

NEW ERA PUBLIC SCHOOL

Subject :- Science

Topic :- Heat

Class :- 7th

Lesson no :- 4

Solved Assignment of Unit-II :-

→ Answer in brief.

Q1 :- Name the device used to measure temperature.

Ans :- The device used to measure temperature is Thermometer.

Q2 :- Which thermometer measures our body temperature?

Ans :- Clinical thermometer measures our body temperature.

Q3 :- What is the range of clinical thermometer in degree Celsius and degree Fahrenheit?

Ans :- The range of clinical thermometer is scaled from 35°C to 42°C and in Fahrenheit from 94°F to 108°F

Q4 :- Name two things other than solids which are poor conductors of heat.

Ans :- The two things other than solids which are poor conductors of heat are Air and Water.

Q5 :- Which mode of transfer of heat doesnot require any medium?

Ans :- Radiation is the mode of transfer of heat that doesnot require any medium.

Q6 :- Name the SI unit of heat.

Ans :- The SI unit of heat is Joule (J)

Q7 :- Name the three units of temperature. which

one is the SI unit of temperature?

Ans:- The three units of temperature are Celsius, Fahrenheit and Kelvin.

The SI unit of temperature is Kelvin (K).

→ Answer in detail.

Q1:- What are the precautions which need to be taken while using a laboratory thermometer?

Ans:- While using a laboratory thermometer, following precautions need to be taken:-

1. While taking temperature with laboratory thermometer, it should be properly dipped in the object whose temperature is to be measured.
2. It should always be kept upright and not tilted.
3. The bulb should not touch the base or the side of the container.

Q2:- Why is the range of clinical thermometer 35°C to 42°C ?

Ans:- A clinical thermometer is graduated from 35°C to 42°C . This is because the temperature of the human body varies only within this range. The average normal body temperature of a healthy human is 37°C .

Q3:- Write an activity to show that conduction takes place in a metal.

Ans:- Aim:- To show that conduction takes place in metals

Materials Required:- metal rod, candle, wax, board pins, stand and a burner.

Procedure:- Take a rod or flat strip of a metal e.g. aluminium or iron. Fix the board pins to the metal rod with wax. These pins should be at nearly equal distances. Clamp the rod to a stand. Now heat the other end of the rod and observe.

Observations and Conclusions:- We will notice that the board pins start falling down as the wax melts after sometime. The pins near the end that is being heated fall off first followed by the others. The pin farthest away from the end that is being heated falls off last.

It means that the temperature of the rod near the heated end increases and the molecules at that end start vibrating faster. These vibrations are passed along the rod and thus heat is transferred along the length of the rod. The conduction of heat is more when the molecules are packed close together. It means the conduction is very fast in solids.

→ [Draw Diagram Fig 4.11: Conduction in Solid

Pg. no 49]

Q4:- Explain how convection takes place in water?

Ans:- When water is heated in a pan, the particles of water which are near the source of heat get heated first. Because of heating, they become light and rise in water. The gap which is created because of rise of hot particles is filled by cold particles of water from the surrounding area. Thus, the cyclic movement of particles begins and ends up heating the whole water of the pan. The cyclic movement in fluids occurs because of heating and is called convection current.

→ [Draw Diagram Fig 4.12 :- Convection of heat in water Pg. no 50]

Q5:- Describe land and sea breeze with the relevant diagrams.

Ans:- During the day, the land gets hotter, the air above it rises and cooler air from over the sea flows in, to take its place. This gives rise to a sea breeze that cools the land.

During the night, the land radiates the heat, it had absorbed during the day and cools down faster than the sea. Above the sea, the air is warmer. It rises above and cooler air from the land moves towards the sea to take its place. This gives rise to the land breeze. Thus, we have

(5)

a sea breeze during day time and a land breeze at night.

→ [Draw Diagram Fig 4.14: Land breeze and Fig 4.15: Sea breeze Pg. no 51]

→ Objective Type Questions:-

A. Tick (✓) the correct option.

- | | | |
|------|------|-------|
| 1. a | 5. c | 9. c |
| 2. c | 6. c | 10. d |
| 3. b | 7. b | |
| 4. c | 8. c | |

B. Fill in the blanks.

- | | |
|-------------------------|--------------|
| 1. Heat | 4. radiation |
| 2. Clinical thermometer | 5. metallic |
| 3. bad | 6. molecules |

C. Coin one word for these statements.

- | | |
|----------------|---------------|
| 1. Mercury | 4. Insulators |
| 2. Temperature | 5. Radiation |
| 3. Conduction | |

D. Match the following columns.

- | | |
|----------------|------------------------|
| 1. Sun's heat. | 2. Convection currents |
|----------------|------------------------|

3. No constriction

4. Hotness of body

5. Solids.

E. Write 'T' for the true and 'F' for the false statements.

1. T

5. T

2. T

6. T

3. F

7. T

4. T

8. T

Topic :- Acids, Bases and Salts.

Lesson no :- 5

→ Answer in brief.

Q1 :- What are acidic and basic substances?

Ans:- A compound that contains hydrogen, dissolves in water, is sour in taste and corrosive by nature is called an acid and substances that have acids in them are said to be acidic substances.

Bases are chemical compounds which are opposite to acids. They have soapy touch and have bitter taste. Bases are compounds which contain oxygen or oxygen along with hydrogen and such substances which have

bases in them are called basic substances.

Q2:- What are indicators? Give examples also.

Ans:- A substance which detects the acidic or basic nature of another substance by change in colour is called indicator. Indicators are used to check if a given substance is acid or base. e.g. litmus, china rose, Phenolphthalein, methyl orange.

Q3:- How do we get litmus?

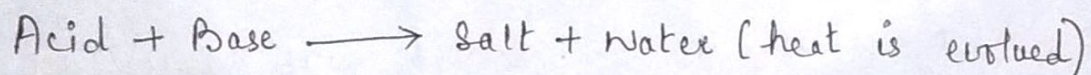
Ans:- Litmus is extracted from lichens. Lichen is a composite organism. It consists of fungi and algae living in symbiotic relationship.

Q4:- Why do we need indicators.

Ans:- Indicators are needed in order to check if a given substance is acid or base.

Q5:- What is neutralization reaction?

Ans:- The reaction between an acid and a base is known as neutralization reaction. Salt and water are produced in this process with the evolution of heat.



Q6:- What is the use of caustic soda?

Ans:- Caustic soda or sodium hydroxide is used in the manufacture of soap, paper and a synthetic fibre called 'rayon'. In homes, it is sometimes used to unblock drains.

→ Answer in detail.

Q1:- With the help of examples explain the process of neutralization reaction.

Ans:- There are various examples of neutralization reactions in our everyday life.

1. Indigestion:- Our stomach contains hydrochloric acid. It helps us to digest food. But too much of acid in the stomach causes indigestion. Sometimes, indigestion is painful. To relieve indigestion, we take an antacid such as milk of magnesia, which contains magnesium hydroxide. It neutralizes the effect of excessive acid.
 2. Ant sting:- The sting of an ant contains formic acid. When an ant bites, it injects the acidic liquid into the skin. The effect of the sting can be neutralized by rubbing moist baking soda or calamine solution, which contains zinc carbonate.
 3. Soil Treatment:- Excessive use of chemical fertilisers makes the soil acidic. Plants donot grow well when the soil is either too acidic or too basic. When the soil is too acidic, it is treated with bases like Quick lime (calcium oxide) or slaked lime (calcium hydroxide). If the soil is basic, organic matter is added to it. Organic matter releases acids which neutralizes the basic nature of the soil.
- Q2:- How will you identify acidic and basic substances?

Ans:- Every substance cannot be tasted to find out if it is acidic or basic. Therefore, to test for acids and bases, we use indicators. An indicator is a substance that changes colour in the presence of an acid or a base.

Q3:- What are natural indicators? How will you prepare china rose indicator?

Ans:- The indicators that are obtained from naturally occurring substance are called natural indicators. e.g. litmus, turmeric, china rose etc.

China rose indicator is prepared by adding warm water to china rose petals in a beaker. After sometime, the water acquires a colour. It can be used as an indicator. It turns magenta in acidic solutions and green in basic solutions.

Q4:- You are given three solutions in different test tubes A, B and C. How will you identify them using an indicator?

Ans:- An indicator is a substance that changes colour in the presence of an acid or a base. We can identify different solutions by change in colour of an indicator. e.g. Litmus indicator turns red in acidic solution, blue in basic and purple in neutral solution.

Q5:- Give reason:

(i) When an ant bites you are advised to rub baking soda on that place.

Ans:- The sting of an ant contains formic acid. When an ant bites, it injects the acidic liquid into the skin. The effect of the sting can be neutralized by rubbing moist baking soda or calamine solution, which contains zinc carbonate.

(ii) Vegetable stain turns reddish-brown when washed with soap solution.

Ans:- Vegetable curry contain turmeric powder and soap is basic in nature. Turmeric is a natural indicator which changes its yellow colour into reddish brown when it comes in contact with a solution of base. Hence, when soap (which is basic in nature) is scrubbed on the stain, the stain turns reddish-brown.

(iii) Quick lime is added to the acidic soil.

Ans:- When excess chemical fertilisers are used in farming, the soil becomes acidic. To neutralise the acid, farmers add bases like quicklime (calcium oxide) to the soil.

→ Objective Type Questions:

A. Tick (✓) the correct option.

1. a

4. a

7. a

2. d

5. a

8. a

3. a

6. b

9. b

B. Fill in the blanks.

1. citric acid

5. formic

2. salt

6. corrosive

3. base

7. electricity

4. acidic

C. Coin one word for these statements.

1. Indicators

5. Table salt

2. Neutral substances

6. Alkali

3. Hydrochloric acid

7. Neutralisation.

4. Acetic acid

D. Match the following columns.

1. Washing soap

4. Natural indicator

2. Base

5. Batteries.

3. Fertilisers

E. Write 'T' for the true and 'F' for the false statements.

1. T

5. T

2. F

6. T

3. T

7. T

4. T

Topic :- Physical and Chemical Changes.

Lesson no:- 6

→ Answer in brief.

Q1:- What compound is formed by burning magnesium in presence of air?

Ans:- Magnesium oxide is formed by burning magnesium in presence of air.

Magnesium + oxygen $\longrightarrow$ Magnesium oxide

Q2:- Name the black compound formed on heating of green copper carbonate.

Ans:- The black compound formed on heating of green copper carbonate is copper oxide.

Q3:- In which type of reaction heat is given out?

Ans:- Heat is given out in exothermic reaction.

Q4:- Is the change in shape a physical change or a chemical change?

Ans:- Change of shape is a physical change.

Q5:- What substance is added to turn the white copper sulphate to blue copper sulphate?

Ans:- Water is added to turn the white copper sulphate to blue copper sulphate.

→ Answer in detail.

Q1:- How can you say that cutting of paper is a physical change?

Ans:- Take a piece of paper and cut it into simple squares. If they are kept together side by side, they acquire the original shape.

We cannot join them but the properties of paper remains the same. So, this is a physical change.

→ {Draw Diagram Fig 6.4: Cutting of paper is a physical change Pg. no 73}

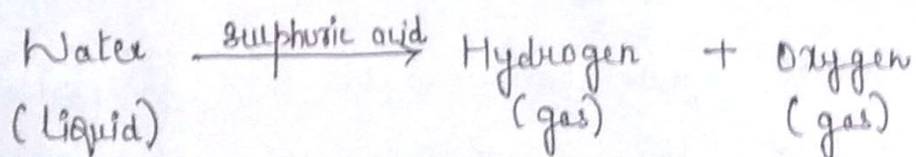
Q2:- Why the colour of blue copper sulphate solution becomes light green when iron powder is added to it?

Ans:- The colour of blue copper sulphate solution becomes light green when iron powder is added to it. It is due to the formation of iron sulphate which is light green in colour.

→ [Draw Diagram Fig 6.9: chemical change in copper sulphate solution Pg. no 75]

Q3:- Explain what happens when electric current is passed through water containing few drops of sulphuric acid?

Ans:- When electric current is passed through water acidified with a few drops of sulphuric acid, it breaks to give hydrogen and oxygen. Water is a liquid and hydrogen and oxygen are gases. Therefore, it is a change of state which is not reversible.



Q4:- Why some substances appear as precipitate in solution?

Ans:- In some chemical reactions, reactants react to form product which is not soluble and settles down in the reaction mixture as precipitate.

Q5:- Define exothermic change.

Ans:- A chemical reaction causing the release of heat is called exothermic change. e.g. burning of paper release heat. When fuel burns it gives out heat and light. So, it is an exothermic change.

Q:- Write the application of crystallization.

Ans:- The application of crystallization are:-

- Purification of sea water.
- Separation of alum crystals from impure samples.
- In the pharmaceutical industry, crystallization is used as a separation and purification process for the synthesis and isolation of many useful substances.

→ Objective Type Questions:-

A:- Tick (✓) the correct option.

- | | |
|------|------|
| 1. a | 4. c |
| 2. c | 5. d |
| 3. a | |

B:- Fill in the blanks.

- | | |
|------------------|--------------------|
| 1. white | 4. magnesium oxide |
| 2. lime water | 5. formic |
| 3. effervescence | 6. corrosion |

C:- Coin one word for these statements.

- | | |
|---------------------|---------------------|
| 1. Chemical change | 4. Crystal. |
| 2. Effervescence | 5. Crystallization. |
| 3. Physical change. | |

D:- Match the following columns:-

1. Lime water milky
2. Light green
3. Hydrogen and oxygen
4. Precipitate
5. Physical change
6. Galvanization.

E:- Write 'T' for the true and 'F' for the false statements.

- | | |
|------|------|
| 1. F | 4. F |
| 2. T | 5. F |
| 3. T | |
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