Class – VII
Science

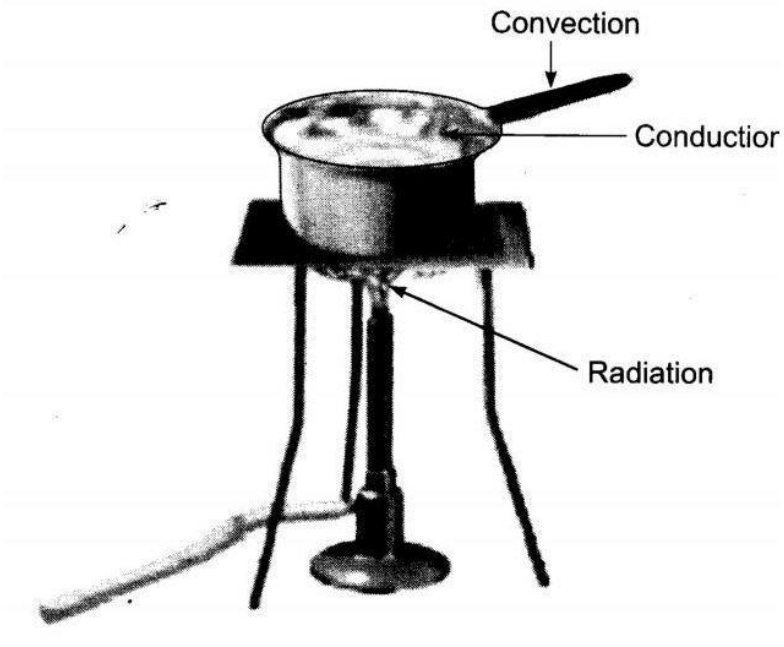
Q.1. State similarities and differences between the laboratory thermometer and the clinical thermometer.
Ans. **Similarities:**
(i) Both thermometers consist of long narrow uniform glass tubes.
(ii) Both have a bulb at one end.
(iii) Both contain mercury in bulb.
(iv) Both use Celsius scale on the glass tube.
Differences:
(i) A clinical thermometer reads temperature 35°C to 45°C while the range of laboratory thermometer is -10°C to 110°C.
(ii) Clinical thermometer has a kink near the bulb while there is no kink in the laboratory thermometer. Due to kink mercury does not fall down on its own in clinical thermometer.
Q.2. Give two examples each of conductors and insulators of heat.
Ans. Conductors—aluminium, iron Insulators—plastic, wood.

Q.3.Fill in the blanks
The hotness of an object is detetmined by its _____ .
(b) Temperature of boiling water cannot be measured by a _____ thermometer.
(c) Temperature is measured in degree _____ .
(d) No medium is required for transfer of heat by the process of _____.
(e) A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of _____
(f) Clothes of _____ colours absorb heat better than clothes of light colours.

Ans. (a) temperature (b) clinical (c) Celsius (d) radiation (e) conduction (f) dark

Q.4. Discuss why wearing more layers of clothing during winter keeps us warmer than wearing just one thick piece of clothing?
Ans.More layers of clothing keep us warm in winters as they have a lot of space between them. This space gets filled up with air. Air is a bad conductor, it does not allow the body heat to escape out.

Q.5. Look at figure 4.6. Mark where the heat is being transferred by conduction, by convection and by radiation
Ans.



Q.6. In places of hot climate it is advised that the outer walls of houses be painted white. Explain.
Ans.In places of hot climate it is advised that the outer wall of houses be painted white because white colour reflects heat and the houses do not heat up too much

Q.8. One litre of water at 30°C is mixed with one litre of water at 50°C. The temperature of the mixture will be:
(a) 80°C (b) More than 50°C but less than 80°C
(c) 20°C (d) Between 30°C and 50°C
Ans.(d) Between 30°C and 50°C.

Q.9. A wooden spoon is dipped in a cup of ice-cream. Its other end:
(a) becomes cold by the process of conduction
(b) becomes cold by the process of convection
(c) becomes cold by the process of radiation
(d) does not become cold
Ans.(d) does not become cold.

Q.10.Stainless steel pans are usually provided with copper bottoms. The reason for this could be that:
(a) copper bottom makes the pan more durable
(b) such pans appear colourful
(c) copper is a better conductor of heat than the stainless steel
(d) copper is easier to clean than the stainless steel

Chapter – 5

Q.1.Ammonia is found in many household products, such as window cleaners. It turns red litmus blue. What is its nature?
Ans.Ammonia has basic nature.

Q.2.Name the source from which litmus solution is obtained. What is the use of this solution?
Ans.Litmus solution is extracted from lichens. It is used to determine whether the given solution is acidic or basic.

Q.3.Is the distilled water acidic/basic/neutral? How would you verify it?
Ans.Distilled water will be neutral. We can verify it by showing that neither blue nor red litmus paper changes its colour when dipped in it.

Q.4.Describe the process of neutralisation with the help of an example.
Ans.The reaction between an acid and a base is known as neutralisation. Salt and water are produced in this process with the evolution of heat.
Antacids like milk of magnesia (magnesium hydroxide), baking soda, etc. which contain a base are used for reducing acidity in stomach when excessive acid released by glands.

Q.5.Mark 'T' if the statement is true and 'F' if it is false:
(i) Nitric acid turns red litmus blue. (T/F)
(ii) Sodium hydroxide turns blue litmus red. {T/F)
(iii) Sodium hydroxide and hydrochloric acid neutralise each other and form salt and water. (T/F)
(id) Indicator is a substance which shows different colours in acidic and basic solutions. . (T/F)
(v) Tooth decay is caused by the presence of a base. (T/F)
Ans.(1) F (ii) F (iii) T (iv) T (V) F

Q.6. Dorji has a few bottles of soft drink in his restaurant. But, unfortunately, these are not labelled. He has to serve the drinks on the demand of customers. One customer wants acidic drink, another wants basic and third one wants neutral drink. How will Dorji decide which drink is to be served to whom?
Ans.Dorji can decide with the help of litmus paper:
(i) The drink which would turn a red litmus blue would be basic.
(ii) If the drink turns a blue litmus to red would be acidic.
(iii) The drink which would not affect both red and blue litmus would be neutral.

Q.7.Explain why:
(a) An antacid tablet is taken when you suffer from acidity.
(b) Calamine solution is applied on the skin when an ant bites.
(c) Factory waste is neutralised before disposing it into the water bodies.

Ans.(a) We take an antacid such as milk of magnesia to neutralises the excessive acid released in stomach.

(b) Ant injects an acidic liquid (Formic acid) into the skin on biting which causes inflammation, to the skin. The effect of the acid can be neutralised by rubbing. Calamine solution which contains zinc carbonate which is very weak base and causes no harm to the skin.
(c) The wastes of factories contain acids. If acids are disposed off in the water body, the acids will harm the organisms. So factory wastes are neutralised by adding basic substances.

Q.8. Three liquids are given to you. One is hydrochloric acid, another is sodium hydroxide and third is a sugar solution. How will you identify them? You have only turmeric indicator.
Ans.Name of the substances Effect on turmeric indicator
1. Hydrochloric acid Yellow to blue
2. Sodium hydroxide Yellow to red
3. Sugar solution No change

Q.9. Blue litmus paper is dipped in a solution. It remains blue. What is the nature of the solution? Explain.
Ans. (i) It can be identified on the basis of the following observations : Bases change the colour of litmus paper to blue. As the colour of blue litmus paper is not affected, the solution must be basic.
(ii) If the solution is neutral, even then colour of litmus will not change.

Q. 10. Consider the following statements:
(a) Both acids and bases change colour of all indicators.
(b) If an indicator gives a colour change with an acid, it does not give a change with a base.
(c) If an indicator changes colour with a base, it does not change colour with an acid.
(d) Change of colour in an acid and a base depends on the type of the indicator. Which of these statements are correct?
(i) All four (ii) (a) and (d) (iii) (b) and (c) (iv) only (d)
Ans. (ii) (a) and (d)

Chapter – 6

Q.1.Classify the changes involved in the following processes as physical or chemical changes:
(a) Photosynthesis
(b) Dissolving sugar in water
(c) Burning of coal
(d) Melting of wax
(e) Beating aluminium to make aluminium foil
(f) Digestion of food

Ans.(a) Chemical change (b) Physical change
(c) Chemical change (d) Physical change
(e) Physical change (/) Chemical change

Q.2.(a) Cutting a log of wood into pieces is a chemical change. (True/ False)
(b) Formation of manure from leaves is a physical change. (True/ False)
(c)Iron pipes coated with zinc do not get rusted easily. (True/ False)
(d)Iron and rust are the same substances. (True/ False)
(e)Condensation of steam is not a chemical change. (True/ False)
Ans. (a)False
Correct statement: Cutting a log of wood into pieces is an irreversible physical change.
(b)False
Correct statement: Formation of manure from leaves is a chemical change.
(c) True
(d)False
Correct statement: Iron and rust are two different chemical substances.
(e)True

Q.3.Fill in the blanks in the following statements:
(a) When carbon dioxide is passed through lime water, it turns milky due to the formation of .
(b) The chemical name of baking soda is .
(c) Two methods by which rusting of iron can be prevented are _____ and _____
(d) Changes in which only _____ properties of a substance change are called physical changes.

(e) Changes in which new substances are formed are called _____ changes..
Ans. (a)calcium carbonate
(b) sodium hydrogen carbonate
(c) painting or greasing, galvanisation

(d) physical
(e) chemical

Q.4. When baking soda is mixed with lemon juice, bubbles are formed with the evolution of a gas. What type of change is it? Explain.
Ans. The reaction between baking soda and lemon juice can be given as below:
Lemon juice + Baking soda ————-> C02 (bubbles) + Other substances

(Citric acid) (Sodium hydrogen carbonate) (Carbon dioxide)

It is a chemical change

Q.5. When a candle burns, both physical and chemical changes take place. Identify these changes. Give another example of a familiar process in which both the chemical and physical changes take place.
Ans. When a candle burns, both physical and chemical changes occur:
(i) Physical change: melting of wax, vapourisation of melted wax.

(ii) Chemical change: Burning of vapours of wax to give carbon dioxide, heat and light.
LPG is another example in which physical change occurs when LPG comes out of cylinder and is converted from liquid to gaseous state and a chemical change occurs when gas burns in air.

Q.6. How would you show that setting of a curd is a chemical change?
Ans. We can say that setting of curd is a chemical change because we can not get the original substance, i.e., milk back and a new substance is formed with different taste, smell and other chemical properties

Q.7. Explain why burning of wood and cutting it into small pieces are considered as two different types of changes. ~
Ans. Burning of wood is a chemical change because in burning new substances are formed as
Wood + Oxygen ————> Charcoal + Carbon dioxide + Heat + Light
But cutting it into small pieces is physical change because no new substance is formed. We can only reduce the size of wood.

Q.8. Describe how crystals of copper sulphate are prepared.
Ans. Take a cupful of water in a beaker and add a few drops of dilute sulphuric acid. Heat the water. When it starts boiling, add copper sulphate powder slowly. Continue to add copper sulphate powder till no more powder can be dissolved. .During this process continuously stir the solution. Filter the solution. Leave it for cooling. Look it after some time, you can see the crystals of copper sulphate

Q.9. Explain how painting of an iron gate prevents it from rusting?
Ans. It is known that for rusting the presence of oxygen and moisture is essential. Painting prevents the iron gate from coming in contact with oxygen and moisture.

Q.10. Explain why rusting of iron objects is faster in coastal areas than in deserts.
Ans. As content of moisture in the air in coastal areas is higher than in the air in deserts. So, the process of rusting is faster in coastal areas.

Q.11. The gas we use in the kitchen is called liquified petroleum gas (LPG). In the cylinder it exists as a liquid. When it comes out from the cylinder it becomes a gas (Change- A) then it bums (Change-B). The following statements pertain to these changes. Choose the correct one.
(i) Process-A is a chemical change.
(ii) Process-B is a chemical change.
(iii) Both processes A and B are chemical changes.
(iv) None of these processes is a chemical change.
Ans. (ii) Process-B is a chemical change.

Q.12.Anaerobic bacteria digest animal waste and produce biogas (Change-A). The biogas is then burnt as fuel (Change-B). The following statements pertain to these changes. Choose the correct one.
(i) Process-A is a chemical change.
(ii) Process-B is a chemical change.
(iii) Both processes A and B are chemical changes.
(iv) None of these processes is a chemical change.
Ans.(iii) Both processes A and B are chemical change.

Chapter – 7

Q.1.Name the elements that determine the weather of a place.
Ans. The temperature, humidity, rainfall, wind-speed, etc. are called the elements that determine the weather of a place.

Q.2. When are the maximum and minimum temperature likely to occur during the day?
Ans.The maximum temperature of the day occurs generally in the afternoon and the minimum temperature occurs in the early morning.

Q.3.Fill in the blanks
(i) The average weather taken over a long time is called _____
(ii) A place receives very little rainfall and the temperature is high throughout the year, the climate of that place will be _____ and _____
(iii) The two regions of the earth with extreme climatic conditions are _____ and _____
Ans. climate of the place (ii) hot, dry (iii) polar, tropical regions

Q.4.Indicate the type of climate of the following areas:
(a) Jammu and Kashmir:
(b) Kerala:,
(c) Rajasthan:
(d) North-east India:
Ans.(a) Jammu and Kashmir—moderately hot and moderately wet climate.
(b) Kerala—very hot and wet climate.
(c) Rajasthan—hot and dry climate.
(d) North-east India—The north eastern India receives rain for a major part of the year, hence wet climate

Q.5.Which of the two changes frequently, weather or climate?
Ans.Weather

Q.6.Followings are some of the characteristics of animals:
(i) Diets heavy on fruits , (ii) White fur (iii) Need to migrate (iv) Loud voice
(v) Sticky pads on feet (vi) Layer of fat under skin
(vii) Wide and large paws (viii) Bright colours
(ix) Strong tails (x) Long and large beak
For each characteristic indicate whether it is adaptation for tropical rainforests or polar regions. Do you think that some of these characteristics can be adapted for both regions?

Characteristics of animals		*Adaption for*
(*i*) Diets heavy on fruits	—	tropical rainforests
(*ii*) White fur	—	polar regions
(*iii*) Need to migrate	—	polar regions
(*iv*) Loud voice	—	tropical rainforests
(*v*) Sticky pads on feet	—	tropical rainforests
(*vi*) Layer of fat under skin	—	polar regions
(*vii*) Wide and large paws	—	polar regions
(*viii*) Bright colours	—	tropical rainforests
(*ix*) Strong tails	—	tropical rainforests
(*x*) Long and large beak	—	tropical rainforests

Q.7. The tropical rainforests has a large population of animals. Explain why it is so.
Ans. Because of continuous warmth and rain, the tropical region supports an enormous number and a wide variety of animals

Q.8.Explain with examples, why we find animals of certain kind living in particular climatic conditions.
Ans. Animals are adapted to survive in the conditions in which they live. Features and habits which help them to adapt to their surroundings are the result of evolution. So, to survive in a particular type of climate the animals must have certain adapted features. This is the reason we find animals of certain kind living in particular climatic conditions. For example, animals in the polar region are adapted to the extremely cold climate. They have special characteristics, such as white fur, strong sense of smell, a layer of fat under the skin, wide and large paws for swimming and walking in snow etc

Q.9. How do elephants living in the tropical rainforests adapt themselves?
Ans. The elephant has adapted to the conditions of rainforest in many remarkable ways. It has a trunk that it uses as a nose because of this it has a strong sense of smell. The trunk is also used by it for picking up food. Its tusks are modified teeth. These can tear the bark of trees that an elephant loves to eat. So, the elephant is able to handle the competition for food very well. Large ears of the elephant help it to hear even very soft sounds. They also help the elephant to keep cool in the hot* humid climate of the rainforest.

Q.10.Choose the correct option which answers the following question:
A carnivore with stripes on its body moves very fast while catching its prey. It is likely to be found in:
(i) polar regions (ii) deserts
(iii) oceans (iv) tropical rainforests
Ans. (iv) tropical rainforests

Q.11.Which features adapt polar bears to live in extremely cold climate?
(i) A white fur, fat below skin, keen sense of smell.
(ii) Thin skin, large eyes, a white fur.
(iii) A long tail, strong claws, white large paws.
(iv) White body, paws for swimming, gills for respiration.
Ans.(iv) A white fur, fat below skin, keen sense of smell.

Q.12.Which option best describes a tropical region?
(i) hot and humid
(ii) moderate temperature, heavy rainfall (iii) cold and humid (iv) hot and dry
Ans.(i) Hot and humid