Activity 12

Take some orange juice in a bowl which is a liquid under normal condition. Put it into a freezer. After some time when you take it out you will find that it has turned into a solid. This is because the temperature is lower in the freezer than the room-temperature.

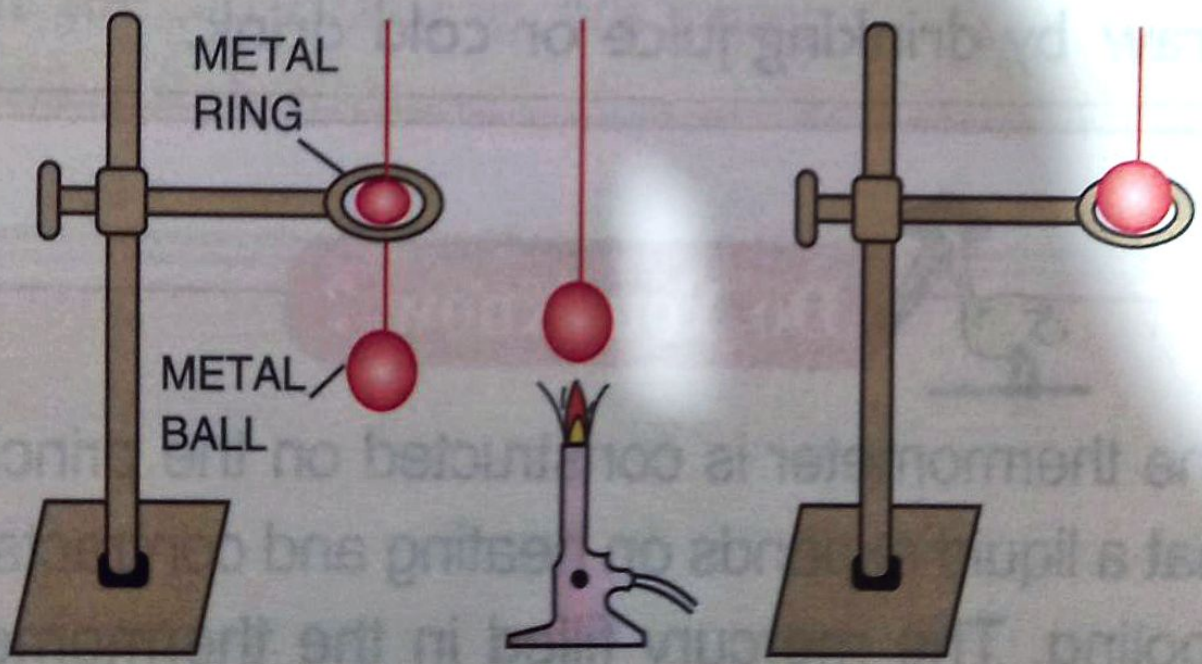
If you lease it at room temperature for some time, it will again turn into a liquid and will taste the same.

Activity 14

Ball and ring experiment to show that a solid expands on heating and contracts on cooling.

Take a metallic ring and ball. Try to pass the metal ball through the ring. The ball is able to pass through the ring. Now heat the metal ball for 5-6 minutes. The hot ball is not able to pass through the ring.

This shows that a solid expands on heating. Now cool the ball, it again passes through the ring. This shows that a solid contracts on cooling.



I
The metal ball passes through the ring

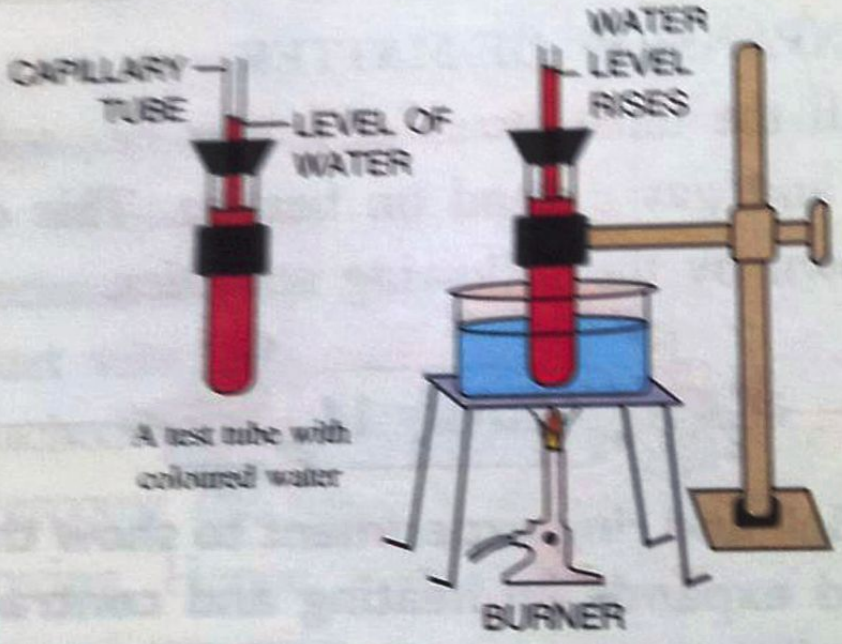
II
Metal ball is heated

III
The metal ball is unable to pass through the ring after being heated

Activity 15

To show that a liquid expands on heating and contracts on cooling.

Take a test tube filled with coloured water. Close the mouth of the test tube with a cork. Fit a capilary glass tube through a hole in the cork such that it is dipped in water. Some water enters the capillary tube. Note the level of water in the capilary tube. Now heat the test tube by putting in a water bath. You will observe that the level of coloured water increases in the capillary tube.



This shows that liquids expand on heating.

On cooling the test tube, the water level in the capillary tube decreases, showing that liquids contract on cooling.

Note : A capillary tube is a thin glass tube with small internal diameter.

The capillary action can also be shown with a straw by drinking juice or cold drink.

To show thermal expansion of a gas.

Take some coloured water in a beaker. Take a capillary tube and dip its one end in the coloured water to take a drop of it in the capillary tube. Fit this capillary through a hole in the cork. Now fit the cork in a test tube carefully.

Now heat the test tube. After some time you will observe that, drop of water moves up. This is because air in the test tube expands on heating which pushes the water drop up. Now cool the test tube, the water drop again comes down. This shows that air contracts on cooling.