	INDIAN SCHOOL AL WADI AL KABIR	
Class: IX	**Department: SCIENCE 2024 – 25** **SUBJECT: SCIENCE(CHEMISTRY)**	**Date :06-05-2024**
Worksheet No: 01 **WITHANSWERS**	**CHAPTER / UNIT: MATTER IN OUR SURROUNDINGS**	**Note:** **A4 FILE FORMAT**
NAME OF THE STUDENT	**CLASS & SEC:**	**ROLL NO.**

OBJECTIVE TYPE QUESTIONS

MULTIPLE CHOICE QUESTIONS

1) Which of the following best describes the arrangement of particles in a gas?
   a. Tightly packed, definite shape and volume
   b. Tightly packed, definite shape but no definite volume
   c. Loosely packed, no definite shape but definite volume
   d. Loosely packed, no definite shape or volume

2) Which of the following is an example of a chemical change?
   a. Melting ice cubes
   b. Dissolving sugar in water
   c. Burning wood
   d. Cutting paper into smaller pieces

3) What type of change occurs when water evaporates to form water vapor?
   a. Physical change
   b. Chemical change
   c. Nuclear change
   d. None of the above

4) On converting 25 °C, 38 °C and 66 °C to kelvin scale, the correct answer will be
   a. 298 K, 311 K and 339 K
   b. 298 K, 300 K and 338 K
   c. 273 K, 278 K and 543 K
   d. 298 K, 310 K and 338 K

5) Seema visited a Natural Gas Compressing Unit and found that the gas can be liquefied under specific conditions of temperature and pressure. While sharing her experience with friends she got confused. Help her to identify the correct set of conditions
   a. Low temperature, low pressure
   b. High temperature, low pressure
   c. Low temperature, high pressure
   d. High temperature, high pressure

6) The property to flow is unique to fluids. Which one of the following statements is correct?
   a. Only gases behave like fluids
   b. Gases and solids behave like fluids
   c. Gases and liquids behave like fluids
   d. Only liquids are fluids

7) Which of the following phenomena would increase on rising temperature?
   a. Diffusion, evaporation, compression of gases
   b. Evaporation, compression of gases, solubility
   c. Evaporation, diffusion, expansion of gases
   d. Evaporation, solubility, diffusion, compression of gases

8) A few substances are arranged in the increasing order of 'forces of attraction' between their particles. Which one of the following represents a correct arrangement?
   a. Water, air, wind
   b. Air, sugar, oil
   c. Oxygen, water, sugar
   d. Salt, juice, air

9) Choose the correct statement of the following
   a. Conversion of solid into vapours without passing through the liquid state is called sublimation.
   b. Conversion of vapours into solid without passing through the liquid state is called vapourisation.
   c. Conversion of vapours into solid without passing through the liquid state is called freezing.
   d. Conversion of solid into liquid is called sublimation

10) In which of the following conditions, the distance between the molecules of hydrogen gas would increase?
   (i) Increasing pressure on hydrogen contained in a closed container
   (ii) Some hydrogen gas leaking out of the container
   (iii) Increasing the volume of the container of hydrogen gas
   (iv) Adding more hydrogen gas to the container without increasing the volume of the container
      a. (i) and (iii)
      b. (i) and (iv)

c. (ii) and (iii)

d.(ii) and (iv)

ASSERTION -REASON TYPE QUESTIONS

Choose the correct options for the following questions.

a. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

b. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion.

c. Assertion is true but Reason is false.

d. Assertion is false but Reason is true

11) Assertion: A gas can easily be compressed by applying pressure.
Reason: Since the inter-particle spaces between gases are very large, they can decrease by applying pressure.

12) Assertion: When a solid melt, its temperature remains the same.
Reason: The heat gets used up in changing the state by overcoming the forces of attraction between the particles.

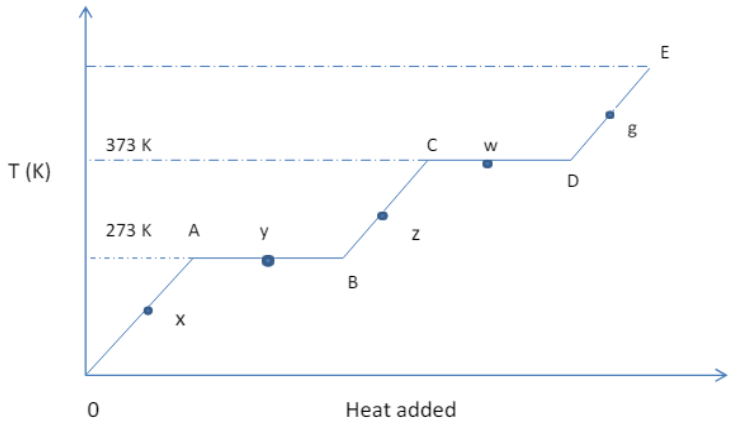
13) Assertion: There is no change in the temperature of a substance when it undergoes a change of state though it is still being heated.
Reason: The heat supplied is absorbed either as latent heat of fusion or as latent heat of vapourisation.

14) Assertion: The intermolecular forces in solid state are stronger than in liquid state.
Reason: The space between the particles of matter is called intermolecular space.

15) Assertion: Naphthalene does not leave any residue when kept open for sometime
Reason: The conversion of a solid directly into gas is called Condensation.

CASE STUDY/DATA BASED QUESTIONS (4 M)

CASE: A teacher asked a group of students to heat a given sample of ice and to draw a heating curve representing temperature rise as a function of heat added. After performing experiment at one atmospheric pressure, the students gave the following curve.

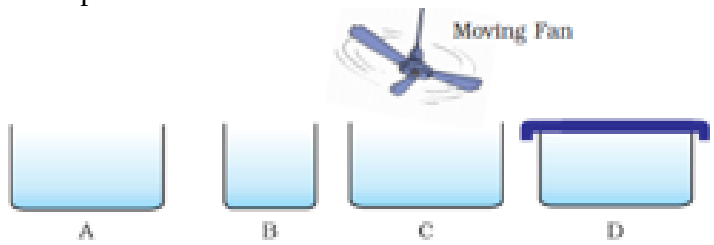


16) What is the physical state of substance at point y?

17) Define boiling point.
18) Express the boiling point of water in Kelvin scale.

VERY SHORT ANSWER TYPE QUESTIONS (2M)

19) 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 freeze at 0°C? Comment.
20) Conversion of solid to vapour is called sublimation. Name the term used to denote the conversion of vapour to solid
21) Look at Fig. and suggest in which of the vessels A, B, C or D the rate of evaporation will be the highest? Explain.



SHORT ANSWER TYPE QUESTIONS (3M)

22) 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.
23) It is a hot summer day, Priyanshi and Ali are wearing cotton and nylon clothes respectively. Who do you think would be more comfortable and why?
24) Kinetic energy of particles of water in three vessels A, B and C are E_A, E_B and E_C respectively and $E_A > E_B > E_C$. Arrange the temperatures, T_A, T_B and T_C of water in the three vessels in increasing order.
25) Why does the temperature of a substance remain constant during its melting point or boiling point?
26) 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.
27) Explain interconversion of three states of matter with the help of flow chart. Name the process of each interconversion.

LONG ANSWER TYPE QUESTIONS (5 M)

28) Explain how the rate of evaporation of a liquid is affected with:
- Increase in temperature of the liquid.
- Decrease in exposed surface area.
- Increase in moisture in the surrounding air.
- Increase in wind speed.

29) While heating ice in a beaker with a thermometer suspended in it, a student recorded the following observations:

Time (in min.)	0	1	2	3	4	5	6	7	8	10	15	20	25	30	35
Temp. (in °C)	–3	–1	0	0	5	8	12	15	19	22	30	50	73	100	100

Based on the above observations, answer the following questions:

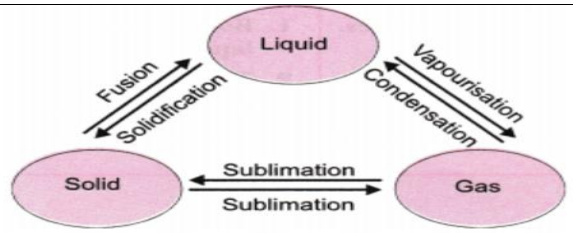
(a) State the change(s) observed between 2-3 min. and name the process involved.

(b) Between 30-35 min., the temperature remains constant. State the reason for this. Name the heat involved in the process and define it.

30) Discuss the various factors which affect the rate of evaporation. Latent heat of evaporation of two liquids A and B is 100 J/kg and 150 J/kg respectively. Which one can produce more cooling effect and why?

ANSWER KEY

Q.NO	ANSWERS
1	a. Loosely packed, no definite shape or volume
2	b. Burning wood
3	a. Physical change
4	a.298 K, 311 K and 339 K
5	c. Low temperature, high pressure
6	a.Gases and liquids behave like fluids
7	c. Evaporation, diffusion, expansion of gases
8	a. Oxygen, water, sugar
9	b. Conversion of vapours into solid without passing through the liquid state is called vapourisation
10	c. (ii) and (iii)
11	a. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
12	a. Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
13	d. Assertion is false but Reason is true
14	b. Both Assertion and Reason are true but Reason is not the correct explanation of Assertion
15	c. Assertion is true but Reason is false
16	Solid-liquid co-exist
17	The temperature at which a liquid starts boiling at the atmospheric pressure is known as its boiling point.
18	100 ^{0}C = (273 + 100 = 373 K)
19	It's freezing point will be below 0°C due to the presence of a non-volatile impurity in it.

20	Sublimation
21	(c) The rate of evaporation increases with an increase of surface area because evaporation is a surface phenomenon. Also, with the increase in air speed, the particles of water vapour will move away with the air, which will increase the rate of evaporation
22	A' is a gas. Properties of gases • They do not have fixed shape and fixed volume. • They have large interparticle space. • They have least forces of attraction between the molecules. They are highly compressible.
23	Cotton being a better absorber of water than nylon helps in absorption of sweat followed by evaporation which leads to cooling. So Priyanshi is more comfortable, whereas Ali is not so comfortable
24	$T_C < T_B < T_A$, the kinetic energy of particles is greater at higher temperature.
25	The temperature of a substance remains constant at its melting and boiling points until all the substance melts or boils because, the heat supplied is continuously used up in changing the state of the substance by overcoming the forces of attraction between the particles. This heat energy absorbed without showing any rise in temperature is given the name latent heat of fusion/latent heat of vaporisation.
26	'A' is a gas. Properties of gases: • They do not have fixed shape and fixed volume. • They have large interparticle space. • They have least forces of attraction between the molecules. • They are highly compressible.
27	
28	• Rate of evaporation increases with rise in temperature. • Evaporation is less when exposed surface area decreases. • Less evaporation if moisture content is high in the air.

	• Rate of evaporation increases if wind speed increases.
29	(a) Between 2-3 min, ice converts into water. This process is known as fusion. (b) Between 30-35 min, the temperature remains constant because the heat supplied is used up in overcoming the intermolecular forces of liquid to change into vapours. The heat involved in the process is latent heat of vaporisation. It is the amount of heat energy required to change 1 kg of liquid into gas at its boiling point.
30	Factors affecting the rate of evaporation: • Surface area: The rate of evaporation increases with increase in surface area. • Temperature: The rate of evaporation increases with increase in temperature. • Humidity: The rate of evaporation decreases with increase in humidity. • Wind speed: The rate of evaporation increases with increase in wind speed. • Nature of the liquid: The volatile compounds evaporate faster than less volatile compounds (liquids). B will produce more cooling effect because it will absorb more heat from the surroundings for evaporation.

PREPARED BY *Ms. SHYNI VINOD*	*CHECKED BY* *HoD SCIENCE*