WORKSHEET 1

CHAPTER 1 – MATTER IN OUR SURROUNDINGS

A. Tick (✓) the correct option.

1. The SI unit of mass is
   a. gram. b. milligram. c. kilogram. d. microgram.
2. The correct arrangement of water, water vapour and ice in the increasing order of forces of attraction between their constituent particles is
   a. water vapour, water, ice.
   b. water, water vapour, ice.
   c. ice, water, water vapour.
   d. ice, water vapour, water.
3. Which of the following sets of properties is possessed by liquids?
   a. Definite shape, definite volume
   b. Fluidity, definite shape
   c. Rigidity, definite volume
   d. Fluidity, definite volume
4. A change of state directly from solid to gas without changing into the liquid state is known as
   a. freezing. b. sublimation. c. evaporation. d. fusion.
5. What is the latent heat of fusion of ice?
   a. 22.6×10^5 kJ kg^{-1} b. 3.35×10^5 kJ kg^{-1} c. 22.6×10^5 J kg^{-1} d. 3.35×10^5 J kg^{-1}

B. Fill in the blanks.

1. _____ is known as the fifth state of matter.
2. The SI unit of temperature is _____
3. The boiling point of water on Fahrenheit scale is _____
4. Solid carbon dioxide is known as _____
5. The amount of water vapour present in air is known as _____

C. State whether the given statements are true or false.

1. The melting point of a solid is an indication of the strength of the force of attraction between its particles.
2. Distances between constituent particles are maximum in a solid.
3. A gas fills completely the container in which it is kept.
4. Boiling is a surface phenomenon.
5. When a substance melts, its temperature increases continuously.

Name: ..... Teacher's signature: .....

Class: IX Date: .....

D. Match the following:

a.	Change of state from liquid to gas	condensation
b.	Change of substance from gas to liquid	evaporation
c.	Substance which changes into gaseous state directly from the solid state	sugar cubes
d.	Substance which vaporises faster than water	naphthalene
e.	Definite shape and volume	ethanol

E. Answer the following:

Very Short Answer Questions

1. When salt is dissolved in water, why does the level of water not change?
2. What is the effect of temperature on diffusion?

Short Answer Questions

1. Convert 212 °F to Celsius scale.
2. Distinguish between evaporation and sublimation with examples.

Long Answer Questions

1. a. Define i. Latent heat of fusion ii. Latent heat of vaporisation
   b. Why are cotton clothes recommended during summers?
   c. Ordinary water boils at 100 °C. Can it be made to boil at 95 °C?
   d. Explain whether the following statement is correct or incorrect?

   "Interconversion of matter is a constant temperature process".
2. a. A sample of water under study was found to boil at 102 °C at normal temperature and pressure. Is the water pure? Will this water freez at 0 °C? Comment.
   b. Conversion of solid to vapour is called sublimation. Name the term used to denote the conversion of vapour to solid.
   c. Water as ice has a cooling effect, whereas water as steam may cause severe burns. Explain.

ANSWERS

WORKSHEET 1

A. Tick (✓) the correct option.

1. c
2. d
3. d
4. b
5. d

B. Fill in the blanks.

1. Plasma
2. Kelvin
3. 212 °F
4. dry ice
5. humidity

C. State whether the given statements are true or false.

1. T
2. F
3. T
4. F
5. F

D. Match the following:

1. Change of state from liquid to gas	evaporation
2. Change of substance from gas to liquid	condensation
3. Substance which changes into gaseous state directly from the solid state	naphthalene
4. Substance which vaporises faster than water	ethanol
5. Definite shape and volume	sugar cubes

E. Answer the following:

Very Short Answer Questions

1. When salt is dissolved in water, the level of water does not change because the particles of salt get in between the particles of water.
2. Diffusion increases with increase in temperature because the kinetic energy of particles increases on increasing the temperature.

Short Answer Questions

1. The relation between Fahrenheit scale and Celsius scale is as follows:

$$°F = 9/5\ (°C) + 32$$

So,

$$°C = (°F - 32) \times (5/9)$$
$$= (212 - 32) \times (5/9)$$
$$= 180 \times (5/9)$$
$$= 100°C$$

2.

Sublimation	Evaporation
It is the process during which a solid on heating changes directly into the vapour phase without passing through the intermediate liquid state.	It to the process in which a liquid changes into vapours at any temperature below the boiling point of the liquid.
For example, solids like dry ice, napthalene, comphor, iodine undergo sublimation.	For example, water present in the wet clothes gets evaporated by absorbing heat from sun light.

Long Answer Questions

1. a. i. The quantity of heat energy required to change are kilogram of solid at atmospheric pressure at its melting point without any change of temperature is called latent heat of fusion.

   ii. The quantity of heat energy required to change one kilogram of liquid into vapour at atmospheric pressure at its boiling point without any change of temperature is called latent heat of vaporisation.

   b. Cotton absorbs sweat from the body and exposes it to the atmosphere. This increases the rate of evaporation of sweat and makes us feel cool as well as comfortable during summers.

   c. The boiling point of a liquid depends upon the pressure acting on it. Water boils at 100 °C under one atmospheric pressure. If the pressure acting on a liquid is reduced below one atmosphere, it can be made to boil at 95 °C.

   d. The given statement is correct. During interconversion of state of matter from solid to liquid or from liquid to gas the heat supplied does not increase the kinetic energy of the particles but simply overcomes the force of attraction. As a result, temperature remains constant.

2. a. Impurities present in the water increases the boiling point and lower the freezing of water. Therefore, the water that boils at 102 °C is not pure. This water will freeze below 0 °C.

   b. Direct conversion of vapours to solid is also called sublimation.

   c. When ice melts at 0 °C, it absorbs heat equal to the latent heat of fusion from the surroundings. Therefore, at 0 °C, ice has less heat energy than water at 0 °C and hence, ice is more effective in cooling than water at the same temperature. In contrast, when water at 100 °C is converted into steam, it absorbs energy equal to latent heat of vapourisation. Therefore, steam at 100 °C has more heat energy than water at 100 °C and hence, steam produces more severe burns than boiling water.