8. Inter-particle attraction between atoms of gases is very weak'. State five properties of gases which correlate as a consequence of the

weak inter-particle attraction between particles of gases.

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9. What is inter-conversion of matter. Give the meaning of the terms involved in inter-conversion of matter -

a] Melting

b] Vaporisation

c) Liquefaction or condensation

d] Solidification or freezing

e] Sublimation

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10. With reference to inter-conversion of matter - on the basis of kinetic theory - explain in brief the conversion of:

A solid into a liquid

With special reference to inter-particle space & inter-particle attraction at the different stages of conversion

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11. With reference to inter-conversion of matter - on the basis of kinetic theory - explain in brief the conversion of:

A liquid into vapour (or gas)

With special reference to inter-particle space & inter-particle attraction at the different stages of conversion

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12. With reference to inter-conversion of matter - on the basis of kinetic theory - explain in brief the conversion of:

Vapour (or gas) into a liquid

With special reference to inter-particle space & inter-particle attraction at the different stages of conversion

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13. With reference to inter-conversion of matter - on the basis of kinetic theory - explain in brief the conversion of:

A liquid into a solid

With special reference to inter-particle space & inter-particle attraction at the different stages of conversion

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14. On the basis of kinetic theory explain why, ammonium chloride sublimes and goes from solid state directly into vapour state.

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Objective Type Questions

1. Select the correct answer from A, B, C, D & E for each statement given below:

A: Solid B: Vaporization C: Ion D: Gases E: Heat

1. An atom or group of atoms - having a resultant charge.

2. The state of matter which has - least density & no free surfaces.

3. In Landolt's experiment - the form in which the chemical energy stored up in the reactants - is released.

4. The process of change of a liquid into vapour (gas) on heating,

5. The state of matter, where the inter-particle attraction between particles is maximum.

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2. On heating the liquid, do the particles gain or lose energy.

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3. The heat energy supplied to the liquid is absorbed by its molecule & stored as which form of energy.

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4. How does the stored energy, have effect on inter-particle space.

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5. State why the inter-particle attraction decreases to negligible.

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6. At what point will the particles become free and escape as gas.

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7. In naphthalene, the inter-particle attraction is – _____ [high/low].

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8. The law of conservation of mass, is strictly valid if mass and _____ [energy/volume) are considered together.

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9. When inter-particle space increases, the inter-particle attractive force _____ (decreases/increases).

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10. Kinetic energy of molecules in helium is _____ [large/very large] compared to the kinetic energy of molecules in water.

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11. Conversion of vapour [or gas] into a liquid is termed as _____ [liquefaction/vaporization]

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12. Molecules in motion possess energy called kinetic energy.

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13. Give reason

Solids cannot be compressed, but gases are highly compressible.

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14. Give reason

Kinetic energy of molecules of gases is very large & of solids, the least.

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15. Give reason

On heating a sublimable solid, the molecules break free & escape from surface of the solid directly into vapour.

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16. Give reason

Particles of matter move more rapidly on application of heat.

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17. Complete the blanks with reference to interconversion of matter on basis of kinetic theory with the word 'increases', 'decreases', 'gain', 'lose' or 'overcome' in the following .

During melting of solids, the inter-particle space _____

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18. Complete the blanks with reference to interconversion of matter on basis of kinetic theory with the word 'increases', 'decreases', 'gain', 'lose' or 'overcome' in the following .

During vaporization, the liquid particles _____ energy.

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19. Complete the blanks with reference to interconversion of matter on basis of kinetic theory with the word 'increases', 'decreases', 'gain', 'lose' or 'overcome' in the following .

During liquefaction, the particles _____ energy.

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20. Complete the blanks with reference to interconversion of matter on basis of kinetic

theory with the word 'increases', 'decreases', 'gain', 'lose' or 'overcome' in the following .

During solidification, the inter-particle space _____.

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21. Complete the blanks with reference to interconversion of matter on basis of kinetic theory with the word 'increases', 'decreases', 'gain', 'lose' or 'overcome' in the following .

During sublimation the inter-particle attraction is _____

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Test Yourself 1 Fill In The Blanks

1. All matter is made up of tiny particles called _____ or _____

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2. Solids have negligible.. .. but strong _____

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3. Kinetic energy of molecules is very high in ..... State of matter

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4. ..... . have definite volume but no shape.

Watch Video Solution

5. The kinetic energy of molecules ..... with the increase in temperature.

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Test Yourself 2 True Or False

1. Weight of reactants is not always equal to weight of products.

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2. Cooling decreases the kinetic energy of particles.

Watch Video Solution

3. Under high pressure , gas changes to liquid state.

Watch Video Solution

4. With decrease in heat, solids change to liquids and liquids change to gaseous state.

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Exercise A Multiple Choice Questions

1. The particles are in constant random motion due to

A. inter-particle space

B. inter-particle attraction

C. kinetic energy

D. heat

Answer: C

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2. Matter with no fixed shape but definite volume exists in following state.

A. solid

B. liquid

C. gas

D. gases

Answer: B

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3. The inter-particle force of attraction between the particles is maximum in

A. gases

B. liquids

C. solids

D. matter

Answer: C

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4. In solids, the particles move about

A. other particles

B. their fixed position

C. independently

D. do not move

Answer: B

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5. According to law of conservation of mass:

A. reactants mass = products mass

B. gases are lighter than solids

C. kinetic energy changes with heat

D. reactants + oxygen = products

Answer: A

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Exercise B True Or False

1. Particles of matter in gaseous state have more kinetic energy than in solids.

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2. Solids can change into liquids on increasing the temperature.

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3. On decreasing the heat, the kinetic energy of particles also decreases.

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4. If mass of apparatus is kept constant, mass of reactants is not equal to products.

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5. Inter-particle force of attraction is weakest in gases.

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Exercise C Fill In The Blanks

1. The energy possessed by a body due to its motion is called ..... energy

2. Kinetic energy of molecules ..... with decrease in temperature.

3. In gaseous state, the inter-particle space is .....

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4. ..... state of matter possesses the least inter-particle space.

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5. ..... state of matter can be compressed when sufficient pressure is applied.

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Exercise D Match The Following

1. Match with correct: 1. Mass is neither created nor destroyed. (a) Liquid

2. Definite volume but no fixed shape. (b)

atoms and molecules

3. Maximum inter-particle space. (c) Conservation of mass

4. All matter is made up of these.

(d) Solid

5. Least kinetic energy. (e) Gas

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Exercise E Name The Following

1. Theory used to explain the arrangement and movement of molecules in matter.

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2. State of matter having particles with highest amount of kinetic energy

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3. State of matter having strongest inter-particle forces of attraction.

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4. Change in state when enough heat is given to a solid.

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5. The point when water changes into gaseous state.

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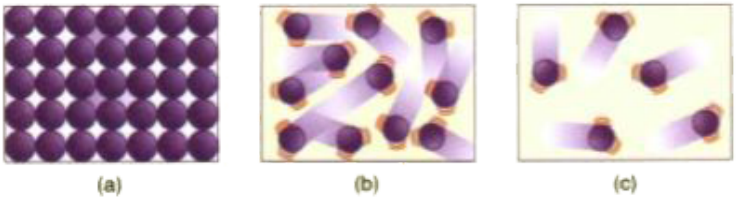
Exercise F Diagram Based Questions

1. 

Name the states of matter shown in (b) and (c) in the above figure.

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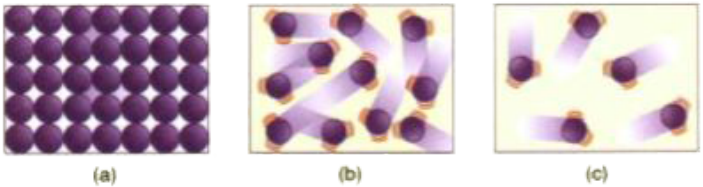
2. 

Which of the above state has particles with maximum kinetic energy?

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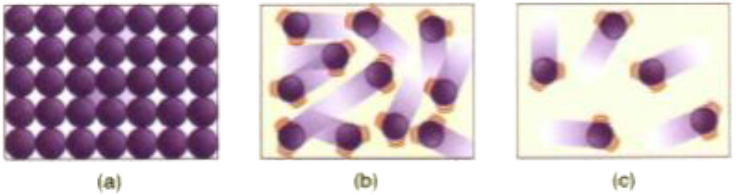
3. 

Compare the inter-particle space and forces of attraction between (a) and (b).

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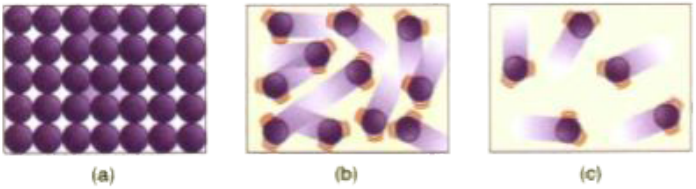
4. 

What will happen if high pressure is applied to state (c)?

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Exercise G Give Reasons For The Following

1. Particles of liquid are free to move around but remain in a confined space.

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2. On cooling, liquid changes into a solid state.

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3. Give Reason: Particles of solid have a fixed shape.

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4. Mass of products is equal to mass of reactants.

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Exercise H Differentiate Between The Following

1. Kinetic energy between particles of solids and gases

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2. Inter-particle space between liquids and gases

Watch Video Solution

3. Inter-particle force of attraction between solids and liquids

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Exercise I Very Short Answer Questions

1. State kinetic theory of matter.

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2. What happens to kinetic energy of matter if temperature of matter is increased?

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3. Name the state of matter in which particles move freely in the space available.

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4. Name the state of matter that changes to gaseous state on heating.

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5. State the law of conservation of mass.

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6. Name the reactants and products involved if wood burns in air and gets converted to ash

and smoke.

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7. Write the sequence of change in state of matter when

ice melts

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8. Write the sequence of change in state of matter when

steam is formed.

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Exercise J Short Answer Questions

1. Why do gases have more kinetic energy than liquids?

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2. Why do solids have a definite shape and volume but not gases?

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3. What is the effect of increase in temperature on soilds?

Watch Video Solution

4. Why do liquids flow but solids do not?

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5. How does the mass of reactants change in a chemical reaction?

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