1 The Invisible Living World: Beyond Our Naked Eye

Fill in the Blanks

1. Scientific investigation involves asking focused _____.
2. Living organisms and their surroundings together form _____ that support life.
3. Some microorganisms can help us _____ our food.
4. The heating effect of electric current is used to produce _____.
5. The magnetic effect of electric current helps _____ run.
6. A force can make an object speed up, slow down or change its _____.
7. Everything around us is made up of tiny _____.
8. Particles in gases can move around _____.
9. Elements are _____ substances.
10. Compounds contain two or more elements that are _____ together.

Multiple Choice Questions

1. Science begins with:
   A. Memorisation
   B. Drawing
   C. Guessing
   D. Curiosity and wonder

2. The root symbol in the textbook represents:
   A. Speed
   B. Strong foundations of knowledge
   C. Electricity
   D. Pressure

3. Which is a pure substance according to the chapter?
   A. Mixture
   B. Salt solution
   C. Tea
   D. Element

4. A mixture can be:
   A. Separated physically
   B. Never separated
   C. Converted into an element automatically
   D. Seen only with a microscope

5. Sugar dissolving in tea is an example of:
   A. A force
   B. An element
   C. A solution
   D. Reflection

6. Light can:
   A. Only be absorbed
   B. Reflect and bend
   C. Never change direction
   D. Only travel through water

7. The different phases of the Moon arise because of:
   A. The Moon changing its size
   B. Relative positions of Earth, Moon and Sun
   C. The Moon producing different amounts of light
   D. Clouds covering the Moon permanently

8. During a fair investigation, we should preferably:
   A. Change many factors at once
   B. Avoid measurements
   C. Change only one factor at a time
   D. Avoid recording observations

9. Which is a possible measurement in the puri investigation?
   A. Colour of the kitchen
   B. Shape of the frying pan
   C. Name of the cook
   D. Time taken by the puri to puff up

10. The systematic approach to scientific experiments is called:
   A. Random thinking
   B. Systematic investigation
   C. Story writing
   D. Classification

Short Answer Questions

1. What is scientific investigation?
2. How can science be useful in the kitchen?
3. What are two effects of electric current mentioned in the chapter?
4. What can a force do to an object?
5. How are pressure differences related to wind?
6. Does only a polished mirror reflect light?
7. What is an ecosystem?
8. Why should observations be recorded during an experiment?

Long Answer Questions

1. Explain the importance of observation, measurement and experimentation in science.
2. Why is it important to control conditions during an experiment?
3. Explain how science is connected with everyday life.
4. Explain the importance of particles in understanding matter.
5. Explain why Earth is suitable for life according to the chapter.

Answers

Fill in the blanks

1. questions
2. ecosystems
3. digest
4. heat
5. motors
6. direction
7. particles
8. freely
9. pure
10. bonded

MCQs

1. D. Curiosity and wonder
2. B. Strong foundations of knowledge
3. D. Element
4. A. Separated physically
5. C. A solution
6. B. Reflect and bend
7. B. Relative positions of Earth, Moon and Sun
8. C. Change only one factor at a time
9. D. Time taken by the puri to puff up
10. B. Systematic investigation

Short Questions – Answers

Ans 1: Scientific investigation is a systematic process of asking focused questions, planning investigations, observing carefully, conducting experiments where appropriate, measuring results and using observations to improve our understanding.

Ans 2: Everyday activities in the kitchen can provide opportunities for scientific investigation. For example, we can investigate why a puri puffs up when placed in hot oil by changing and controlling different factors and carefully observing the results.

Ans 3: The two effects are:

- Heating effect
- Magnetic effect

The heating effect can be used to produce heat, while the magnetic effect helps motors run and machines function.

Ans 4: A force can make an object speed up, slow down or change its direction.

Ans 5: Differences in pressure can cause air to move. A small pressure difference can produce a gentle breeze, while a stronger pressure difference can produce strong winds and may contribute to powerful weather events such as cyclones.

Ans 6: No. Rough surfaces also reflect light. The chapter also points out that the Moon reflects light.

Ans 7: An ecosystem involves relationships between living organisms and their environment. Living beings depend on and respond to air, water, sunlight and other organisms.

Ans 8: Recording observations helps us remember what happened, compare results and use the evidence to improve our understanding.

Long Questions – Answers

Ans 1: Observation allows us to notice and record what happens. Measurement gives us numerical information when a quantity can be measured. Experimentation allows us to investigate whether changing a particular factor produces a difference. Together, these processes provide evidence that can be used to improve our understanding. The chapter emphasises observing, measuring and experimenting as important scientific principles.

Ans 2: If several factors are changed simultaneously, it becomes difficult to determine which factor caused the observed result. Therefore, a scientific investigation should ideally change one factor at a time while keeping the other conditions the same. For example, while studying the effect of oil temperature on puri puffing, the thickness of the dough and the way it is placed in the oil should remain the same.

Ans 3: Science is present in everyday activities and helps us understand and improve our lives. We use electric current for heating and for operating motors. Forces explain why objects speed up, slow down or change direction. Pressure helps us understand the movement of air and weather. The study of particles helps us understand materials and solutions. Light explains mirrors, lenses and corrective glasses. Thus, everyday observations can become starting points for scientific investigations.

Ans 4: Everything around us is made of tiny particles. Their movement helps us understand the behaviour of different materials. In solids, particles cannot move much, while in gases they can move around freely. Understanding particles also helps explain pressure, boiling and the way substances combine or mix.

Ans 5: Earth is at a suitable distance from the Sun, allowing water to remain in liquid form. Earth also has an atmosphere that provides the oxygen we breathe and protects us from harmful ultraviolet radiation. These conditions help make Earth suitable for life. However, human activities can affect Earth's temperature and disrupt climate patterns.