DAYANAND ANGLO VEDIC PUBLIC SCHOOL, AIROLI (2024-25)
STD: IX
WORKSHEET- CHEMISTRY
MATTER IN OUR SURROUNDINGS

1. Assertion reason questions: For this question two statements are given- one labeled **Assertion (A)** and the other labeled **Reason (R)**. Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

(a) Both A and R are true, and R is the correct explanation of the assertion.

(b) Both A and R are true, but R is not the correct explanation of the assertion.

(c) A is true, but R is false.

(d) A is false, but R is true.

i. Assertion : Ammonium chloride is a sublimable substance.
Reason : Ammonium chloride melts on heating.

ii. Assertion: Dry ice is solid.
Reason : It has a fixed shape and volume.

iii. Assertion: Smell of hot food reaches several meters away.
Reason : Gases have least density.

iv. Assertion : Liquids diffuse easily as compared to gases.
Reason : Intermolecular forces are greater in liquid.

v. Assertion: Evaporation is a bulk phenomenon.
Reason: Only surface particles take part in the process of evaporation.

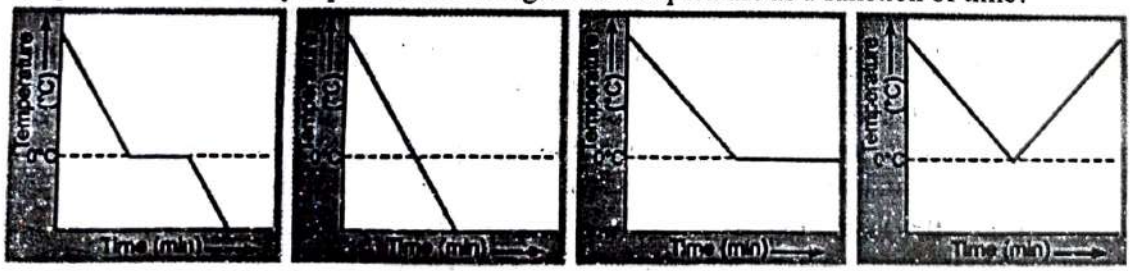
2. CBQ:

i. In a certain investigatory project 150 ml of water is taken in each of the four beakers A , B , C and D. Beaker A and B are maintained at temperature 25°C while C and D are maintained at temperature 65°C. Four crystals of copper sulphate of approximately the same mass (say 2g) are taken and two of them are ground into powder form. Now, crystals are added in beaker A and C while powdered form of the salt are added in beaker B and D respectively.

a. In which beaker the intermixing will be the quickest? Give reason for your answer.
b. Name and define the process taking place in above information.

ii. A glass tumbler containing hot water is kept in the freezer compartment of a refrigerator (temperature <0°C).

a. If you could measure the temperature of the content of the tumbler, which of the following graphs would correctly represent the change in its temperature as a function of time?



(a) (b) (c) (d)

b. Explain whether heat is released or absorbed when water converts in to ice? What is that heat called?

c. Express the melting point of water in Kelvin scale.

3. MCQ.

i. When 50 g of sugar is dissolved in 100 mL of water, there is no increase in volume. What characteristic of matter is illustrated by this observation?

(a) Particles of matter have inter-particle force of attraction.

(b) Particles of matter have inter-particle space.

(c) Particles of matter are continuously moving.

(d) Rate of diffusion is directly proportional to particles.

ii. Which of the following shows correct order of increasing force of attraction between particles of matter given:

(a) Carbon dioxide, salt, oil (b) honey, sugar solution, water

(c) nitrogen gas, ammonium chloride, iron (d) water, ice, steam

iii. When heat is constantly supplied by a burner to boiling water, then the temperature of the water during vaporization:

(a) Rises very slowly (b) Rises rapidly until steam is produced

(c) First rises and then becomes constant (d) Does not rise at all

4. Answer the following

i. Substance 'A' has high compressibility and can be easily liquefied. It can take up the shape of any container. Predict the nature of the substance. Enlist four properties of this state of matter.

ii. Name the state of matter in which:

a. Layers of particles can slip and slide over each other.

b. Particles just move around randomly because of a very weak force of attraction.

iii. Which change of state takes place in the following processes?

a. Wax melts in the sun b. Formation of clouds

iv. Identify the conditions which increase the rate of evaporation of water?

v. Which of the following pairs will not exhibit diffusion? Give reason.

(a) Hydrogen, oxygen (b) Oxygen-water (c) Salt, sand (d) Sugar crystal - water.

vi. Dry ice is obtained when a gas is compressed at high pressure. Name the gas and state what happens to it when the pressure is released.

vii. Explain why a gas fills a vessel completely?

viii. Identify the conditions which increase the rate of evaporation of water?

3. Give reason for following:

i. A wooden pencil can be broken down easily but iron nail cannot.

ii. Rate of diffusion of ink in water is more than honey in water.

iii. Sugar crystals disappear when mixed in water.

iv. The food cooked in the kitchen can be identified in other room easily.

v. The melting point of Caesium is less than Iron.

vi. A stream of water cannot cut into two halves.

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IS MATTER AROUND US PURE

1. MCQ

i. Calcium carbonate is a pure substance because:

a. It is made up of the same kind of particles. b. It is found in nature.

c. It is formed by reversible process d. It is a mixture.

ii. Heterogenous mixtures show tyndall effect because the particle size of solute is :.

a. Greater than 1 nm b. Smaller than 1 nm c. less than 1 cm d. More than 1 cm

iii. Which of the following is a true solution: (choose correct option with reason associated)

a. Tincture iodine as its particle size is between 1 to 100 nm

b. Copper sulphate solution as it does not show tyndall effect.

c. Chalk powder in water as particles do not settle down after some time.

d. Ink in water as it is homogenous,

iv. Brass is a solution of molten copper in

a. solid zinc b. molten zinc c. gaseous zinc d. molten tin

v. Two substances,A & B were made to react. In the reaction a third substance A_2B is formed according to

$2A + B \rightarrow A_2B$

Which of the following statements concerning this reaction are incorrect?

i.The product shows properties of substances A & B.

ii.The product will always have fixed composition.

iii.The product so formed cannot be classified as compound.

iv.The product so formed is an element.

a. i,ii & iii b. ii, iii & iv c. i, iii & iv d. ii only

2. ASSERTION REASON QUESTIONS:

i.Assertion : Chemical change brings variation in chemical properties.

Reason: A chemical reaction takes place in a chemical change.

ii. Assertion : Sodium is a non-metal.

Reason: Sodium is a soft element.

iii. Assertion : Ammonia is a mixture.

Reason: Components of ammonia cannot be separated by simple physical methods.

iv. Assertion :Emerald scatters beam of light when passed through it.

Reason: Emerald is a colloid.

CASE BASED QUESTIONS

i. A solution which can dissolve more of the solute at a given temperature is called an unsaturated solution. However, a solution which cannot dissolve any more of the solute is called saturated solution. The amount of solute that can dissolve in 100 g of the solvent at a given temperature is called solubility of the substance. Use this information to answer the following questions:

a)The solubility of a salt X in water at 298 K is 10 g. Rahul added 5 g of that salt in 25 g water. Write the observation and type of solution prepared by Rahul.

b) What name is given to the solution which contains more solute than that required to prepare saturated solution at that temperature?

c)How can a saturated solution be made unsaturated?

ii. A group of students took an old shoe box and covered it with a black paper from all sides. They fixed a source of light (a torch) at one end of the box by making a hole in it and made another hole on the other side to view the light. They placed a milk sample contained in a beaker/tumbler in the box as shown in the given figure. They were amazed to see that milk taken in the tumbler was illuminated. They tried the same activity by taking a salt solution but found that light simply passed through it?

a. Name any two other mixtures which show similar results as milk sample.
b. Write any two characteristics of the type of mixture illustrated above.
c. Define the process shown in the above diagram.

4. Solve the following:

i.Calculate the mass of sodium sulphate required to prepare its 20% (mass percent) solution in 100g of water?

ii.Calculate the concentration of solution which contains 2.5 g of salt dissolved in 50 g water.

5. Answer the following:

i. Identify solute and sovent / dispersed phase and dispersing medium in following:

a. Fog b. Soda water c. Tincture iodine d. foam

ii. Identity the physical and chemical changes:

a. Dissolution of potassium permanganate in water. b. decomposition of ferrous sulphate

iii. Differentiate between : a. True and suspension b. Saturated and unsaturated solution.

iv. Which elements are present in : vinegar, brass

v. Compare properties of different types of mixtures.

Activity 2.4 (text book) based question:

i. Name the compound formed iron is heated with sulphur. Write equation also.

ii. Write observations:

a. Magnet is brought near above product formed. Give reason for your answer.
b. What will happen if pure sulphur is mixed with carbon disulphide solution?
c. Write ant three differences between mixture and compound.
d. Name the gas evolved when HCl reacts with FeS.