1

The Ever-Evolving World of Science

(A) MULTIPLE CHOICE QUESTIONS

1. Which of the following is NOT a major branch of science?
   (*a*) Biology (*b*) Chemistry
   (*c*) Astrology (*d*) Physics
2. What is the first step in learning science according to the lesson?
   (*a*) Conducting experiments (*b*) Observing things
   (*c*) Writing reports (*d*) Using technology
3. Which sense is NOT commonly used in making scientific observations?
   (*a*) Sight (*b*) Taste
   (*c*) Smell (*d*) Touch
4. Why is curiosity important in science?
   (*a*) It saves times (*b*) It avoids mistakes
   (*c*) It leads to discoveries and new ideas (*d*) It helps memorize facts
5. What is Earth science the study of?
   (*a*) Plants and animals (*b*) Chemicals and atoms
   (*c*) Land, water, air and weather (*d*) Machines and inventions

2

Exploring Substances Acidic, Basic and Neutral

(A) MULTIPLE CHOICE QUESTIONS

1. Which one of the following is not an indicator?
   (*a*) Vinegar (*b*) Litmus
   (*c*) Turmeric (*d*) Red rose extract
2. Sodium bicarbonate is _____.
   (*a*) Base (*b*) Acid
   (*c*) Salt (*d*) indicator
3. Water is a _____.
   (*a*) Acid (*b*) Base
   (*c*) Neither acidic nor basic (*d*) Both acidic and basic
4. Acids are _____.
   (*a*) Sour in taste (*b*) Soluble in water
   (*c*) Corrosive in nature (*d*) All of the above
5. The reaction in which an acid reacts with a base to form salt and water is called as _____.
   (*a*) Addition reaction (*b*) Displacement reaction
   (*c*) Neutralisation reaction (*d*) Substitution reaction
6. Common salt is _____.
   (*a*) Acidic (*b*) Basic
   (*c*) Neutral (*d*) None of these
7. Sting of an ant contains _____.
   (*a*) Vinegar (*b*) Common Salt
   (*c*) Formic acid (*d*) Baking soda
8. Which of the following is an acid-base indicator?
   (*a*) Vinegar (*b*) Lime water
   (*c*) Turmeric (*d*) Baking soda
9. Which of the following is not an olfactory indicator
   (*a*) Litmus paper (*b*) Onion
   (*c*) clove oil (*d*) vanilla essence

10. Products of a neutralisation reaction are:

(*a*) salt and acid (*b*) acid and water

(*c*) salt and water (*d*) acid and base

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Acid	(a) Indicator
(ii) Base	(b) Turn red litmus into blue
(iii) Turmeric	(c) Neutralisation reaction
(iv) Salt	(d) Turns blue litmus into red

(C) FILL IN THE BLANKS

1. Substance that confirms the nature of substance as acid or base is called _____.
2. Reaction between _____ and _____ is neutralization reaction.
3. _____ solution is applied on the skin when an ant bites.
4. _____ are used to identify the nature of substances.
5. If red rose indicator is added to acidic solution, it turns _____ and when added to basic solution, it turns _____.
6. Litmus indicators are obtained from _____.
7. Hydrangea produces _____ coloured flowers in basic soil.
8. Vinegar contains _____acid.
9. Orange juice turns _____ litmus _____.
10. Tomatoes are rich in _____ acid.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason is false

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** Acids are sour in taste.

   Reason (R): Bases are soapy in touch and bitter in taste.
2. **Assertion (A):** Neutralisation reaction is accompanied by the absorption of heat.

   Reason (R): Neutralisation reaction is a reaction between an acid and a base to form salt and water.
3. **Assertion (A):** Turmeric is a natural indicator.

   Reason (R): Turmeric acquires an orange colour in basic solution.
4. **Assertion (A):** All bitter substances are basic in nature.

   Reason (R): Bitter gourds are basic in nature.
5. **Assertion (A):** Ant sting can be neutralized by rubbing baking soda.

   Reason (R): Baking soda is basic in nature.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Acids are bitter in taste.

2. Litmus paper is an indicator.
3. We should not taste anything in laboratory.
4. Indicators bring about colour change to substance.
5. Lemons are rich in tartaric acid.
6. Bases turn blue litmus red.
7. Sugar solution is neutral in nature.
8. Turmeric is also known as golden spice.
9. Acidic soil can be treated using lime.
10. A neutralization reaction is accompanied by absorbing heat.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts.

Neutral substance is any substance which is neither acidic nor basic in nature.

Indicators: We cannot taste every object and find its nature. Therefore, we use indicators. An indicator is a substance that can determine if another substance is acidic or basic in nature. The indicators indicate the presence of an acid or base in a substance by changing their colour. For example, Turmeric, China rose petals and Litmus are some natural indicators. Natural indicators are the indicators that occur in nature.

Litmus: Litmus is a natural indicator which is obtained from Lichens. Litmus is available in a solution form and paper strips. (red litmus and blue litmus paper).

Turmeric as an indicator: To use turmeric as an indicator it is generally mixed with water to form a paste which is then put on blotting paper and dried to form thin strips of turmeric paper. The turmeric paper is then put into the solutions in order to determine their acidity or alkaline nature sometimes turmeric solution is also used as an indicator. (Yellow turmeric paper to red turmeric paper).

Questions:

1. Bases turn red litmus to which colour?
2. Give an example of natural indicators.
3. How we can use Turmeric as an indicator?
4. Bases turn the yellow turmeric paper to which colour?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

A leather processing factory in a city used strong acids to remove hair and clean animal hides before tanning. After use, the acidic wastewater was directly released into the nearby river. Over time, fish started dying, and plants near the riverbanks withered. The pollution control board inspected the factory and found the wastewater to be highly acidic. They instructed the factory management to treat the wastewater by adding slaked lime (calcium hydroxide) before releasing it. This neutralisation process converted the acidic water into a harmless, near-neutral solution, preventing further harm to aquatic life and the environment.

Questions:

1. Why was the wastewater from the leather factory harmful to aquatic life?
2. Which chemical was used to neutralise the acidic wastewater?
3. How does neutralisation help in protecting the environment in this case?
4. Give another example where neutralisation is used in an industry.

3

Electricity: Circuits and their Components

(A) MULTIPLE CHOICE QUESTIONS

1. The heating effect of electric is used in _____.
   (*a*) An electric bulb (*b*) An electric toaster
   (*c*) A room heater (*d*) All of these
2. In making a battery:
   (*a*) Positive terminal of one cell is connected to the negative terminal of the next cell
   (*b*) Positive terminal of one cell is connected to the positive terminal of the next cell
   (*c*) Negative terminal of one cell is connected to the negative terminal of the next cell
   (*d*) None of the above
3. Where can the key or switch be placed in the circuit?
   (*a*) Left side of the battery (*b*) Right side of the battery
   (*c*) Can be placed anywhere in the circuit (*d*) Near the positive terminal of the bulb
4. Which material is NOT a conductor of electricity?
   (*a*) Iron nail (*b*) Silver wire
   (*c*) Plastic ruler (*d*) Copper strip
5. Which of the following components is used to store electrical energy?
   (*a*) Battery (*b*) Switch
   (*c*) Wire (*d*) Bulb
6. In an electric circuit, what happens when the switch is in the 'OFF' position?
   (*a*) The circuit is open, and no current flows (*b*) The circuit is closed, and current flows
   (*c*) The bulb lights up (*d*) The battery gets charged
7. In an electric circuit, the device used to open or close the circuit is called:
   (*a*) Battery (*b*) Switch
   (*c*) Bulb (*d*) Wire
8. Which of the following symbols represents a battery?
   (*a*) (*b*)  (*c*) (*d*) 
9. The full form of LED is:
   (*a*) Light Emitting Device (*b*) Light Emitting Diode
   (*c*) Low Energy Device (*d*) Light Energy Diode

10. Compared to an electric bulb, an LED:

(*a*) Consumes more energy
(*b*) Has a shorter life
(*c*) Consumes less energy and lasts longer
(*d*) Produces more heat

(B) MATCH THE COLUMNS

Column 1	**Column 2**
(i) Switch	(a) Heater
(ii) Cell	(b) Safety device
(iii) Fuse	(c) Source of electricity
(iv) Element	(d) Break and make the circuit

(C) FILL IN THE BLANKS

1. The combination of two or more cells is called _____.
2. Longer line in the symbol for a cell represents its _____ terminal.
3. A _____ diagram represents a circuit in terms of the symbols of components used.
4. A _____ is a device that completes or breaks a circuit.
5. Current flows from the _____ terminal to the _____ terminal of a cell.
6. The terminal of a LED attached to the longer wire is the _____ terminal.
7. In an incandescent bulb, a large amount of energy is wasted in the form of _____.
8. Our body is a _____ of electricity.
9. The direction of electric current in a closed circuit is from the _____ to the _____ terminal.
10. Materials which do not allow current flow through them are called _____.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.
(c) If Assertion is true, but Reason if false.
(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** Battery is a combination of two cells only.
   Reason (R): The positive and negative terminals are generally marked on cells.
2. **Assertion (A):** The switch in a circuit is used to control the flow of electricity.
   Reason (R): The switch opens or closes the circuit to either allow or stop the flow of current.
3. **Assertion (A):** Steel spoon can be used to complete an electric circuit.
   Reason (R): Metals generally allow electricity to flow through them.
4. **Assertion (A):** LEDs are preferred in traffic lights and indicator lamps.
   Reason (R): LEDs last longer but are less energy-efficient than bulbs.
5. **Assertion (A):** LEDs can glow even when connected in reverse direction.
   Reason (R): LEDs allow current to flow in one direction.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. A cell has two terminals.
2. Electric current can produce heat.
3. To make a battery of two cells, the negative terminal of one cell is connected to the positive terminal of other cell.
4. Kettle works on the basis of heating effect of current.
5. Copper wire is a good conductor of electricity.
6. Plastic allows electricity to pass through it.
7. An incandescent bulb produces light without any heat.
8. Rubber is used as an insulator to cover wires.
9. LEDs can glow even if connected in reverse direction.
10. In an incandescent bulb, the filament glows because it gets heated.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts.

Riya wanted to decorate her study table with a small light circuit. She used a cell, a switch, connecting wires, and an LED instead of a bulb. She connected the LED in the forward direction and closed the switch. The LED started glowing brightly.

Later, she tried connecting the LED in the reverse direction. This time, even though the switch was closed, the LED did not glow. She also noticed that the LED glowed even with a very small current, unlike a bulb which needed more power.

This made her realize that LEDs are energy-saving, long-lasting, and are used in indicators, decorative lights, and traffic signals.

Questions:

1. Which component in Riya's circuit controlled the flow of current?
2. Why did the LED glow only in the forward direction?
3. Which consumes more energy LED or bulb?
4. Mention two advantages of LED.

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts.

During a science activity in school, students were asked to test different materials to check whether they allow electricity to pass through them. They used a simple circuit with a cell, a bulb, and connecting wires.

When they connected a copper wire, the bulb glowed brightly, showing that copper is a good conductor of electricity. However, when they tried the same with a plastic ruler, the bulb did not glow, indicating that plastic is an insulator.

Next, they tested a steel spoon, and the bulb glowed. But with a rubber band, the bulb did not glow. This helped the students classify materials into conductors (like copper and steel) and insulators (like plastic and rubber).

Questions:

1. In the activity, which material acted as a conductor?

   (*a*) Plastic ruler (*b*) Rubber band

   (*c*) Copper wire (*d*) Wood

2. Why did the bulb not glow when plastic was connected?
   (*a*) Because plastic is a conductor
   (*b*) Because plastic is an insulator and does not allow current to pass
   (*c*) Because the cell was weak
   (*d*) Because the switch was open
3. Which of the following is an insulator?
   (*a*) Iron nail
   (*b*) Steel spoon
   (*c*) Rubber band
   (*d*) Aluminium foil
4. What did the students learn from the activity?
   (*a*) All metals are insulators
   (*b*) All non-metals are conductors
   (*c*) Metals are generally conductors, while plastic and rubber are insulators
   (*d*) All materials allow electricity to pass

4

The World of Metals and Non-Metals

(A) MULTIPLE CHOICE QUESTIONS

1. Which of the following is not a non-metal?
   (*a*) Carbon (*b*) Sulphur
   (*c*) Aluminium (*d*) Iodine
2. The metals which can be cut with a knife are:
   (*a*) Sodium and potassium (*b*) Barium and calcium
   (*c*) Sodium and mercury (*d*) Potassium and calcium.
3. Which of the following is a liquid metal at room temperature?
   (*a*) Sodium (*b*) Iodine
   (*c*) Aluminium (*d*) Mercury
4. Which of the following is not a property of metals?
   (*a*) Malleability (*b*) Ductility
   (*c*) Brittleness (*d*) Sonority
5. Which of the following non-metals reacts and catches fire on exposure to air?
   (*a*) Phosphorus (*b*) Nitrogen
   (*c*) Sulphur (*d*) Hydrogen
6. The nature of metal oxides is:
   (*a*) Acidic (*b*) Basic
   (*c*) Neutral (*d*) all of these.
7. Which non-metal is a good conductor of electricity?
   (*a*) Sulphur (*b*) Carbon (Graphite)
   (*c*) Phosphorus (*d*) Iodine
8. Which of the following statements is incorrect about metals?
   (*a*) Metals are generally malleable (*b*) Metals are ductile
   (*c*) Metals are soft and can be cut with a knife (*d*) Metals are good conductors of electricity
9. Which of the following is a property of non-metals?
   (*a*) Sonorous (*b*) Lustrous
   (*c*) Poor conductor of heat (*d*) Ductile

10. What is the total number of elements known at present?

(*a*) 110 (*b*) 112

(*c*) 118 (*d*) 120

(B) MATCH THE COLUMNS

Column I	Column II
(i) Nitrogen	(a) essential for life
(ii) Carbon	(b) Manufacture of fertilisers
(iii) Oxygen	(c) most ductile
(iv) Chlorine	(d) Building blocks of life
(v) Gold	(e) water purification

(C) FILL IN THE BLANKS

1. Metals are generally _____ conductors of heat and electricity.
2. _____ are the basic building blocks of matter.
3. The property of metals that allows them to be beaten into thin sheets is called _____.
4. _____ is the only liquid metal at room temperature.
5. _____ is a non-metal that is lustrous and used in making antiseptic solution.
6. Non-metals are generally _____ in nature, while metals are sonorous.
7. Aluminium is a _____ metal, therefore it is used in making aircraft bodies.
8. Non-metal oxides are _____ in nature.
9. _____, a form of carbon, is a good conductor of electricity.
10. _____ do not react with water.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** Metals are poor conductors of electricity.
   Reason (R): Metals can be beaten into thin sheets.
2. **Assertion (A):** Non-metals are non-sonorous.
   Reason (R): Non-metals do not produce a ringing sound when struck.
3. **Assertion (A):** Sodium is stored in kerosene oil.
   Reason (R): Sodium reacts very slowly with oxygen and water.
4. **Assertion (A):** Metals form basic oxides.
   Reason (R): Non-metallic oxides turn blue litmus paper red.
5. **Assertion (A):** Chlorine is used in water purification
   Reason (R): Chlorine is a non-metal.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Graphite, a form of carbon, is a good conductor of electricity.
2. Mercury is the only liquid non-metal at room temperature.
3. Iron is used in construction of bridges and buildings because it is strong and hard.
4. Non-metal iodine is used in making antiseptic solution
5. Diamond, a form of carbon, is used in cutting tools because it is very soft.
6. Metal oxides turn red litmus blue.
7. Sulphur and phosphorus are examples of dull, non-lustrous non-metals.
8. Iron can rust in the absence of air.
9. Silver objects do not undergo corrosion.
10. Non-metals are usually brittle and break easily when hammered.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Corrosion is the gradual destruction of metals when they react with moisture, air, or chemicals present in the environment. A common example is the rusting of iron. Rust weakens iron objects such as bridges, railway tracks, gates, and pipelines, leading to damage and accidents. To prevent corrosion, metals are often painted, oiled or galvanised. Ships are painted regularly to protect them from rusting due to salty seawater. Aluminium, though a metal, does not corrode easily because it forms a protective oxide layer on its surface. Understanding corrosion and its prevention is important in daily life, construction, and industry.

Questions:

1. What is the main cause of rusting in iron?
2. Why are ships painted regularly?
3. Why does aluminium not corrode as easily as iron?
4. What is galvanization?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

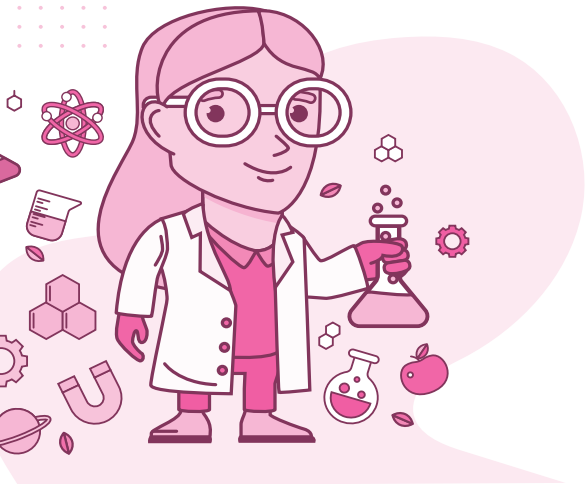
The Taj Mahal, one of the Seven Wonders of the World, is made of white marble. However, in recent years, its marble has started turning yellow. This is mainly due to air pollution. Factories, vehicles, and power plants release acidic oxides into the air.

When these gases mix with rainwater, they form acid rain, which reacts with the calcium carbonate in marble, causing it to lose its shine and turn yellow. This process is a real-life example of the acidic behaviour of non-metal oxides.

To protect the Taj Mahal, steps like reducing factory pollution, using cleaner fuels, and creating a pollution-free zone around Agra have been taken. Understanding chemistry of acids and bases helps us protect our heritage and the environment.

Questions:

1. Name an acidic oxide.
2. How can we protect monuments like the Taj Mahal from the effects of acid rain?
3. How do acidic oxides affect litmus?
4. Why is the problem of acid rain more severe in industrial cities?



5

Changes Around Us Physical and Chemical

(A) MULTIPLE CHOICE QUESTIONS

1. Which of the following is a physical change?
   (*a*) Burning of magnesium (*b*) Rusting of iron
   (*c*) Glowing of bulb (*d*) None of these
2. When iron gets covered with brown powder substance it is called?
   (*a*) Alloying (*b*) Rusting
   (*c*) Electroplating (*d*) Refining
3. Changes in which substances with different properties are formed are called:
   (*a*) Physical change (*b*) Chemical change
   (*c*) Both physical and chemical (*d*) None of these
4. The gas which turns lime water milky is:
   (*a*) Oxygen (*b*) Carbon dioxide
   (*c*) Hydrogen (*d*) Nitrogen
5. Which of the following is an example of a reversible change?
   (*a*) A bud turning into flower (*b*) Rusting of iron
   (*c*) Boiling of water (*d*) Ripening of a Tomato
6. Which of the following is a chemical change?
   (*a*) Bursting of a fire cracker (*b*) Germination of seed
   (*c*) Coal formation from buried trees (*d*) All of these
7. In a physical change
   (*a*) Change is irreversible (*b*) Molecules of a substance change
   (*c*) Molecules of the substance do not change (*d*) A chemical reaction occurs
8. Properties like size, shape, colour, state of a substance are:
   (*a*) Chemical properties (*b*) Mental properties
   (*c*) Physical properties (*d*) Physico-chemical properties
9. What is ignition temperature?
   (*a*) The minimum temperature at which a substance catches fire.
   (*b*) The maximum temperature at which a substance catches fire.
   (*c*) Any temperature at which a substance catches fire. (*d*) None of these.

10. Which of the following changes does not have a long-term impact on the environment?

(*a*) Drying of paints (*b*) ripening of fruits

(*c*) consumption of fuel in vehicles (*d*) all of the above

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Ripening of fruits	(a) Both physical and chemical change
(ii) Burning of candle	(b) turns lime water milky
(iii) Carbon dioxide	(c) a combustible substance
(iv) Rusting of iron	(d) chemical change
(v) Fuel	(e) undesirable change

(C) FILL IN THE BLANKS

1. Change in which new substance is formed is called _____ change.
2. Changes in which only _____ properties of a substance change are called physical changes.
3. Properties such as shape, size, colour and state of a substance are called its _____ properties.
4. Stretched rubber band involves a _____ change.
5. Production of hydrogen and oxygen from water is a _____ change.
6. The lowest temperature at which a substance catches fire is called its _____ temperature.
7. A chemical reaction in which a substance reacts with oxygen is called a _____ reaction.
8. Vinegar reacts with baking soda to produce _____ gas.
9. Lime water turns milky on passing carbon dioxide due to the formation of _____.
10. The white powder obtained on burning a magnesium ribbon is _____.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

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1. **Assertion (A):** Acids are sour in taste.

   Reason (R): Bases are soapy in touch and bitter in taste.
2. **Assertion (A):** Neutralisation reaction is accompanied by the absorption of heat.

   Reason (R): Neutralisation reaction is a reaction between an acid and a base to form salt and water.
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   Reason (R): Turmeric acquires an orange colour in basic solution.
4. **Assertion (A):** All bitter substances are basic in nature.

   Reason (R): Bitter gourds are basic in nature.
5. **Assertion (A):** Ant sting can be neutralized by rubbing baking soda.

   Reason (R): Baking soda is basic in nature.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Cutting of log of wood into pieces is a chemical change.
2. Formation of manure from leaves is a physical change.
3. Iron pipes coated with zinc do not get rusted quickly.
4. Condensation is not chemical change.
5. Baking soda produces effervescence with vinegar.
6. A chemical change is permanent and irreversible.
7. Burning of candle involves physical change only.
8. Combustion occurs in presence of oxygen.
9. Lime water is calcium hydroxide.
10. Oxygen gas can turn lime water milky.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Riya was helping her mother in the kitchen. While arranging glasses, one slipped from her hand and broke into pieces. She felt sad, but her mother explained that the glass could not be changed back into its original form by simple methods.

Later in the evening, Riya lit a candle during a power cut. She observed two things:

a. The candle wax melted near the flame and became liquid, which solidified again after cooling.

b. The burning wick produced light, heat, smoke, and a black residue that could not be changed back into wax.

Her teacher later explained that these were examples of physical and chemical changes happening around us.

Questions:

1. Which type of change occurred when the glass broke?
2. What kind of change is melting of candle wax? Why?
3. Why is burning of the candle wick considered a chemical change?
4. Give one more daily life example each of a physical change and a chemical change.

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

One evening, Mrs. Meera was preparing dinner in the kitchen. Suddenly, some cooking oil spilled near the gas stove and caught fire. She panicked, but her son Aarav quickly remembered what he had learned in science class. He did not throw water on the burning oil. Instead, he covered the flames with a wet cloth, which stopped the supply of oxygen and the fire was extinguished.

Later, Aarav explained to his mother that oil is a combustible substance, which means it can catch fire easily. He also explained that water should not be used on oil fires because oil floats on water, spreading the fire even more. Instead, sand, soil, or a fire extinguisher is safer.

Questions:

1. Why did the oil catch fire so easily?
2. Why should water not be poured on burning oil?
3. What method did Aarav use to put out the fire?
4. Name two common combustible substances used in daily life.

6

Adolescence – a Stage of Growth and Change

(A) MULTIPLE CHOICE QUESTIONS

1. Adolescence is the period between
   (*a*) Childhood and old age (*b*) Childhood and adulthood
   (*c*) Infancy and childhood (*d*) Adulthood and old age
2. The period of adolescence usually starts around the age of:
   (*a*) 3–5 years (*b*) 5–9 years
   (*c*) 10–12 years (*d*) 20–25 years
3. Voice cracking in boys during adolescence occurs due to growth of:
   (*a*) Brain (*b*) Larynx (voice box)
   (*c*) Heart (*d*) Nose
4. Which of the following is a secondary sexual character in girls?
   (*a*) Growth of facial hair (*b*) Broadening of hips
   (*c*) Deepening of voice (*d*) Growth of Adam's apple
5. Which of the following is NOT an advisable practice during adolescence?
   (*a*) Eating a balanced diet (*b*) Maintaining personal hygiene
   (*c*) Engaging in regular exercise (*d*) Consuming alcohol or drugs
6. Menstruation occurs approximately every:
   (*a*) 7 days (*b*) 14 days
   (*c*) 21–28 days (*d*) 40 days
7. Which of these is an emotional change during adolescence?
   (*a*) Increase in height (*b*) Voice change
   (*c*) Mood swings (*d*) Growth of body hair
8. Which of the following is a correct way to maintain hygiene during adolescence?
   (*a*) Avoid bathing daily (*b*) Wear clean clothes
   (*c*) Share used towels with friends (*d*) Avoid washing hair regularly
9. Which of these habits is harmful during adolescence?
   (*a*) Regular exercise (*b*) Eating junk food excessively
   (*c*) Sleeping for 8 hours (*d*) Playing outdoor games

10. Which nutrient is most important for blood formation during adolescence?

(*a*) Iron (*b*) Calcium

(*c*) Iodine (*d*) Proteins

(B) MATCH THE COLUMNS

Column 1	**Column 2**
(i) Sweat and oily secretion	(a) 10 – 19 years
(ii) Menstruation	(b) acne and pimples
(iii) Adam's apple	(c) necessary for proper growth
(iv) Puberty	(d) monthly cycle in girls
(v) Balanced diet	(e) larger in boys

(C) FILL IN THE BLANKS

1. During adolescence, the voice of boys becomes deep due to the enlargement of _____.
2. For proper growth and development during adolescence, a _____ diet is necessary.
3. The changes which occur during adolescence are controlled by _____.
4. The time of puberty in girls is marked by the beginning of _____ .
5. Adolescents should maintain proper _____ to avoid bacterial infections.
6. Regular _____ helps maintain physical and mental health during adolescence.
7. _____ related health problems may be caused due to the deficiency of iron or vitamin B_{12}.
8. Dorothy Hodgkin studied the structure of _____.
9. Shuchi scheme aims to distribute free sanitary pads in the state of _____.
10. _____ involves the use of digital devices to harass others.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** During menstruation, blood is discharged from the body as part of the cycle.

   Reason (R): Duration of the menstrual cycle may vary from 28 to 30 days.
2. **Assertion (A):** It is wise to stay away from tobacco, alcohol and drugs.

   Reason (R): Tobacco, alcohol and drugs have adverse effects on the body.
3. **Assertion (A):** Boys develop deeper voices during puberty.

   Reason (R): Voice box is bigger in girls than in boys.
4. **Assertion (A):** Adolescents should eat a lot of junk food.

   Reason (R): Balanced diet provides proper nutrients for growth and development.
5. **Assertion (A):** The phase of the menstrual cycle when blood is discharged from the body is called menstruation.

   Reason (R): Menstruation lasts from 3 to 7 days.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Adolescents face several emotional and behavioural changes.
2. Acne occurs due to an increase in oily secretion from the skin.
3. You can upload any pictures online.
4. Menstruation continues throughout life.
5. Balanced diet and exercise are important during adolescence.
6. Puberty begins at the same age for all individuals.
7. Adolescents should consume junk food regularly for faster growth.
8. Vitamin B12 cannot be made in the human body.
9. Social media should be used under the guidance of parents and teachers.
10. Hormones may influence our mood and behaviour.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Neha is a 13-year-old girl who loves using her smartphone to chat with friends and watch videos. She spends most of her free time on social media platforms and often stays up late at night scrolling through posts. Over time, Neha started feeling tired during school, her homework was often incomplete, and she found it difficult to concentrate in class.

Her parents noticed that Neha was becoming irritable and withdrawn. They also observed that she compared herself with others online and sometimes felt sad or anxious when she didn't get enough likes or comments. Her school counselor explained that excessive social media use can affect sleep, studies, mental health, and self-confidence. With proper guidance, Neha began managing her screen time, focusing on hobbies, and spending more time with family and friends.

Questions:

1. What problems did Neha face due to excessive social media use?
2. How did social media affect Neha's mental health?
3. Suggest two ways Neha can use social media responsibly.
4. Why is it important for adolescents to balance online and offline activities?

Case Study II:

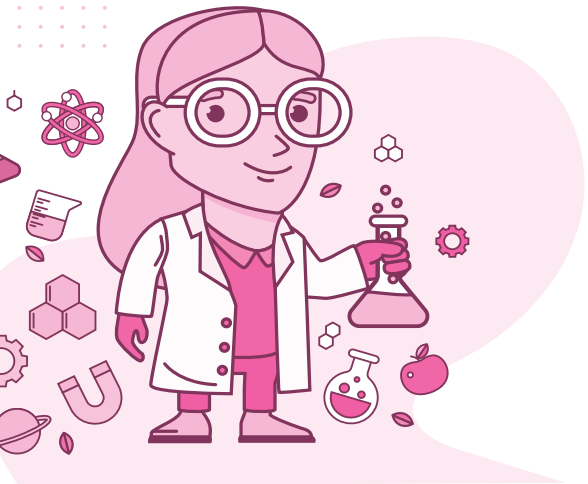
Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Rahul is a 15-year-old boy who recently entered high school. He was a good student and loved playing football. However, he started feeling pressurized when some of his friends teased him for not being "cool enough." One day, his friends offered him cigarettes and later introduced him to harmful drugs. At first, Rahul refused, but after constant pressure, he agreed to try them.

Over time, Rahul started skipping classes, lost interest in studies, and became weak and tired. He often fell sick, had mood swings, and got angry quickly. His football coach noticed the changes and spoke to Rahul's parents. With their support and proper counseling, Rahul understood the dangers of drug abuse. He decided to quit and slowly returned to his normal, healthy lifestyle.

Questions:

1. Why did Rahul start using harmful substances?
2. Mention two harmful effects of drug abuse on Rahul's health.
3. How did Rahul's behavior change after drug abuse?
4. Suggest two ways by which adolescents can avoid falling into the trap of drug abuse.



7

Heat Transfer in Nature

(A) MULTIPLE CHOICE QUESTIONS

1. Which one is not a mode of transfer of heat?
   (*a*) Conduction (*b*) Convection
   (*c*) Radiation (*d*) Induction
2. Heat energy flows from body A to B, if
   (*a*) Body A is at higher temperature (*b*) Body B is at higher temperature
   (*c*) Bodies A and B are at same temperature (*d*) In all the cases
3. The phenomenon involved in the formation of land and sea breeze is:
   (*a*) Conduction (*b*) Convection
   (*c*) Radiation (*d*) All of these
4. Which of the following substance is not a bad conductor of heat?
   (*a*) Rubber (*b*) Aluminum
   (*c*) Glass (*d*) Plastic
5. Land breeze blows from?
   (*a*) Lower surface to upper surface (*b*) Sea to land
   (*c*) Upper surface to lower surface (*d*) Land to sea
6. Which type of cloth is preferred in summer?
   (*a*) Silk clothes (*b*) Cotton clothes
   (*c*) Nylon clothes (*d*) Polyester clothes
7. The primary mode of heat transfer in solids is:
   (*a*) Radiation (*b*) Conduction
   (*c*) Convection (*d*) All of the above
8. A plastic 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
9. A marble tile feels colder than a wooden tile on a winter morning, because the marble tile
   (*a*) is a better conductor of heat than the wooden tile. (*b*) is polished while wooden tile is not polished.
   (*c*) reflects more heat than wooden tile. (*d*) is a poor conductor of heat than the wooden tile.

10. Which material allows water to seep through most slowly?

(*a*) Clay (*b*) Sand

(*c*) Gravel (*d*) Aquifer

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Land breeze blows during	(a) Summer
(ii) Sea breeze blows during	(b) Winter
(iii) Dark, colored clothes are preferred during	(c) Day
(iv) Light colored clothes are preferred during	(d) Night

(C) FILL IN THE BLANKS

1. The mode of heat transfer from sun to earth is _____.
2. A cold steel spoon is dipped in a cup of hot milk. It transfers heat to its other end by the process of _____.
3. In liquids and gases the heat is transferred by _____.
4. The falling of water in the form of rain, snow or hail is called _____.
5. In cold regions like Ladakh, people have developed _____ to conserve water.
6. The hot bodies radiate _____ .
7. Water and air are _____ conductors of heat.
8. The process of surface water seeping through rocks and soil is called _____.
9. The underground layers of sediments and rocks that store water in pore spaces are called _____.
10. The process of circulation of air due to heating is called _____ currents.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** Heat always flows from a large object to smaller object.

   Reason (R): Various mode by which heat can flow are conduction, convection, radiation.
2. **Assertion (A):** Sea breeze blows during daytime.

   Reason (R): The air above the sea is hot and moves towards land.
3. **Assertion (A):** Conduction is the transfer of heat through a material without the movement of the particles.

   Reason (R): In conduction, heat moves from the colder part to the hotter part of the material.
4. **Assertion (A):** Sea breeze refers to the movement of cold air from sea towards land during day time.

   Reason (R): Land breeze refers to the movement of cold air from land towards sea during night time.
5. **Assertion (A):** Precipitation adds fresh water to rivers, lakes, and groundwater.

   Reason (R): Precipitation occurs when clouds become too heavy with water droplets.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Radiation of heat can occur in vacuum.
2. When heat energy flows into a body it cools the body.
3. Air is a bad conductor of heat.
4. We prefer to wear dark clothes in winters.
5. In convection heat flows from one point to the other, in such a way that there is no actual motion of the particles of the medium.
6. No medium is required for transfer of heat by the process of radiation.
7. Precipitation always occurs in the form of rain only.
8. Infiltration is the process of water seeping into the soil and replenishing groundwater.
9. At night, the sea is cooler than the land.
10. Groundwater cannot be replenished by rainfall.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Riya and her family went to visit her grandparents who live in a coastal town. During the day, Riya noticed that it was cooler near the beach compared to her home in the city. Her grandmother explained that this was due to the sea breeze, where cooler air from the sea moves towards the land. Riya also observed that at night, the direction of the breeze changed, and the air seemed to flow from the land towards the sea. Her grandfather told her that this is called the land breeze.

Riya was curious and wanted to know why the direction of the breeze changes between day and night. She learned that land heats up and cools down faster than water.

Questions:

1. Why did Riya feel cooler near the beach during the daytime?
2. Explain why the direction of the breeze changes at night.
3. Which heats up faster – land or water? How does this affect the breeze?
4. How do sea breeze and land breeze help in maintaining a comfortable temperature in coastal regions?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Rohan was helping his mother in the kitchen. He noticed that when a metal spoon was left in a hot pan, the handle of the spoon also became hot. Later, while making tea, he observed steam rising from the boiling water and circulating in the air above the pan. His mother also told him that she prefers using wooden or plastic handles on cooking utensils because they do not get hot easily. In the evening, Rohan sat outside in the garden and felt the warmth of the Sun on his skin, even though the Sun was far away in the sky.

Rohan became curious and asked his science teacher how heat was reaching him in so many different ways. His teacher explained that heat is transferred by three different methods- conduction, convection and radiation

Questions:

1. Why did the handle of the metal spoon become hot when left in the pan?
2. Which process of heat transfer explains the rising and circulating of steam above boiling water?
3. Why are wooden or plastic handles used in cooking utensils?
4. How does heat from the Sun reach the Earth despite the vacuum in space?

8

Measurement of Time and Motion

(A) MULTIPLE CHOICE QUESTIONS

1. Which one of these is not used for measuring time?
   (*a*) Pendulum (*b*) Hour glass
   (*c*) Meter scale (*d*) Sundial
2. Which one of these is not a unit of time?
   (*a*) m/s (*b*) week
   (*c*) month (*d*) year
3. Which one of these is periodic motion?
   (*a*) Rotation of earth about its axis (*b*) Revolution of the moon about the earth
   (*c*) To and fro movement of vibrating spring (*d*) All of these
4. A bus travels 54 km in 90 minutes. The speed of the bus is:
   (*a*) 0.6 m/s (*b*) 10 m/s
   (*c*) 5.4 m/s (*d*) 3.6 m/s
5. Time period of a simple pendulum depends upon its _____.
   (*a*) Weight of bob (*b*) Length
   (*c*) Both (*a*) and (*b*) (*d*) None of these
6. A simple pendulum takes 42 seconds to complete 20 oscillations. What is its time period?
   (*a*) 2.1 s (*b*) 4.2 s
   (*c*) 21 s (*d*) 8.4 s
7. The basic unit of speed is:
   (*a*) Km/min (*b*) m/min
   (*c*) km/hr (*d*) m/s
8. Which of the following clocks are known to be the most precise?
   (*a*) Pendulum clock (*b*) Atomic clock
   (*c*) Digital clock (*d*) Quartz clock
9. If we denote speed by S, distance by D and time by T, the relationship between these quantities is:
   (*a*) S = D × T (*b*) T = S × D
   (*c*) D = S + T (*d*) D = S × T

10. A car travels 50 m in 5 seconds. The speed of the car is:

(*a*) 250 m/s (*b*) 55 m/s

(*c*) 10 m/s (*d*) 5 m/s

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Modern clocks	(a) Christiaan Huygens
(ii) Pendulum clock	(b) Aryabhatta
(iii) Ghatika-yantra	(c) Kautilya
(iv) Samrat Yantra	(d) quartz crystal
(v) Shadow based time	(e) Jantar Mantar

(C) FILL IN THE BLANKS

1. Motion that repeats itself after equal intervals of time is called _____.
2. An instrument used to measure time is known as _____.
3. The distance travelled by an object in unit time is called _____.
4. A brass bob that is suspended from a fixed point and allowed to swing freely under the influence of gravity is called _____.
5. Speed is defined as the ratio of _____ to the _____ taken.
6. The time taken by a pendulum of complete an oscillation is called its _____ .
7. A body with a greater speed travelling along a straight line covers a _____ distance as compared to a body travelling at a lower speed in the same time.
8. A _____ is the earliest device used by humans to measure time using the shadow of the Sun.
9. The SI unit of speed is _____.
10. An object moving along a straight line with a constant speed is said to be in _____ motion.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** The time period of simple pendulum is independent on its length.

   Reason (R): The length of a pendulum is the distance between point of suspension and center of the bob.
2. **Assertion (A):** The SI unit of time is second.

   Reason (R): Time for one sunrise to the next is called month.
3. **Assertion (A):** The hands of a clock show periodic motion.

   Reason (R): Periodic motion is a motion that repeats itself at regular intervals of time.
4. **Assertion (A):** A bus moving on a crowded city road is in uniform motion.

   Reason (R): Non-uniform motion occurs when the speed of the object changes with time.
5. **Assertion (A):** The SI unit of speed is metre per second (m/s).

   Reason (R): In the SI system, distance is measured in metres and time in seconds.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. The speed of a train is expressed in km/h.
2. Distance between two cities is measured in kilometers.
3. Every object moves with a constant speed.
4. Speed of object is distance travelled in unit time.
5. The SI unit of time is minutes.
6. Speed measures how fast or slow an object moves.
7. If an object moving along a straight line keeps changing its speed, its motion is called uniform.
8. When speed is zero, the distance travelled will also be zero.
9. If time taken is doubled, with the same speed, then the distance covered will also be doubled.
10. A bus moving with non-uniform speed covers equal distances in equal intervals of time.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Rohit's teacher asked him to prepare a small project on "How people measured time in the past and how they do it now." While researching, Rohit found that:

- Sundials were the earliest clocks. They worked by using the position of the Sun and the length of shadows. However, they could not be used on cloudy days or at night.
- Later, Water Clocks and Sand Clocks (Hourglasses) were invented, which measured time by the steady flow of water or sand. These were more reliable but not very accurate.
- Pendulum Clocks came next. These worked on oscillatory motion and were far more accurate than earlier clocks.
- Today, we mostly use Quartz Clocks and Digital Clocks, which work on electric circuits and vibrations of quartz crystals. They are very precise and can even show time to the exact second.
- For scientific purposes, the most accurate are Atomic Clocks, which can measure time with an error of only a second in millions of years!

Rohit was surprised to see how the concept of time measurement evolved over centuries, from simple shadows to highly advanced atomic vibrations.

Questions:

1. Why can't a sundial be used at night?
2. How is a sand clock different from a water clock?
3. Which type of motion is shown by the pendulum of a pendulum clock?
4. Which clock is used today for the highest accuracy?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Riya and her family went on a weekend trip to a hill station. While travelling on the highway, their car moved at a constant speed of 60 km/h for two hours without stopping. Riya noticed that the car was covering equal distances in equal intervals of time.

However, as they entered the hilly area, the road became curvy and steep. The car's speed kept changing — sometimes 40 km/h uphill, sometimes 30 km/h on narrow turns, and sometimes 50 km/h downhill. Riya observed that now the car was covering unequal distances in equal intervals of time because the speed was not steady.

Later, Riya shared her observations in her science class. Her teacher explained that the first part of the journey (on the highway) was an example of uniform motion, while the second part (in the hilly area) was an example of non-uniform motion.

Questions:

1. What type of motion did the car have on the highway? Why?
2. Define uniform motion in your own words.
3. Give one more real-life example of non-uniform motion.
4. If the car maintained a speed of 60 km/h for 2 hours on the highway, how much distance did it cover?

9

Life Processes in Animals

(A) MULTIPLE CHOICE QUESTIONS

1. The process of breaking down complex food into simpler substances is called:
   (*a*) Digestion (*b*) Inhalation
   (*c*) Excretion (*d*) Respiration
2. In humans, food is digested with the help of:
   (*a*) Enzymes (*b*) Bones
   (*c*) Lungs (*d*) Skin
3. In ruminants (like cows), partially digested food returns from the stomach to the mouth for chewing. This process is called:
   (*a*) Assimilation (*b*) Rumination
   (*c*) Excretion (*d*) Respiration
4. The organ in humans where most of the digestion and absorption of food takes place is:
   (*a*) Stomach (*b*) Small intestine
   (*c*) Large intestine (*d*) Liver
5. Which gas is taken in during respiration?
   (*a*) Carbon dioxide (*b*) Nitrogen
   (*c*) Oxygen (*d*) Hydrogen
6. Earthworms, breathe through their:
   (*a*) Skin (*b*) Lungs
   (*c*) Gills (*d*) Spiracles
7. Which structure helps fish to breathe in water?
   (*a*) Lungs (*b*) Spiracles
   (*c*) Gills (*d*) Skin
8. Bile juice is secreted by the:
   (*a*) Pancreas (*b*) Small intestine
   (*c*) Liver (*d*) Gall bladder
9. The finger-like projections in the small intestine that absorb nutrients are called:
   (*a*) Villi (*b*) Alveoli
   (*c*) Gills (*d*) Nephrons

10. The process of removing undigested food from the body is called:

(*a*) Egestion (*b*) Ingestion

(*c*) Assimilation (*d*) Absorption

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Trachea	(a) birds
(ii) Gills	(b) windpipe
(iii) Gizzard	(c) helps in breathing movement
(iv) Diaphragm	(d) chemical process
(v) Respiration	(e) tadpoles

(C) FILL IN THE BLANKS

1. During _____, carbon dioxide-rich air is expelled from the body.
2. Breathing is a _____ process.
3. _____ is the longest part of our digestive system.
4. The secretions of the stomach contain _____, _____ and _____.
5. The small intestine receives secretions from the _____ and the _____.
6. The contraction and relaxation of the _____ helps in breathing.
7. The body part where undigested food is stored temporarily before being removed is the _____.
8. The main purpose of respiration is to produce _____.
9. Saliva helps breakdown starch into _____.
10. The small balloon-like sacs in the lungs where gas exchange occurs are called _____.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** The nose filters and moistens the air we breathe.
   Reason (R): Tiny hair and mucus help trap dust particles.
2. **Assertion (A):** The small intestine is longer than the large intestine.
   Reason (R): The small intestine is 1.5 m long.
3. **Assertion (A):** Alveoli are found in the stomach.
   Reason (R): Alveoli help in gas exchange.
4. **Assertion (A):** The small intestine is the main site for absorption of nutrients.
   Reason (R): The inner walls of the small intestine have finger-like projections.
5. **Assertion (A):** Saliva breaks down starch into sugar.
   Reason (R): Bile breaks down fats into smaller droplets to make their digestion easier.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. The ruminants bring back swallowed grass into their mouth and chew it for some time.
2. Digestion of starch starts in the stomach.
3. We should always breathe through the mouth and not the nose.
4. The large intestine is longer and broader than the small intestine of the human alimentary canal.
5. The pancreas is part of the respiratory system.
6. The oesophagus connects the mouth to the stomach.
7. The small intestine is 6 m long.
8. The ribs move down and inwards when we inhale.
9. The exhaled air is rich in carbon dioxide.
10. Breathing is a chemical process.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Ravi loves eating fast food like samosas, noodles, and burgers. One day, after eating a large burger very quickly, he started feeling discomfort in his stomach. His mother explained to him that eating too much oily food or eating in a hurry can disturb the process of digestion.

She further told him that digestion is the process of breaking down food into simpler forms so that the body can absorb nutrients. Digestion begins in the mouth where saliva acts on starch, continues in the stomach where gastric juices act on proteins, and is completed in the small intestine with the help of bile from the liver and pancreatic juices. The villi in the small intestine absorb digested food, and water is absorbed in the large intestine.

To stay healthy, Ravi decided to eat slowly, chew food properly, and include fruits, vegetables, and enough water in his diet.

Questions:

1. Which enzyme in saliva helps in the digestion of starch?
2. What is the role of bile in digestion?
3. In which part of the digestive system is food completely digested and absorbed?
4. Write two healthy eating habits Ravi should follow to improve digestion.

Case Study II:

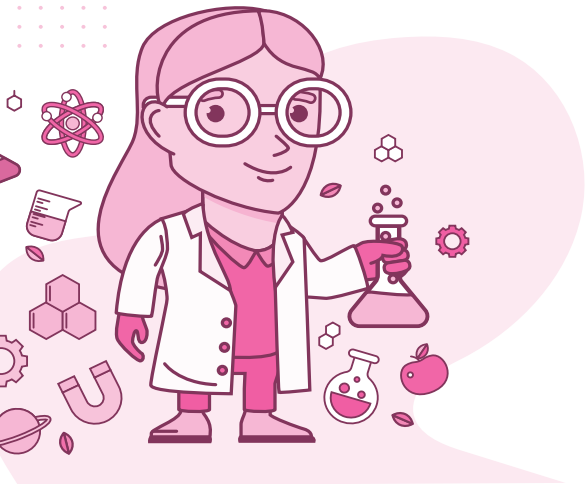
Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Meena was running to catch her school bus. After reaching the bus stop, she noticed that her breathing became faster, and she was inhaling and exhaling deeply. Later in science class, her teacher explained that this happens because when we run, our muscles need more energy. To provide this energy, the body increases the breathing rate to take in more oxygen and release more carbon dioxide.

This continuous process ensures that oxygen reaches the lungs, where it diffuses into the blood and is transported to all parts of the body. The waste gas, carbon dioxide, comes back to the lungs and is removed during exhalation.

Questions:

1. What are the two main processes of breathing?
2. Which gas is taken in during inhalation and which gas is released during exhalation?
3. How is oxygen transported to all parts of the body?
4. Suggest two healthy habits that keep our lungs strong.



10

Life Processes in Plants

(A) MULTIPLE CHOICE QUESTIONS

1. Which of the following is known as the 'Food factories' of plants?
   (*a*) Roots (*b*) Stem
   (*c*) Leaves (*d*) Flower
2. Which of the following is used to test the presence of starch in a leaf?
   (*a*) Alcohol (*b*) Iodine solution
   (*c*) Water (*d*) Chlorophyll
3. Why do non-green parts of a leaf not produce starch?
   (*a*) They do not get water. (*b*) They do not have chlorophyll.
   (*c*) They are too small. (*d*) They do not get air.
4. Which of the following raw materials is not essential for photosynthesis?
   (*a*) Oxygen (*b*) Carbon dioxide
   (*c*) Chlorophyll (*d*) Water
5. Which gas is released during respiration in plants?
   (*a*) Oxygen (*b*) Carbon dioxide
   (*c*) Nitrogen (*d*) Methane
6. During photosynthesis, food is produced in the form of _____.
   (*a*) Starch (*b*) Water
   (*c*) Stomata (*d*) Glucose
7. Water and minerals are transported from roots to other parts of the plant by _____.
   (*a*) Phloem (*b*) Xylem
   (*c*) Chlorophyll (*d*) Stomata
8. The process by which plants break down glucose and release energy is called:
   (*a*) Respiration (*b*) Photosynthesis (*c*) Transportation (*d*) food factory
9. The numerous small pores on the surface of a leaf are called:
   (*a*) Lamina (*b*) Veins (*c*) Stomata (*d*) None of the above
10. Plants store food in the form of _____.
    (*a*) Glucose (*b*) Water (*c*) Carbon dioxide (*d*) Starch

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Chlorophyll	(a) synthesizes glucose
(ii) Stomata	(b) releases carbon dioxide
(iii) Leaves	(c) green pigment
(iv) Photosynthesis	(d) small pores on leaves
(v) Respiration	(e) food factories

(C) FILL IN THE BLANKS

1. Lime water turns milky in the presence of _____.
2. _____ is a simple carbohydrate.
3. The transport of food in plants takes place through the _____.
4. _____ is produced by seeds as they respire.
5. _____ helps in capturing sunlight during photosynthesis.
6. _____ solution is used to indicate the presence of starch.
7. Lime water turns milky due to the presence of _____.
8. Sunlight, water, _____ and _____ are essential for the process of photosynthesis.
9. _____ absorbs carbon dioxide from the air.
10. Iodine solution turns _____ in the presence of starch.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** All parts of a plant, green or non-green, carry out respiration.
   Reason (R): Glucose is broken down in the presence of oxygen during respiration.
2. **Assertion (A):** Green pigment found in the leaves is called chlorophyll.
   Reason (R): Chlorophyll is not essential for photosynthesis.
3. **Assertion (A):** Minerals and water present in the soil are absorbed by the roots and transported to leaves.
   Reason (R): Carbon dioxide from air is taken through stomata present on the surface of leaves.
4. **Assertion (A):** The final product of respiration is glucose.
   Reason (R): Glucose ultimately gets converted into starch.
5. **Assertion (A):** Leaves of some plants appear red, violet or brown.
   Reason (R): They contain more coloured pigments than chlorophyll.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. Plants store food in the form of glucose.
2. Non-green patches of leaf contain chlorophyll.
3. Sodium hydroxide solution absorbs carbon dioxide.

4. Plants should be kept in the dark for 3-4 days to destarch before performing an experiment.
5. Chlorophyll helps in capturing sunlight.
6. The red-yellow colour confirms the presence of starch in the leaves.
7. Carbon dioxide is released during respiration.
8. Water is not essential for photosynthesis.
9. Phloem helps in conduction of water and minerals in plants.
10. Energy is released during respiration.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

In a small town, electricity was cut off for a whole day. People couldn't use refrigerators, so vegetables and fruits were kept outside. Rohan's grandmother explained that fruits and vegetables are sources of energy for us because they contain food prepared by plants through photosynthesis.

She further said that not only humans but also animals depend on plants for food, directly or indirectly. Cows eat grass, goats eat leaves, and even carnivores like lions depend on herbivores that eat plants. Without photosynthesis, there would be no food chain.

Rohan was amazed and asked, "So, plants are the real producers of food on Earth?" His grandmother nodded and said, "Yes, and while making food, plants also release oxygen which is essential for our survival."

Questions:

1. Why did Rohan's grandmother say that all living beings depend on plants for food?
2. How does photosynthesis help maintain the balance of oxygen in nature?
3. Write the word equation for photosynthesis.
4. What will happen to life on Earth if photosynthesis stops?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Ravi kept a potted plant in his bedroom at night. The next morning, his grandmother advised him not to keep plants in closed rooms at night. Ravi was confused and asked his science teacher about it.

The teacher explained that plants perform respiration all the time (day and night). At night, in the absence of sunlight, photosynthesis does not take place, but respiration continues. This means plants take in oxygen and release carbon dioxide at night. If many plants are kept in a closed room, the level of carbon dioxide may increase, which can be harmful for humans.

During the daytime, however, plants perform both photosynthesis and respiration. The amount of oxygen released during photosynthesis is much more than the carbon dioxide released in respiration. That's why plants are considered the "lungs of the Earth."

Questions:

1. Why did Ravi's grandmother advise him not to keep plants in a closed bedroom at night?
2. What happens in plants at night when there is no sunlight?
3. How is respiration different from photosynthesis in terms of gases released?
4. Why are plants called the "lungs of the Earth"?

11

Light - Shadows and Reflections

(A) MULTIPLE CHOICE QUESTIONS

1. Which of the following is a non-luminous object?
   (*a*) Sun (*b*) Lamp
   (*c*) Eraser (*d*) Tube light
2. Image formed by the pinhole camera is:
   (*a*) Erect (*b*) Inverted
   (*c*) sometimes erected, sometimes inverted (*d*) all of these
3. The colour of a shadow is:
   (*a*) Blue (*b*) Red
   (*c*) Black (*d*) same as object
4. Natural luminous object among the following is:
   (*a*) tube light (*b*) bulb (*c*) moon (*d*) stars
5. A boy stands 3 m in front of a plane mirror. The distance between the boy and his image will be:
   (*a*) 3 m (*b*) 6 m
   (*c*) 9 m (*d*) Cannot be determined
6. The phenomenon due to which letters appear reversed in a plane mirror is called:
   (*a*) Reflection (*b*) Refraction
   (*c*) Lateral inversion (*d*) Dispersion
7. Which material allows only some light to pass through it?
   (*a*) Transparent (*b*) Translucent
   (*c*) Opaque (*d*) None of these
8. Which of these is incorrectly matched?
   (*a*) Water – Transparent (*b*) Clean air – Transparent
   (*c*) Tinted glass – Opaque (*d*) Butter paper – Translucent
9. How many plane mirrors are generally used in a simple periscope?
   (*a*) 1 (*b*) 2 (*c*) 3 (*d*) 4
10. A kaleidoscope works on the principle of:
    (*a*) Refraction of light through a prism (*b*) Reflection of light from multiple mirrors
    (*c*) Scattering of light (*d*) Lateral inversion in mirrors

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Kaleidoscope	(a) lateral inversion
(ii) Periscope	(b) inverted image
(iii) Shadow	(c) submarine
(iv) Plane Mirror	(d) designers and artists
(v) Pin hole camera	(e) black in colour

(C) FILL IN THE BLANKS

1. _____ objects emit their own light.
2. Light travels in a _____ line.
3. Light does not pass through an _____ object.
4. The change in direction of light by a mirror is called _____.
5. A pin hole camera always forms an _____ image.
6. In lateral inversion, the left side of the object appears on the _____ side in the image.
7. The length of the shadow is _____ when the sun is overhead.
8. If the light source is moved closer to the object, the shadow becomes _____.
9. Glass is _____ but plastic is _____.
10. Moon is a _____ object.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** The objects which allow the light to pass through them are called translucent objects.
   Reason (R): Glass sheets, water, and air are examples of transparent objects.
2. **Assertion (A):** In mirror image, the left side of the object is seen as the right side in the image.
   Reason (R): The capital English letter 'H' does not show lateral inversion.
3. **Assertion (A):** A periscope helps soldiers to see over tall walls.
   Reason (R): A periscope uses refraction of light through prisms.
4. **Assertion (A):** Kaleidoscopes form beautiful patterns using colored glass pieces.
   Reason (R): Kaleidoscopes work on the principle of multiple reflections of light.
5. **Assertion (A):** Shadows can be colored.
   Reason (R): Shadows are formed when the path of light is blocked by an object.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. An image formed by a plane mirror is erect.
2. Sun is a non-luminous body.
3. Mirror is a transparent object.

4. Three rectangular mirrors are used to make a Kaleidoscope.
5. A pinhole camera forms an inverted image.
6. Fire flies are luminous.
7. LED lamps consume more power than traditional lamps.
8. Laser beams can cause serious eye damage.
9. Light can pass through opaque objects.
10. If the distance between the object and the screen increases, the shadow becomes bright.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

One cool winter night, Meera and her brother Aarav were sitting on the terrace, gazing at the bright full Moon. Suddenly, they noticed that the Moon was slowly losing its brightness and a dark shadow was spreading across its surface. Surprised, Aarav shouted, "Meera, look! The Moon is disappearing!"

Their grandfather, who was sitting nearby, smiled and explained, "Don't worry, children. The Moon is not disappearing. What you are seeing is called a lunar eclipse. Right now, the Earth is coming between the Sun and the Moon, blocking the sunlight. The Earth's shadow is falling on the Moon."

Questions:

1. What causes a lunar eclipse?
2. During a lunar eclipse, which celestial body casts its shadow on the Moon?
3. Which property of light is proved by the occurrence of a lunar eclipse?
4. Why did Aarav and Meera initially think that the Moon was "disappearing"?

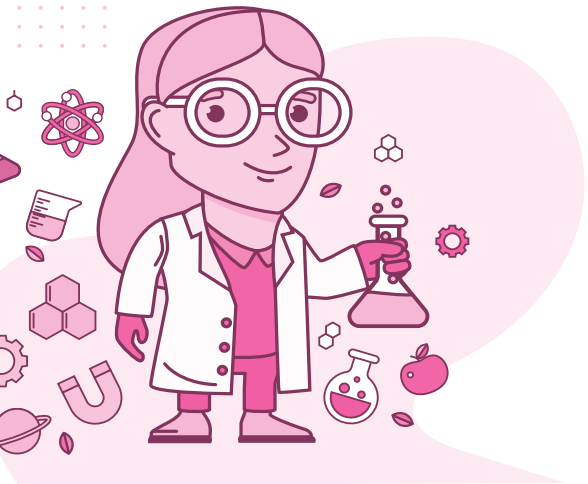
Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

Ravi visited a naval museum where he saw a submarine model. The guide explained that submarines use a special instrument called a periscope. A periscope helps sailors see objects above the water's surface while staying hidden underwater. It is made up of two plane mirrors placed at 45° angles inside a long tube. When light rays from an object strike the upper mirror, they get reflected downwards to the lower mirror, which again reflects them to the observer's eye. This principle of reflection of light makes it possible to see over tall obstacles or above the sea surface without being directly visible.

Questions:

1. What principle of light does a periscope use?
2. Why are the mirrors placed at 45° angles inside a periscope?
3. Give two practical uses of a periscope.
4. How does a periscope help in keeping the submarine hidden while observing objects above water?



12

Earth, Moon and the Sun

(A) MULTIPLE CHOICE QUESTIONS

1. What causes day and night on Earth?
   (*a*) Earth's revolution around the Sun (*b*) Moon's rotation
   (*c*) Earth's rotation on its axis (*d*) Sun's movement
2. In which direction does the Earth rotate?
   (*a*) East to West (*b*) West to East
   (*c*) North to South (*d*) South to North
3. How long does Earth take to complete one rotation?
   (*a*) 30 days (*b*) 1 year
   (*c*) 24 hours (*d*) 12 hours
4. What is the motion of the Earth around the Sun called?
   (*a*) Rotation (*b*) Revolution
   (*c*) Spinning (*d*) Orbiting
5. What is the name of the star that appears fixed in the sky?
   (*a*) Sirius (*b*) Alpha Centauri (*c*) Pole Star (*d*) Vega
6. How long does Earth take to complete one revolution?
   (*a*) 30 days (*b*) 24 hours (*c*) 365 days and 6 hours (*d*) 60 days
7. A solar eclipse happens when:
   (*a*) Earth comes between the Sun and Moon (*b*) Moon comes between the Sun and Earth
   (*c*) Sun comes between Earth and Moon (*d*) All three are aligned side by side
8. A lunar eclipse occurs when:
   (*a*) Earth comes between Sun and Moon (*b*) Moon comes between Sun and Earth
   (*c*) Sun comes between Earth and Moon (*d*) Moon moves away from Earth
9. The longest day of the year is:
   (*a*) 21 March (*b*) 21 June (*c*) 23 September (*d*) 22 December
10. An equinox occurs when:
    (*a*) Earth's axis is tilted directly towards the Sun
    (*b*) The length of day and night is equal everywhere
    (*c*) The Earth is closest to the Sun (*d*) The Sun is farthest from the Earth

(B) MATCH THE COLUMNS

Column 1	Column 2
(i) Earth's rotation	(a) 23 September
(ii) Earth's revolution	(b) shadow of moon
(iii) Longest night	(c) causes seasons
(iv) Autumn equinox	(d) causes day and night
(v) Solar eclipse	(e) 22 December

(C) FILL IN THE BLANKS

1. The time taken by the Earth to complete one revolution is about _____ days and 6 hours.
2. Eclipses were once feared because they were not _____.
3. The Big Dipper appears to move around the _____ star in the sky.
4. _____ eclipse can be watched safely with naked eyes.
5. The Earth rotates on its axis from _____ to _____.
6. The sun rises on 21st March for six months at the _____ pole.
7. The _____ star appears stationary in the sky.
8. Sunlight falls on the _____ part of India first.
9. _____ take long exposure photographs of the night sky.
10. The _____ hemisphere experiences winters in June.

(D) ASSERTION-REASON TYPE QUESTIONS

Directions. *In each of the following questions, a statement of Assertion is given by the corresponding statement of reason. Of the statements, mark the correct answer as:*

(a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(b) If both Assertion and Reason are true, but Reason is not the correct explanation of Assertion.

(c) If Assertion is true, but Reason if false.

(d) If Assertion is false, but Reason is true.

1. **Assertion (A):** The Earth experiences different seasons during the year.
   Reason (R): The Earth's axis is tilted and it revolves around the Sun.
2. **Assertion (A):** We should never look at the Sun directly during a solar eclipse.
   Reason (R): Looking at the Sun through sunglasses or binoculars during a solar eclipse is completely safe.
3. **Assertion (A):** The Sun appears to rise in the east and set in the west.
   Reason (R): The Earth rotates from west to east.
4. **Assertion (A):** The Earth's revolution around the Sun causes day and night.
   Reason (R): The Earth takes about 24 hours to complete one rotation on its axis.
5. **Assertion (A):** A lunar eclipse occurs when the Earth comes between the Sun and the Moon.
   Reason (R): A lunar eclipse happens when the Moon's shadow falls on the Earth.

(E) STATE TRUE/FALSE TO THE FOLLOWING STATEMENT

1. The Pole Star changes its position in the sky every night.
2. A lunar eclipse occurs when the Earth comes between the Sun and the Moon.

3. Day and night occur due to the Earth's revolution around the Sun.
4. The Autumnal Equinox occurs around 21st March.
5. The shortest night in the Northern Hemisphere occurs on 21st June.
6. Solar eclipses occur every month.
7. On summer solistice, day and night are almost equal everywhere on Earth
8. When it is summer in the Northern Hemisphere, it is winter in the Southern Hemisphere.
9. On the equator, there is always 12 hours of sunlight and 12 hours of darkness.
10. A solar eclipse happens when Earth comes between the Sun and the Moon.

(F) CASE STUDY QUESTIONS

Case Study I:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

One evening, Anya's family gathered on their terrace to watch a lunar eclipse. As Earth's shadow slowly covered the Moon, her father explained that this happens when Earth comes between the Sun and the Moon.

A few months later, during the day, Anya's school warned students not to look at the sky without protection because a solar eclipse was happening. Her teacher explained that it occurs when the Moon comes between the Sun and Earth, and looking at it directly can harm the eyes.

Through these events, Anya understood how the positions of the Sun, Earth, and Moon create eclipses.

Questions:

1. What causes a lunar eclipse?
2. Why is it dangerous to look at a solar eclipse directly?
3. Which celestial body's shadow falls on Earth during a solar eclipse?
4. Which eclipse is safe to watch with naked eyes?

Case Study II:

Answer the questions on the basis of your understanding of the following passage and related studied concepts:

One winter evening, Arjun went camping with his friends. As they looked at the clear night sky, he noticed that all the stars seemed to slowly change their position during the night. But one star, shining brightly, remained fixed in the same place. Curious, Arjun tried to collect more information about this star. He came to know that travelers and sailors in ancient times used this star to find direction at night, since it always points towards the north.

Arjun realized how observing the night sky can help us understand Earth's movement and even guide travelers.

Questions:

1. Why do most stars appear to change their position in the night sky?
2. Which star appears fixed in the night sky, and why?
3. How was the Pole Star useful to travelers in the past?
4. What direction does the Pole Star indicate?

ANSWERS

Chapter 1. The Ever-Evolving World of Science

(A) Multiple Choice Questions:

1. (c) **2.** (b) **3.** (b) **4.** (c) **5.** (c)

Chapter 2. Exploring Substances Acidic, Basic and Neutral

(A) Multiple Choice Questions:

1. (a) **2.** (c) **3.** (c) **4.** (a) **5.** (c) **6.** (c) **7.** (c) **8.** (c) **9.** (a) **10.** (c)

(B) Match the product with sources:

(i) - (b), (ii) - (d), (iii) - (a), (iv) - (c)

(C) Fill in the blanks:

1. Indicator **2.** acid, base **3.** Baking soda **4.** Indicators **5.** red, green
6. Lichens **7.** pink or red **8.** acetic **9.** blue, red **10.** oxalic

(D) Assertion-Reason Type questions:

1. (b) **2.** (d) **3.** (c) **4.** (d) **5.** (a)

(E) State True/false to the following statement:

1. False **2.** True **3.** True **4.** True **5.** False **6.** False **7.** True **8.** True **9.** True **10.** False

(F) Case Study Questions:

Case Study I:
1. Blue **2.** Turmeric, Red Rose
3. By creating a paste or turmeric paper **4.** Reddish brown

Case Study II:
1. Because it was highly acidic **2.** Calcium hydroxide
3. Neutralisation converts acid into harmless salt and water
4. It is used in fertilizer industry and pharmaceutical industries

Chapter 3. Electricity: Circuits and their Components

A) Multiple Choice Questions:

1. (d) **2.** (a) **3.** (c) **4.** (a) **5.** (a) **6.** (a) **7.** (b) **8.** (c) **9.** (b) **10.** (c)

(B) Match the product with sources:

(i) - (d), (ii) - (c), (iii) - (b), (iv) - (a)

(C) Fill in the blanks:

1. battery **2.** positive **3.** circuit **4.** switch **5.** Positive, negative
6. Positive **7.** heat **8.** conductor **9.** positive, negative **10.** insulators

(D) Assertion-Reason Type questions:

1. (d) **2.** (b) **3.** (a) **4.** (c) **5.** (d)

(E) State True/false to the following statement:

1. True **2.** True **3.** True **4.** True **5.** True **6.** False **7.** False **8.** True **9.** False **10.** True

(F) Case Study Questions:

Case Study I:
1. switch **2.** Because LEDs allow current to pass only in one direction
3. LED **4.** Energy saving and long lasting

Case Study II: **1.** (c) **2.** (b) **3.** (c) **4.** (c)

Chapter 4. The World of Metals and Non-Metals

A) Multiple Choice Questions:

1. (c) **2.** (a) **3.** (d) **4.** (c) **5.** (a) **6.** (b) **7.** (b) **8.** (c) **9.** (c) **10.** (c)

(B) Match the product with sources:

(i) - (b), (ii) - (d), (iii) - (a), (iv) - (e), (v) - (c)

(C) Fill in the blanks:

1. good **2.** elements **3.** malleability **4.** Mercury **5.** Iodine
6. Non-sonorous **7.** light **8.** acidic **9.** Graphite **10.** Non-metals

(D) Assertion-Reason Type questions:

1. (d) **2.** (a) **3.** (c) **4.** (b) **5.** (b)

(E) State True/false to the following statement:

1. True **2.** False **3.** True **4.** True **5.** False
6. True **7.** True **8.** False **9.** False **10.** True

(F) Case Study Questions:

Case Study I: **1.** Presence of air and moisture **2.** To prevent rusting
3. Because it forms a protective oxide layer on its surface
4. Process of applying a zinc coating on the surface of iron to prevent rusting

Case Study II: **1.** Sulphur dioxide
2. By reducing factory pollution, using clean fuels and planting more trees
3. They turn blue litmus red
4. Because industries release acidic oxides like Sulphur dioxide and nitrogen oxides in the air.

Chapter 5. Changes Around Us Physical and Chemical

(A) Multiple Choice Questions:

1. (c) **2.** (b) **3.** (b) **4.** (b) **5.** (c) **6.** (d) **7.** (c) **8.** (c) **9.** (a) **10.** (b)

(B) Match the product with sources:

(i) - (d), (ii) - (a), (iii) - (b), (iv) - (e), (v) - (c)

(C) Fill in the blanks:

1. chemical **2.** physical **3.** physical **4.** physical **5.** chemical **6.** ignition
7. combustion **8.** carbon dioxide **9.** calcium carbonate **10.** magnesium oxide

(D) Assertion-Reason Type questions:

1. (d) **2.** (b) **3.** (c) **4.** (a) **5.** (a)

(E) State True/false to the following statement:

1. False **2.** False **3.** True **4.** True **5.** True
6. True **7.** False **8.** True **9.** True **10.** False

(F) Case Study Questions:

Case Study I: **1.** Physical change (change in shape, but no new substance formed).
2. Physical change, because melted wax can solidify back into wax.
3. Because a new substance (ash, smoke, gases) is formed, and the process is irreversible.
4. Physical – Ice melting; Chemical – Rusting of iron.

Case Study II: **1.** Because oil is a combustible substance.

2. Because oil floats on water, causing the fire to spread.

3. He covered it with a wet cloth to cut off oxygen supply.

4. Petrol, wood

Chapter 6. Adolescence – a Stage of Growth and Change

(A) Multiple Choice Questions:

1. (b) **2.** (c) **3.** (b) **4.** (b) **5.** (d) **6.** (c) **7.** (c) **8.** (b) **9.** (b) **10.** (a)

(B) Match the product with sources:

(i) - (b), (ii) - (d), (iii) - (e), (iv) - (a), (v) - (c)

(C) Fill in the blanks:

1. Voice box **2.** Balanced **3.** Hormones **4.** menstruation **5.** hygiene
6. exercise **7.** blood **8.** vitamin B12 **9.** Karnataka **10.** Cyberbullying

(D) Assertion-Reason Type questions:

1. (b) **2.** (a) **3.** (c) **4.** (d) **5.** (b)

(E) State True/false to the following statement:

1. True **2.** True **3.** False **4.** False **5.** True
6. False **7.** False **8.** True **9.** True **10.** True

(F) Case Study Questions:

Case Study I:

1. Neha felt tired, her homework was incomplete, and she had difficulty concentrating in class.

2. She became irritable, withdrawn, and sometimes felt sad or anxious when she didn't get enough likes or comments.

3. (i) Limit screen time and avoid staying up late at night.
(ii) Focus on hobbies, family, and offline activities.

4. Balancing online and offline activities ensures proper physical health, mental well-being, academic performance, and social skills development.

Case Study II:

1. Rahul started using harmful substances because of peer pressure.

2. (i) He became weak and tired. (ii) He often fell sick and lost interest in his normal activities.

3. Rahul skipped classes, lost interest in studies, had mood swings, and became easily angry.

4. (i) Choose good friends who encourage healthy habits.
(ii) Engage in sports, hobbies, and talk to parents or teachers when feeling pressured.

Chapter 7. Heat Transfer in Nature

(A) Multiple Choice Questions:

1. (d) **2.** (a) **3.** (b) **4.** (b) **5.** (d) **6.** (b) **7.** (b) **8.** (d) **9.** (a) **10.** (a)

(B) Match the product with sources:

(i) - (d), (ii) - (c), (iii) - (a), (iv) - (b)

(C) Fill in the blanks:

1. Radiation **2.** Conduction **3.** convection **4.** precipitation **5.** ice stupas
6. heat **7.** poor **8.** infiltration **9.** Aquifers **10.** Convection

(D) Assertion-Reason Type questions:

1. (d) **2.** (c) **3.** (c) **4.** (b) **5.** (a)

(E) State True/false to the following statement:

1. True	**2.** False	**3.** True	**4.** True	**5.** False
6. True	**7.** False	**8.** True	**9.** False	**10.** False

(F) Case Study Questions:

Case Study I.

1. Because of the sea breeze – cooler air from the sea moves towards the land during the day, making the coastal area cooler.

2. At night, the land cools faster than the sea. The warmer air above the sea rises, and cooler air from the land moves towards the sea, forming a land breeze.

3. In the daytime, land becomes hotter → sea breeze forms.

At night, land cools faster → land breeze forms.

4. They regulate the temperature:

Sea breeze keeps coastal areas cooler in the daytime.

Land breeze balances temperatures at night.

Thus, people living in coastal regions experience moderate climates compared to inland areas.

Case Study II:

1. Because of conduction – heat travelled from the hot part of the spoon in contact with the pan to the handle through the metal.

2. Convection – hot steam rises, cooler air takes its place, and circulation occurs in gases and liquids.

3. Because wood and plastic are poor conductors of heat (insulators), so they prevent the handle from becoming hot and protect us from burns.

4. Through radiation, as it does not require any medium to travel.

Chapter 8. Measurement of Time and Motion

(A) Multiple Choice Questions:

1. (c) **2.** (a) **3.** (d) **4.** (b) **5.** (b) **6.** (a) **7.** (d) **8.** (b) **9.** (d) **10.** (c)

(B) Match the product with sources:

(i) - (d), (ii) - (a), (iii) - (b), (iv) - (e), (v) - (c)

(C) Fill in the blanks:

1. time	**2.** clock	**3.** speed	**4.** pendulum	**5.** distance, time
6. time period	**7.** greater	**8.** sundial	**9.** m/s	**10.** uniform linear

(D) Assertion-Reason Type questions:

1. (d) **2.** (c) **3.** (a) **4.** (d) **5.** (a)

(E) State True/false to the following statement:

1. True **2.** True **3.** False **4.** True **5.** False **6.** True **7.** False **8.** True **9.** True **10.** False

(F) Case Study Questions:

Case Study I.

1. A sundial cannot be used at night because it depends on the Sun's shadow.

2. A sand clock uses flowing sand, whereas a water clock uses flowing water to measure time.

3. The pendulum of a pendulum clock shows oscillatory motion.

4. Atomic clocks are used for the highest accuracy.

Case Study II:

1. Uniform motion, because the car covered equal distances in equal intervals of time.

2. Uniform motion is when an object covers equal distances in equal intervals of time.

3. Example: A bus moving in city traffic.
4. Distance = Speed × Time = 60 × 2 = 120 km.

Chapter 9. Life Processes in Animals

(A) Multiple Choice Questions:

1. (a) **2.** (a) **3.** (b) **4.** (b) **5.** (c) **6.** (a) **7.** (c) **8.** (c) **9.** (a) **10.** (a)

(B) Match the product with sources:

(i) - (b), (ii) - (e), (iii) - (a), (iv) - (c), (v) - (d)

(C) Fill in the blanks:

1. Exhalation **2.** Physical **3.** Small intestine **4.** Digestive juice, acid, mucus
5. Liver, pancreas **6.** Diaphragm **7.** Rectum **8.** Energy **9.** Sugar **10.** Alveoli

(D) Assertion-Reason Type questions:

1. (a) **2.** (c) **3.** (d) **4.** (a) **5.** (b)

(E) State True/false to the following statement:

1. True **2.** False **3.** False **4.** False **5.** False **6.** True **7.** True **8.** False **9.** True **10.** False

(F) Case Study Questions:

Case Study I:

1. The enzyme amylase in saliva helps in breaking down starch into sugar.
2. Bile breaks down large fat molecules into smaller droplets, making it easier for enzymes to digest fats.
3. Complete digestion and absorption of food take place in the small intestine.
4. (i) Eat slowly and chew food properly.
   (ii) Eat more fruits and vegetables, and drink enough water.

Case Study II:

1. The two processes are inhalation and exhalation.
2. Inhalation takes in oxygen and exhalation releases carbon dioxide.
3. Oxygen diffuses into the blood from the lungs and is carried to all body parts by blood circulation.
4. (i) Regular exercise like walking or playing outdoor games.
   (ii) Avoiding smoking and polluted air.

Chapter 10. Life Processes in Plants

(A) Multiple Choice Questions:

1. (c) **2.** (b) **3.** (b) **4.** (a) **5.** (b) **6.** (d) **7.** (b) **8.** (a) **9.** (c) **10.** (d)

(B) Match the product with sources:

(i) - (c), (ii) - (d), (iii) - (e), (iv) - (a), (v) - (b)

(C) Fill in the blanks:

1. Carbon dioxide **2.** Glucose **3.** Phloem **4.** Carbon dioxide
5. Chlorophyll **6.** Iodine **7.** Carbon dioxide **8.** Chlorophyll, carbon dioxide
9. Caustic soda **10.** Blue-black

(D) Assertion-Reason Type questions:

1. (b) **2.** (c) **3.** (b) **4.** (d) **5.** (a)

(E) State True/false to the following statement:

1. False **2.** False **3.** True **4.** True **5.** True **6.** False **7.** True **8.** False **9.** False **10.** True

(F) Case Study Questions:

Case Study I:

1. Because plants prepare food by photosynthesis, and all animals (herbivores, carnivores, omnivores) depend directly or indirectly on plants for food.
2. During photosynthesis, plants release oxygen into the atmosphere. This oxygen is used by humans and animals for respiration, maintaining the oxygen balance in nature.
3. Carbon dioxide + Water $\xrightarrow{\text{(in presence of sunlight and chlorophyll)}}$ Glucose + Oxygen
4. If photosynthesis stops:
   - Plants will not produce food.
   - Animals and humans will not get energy.
   - Oxygen supply will decrease.
   - Life on Earth will not survive.

Case Study II:

1. Because at night plants only respire (no photosynthesis) and release carbon dioxide, which can reduce oxygen levels in a closed room.
2. Photosynthesis stops, but respiration continues — plants take in oxygen and release carbon dioxide.
3. Respiration releases carbon dioxide and uses oxygen, while photosynthesis releases oxygen and uses carbon dioxide.
4. Because they release a large amount of oxygen during photosynthesis, which is essential for the survival of living beings.

Chapter 11. Light - Shadows and Reflections

(A) Multiple Choice Questions:

1. (c) **2.** (a) **3.** (c) **4.** (d) **5.** (b) **6.** (c) **7.** (b) **8.** (c) **9.** (b) **10.** (b)

(B) Match the product with sources:

(i) - (d), (ii) - (c), (iii) - (e), (iv) - (a), (v) - (b)

(C) Fill in the blanks:

1. Luminous **2.** Straight **3.** Opaque **4.** Reflection **5.** Inverted
6. Right **7.** Shortest **8.** Larger **9.** transparent, opaque **10.** Non luminous

(D) Assertion-Reason Type questions:

1. (d) **2.** (b) **3.** (c) **4.** (a) **5.** (d)

(E) State True/false to the following statement:

1. True **2.** False **3.** False **4.** True **5.** True **6.** True **7.** False **8.** True **9.** False **10.** False

(F) Case Study Questions:

Case Study I:

1. A lunar eclipse occurs when the Earth comes between the Sun and the Moon, blocking sunlight.
2. The Earth casts its shadow on the Moon.
3. Light travels in a straight line.
4. Because the Earth's shadow gradually covered the Moon, making it look like it was disappearing.

Case Study II:

1. A periscope works on the principle of reflection of light from plane mirrors.
2. The mirrors are placed at 45° so that light rays can change direction twice and reach the observer's eyes.
3. (i) In submarines to see above water,
   (ii) In bunkers or trenches to observe enemies safely.
4. It allows sailors to look above water while the submarine remains hidden below the surface.

Chapter 12. Earth, Moon and the Sun

(A) Multiple Choice Questions:

1. (c) **2.** (b) **3.** (c) **4.** (b) **5.** (c) **6.** (c) **7.** (b) **8.** (a) **9.** (b) **10.** (b)

(B) Match the product with sources:

(i) - (d), (ii) - (c), (iii) - (e), (iv) - (a), (v) - (b)

(C) Fill in the blanks:

1. 365 **2.** understood **3.** pole **4.** Lunar **5.** West, east

6. North **7.** pole **8.** eastern **9.** astrophotographers **10.** Southern

(D) Assertion-Reason Type questions:

1. (a) **2.** (c) **3.** (a) **4.** (d) **5.** (c)

(E) State True/false to the following statement:

1. False **2.** True **3.** True **4.** False **5.** True **6.** False **7.** False **8.** True **9.** True **10.** False

(F) Case Study Questions:

Case Study I:

1. Earth comes between Sun and Moon.

2. Direct sunlight can damage the eyes.

3. Moon's shadow

4. Lunar eclipse

Case Study II:

1. Because of Earth's rotation.

2. The Pole Star, as it lies almost directly above the Earth's axis at the North Pole.

3. It was used for navigation, as it always shows the north direction.

4. North direction