

# Mid Term Practice Worksheet - 1

Class 9th

Science

Time: 3 hours.

Maximum Marks: 80

Name: \_\_\_\_\_ Section: \_\_\_\_\_. Roll No.: \_\_\_\_\_.

Date: 23 August 2026

## General Instructions:

1. All questions are compulsory.
  2. This question paper consists of Sections A, B, C, D and E.
  3. Section A consists of 20 multiple choice questions of 1 mark each, including 3 Assertion-Reason based questions.
  4. Section B consists of Matching, Fill in the Blanks and True/False type questions of 1 mark each.
  5. Section C consists of short answer questions of 2 marks each, with internal choice.
  6. Section D consists of questions of 3 marks each with internal choice.
  7. Section E consists of case study based questions of 5 marks each with internal choice.
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## SECTION A

### Q1: From Question I–XX, choose the correct option. (20 × 1 = 20)

- I) Which of the following best represents the correct order of steps in the scientific method?
- (A) Conclusion → Hypothesis → Observation → Experiment  
(B) Observation → Hypothesis → Experiment → Conclusion  
(C) Experiment → Conclusion → Observation → Hypothesis  
(D) Hypothesis → Conclusion → Observation → Experiment
- II) A model in science is best described as:
- (A) An exact copy of reality (B) A simplified representation used to explain or predict phenomena (C) A random guess  
(D) A completed experiment
- III) According to the cell theory, all living organisms are made up of:
- (A) Tissues only (B) One or more cells (C) Organs only (D) Molecules only
- IV) Which of the following is a unicellular organism?
- (A) Amoeba (B) Human being (C) Frog (D) Hibiscus plant
- V) The organelle responsible for photosynthesis in plant cells is the:
- (A) Mitochondrion (B) Chloroplast (C) Nucleus (D) Ribosome
- VI) Which plant tissue is mainly responsible for active cell division and growth?
- (A) Permanent tissue (B) Meristematic tissue (C) Epidermal tissue (D) Vascular tissue
- VII) Which animal tissue is responsible for transmitting messages within the body?
- (A) Epithelial tissue (B) Connective tissue (C) Muscular tissue (D) Nervous tissue
- VIII) A mixture in which the components are uniformly distributed throughout is called a:
- (A) Heterogeneous mixture (B) Homogeneous mixture (C) Suspension (D) Colloid
- IX) Which technique is used to separate a mixture of two miscible liquids having different boiling points?
- (A) Filtration (B) Sublimation (C) Distillation (D) Decantation
- X) Common salt can be recovered from salt water by the process of:
- (A) Filtration (B) Evaporation (C) Magnetic separation (D) Winnowing

XI) Which subatomic particle was discovered by J.J. Thomson?

- (A) Proton (B) Neutron (C) Electron (D) Positron

XII) According to Rutherford's atomic model, most of the mass of an atom is concentrated in its:

- (A) Electron cloud (B) Nucleus (C) Outermost shell (D) Orbit

XIII) Which scientist proposed that electrons revolve around the nucleus in fixed orbits of definite energy?

- (A) J.J. Thomson (B) Ernest Rutherford (C) Niels Bohr (D) John Dalton

XIV) The smallest particle of an element that can take part in a chemical reaction is called a/an:

- (A) Molecule (B) Atom (C) Ion (D) Compound

XV) Who first discovered the cell in cork?

- (A) Robert Brown (B) Robert Hooke (C) Anton Van Leeuwenhoek (D) Rudolf Virchow

XVI) Which of the following is NOT one of Earth's major spheres?

- (A) Lithosphere (B) Hydrosphere (C) Biosphere (D) Stratosphere

XVII) The continuous movement of water between the atmosphere, land and oceans is called the:

- (A) Carbon cycle (B) Nitrogen cycle (C) Water cycle (D) Rock cycle

**Directions (XVIII–XX): Each question below consists of two statements, Assertion (A) and Reason (R). Choose the correct option from the following:**

(A) Both A and R are true, and R is the correct explanation of A.

(B) Both A and R are true, but R is NOT the correct explanation of A.

(C) A is true, but R is false.

(D) A is false, but R is true.

XVIII) Assertion (A): The cell is called the structural and functional unit of life.

Reason (R): All the life processes of an organism take place within its cells, and every living organism is made up of cells.

XIX) Assertion (A): The molecular mass of water ( $\text{H}_2\text{O}$ ) is 18 u.

Reason (R): Molecular mass is calculated by adding the atomic masses of hydrogen and carbon atoms present in the molecule.

XX) Assertion (A): The carbon cycle helps maintain the balance of carbon dioxide in the atmosphere.

Reason (R): Carbon moves between the atmosphere, living organisms, oceans and rocks through processes such as photosynthesis, respiration and combustion.

## SECTION B

**Q2. Match Column A with the correct item in Column B. (1×5=5)**

| Column A               | Column B                                                     |
|------------------------|--------------------------------------------------------------|
| 1. Meristematic tissue | (a) Contains most of an atom's mass                          |
| 2. Distillation        | (b) Combining capacity of an element in forming compounds    |
| 3. Nucleus             | (c) Zone of the Earth where life exists                      |
| 4. Valency             | (d) Region of active cell division in plants                 |
| 5. Biosphere           | (e) Separates miscible liquids with different boiling points |

**Q3. Read the passage below and fill in the blanks. (1×5=5)**

During a school trip to a science museum, Aditi and her friends observed many exhibits. At the entrance, a guide explained that before accepting any explanation as true, a scientist must test it through experiments — this testable explanation is called a \_\_\_\_\_. (i) \_\_\_\_\_. Inside the biology hall, a microscope revealed tiny box-like structures that make up all living things, called

\_\_\_\_\_(ii)\_\_\_\_\_. In the chemistry section, students learned that salt could be separated from a salt-sand mixture by dissolving it in water, filtering the mixture and then using \_\_\_\_\_(iii)\_\_\_\_\_, which leaves the salt behind. Nearby, a model of the atom showed electrons revolving around a dense central \_\_\_\_\_(iv)\_\_\_\_\_ containing protons and neutrons. In the Earth Sciences corner, a large globe illustrated how carbon moves continuously between the air, living things and the oceans through the \_\_\_\_\_(v)\_\_\_\_\_.

*Word bank (use each word once): hypothesis • cells • evaporation • nucleus • carbon cycle*

**Q4. State whether the following statements are True or False. (1×5=5)**

- i. The cell is the smallest structural and functional unit of life.
- ii. A homogeneous mixture has visibly different components.
- iii. Protons are negatively charged particles found in the nucleus of an atom.
- iv. Sclerenchyma cells are living cells with thin cell walls.
- v. The biosphere refers only to the ocean regions of the Earth.

**SECTION C**

**Q5. Answer the following questions. Attempt any Six of the following questions. (2×6=12)**

1. Differentiate between an observation and a hypothesis, with an example.
2. State two features of the cell theory.
3. Name two organelles found in a plant cell but not in an animal cell.
4. Give one function each of meristematic and permanent tissue in plants.
5. Differentiate between a homogeneous and a heterogeneous mixture, with an example of each.
6. State one key feature of Rutherford's atomic model.
7. Differentiate between an atom and a molecule, giving one example of each.
8. Name two biogeochemical cycles that help maintain balance in the Earth's systems.

**SECTION D**

**Q6. Answer the following questions. Attempt any Six of the following questions. (3×6=18)**

1. Explain, with an example, the importance of models in understanding scientific concepts.
2. Explain the structure and function of the nucleus in a cell.
3. Differentiate between epithelial and connective tissue, giving one example of each.
4. Describe the process of distillation and state one situation where it is used.
5. Explain how chromatography is used to separate the components of a mixture, such as ink.
6. Compare Thomson's and Rutherford's models of the atom, stating one key difference.
7. Calculate the molecular mass of carbon dioxide (CO<sub>2</sub>), given atomic masses: C = 12u, O = 16u. Show your work.
8. Explain how the water cycle connects the atmosphere, hydrosphere and lithosphere.

**SECTION E**

**Q7. Attempt any three of the following case study based questions.**

I) Under a microscope, Riya observed an onion peel and a human cheek cell. She noted that the onion cell had a rigid outer boundary and a large empty space inside, while the cheek cell had neither.

- (a) What is the rigid outer boundary seen in the onion cell called, and is it present in animal cells? [2]
- (b) Name the large fluid-filled space observed in the onion cell. [1]
- (c) State one other structural difference between plant and animal cells. [2]

II) During a practical class, students examined a slide of an onion root tip under high magnification and found cells that were small, densely packed and constantly dividing.

- (a) Name the type of plant tissue found at the root tip. [1]
- (b) State one characteristic feature of this tissue that distinguishes it from permanent tissue. [2]
- (c) Why is this tissue important for the growth of a plant? [2]

III) Sameer was given a sample containing sand, salt and water all mixed together, and asked to recover all three components separately.

- (a) Suggest the first step Sameer should take to separate the sand from the salt water. [1]
- (b) Name the method Sameer should use next to recover the salt from the salt water. Explain briefly. [2]
- (c) Is the original mixture homogeneous or heterogeneous? Give one reason. [2]

IV) While studying chemical formulas, a student learnt that the valency of hydrogen is 1 and the valency of oxygen is 2, and used this to write the formula of water as  $H_2O$ .

- (a) What is meant by the valency of an element? [1]
- (b) Using the valencies given, show how the formula of water is derived to be  $H_2O$ . [2]
- (c) What would be the chemical formula and the nomenclature of a compound formed between sodium (valency 1) and chlorine (valency 1)? [2]

V) Scientists studying a forest region found that trees absorb carbon dioxide during the day, and that the carbon stored in plant material eventually returns to the atmosphere when the plants decompose or are burnt.

- (a) Name the biogeochemical cycle being described here. [1]
- (b) State two ways carbon enters the atmosphere in this cycle. [2]
- (c) Why is it important to maintain a balance in this cycle for life on Earth? [2]

— End of Worksheet —