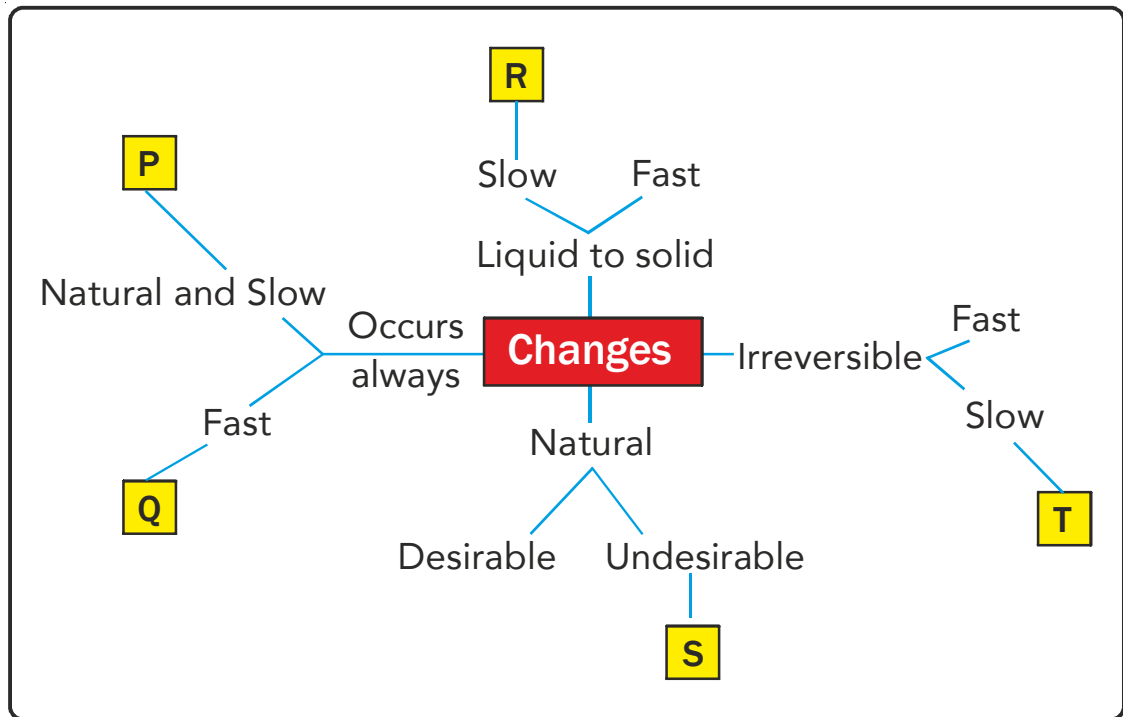


01

Read the flow chart given below.



- (i) Which process is natural and slow that occurs always in the presence and absence of sunlight?
- (ii) Which hands always move fast irrespective of any events ?
- (iii) Which slow process involves change of a liquid to solid ?
- (iv) Which natural change(s) is irreversible and undesirable by humans ?
- (v) Which process on a metal is slow and requires some components of atmospheric air ?

- (i) Occurrence of days and nights is a natural and slow process that occurs always in the presence and absence of sunlight.
- (ii) Seconds, minutes and hours hands of a clock move fast always irrespective of any events.
- (iii) Crystallisation is a slow process, in which a liquid solution is converted into a solid by heating or use of sunlight.

Ex: Evaporation of sea water to obtain salt.

- (iv) Volcanic eruption, floods, earthquakes are some natural changes that are irreversible and undesirable by humans.
- (v) Rusting of iron metal is a slow process that requires water vapour and oxygen from the atmospheric air.

02

A boy took a long bamboo stick (P) and cut it into 6 pieces and marked all as (Q). He then burnt a piece of bamboo stick from (Q) and named it (R) with the help of a candle and collected its ash.

- (i) What type of change is undergone by a bamboo stick (P), when it is cut into 6 pieces ?
- (ii) Can we join all the 6 pieces to get an original bamboo stick to make this change reversible ?
- (iii) Weigh the mass of a piece of bamboo stick (R) and note its mass. Later on burn it. Again note its mass. Why there is a difference in mass of a piece of bamboo stick (R) before and after burning it ? Indicate the type of change ?

- (i) A bamboo stick cut into 6 pieces has undergone an irreversible change as these pieces cannot be joined to form a long original bamboo stick (P).
- (ii) No. We cannot obtain original bamboo stick by joining 6 pieces. Only few irreversible changes can be reversed but not all.
- (iii) A piece of bamboo stick on burning has undergone irreversible change with reduction in mass.

03

A metal ring has to be fixed on a wooden wheel of a cart. The blacksmith heats the metal ring and puts it on the wheel. The wheel fits perfectly after some time.

- (a) What was the size of the metal ring that was fixed on the wheel of a cart ?
- (b) What type of change is undergone by the metal ring ?
- (c) What is the cause for the change in the size of a metal ring ?

- (a) The metal ring size is slightly smaller than the wheel.
- (b) On heating a metal ring, it expands. After fixing this metal ring on the wheel, it contracts on cooling. Expansion and contraction are increase and decrease in the size of the metal ring. It is a reversible change.
- (c) Heating of a metal ring causes a change in its size.

04

When water boils in a kettle, hot steam comes out of the spout due to evaporation. If a cold plate is held over the steam, it turns back into water droplets which can be seen on the plate. This change is called condensation, which is a reverse of evaporation. Both the processes occur frequently in the nature.

The above activity of evaporation also occurs naturally in water bodies. Even condensation also occurs naturally in the clouds to form rain.

- (a) What makes the water to evaporate from ponds, puddles and water bodies ?
- (b) Which process is reverse of evaporation ?
- (c) What types of changes are evaporation and condensation ?

- (a) When sun rays fall on the given water sources/ bodies, liquid water forms water vapour by evaporation.
- (b) Condensation is the reverse process of evaporation.
- (c) Both are reversible changes.

05

The production of electricity using coal in a thermal power plant is quite useful for us and desirable. The emission of smoke and other harmful gases due to the burning of coal into the environment becomes undesirable.

- (a) What is used to obtain electricity in a thermal power plant ? Indicate the type of change.
- (b) Why production of electricity from a thermal power plant undesirable ?
- (c) What happens if the above harmful and toxic gases are inhaled by humans ? Is this change desirable or undesirable ?

- (a) Coal is used to obtain electricity in a thermal power plant. It is an irreversible, desirable change.
- (b) Coal contains impurities. On its use in thermal power plant, coal releases harmful and toxic gases into the air. It is an undesirable change.
- (c) Inhaling harmful and toxic gases by humans leads to breathlessness, headache etc., and may lead to death. Production of electricity by using coal is a desirable change but release of harmful gases and its inhalation by humans is an undesirable change.