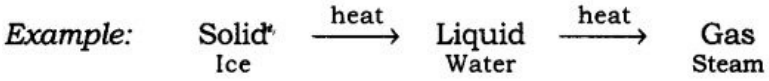
IV. Long Answer Type Questions

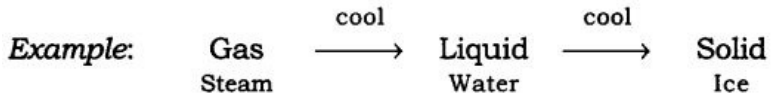
Question 1. Pressure and temperature determine the state of a substance. Ex-plane this in detail.

Answer: (1) Any matter i.e., solid, liquid or gas when experiences an increase in temperature then they change their state.



Take ice cubes in a beaker or heat them slowly, the temperature increases and the ice melts to form liquid. Heat this liquid further it will become steam.

(2) On lowering down the temperature of any matter, show change in their state.



Take the steam that is coming out of a boiling water and allow it to cool down, it condenses to form water and on further cooling of this water we get ice.

(3) On applying pressure and reducing temperature we can liquefy gases or change them into solid.

Example: Take carbon-dioxide gas, reduce its temperature and apply lot of pressure on it so that it changes into solid carbon dioxide, called diy ice, which is used as refrigerant for cooling.

If the pressure on it is decreased it directly changes into gas.

In LPG cylinders, the petroleum gas is cooled and with lot of pressure changes it into liquid state.

While using this LPG, we release the pressure exerted on it and hence it comes out in the form of gas.

Question 2. Explain giving examples the various factors on which rate of evaporation depends.

Answer: The rate of evaporation depends on the following factors:

1. Surface area: If the surface area is increased the rate of evaporation also increases.
    - To dry the clothes we spread them to dry faster.
    - Tea in saucer cools faster than in a cup.
2. Temperature: If the temperature is increased the rate of evaporation also increases. Due to increase in temperature the particles gain more kinetic energy and change their phase from liquid to gaseous. Water will evaporate faster in sun than in shade.
3. Humidity: It is the amount of water vapour present in air. The air can hold definite amount of water vapour, at a given temperature. If the amount of water vapour is high in the air then the rate of evaporation decreases. On hot and humid day, desert coolers are not effective as the air cannot hold any more moisture to get the cooling effect.
4. Wind speed: With the increase in wind speed, the rate of evaporation increases. The particles of water vapour move away with the wind, decreasing the amount of water vapour in the surrounding.

V. Value-Based Questions

Question 1. Adil parked his bicycle on a sunny day in a parking stand of his school campus. When the school got over Adil saw his burst cycle type. Thereafter he kept less air in his cycle types and did not inflate them fully.
(a) Why did the type burst?
(b) Why is air compressible?
(c) What value of Adil is reflected in the above act?
Answer:
(a) The tyre burst because the air inside the tyre got heated and therefore exerted pressure on the walls of the tyre.
(b) Air is compressible because it has large intermolecular space.
(c) Adil showed the value of intelligence, awareness and self responsibility.

Question 2. Akshay's friend visited his house in Mumbai and he was surprised to see air conditioners installed in all of his rooms. His friend advised Akshay to use water-coolers and save electricity. On this Akshay told, him that the water-cooler is not at all effective in coastal areas.
(a) Why are water-cooler not effective in coastal areas?
(b) What are the other two factors on which evaporation of water depends?
(c) What value of Akshay's friend is seen in this act?
Answer: (a) Water coolers are not effective in coastal areas due to high rate of humidity.
(b) The other two factors on which evaporation of water depends are temperature and surface area.
(c) Akshay's friend showed the value of concerned citizen, morally responsible and friendly in nature.

Question 3. Sita lived in a village and could, not afford refrigerator in her house. She knew how to keep water cold and preserve all perishable items in her house. She kept ivet cloth surrounding the earthen pot to keep water cool, she also kept vegetables fresh by keeping them in wet gunny bag and timely sprinkled water over it.
(a) Why did Sita keep wet cloth surrounding the earthen pot?
(b) Suggest one more method of keeping the house cool in summer.
(c) What value of Sita is reflected in the above case?
Answer: (a) The wet cloth gave the cooling effect to the pot, as the water in the cloth evaporated and evaporation causes cooling effect.
(b) By sprinkling some water on the lawn/veranda of the house can keep the house cool.
(c) Sita showed the value of responsible behaviour.

Question 4. Shreya commutes in a CNG fitted van to school every day along with many other students. She told the van driver to get the CNG connection certified and timely checked it for any leakage or loose connection of pipes. She told the driver to be more careful during summers.
(a) What is CNG?
(b) Why should one be more careful with CNG cylinders during summer?
(c) What value of Shreya is seen in the above act?
Answer: (a) CNG is Compressed Natural Gas used as fuel.
(b) During summers, the CNG connections and cylinder need to be checked because the gas expands due to heat and if there would be any leakage then it would cause fire in the vehicle.
(c) Shreya showed the value of concerned citizen and morally responsible behaviour.

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