SANJEEVANI PUBLIC SCHOOL

SCIENCE ASSIGNMENT (I)
CLASS: IX
CH:1- MATTER IN OUR SURROUNDINS
Extra Question/Answer

Q1. What do you understand by matter?

Ans. Anything which has mass and occupies space according to its dimention is called matter. For exp. Air, water, stone etc.

Q2. What are the physical nature of matter?

Ans : The physical nature of the matter are given below:

1. Matter is made up of particles
2. The particles of matter are very- very small.
3. The particles of matter are moving continuously.
4. The particles of matter have space between them.
5. The particles of matter attract each other due to force of attraction.

Q3. How can you say that matter is made up of particles.

Ans. When we dissolve salt in water, salt get dissolve in water. The particles of salt have entered in the space between the water molecules and the level of water does not change.

This prove that matter is made up of particles.

Q4. How can you prove that the particles of matter are very small?

Ans. When few drop of dettol are mixed in water, whole water gives the smell of dettol. Even after diluting this dettol with water, it gives the smell of dettol.

This prove that particles of matter are very small.

Q5. How can you say that particles of matter are moving continuously?

Ans. Mixing of gases into the nature is also the evidence of motion of particles. We get the aroma of favourite food sitting in the drawing room while food is being cooked in the kitchen. This is because vapour coming out from the hot food mixed with air and reaches to us because of motion of particles

This prove that particles of matter are moving continuously

Q6. Define diffusion.

Ans. The intermixing of substances into their own is called diffusion. For exp. Intermixing of food aroma into the air is the example of diffusion.

Q7. How can you say that the particles of matter have space between them?

Ans. When sugar is dissolve in water, the particles of sugar disappearing in water. This happens because the particles of sugar fixed in the space between the particles of the water and it can be seen there is no rise in the level of water.

This prove that particles of matter have space between them.

Q8. Explain that the particles of matter attract each other due to the force of attraction?

Ans. Force of attraction between the particles of matter keeps the particles of solid is greatest, between the particles of gases is lowest.

Because of the lowest force of attraction between the particles of gas we can move our hand through air easily. To move our hand in liquid, such as water we have to apply some force. But from a solid such as wood, we can not move our hand.

This is because the force of attraction between the particles of gases is almost negligible, in liquid the force of attraction is moderate but it is greatest in solid.

The force of attraction between the solid, liquid and gas can be arrange in the decreasing order as follow

Solid $>$ liquid $>$ gas

Q9. What are the different states of matter?

Ans. Matter around us exist in three different states solid, liquid and gas.

Q10. What is solid?

Ans. Matter which has fixed volume and shape is called solid. For eg. Stone, wood, brick, ice etc.

All metals are solids except mercury and gallium are liquid at room temperature.

Q11. Write the properties of solid?

Ans. The properties of solid are

- Solids have fixed shape.
- Solids have fixed volume.
- Solids have high density.
- Solids are heavy.
- Solids don't flow.

Q12. What is liquid?

Ans. Matters which have fixed volume but indefinite shape are called liquid, for exp. milk, water, petrol etc.

Q13. Write the properties of liquid?

Ans. The properties of liquid are:

- Liquid has no definite shape. It gets the shape of the container in which it is kept.
- Liquid has a definite volume
- Liquid can't be compressed much.
- liquid has less density as compare to solid.
- Liquid is lighter.
- Liquids flow and hence it is called fluid.

Q14. What is gas?

Ans. Matter which has indefinite shape and volume is called gas. For eg. Oxygen, hydrogen etc.

Q15. Write the properties of gases?

Ans. the properties of gases are

- Gas has indefinite shape.
- Gas has no fixed volume.
- Gas gets the shape and volume of the container.
- Gas fills the container completely.
- Gas has very low density.
- Because of very low density gas is light.
- Gas can through easily and hence are called fluid.

Q16. What are the causes of different physical states of matter?

Ans. The physical states of matter depends upon three main features.

1. The force of attraction between the particles
2. The space between the particles.
3. The kinetic energy of particles.

Q17. What are the causes of matter being solid?

Ans. The following causes are responsible for being solid.

1. The force of attraction between the particles of solid are very strong.
2. The space between the particles of solids are very small.
3. The particles of solid have minimum kinetic energy.

Because of great force of attraction between the solid are closely packed together. This makes the space between particles of solid almost negligible. The lowest kinetic energy of particles doesn't able to move the particles of solid. Hence, the great force of attraction and least space between the particles of solid and lowest kinetic energy of solid of the particles keep the particles at fixed place. Because of the combination of these character matter exist in solid state.

Q18. What are the cause of matter being liquid?

Ans. the cause of matter being liquid are:

- The force of attraction between the particles of liquid is strong but less than solids.
- The space between the particles of liquid is more than solids.
- The kinetic energy is greater than solids but less than gases.

Strong force of attraction keeps the particles of liquid packed. But the force of attraction between the particles of liquid is less than that of solid because of this particles of liquid are loosely packed compared to solids. The kinetic energy of the particles of liquid is greater than that of solids.

Because of more space between the particles and more kinetic energy than solids the particles of liquid slide over one another. This characters make a matter to exist in liquid state.

Because of slide of particles over one another liquid can flow.

Q19. Write the cause of matter being gas?

Ans. The cause of matter being gas:

(1) The force of attraction between the particles of gases is almost negligible.
(2) The space between the particles of gas is maximum.
(3) The kinetic energy is maximum in the particles of gas.

Because of negligible force of attraction the particles of gases are loosely packed consequently. These are lots of space between their particles of gas move with high speed.

Q20. Write the states of matter other than solid, liquid and gas.

Ans. The other states of matter are plasma and Bose-Einstien Condensate

Plasma and BEC are hence opposite characters. Plasma is a super hot and super excited atom While condensate has super cool and super unexcited atoms.

BEC has been -87 at super low temperature.

Q21.What are the two factors by which you can change state of matter?

Ans. The change of state of matter depends upon mainly 2 factors.

1. Temperature
2. Presure

Q22. What are the effects of temperature on state of matter?

Ans. The effects of temperature are given below.

1. Solid changes into liquid with increase in temperature.
2. A liquid change into gas by increase in temperature
3. Gas changes in liquid by decrease in temperature.
4. Liquid changes into solid by decreasing temperature.

Q23. How does solid changes into liquid?

Ans. On heating the particles of solids get more kinetic energy and they start moving rapidly. On the other hand heating increases the space between the particles and decrease the force of attraction between the particles. When the kinetic energy of the particles and space between them becomes similar to the liquid. In this condition a solid changes into liquid.

Q24. How does liquid changes into gas?

Ans. On heating the particles of liquid, liquid particles get more kinetic energy and they start moving more rapidly, the increase in temperature, increase the kinetic energy of particles and inter space between them increase and decrease the force of attraction between the particles. When the kinetic energy of the particles and space between them becomes similar to the gas. In this condition liquid changes into gas.

Q25. Define (i) Melting point (ii) boiling point (iii) latent heat of fussion (iv) latent heat of vaporisation

Ans. Defines:

(i) Melting point: The temperature at which a solid melts to become a liquid at the atmospheric pressure is called its melting point.

(ii) Boiling Point: The temperature at which a liquid starts boiling at the atmospheric pressure is known as its boiling point. It is bulk phenomenon.

(iii) Latent Heat of Fusion: The amount of heat energy that is required to change 1 kg. of a solid into liquid at atmospheric pressure at its melting point is known as latent heat of fusion .

(iv) Latent Heat Of vaporisation: when liquid changes into gas, the heat required changing the state without rising in temperature is called the latent heat of vaporisation. The latent heat of vaporisation of water is equal to 22.5×10^5 j/kg. Different liquid has different heat of vapourisation.

Q26. What is the effect of pressure on the following:

(a) Solid (b) liquid (c) Gas

Ans; the effect of pressure :

(a) Solid: There is no effect of pressure on solids. Solids are non compressible, i.e. solids can't be compressed as there is no space between their particles which couldn't allow compression. When the pressure is increased on a solid, it is deformed and finally broken.

(b) Liquid: There is no effect of pressure on liquid. Liquid are non compressible, i.e. liquids canot be compressed since there is not enough space between their particles to get compressed.

(c) Gas: The volume of gas decrease with increase in pressure. Since there is a lot of space between the particles, gas is highly compressible. Large volume of gas can be compressed to a small volume. Because of this nature high compressibility. Gas is transported easily after compressed to small volume in cylinders. Natural gas is compressed to small volume and packed in a cylinders. It is used widely as a fuel to running vehicles. Because of compression it is called Compressed Natural Gas (CNG).
Note: Gas can be change into liquid by applying pressure and decreasing temperature.

Q27. Define sublimation:

Ans. Sublimation: It is the process of changing the solid into gas without changing into liquid and vice versa. The sublime material are camphor, naphthalene balls, ammonium chloride, dry ice etc.

Q28. What is vaporization?

Ans: Vaporization of an element or compound is a phase transition from the liquid phase to vapour. There are two types of evaporation, vaporization and boiling.

(a) Evaporation: The change of liquid into vapour without reaching at its boiling point is called evaporation. It is a surface phenomena. It cause cooling.

(b) Boiling: it occurs only at the boiling temperature. It is a bulk phenomenon. It does not cause cooling.

Q29. What is condensation?

Ans. The change of vapour into liquid because of decrease in temperature is called condensation. Condensation is the reverse process of vapourisation.

Q30. What is distillation:

Ans. Distilled water is manufactured by the condensation of vapour. The process of making of distilled water is known as distillation. In distillation first water is boiled to vaporize and the vapour is cooled, i.e. condensed to get distilled water.

Q31.Define freezing:

Ans. Freezing: (Change of liquid into solid): The change of liquid into solid because of decrease in temperature is called freezing.

Q32. Define melting:

Ans. Melting: The change of solid into liquid due to increase in temperature is known as melting. Ice which is a solid melts, i.e. Changes into water at 0^0C.

Q33. On what factors effecting evaporation?

Ans. Factors effecting evaporation are given below:

1. Temperature: Rate of evaporation is directly proportional to the temperature. This means that evaporation increases with increasing the temperature.
2. Pressure: Rate of evaporation is indirectly proportional to the pressure this means evaporation decrease with increases in pressure and increase with decrease in pressur.
3. Surface area: Rate of evaporation is directly proportional to the surface area. It means increase with surface area increase in evaporation and decrease with surface area decrease in evaporation.
4. Humidity In Air And Evaporation: Rate of evaporation is indirectly proportional to the humidity present in air. It means evaporation decrease with increase in humidity and increase with decrease in humidity. Humidity is the amount of water vapour present in air.
5. Wind Speed: The rate of evaporation is directly proportional to the wind speed means greater the wind speed greater the evaporation. Speedy wind propelled away some of the particles of water with it. That's why speedy wind speeds up the rate of evaporation.