FIRST TERM MODEL QUESTION PAPER 2024 WITH ANSWER KEY SET 3

SCIENCE - Standard VII

Time: 2 hours

Max. Marks: 50

(Prepared by www.educationobserver.com)

Instructions:

1. Read the questions carefully before answering.
2. All activities carry equal marks.

Activity 1: Multiple-Choice Questions

1. Which of the following is a method of vegetative propagation?
   a) Pollination
   b) Grafting
   c) Seed sowing
   d) Fertilization

2. Which gas is primarily released during the process of photosynthesis?
   a) Carbon dioxide
   b) Nitrogen
   c) Oxygen
   d) Hydrogen

3. Which acid is found in vinegar?
   a) Hydrochloric acid
   b) Acetic acid
   c) Citric acid
   d) Formic acid

4. Which of the following is an organic fertilizer?
   a) Urea
   b) Compost
   c) Superphosphate
   d) Potash

5. What is the role of stomata in leaves?
   a) Storing water
   b) Gaseous exchange
   c) Absorbing nutrients
   d) Producing seeds

Activity 2: Short Answer Questions (5 Marks)

1. Explain the process of composting and how it helps in sustainable agriculture.
2. Describe the differences between chemical fertilizers and organic fertilizers. Provide examples of each.

Activity 3

Describe the structure and function of a flower. Include a labeled diagram showing the main parts and explain their role in plant reproduction.

Activity 4

Explain the adaptations seen in plants and animals living in desert conditions. Provide examples from the textbook to illustrate how these adaptations help them survive in their environment.

Activity 5

Discuss the significance of the nitrogen cycle in agriculture. Explain how nitrogen is made available to plants and the role of nitrogen-fixing bacteria.

Activity 6

Explain the steps involved in air layering and serpentine layering in plants. Illustrate with examples from the textbook and provide a labeled diagram.

Activity 7

Discuss the role of artificial pollination in producing hybrid crops. Explain how artificial pollination is carried out and its advantages in agriculture.

Activity 8

Describe the physical and chemical properties of acids and bases. Explain how indicators are used to identify acids and bases, and provide examples from the textbook.

ANSWER KEY

Activity 1: Multiple-Choice Questions

1. b) Grafting
   Explanation: Grafting is a method of vegetative propagation used to reproduce plants with desirable traits.
2. c) Oxygen
   Explanation: During photosynthesis, plants release oxygen as a byproduct.
3. b) Acetic acid
   Explanation: Acetic acid is the main component of vinegar.
4. b) Compost
   Explanation: Compost is an organic fertilizer made from decomposed plant and animal matter.
5. b) Gaseous exchange
   Explanation: Stomata are tiny openings in leaves that allow for the exchange of gases, primarily carbon dioxide and oxygen.

Activity 2: Short Answer Questions (5 Marks)

1. Composting: Composting is the process of breaking down organic waste like kitchen scraps, leaves, and garden waste into nutrient-rich material that can be added to soil. The process involves the natural decomposition of organic matter by microorganisms. Composting improves soil health, reduces the need for chemical fertilizers, and helps in waste management by recycling organic waste.
2. Differences between Chemical and Organic Fertilizers:
   - Chemical Fertilizers: Made from synthetic chemicals, they provide immediate nutrients but can lead to soil degradation over time. Examples include urea and superphosphate.
   - Organic Fertilizers: Derived from natural sources like compost and manure, they improve soil structure and fertility without causing harm to the environment. Examples include compost and cow dung manure.

Activity 3

Structure and Function of a Flower:

- Main Parts:
  - Sepals: Protect the flower bud.
  - Petals: Attract pollinators with their color and scent.

- Stamens: Male reproductive part, consisting of anther and filament, which produces pollen.
- Pistil: Female reproductive part, consisting of stigma, style, and ovary, where seeds are formed.

Labeled Diagram:
(Students should include a labeled diagram showing these parts.)

Activity 4

Adaptations in Desert Plants and Animals:

- Plants: Desert plants like cacti have thick stems to store water, reduced leaves (spines) to minimize water loss, and deep roots to reach underground water.
- Animals: Desert animals like camels store fat in their humps, have long legs to keep their body away from hot ground, and can survive without water for long periods.

Activity 5

Significance of the Nitrogen Cycle in Agriculture:

- The nitrogen cycle converts nitrogen from the atmosphere into a form that plants can absorb and use for growth. Nitrogen-fixing bacteria in soil and root nodules of legumes convert atmospheric nitrogen into ammonia. This ammonia is then converted into nitrites and nitrates, which plants absorb to produce proteins. The nitrogen cycle is essential for maintaining soil fertility and promoting healthy plant growth.

Activity 6

Air Layering and Serpentine Layering:

- Air Layering: A branch is wounded, treated with rooting hormone, and wrapped with moist soil and plastic until roots form. The branch is then cut and planted.
- Serpentine Layering: The stem is bent to the ground and buried at intervals, allowing roots to form at each buried section. The rooted sections are cut and planted as new plants.

Labeled Diagram:
(Students should include a labeled diagram showing the steps involved.)

Activity 7

Artificial Pollination:

Artificial pollination involves manually transferring pollen from one flower to the stigma of another to produce hybrid seeds with desired traits. This method is used in crops like tomatoes and brinjals. The advantages include improved crop yield, better resistance to diseases, and faster growth.

Activity 8

Physical and Chemical Properties of Acids and Bases:

- Acids: Sour taste, turn blue litmus paper red, react with metals to produce hydrogen gas. Example: Hydrochloric acid.
- Bases: Bitter taste, slippery feel, turn red litmus paper blue, neutralize acids. Example: Sodium hydroxide.
- Indicators: Litmus, phenolphthalein, and methyl orange are used to determine whether a substance is acidic or basic. Litmus paper turns red in acid and blue in base.