

7th Science Lesson 9 Questions in English

9] Changes Around Us

1. Which of the following is/are physical change?

- 1) Ice melts on heating
 - 2) Water starts evaporating
 - 3) Freezing of water
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Changes take place around us all the time. A change refers to an alteration in physical properties or alteration in the composition of matter. For example, **ice melts on heating, that is, it changes from a solid to liquid. On further heating, water starts evaporating; it changes from a liquid to gas. Here, there is a change in the physical state of the substance.**

2. Which of the following are altered by physical changes?

- 1) Colour
 - 2) Texture
 - 3) State of the substance
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

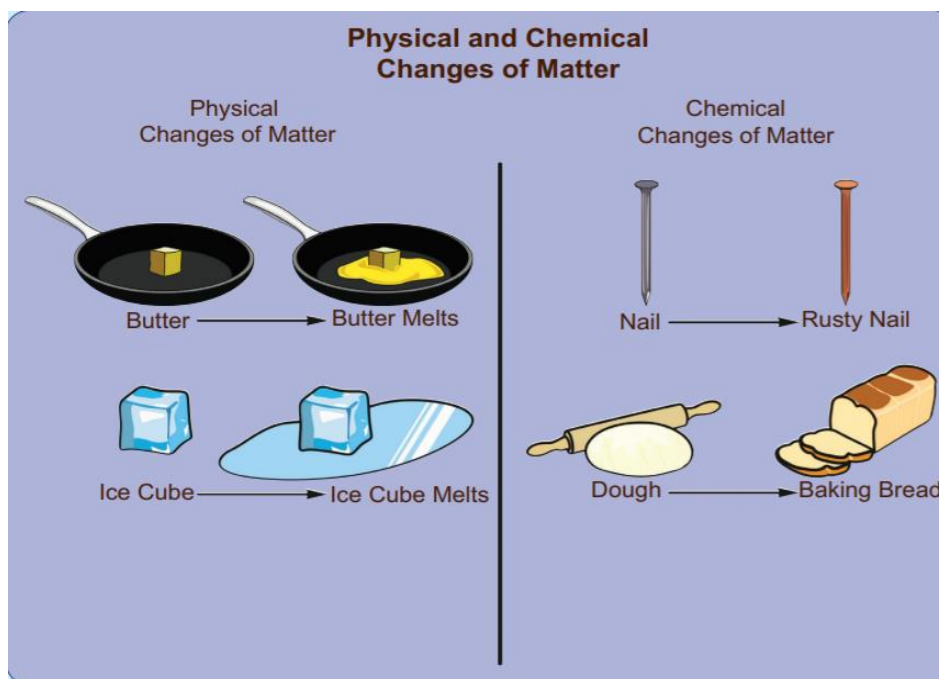
Explanation

Let us look at another change, that is, when objects made of iron are exposed to moist conditions, a reddish-brown new substance called rust forms on the surface of these objects. In this instance of rusting, there is change in the composition of the substance. Thus, the physical changes involve an **alteration in the properties such as colour, texture and the state of the substance** since there is formation of a new substance.

3. Which of the following is chemical change?

- 1) Butter melting
 - 2) Nail rusting
 - 3) Bread making
- a) 1, 2

- b) 1, 3
- c) 2, 3
- d) All the above

Explanation

4. Which of the following gas is liberated when paper is burnt?

- a) Oxygen
- b) Carbon Monoxide
- c) **Carbon di-oxide**
- d) Nitrogen

Explanation

In case of burning of paper, changes to carbon dioxide and other substances. Now we cannot get back the paper after burning. As there is a change in the chemical nature, it is called as chemical change.

5. Heating of a substance results in_____

- a) Expansion
- b) Distribution
- c) Contraction
- d) **Either a or c**

Explanation

Upon heating, particle arrangement within the state of matter gets disturbed. The disturbance is seen either as **expansion or contraction**.

6. Which of the following remains the same when an object is cooled?

- a) Shape
- b) Mass**
- c) Size
- d) All the above

Explanation

When heated or cooled, the object may expand or contract based on the nature of the object, but the **mass remains the same**. That is, the number of particles that was inside the object does not undergo any change, only the arrangement of the particle changes.

7. When a glass of water is heated, its volume_____

- a) Decreases
- b) Increases**
- c) Initially increases then decreases
- d) Remains the same

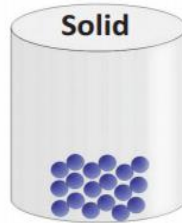
Explanation

When a **glass of water is heated, its volume increases** and in case a glass of water is **cooled its volume decreases**.

8. Which of the following statement about solid is correct?

- 1) Particles are very close together
 - 2) Particles are not arranged in a fixed regular pattern
 - 3) Particles can vibrate about their fixed positions
- a) 1, 2
 - b) 1, 3**
 - c) 2, 3
 - d) All the above

Explanation



In which particles are very close together.

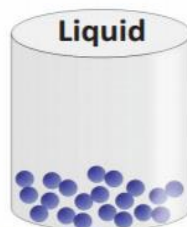
Particles are arranged in a fixed regular pattern.

Particles can vibrate about their fixed positions.

9. Which of the following statement about liquid is correct?

- 1) Particles are apart from each other
 - 2) Particles are not arranged in a fixed regular pattern
 - 3) Particles are able to slide past one another.
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation



In which particles are close together.

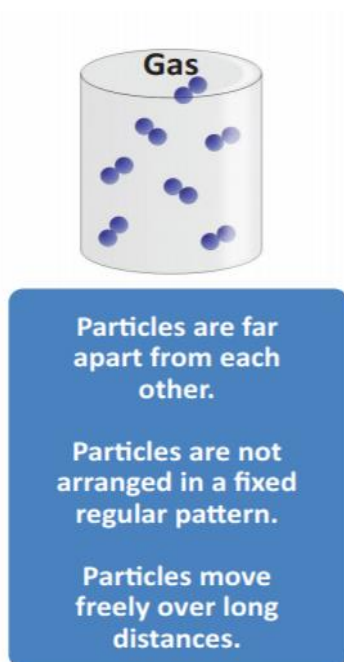
Particles are not arranged in a fixed regular pattern.

Particles are able to slide past one another.

10. Which of the following statement about gas is correct?

- 1) Particles are apart from each other
 - 2) Particles are not arranged in a fixed regular pattern
 - 3) Particles move freely over long distances.
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

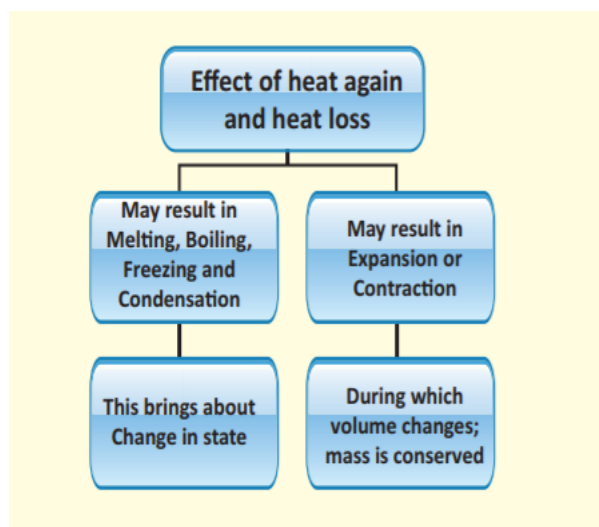
Explanation



11. Which of the following are the effects of heat gain?

- 1) May result in Melting, Boiling, Freezing and Condensation
 - 2) Brings change in state
- a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation



12. Which of the following statement is correct?

- 1) Physical changes are the changes in which only physical properties of a substance undergo a change
- 2) There is no new substance formed in a physical change
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Physical changes are the changes in which only physical properties of a substance undergo a change and **there is no change in its chemical composition**. There is no new substance formed in a physical change.

13. Which of the following are physical properties?

- 1) Lustre
- 2) Ductility
- 3) Viscosity
- 4) Density
 - a) 1, 2, 3
 - b) 1, 3, 4
 - c) 2, 3, 4
 - d) All the above

Explanation

Physical properties include **lustre, malleability (flexibility), and ductility (ability to be drawn into a thin wire), density, viscosity, solubility, mass, volume** and so on. Any change in these physical properties is referred to as a physical change.

14. Assertion(A): when a rubber band is stretched, it elongates

Reason(R): Stretching of rubber band is chemical change

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) Both (A) and (R) are correct and (R) explains (A)
- d) (A) is Correct and (R) is wrong

Explanation

Any change in these physical properties is referred to as a physical change. For example, when a rubber band is stretched, it elongates. However, when then stretching is stopped, the rubber band comes back to its original state and shape. In this example, there is no new substance formed but the rubber band remains the same before and after elongation.

15. Which of the following statement is correct?

- 1) During a physical change, no new substances are formed
 - 2) A physical change is usually temporary and reversible in nature
 - 3) In a physical change, the chemical properties of a substance do not change
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

A physical change has following characteristics:

- During a physical change, no new substances are formed. In a physical change, the chemical properties of a substance do not change. For example, when ice cube melts, water is formed. In this change, there is no new substance, but water is same both in ice and in water
- A physical change is usually temporary and reversible in nature. For example, when water is heated, water vapours are formed, once water vapours are cooled, water can be obtained again.
- In a physical change, the chemical properties of a substance do not change. For example, when a piece of gold is melted, its chemical composition remains the same in the solid form and also in the liquid form.

16. Which of the following are examples of physical change?

- 1) Cutting of vegetables
- 2) Rusting of Iron
- 3) Inflating a balloon
 - a) 1, 2
 - b) 1, 3**
 - c) 2, 3
 - d) All the above

Explanation

In a physical change, the physical properties such as colour, shape and size of a substance may undergo a change. For example, **cutting of vegetables and inflating a balloon are some examples of physical changes in which size and shape of a substance undergoes a change.** we know it is not

17. Match the following:

- | | |
|-----------------------|-----------------|
| I. Solid → to Liquid | 1. Sublimation |
| II. Liquid → to Solid | 2. Melting |
| III. Solid → to Gas | 3. Freezing |
| IV. Gas → to Liquid | 4. Condensation |
| a) 3, 1, 2, 4 | |
| b) 2, 3, 1, 4 | |
| c) 2, 3, 4, 1 | |
| d) 3, 4, 1, 2 | |

Explanation

The following are some of the changes of state:

from Solid → to Liquid is Melting

from Liquid → to Gas is Vaporization

from Liquid → to Solid is Freezing

from Gas → to Liquid is Condensation

from Solid → to Gas is Sublimation

18. In an endothermic process, the speed of the molecules_____

- a) Decreases
- b) Increases**
- c) Initially increases then decreases
- d) None

Explanation

In an **endothermic process**, heat is absorbed and the **speed of the molecules is increased** hence they move faster.

19. Which of the following process are endothermic process?

- 1) Melting
 - 2) Freezing
 - 3) Vaporization
 - 4) Sublimation
- a) 1, 2, 4
 - b) 1, 3, 4
 - c) 2, 3, 4
 - d) All the above

Explanation

Melting, vaporization, and sublimation occur **when heated** and hence it is called as **endothermic process**.

20. Which of the following statement about exothermic process is correct?

- 1) Heat is removed
 - 2) It decreases the speed of molecules
 - 3) Freezing and condensation are exothermic process
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

In contrast, such as in **freezing and condensation**, heat is removed, resulting in the decreasing the **speed of the molecules** causing them move slower. Such processes are called as exothermic process.

21. How many types of vaporization are there?

- a) 2
- b) 4
- c) 3
- d) 1

Explanation

When you put a wet cloth to dry, the water evaporates into air, leaving the clothes dry. That is there are **two types of vaporization: boiling and evaporation**, the first one is by heating and the second type of vaporization is natural.

22. Which of the following statement is correct?

- 1) Boiling is a physical change
- 2) Boiling is the process of conversion of a liquid into vapours on heating
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Boiling is the process of conversion of a liquid into vapours on heating. In gaseous state, only the arrangement of molecules changes, there is no change in their chemical composition. So, **boiling is a physical change.**

23. Which of the following statement is correct?

- 1) Upon heating a liquid, the particles gain energy and vibrate more vigorously.
- 2) When liquid water is heated to 100°C, it boils to become steam
- 3) Boiling occurs when the boiling point is reached
 - a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Upon heating a liquid, the particles gain energy and vibrate more vigorously. When the particles possess enough energy, they overcome the strong forces of attraction between one another. The particles break free from one another and move randomly. For example, **when liquid water is heated to 100°C, it boils to become steam.** Boiling occurs when the boiling point is reached. The liquid changes to its gaseous state.

24. Which of the following statement is correct?

- 1) Evaporation is the technique used to separate dissolved solids from a solid-liquid mixture.
- 2) This is the technique used to extract salt from sea water in salt pans
 - a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Evaporation is the technique used to separate dissolved solids from a solid-liquid mixture. This is the technique **used to extract salt from sea water in salt pans.**

25. Assertion(A): Salt is formed by the evaporation of sea water

Reason(R): Evaporation makes use of the fact that the solvent in a solution can vapourise at any temperature, leaving behind a residue of the solid that was dissolved in the liquid.

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) **Both (A) and (R) are correct and (R) explains (A)**
- d) (A) is Correct and (R) is wrong

Explanation

Salt is formed by the evaporation of sea water. Shallow level of sea water is impounded. Slowly the water evaporates due to action of Sun. Ultimately salt deposits over the ground we can understand. **Evaporation makes use of the fact that the solvent in a solution can vapourise at any temperature, leaving behind a residue of the solid that was dissolved in the liquid.**

26. Evaporation occurs at_____ of liquid

- a) **Surface**
- b) Top
- c) All over the body
- d) None

Explanation

From drying clothes to drying fish, evaporation is used. **Evaporation is a slow process and occurs only at the surface of the liquid.**

27. Upon cooling a liquid, the particles_____ energy

- a) Gain
- b) **Loose**
- c) Initially loose then gain
- d) None

Explanation

Upon cooling a liquid, the particles loose energy and vibrate less vigorously. When the particles possess less energy, they can experience strong forces of attraction between one another. The particles move closer to each other and movement of particles is also restricted.

28. At what temperature liquid water freezes to become ice?

- a) 0°C
- b) 4°C
- c) -1°C
- d) -100°C

Explanation

When liquid water is cooled to 0°C , it freezes to become ice. Freezing occurs when the freezing point is reached. The liquid changes to its solid state.

29. Which of the following statement is correct?

- 1) Condensation is the conversion of gas into its liquid state
 - 2) Condensation is neither physical nor chemical change
 - 3) During this process, only the arrangement of molecules changes from the gaseous state to liquid state
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Condensation is the conversion of gas into its liquid state. The liquid obtained after condensation can be converted back into gas on heating. So, condensation is also a physical process. During this process, only the arrangement of molecules changes from the gaseous state to liquid state. So, **condensation is a physical change.**

30. Which of the following statement is incorrect?

- 1) Evaporation is the changing of a gas into its liquid state
 - 2) Condensation is the changing of a liquid into its gas state
- a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

Condensation is the changing of a gas into its liquid state and it happens by cooling, whereas **Evaporation is the changing of a liquid into its gas state** and it happens by heating.

31. Which of the following statement is incorrect?

- 1) Conversion of solid directly into gas is called sublimation.
 - 2) There are certain solid substances like camphor, naphthalene that get converted into gas directly upon heating without becoming liquid
- a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

There are certain solid substances like camphor, naphthalene that get converted into gas directly upon heating without becoming liquid. This process in which a **solid is converted directly into gas is called sublimation**. In each of the above said processes, there is a change of state due to change in temperature. But there is no change in chemical composition.

32. Which of the following statement is correct?

- 1) Crystallization is a method of separation as well as a method of purification.
 - 2) Large crystals of pure substances can be obtained from their solutions by the process of crystallization.
- a) 1 alone
 - b) 2 alone
 - c) 1, 2
 - d) None

Explanation

crystallization is also a special form of physical change. **Large crystals of pure substances can be obtained from their solutions by the process of crystallization**. Crystallization is a method of separation as well as a method of purification.

33. Which of the following results in formation of new substance?

- a) Physical change
- b) **Chemical change**
- c) Both a and b
- d) None

Explanation

Changes that occur with the **formation of new substance with different chemical composition or transformation of a substance into another substance** with the evolution or absorption of heat or light energy are termed as chemical changes.

34. Which of the following are examples of chemical change?

- 1) Curdling of milk
 - 2) Burning
 - 3) Fermentation
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) **All the above**

Explanation

Chemical changes are very important in our lives. All the new substances which we use in various fields of our life are produced as a result of chemical reactions. Some of the examples of the importance of chemical changes are given below: **Rusting of iron, burning, curdling of milk, reaction of baking soda with lemon juice, fermentation are some examples of chemical changes.**

35. Which of the following are accompanied by chemical changes?

- 1) Heat
 - 2) Sound
 - 3) Gas
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) **All the above**

Explanation

In addition to new products, the following may also accompany a chemical change:

- **Heat, light or any other radiation may be given off or absorbed.**
- **Sound** may be produced
- A change in smell may take place (or) a new smell may be given off.
- A colour change may take place.
- **A gas may be formed.**

36. Explosion of a firework is a_____

- a) Physical change
- b) **Chemical change**
- c) Either a or b

d) None

Explanation

Explosion of a firework is a chemical change. We know that such an explosion produces heat, light, sound and unpleasant gases that pollute the atmosphere. That is why we are advised not to play with fireworks.

37. When slice of apple is kept in air, it becomes_____ in colour

- a) Red
- b) Brown**
- c) Yellow
- d) Green

Explanation

You must have noticed that a slice of **an apple acquires a brown colour** if it is not consumed immediately. Colour of the potato remains the same when stored in water but there is change in colour with the piece kept in air. Look at the cut brinjal kept in air.

38. The iron pillar which has not been rusted is located in_____

- a) Agra
- b) Delhi**
- c) Chennai
- d) Vijayanagar

Explanation

There is an iron pillar at the Qutub complex in Delhi which is more than 1600 years age. Even after such a long period, the iron pillar kept in open spaces has not rusted at all. This shows that Indian scientists made great advances in metal making technology even at 16th century which enabled them to make this iron pillar having the quality of great rust resistance.

39. iron + ___ + _____ → rust

- a) CO₂, Water
- b) O₂, Water**
- c) SO₂, Water
- d) NO₂, Water

Explanation

iron + oxygen + water → rust

$2\text{Fe} + 2\text{O}_2 \text{ from air} + 2\text{H}_2\text{O} \rightarrow 2\text{Fe}_2\text{O}_3 \cdot \text{H}_2\text{O}$

40. Which of the following can be used for galvanization?

- 1) Zinc
 - 2) Iron
 - 3) Helium
 - 4) Chromium
- a) 1, 2, 4
 - b) 2, 3, 4
 - c) 1, 2, 3
 - d) All the above

Explanation

Another way of preventing rusting is to **deposit a layer of a metal like chromium or zinc on iron**. This is called galvanization. Iron articles can be prevented from making contact with oxygen, water/water vapour. A simple way is to apply a coat of paint or grease. These coats should be applied regularly to prevent rusting.

41. Which of the following substances are formed during burning a paper?

- 1) NO₂
 - 2) carbon-dioxide
 - 3) water vapour
 - 4) Smoke
- a) 1, 2, 3
 - b) 2, 3, 4
 - c) 1, 3, 4
 - d) All the above

Explanation

Burning a piece of paper gives **entirely new substances such as carbon-dioxide, water, water vapour, smoke and ash**. Heat and light are also given out during the burning of paper. We cannot combine the products of burning of paper to form the original paper again. So, it is a permanent change.

42. When magnesium ribbon is burnt it produce_____ coloured light

- a) Blue
- b) Green
- c) Red
- d) **White**

Explanation

You can see that the **magnesium ribbon starts burning with a dazzling white light**. Hold the burning magnesium ribbon over a watch glass so that the powdery ash being formed by the burning of magnesium collects in the watch glass.

43. $2\text{Mg} + \text{O}_2 \rightarrow$

- a) MgO_2
- b) Mg_2O
- c) **2MgO**
- d) 2MnO

Explanation

When magnesium ribbon burns in air, then the magnesium metal combines with the oxygen of air to form a new substance called magnesium oxide.

Magnesium + Oxygen $\rightarrow$ Magnesium oxide

$2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$

44. Which of the following statement is correct?

- 1) Curdling is a process in which liquid gradually turns into solid, forming clumps along the way.
 - 2) It is a Physical change
 - 3) Curdling of milk is an example of irreversible change
- a) 1, 2
 - b) **1, 3**
 - c) 2, 3
 - d) All the above

Explanation

We know that curdling of milk is an example of irreversible change since we cannot get back the milk after curdling occurs. It is also called as a **chemical change**. **Curdling is a process in which liquid gradually turns into solid, forming clumps along the way.**

45. Which of the following breaks the sugar solution into alcohol and carbon-di-oxide?

- a) Virus
- b) Fungi
- c) **Yeast**
- d) None

Explanation

Fermentation is the process in which microorganisms such as **yeast and certain bacteria break down sugar solution into alcohol and carbon-di-oxide**. It is an irreversible process as the alcohol formed cannot be turned back into sugar

46. Who was the first person to describe the process of fermentation?

- a) Louis Pasteur
- b) Robert Koch
- c) Edward Jenner
- d) Edward patison

Explanation

Louis Pasteur (1822- 1895), a French chemist and microbiologist was the **first person to describe the process of fermentation**.

47. Who discovered the cure for rabies?

- a) Louis Pasteur
- b) Robert Koch
- c) Edward Jenner
- d) Edward patison

Explanation

Louis Pasteur described that fermentation occurs in the absence of air and in the presence of micro-organisms such as yeast. **He discovered the cure for rabies**.

48. Which of the following is formed when Baking soda is mixed with lemon juice?

- 1) Sodium citrate
 - 2) Carbon di-oxide
 - 3) Carbon Mono-oxide
 - 4) Water
- a) 1, 2, 4
 - b) 2, 3, 4
 - c) 1, 3, 4
 - d) All the above

Explanation

Baking soda is sodium hydrogen carbonate and lemon juice contains citric acid. So, when these two substances are mixed together, then a chemical change takes place **between sodium hydrogen carbonate and citric acid to form three new substances: sodium citrate, carbon di-oxide and water**.

49. Assertion(A): When lemon juice is mixed with soda water, they produce brisk effervescence

Reason(R): Change in pressure may also bring about a chemical change

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) **Both (A) and (R) are correct and (R) explains (A)**
- d) (A) is Correct and (R) is wrong

Explanation

We know that firing of crackers is a chemical change. Some crackers explode only when thrown against a wall or struck with a hard substance. Thus, **we could see that change in pressure may also bring about a chemical change. When lemon juice is mixed with soda water, they produce brisk effervescence which is otherwise not possible when they are separate.**

50. Assertion(A): yeast acts as the catalyst in the fermentation of sugar

Reason(R): Catalysts are substances that speed up the process of a chemical change and it will not undergo any change during the course of the reaction

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) **Both (A) and (R) are correct and (R) explains (A)**
- d) (A) is Correct and (R) is wrong

Explanation

Catalysts are substances that speed up the process of a chemical change and it will not undergo any change during the course of the reaction. For example, **yeast acts as the catalyst** in the fermentation of sugar. You will learn more about catalyst in your higher classes.

51. Burning of wood is an example of_____ change

- a) **Exothermic**
- b) Endothermic
- c) Physical
- d) None

Explanation

We saw that the burning of magnesium ribbon gives out heat and light. Similarly, **burning of wood** also releases heat and light. Such changes in which heat is released are known as **exothermic changes**.

52. Dissolution of glucose in water is_____ change

- a) Exothermic
- b) Endothermic
- c) Physical
- d) None

Explanation

There are some changes in which heat is absorbed. For example, water absorbs heat when it evaporates to form water vapours. Similarly, ice absorbs heat when it melts to form water. Such changes in which heat is absorbed are known as endothermic changes. **Dissolution of glucose in water is also an endothermic change.**

53. Which of the following are periodic change?

- 1) Motion of the seconds-hand
 - 2) Rotation of earth
 - 3) Beating of the heart
- a) 1, 2
 - b) 1, 3
 - c) 2, 3
 - d) All the above

Explanation

Changes that repeat themselves after a definite interval of time are called periodic changes. **Rotation and Revolution of earth, beating of the heart, clock striking every hour, motion of the seconds-hand / minute-hand / hour-hand of a clock** are some examples of periodic changes.

54. Which of the following are Non-periodic changes?

- 1) Eruption of a volcano
 - 2) Streak of lighting flash across the sky
 - 3) Seasonal change
- a) 1, 3
 - b) 2, 3
 - c) 1, 2
 - d) All the above

Explanation

Changes that do not repeat themselves after a definite interval of time and occur randomly are called non-periodic changes. **Eruption of a volcano, occurrence of an earthquake, a streak of lighting flash across the sky during a thunderstorm, running of a batsman between the wickets, movement of legs while dancing** are a few examples of non-periodic changes.