SUMMATIVE ASSESSMENT II | 2025-2026

BASIC SCIENCE MODEL QUESTION PAPER

ANSWER KEY

Class: 6

1. Mixtures and Solutions

- a) Scientific purity of Coconut Oil:
  - No, coconut oil is not a scientifically pure substance.
  - Justification: A pure substance (like water) consists of only one type of molecule. Coconut oil is a homogeneous mixture containing different types of molecules (fatty acids, etc.). It does not consist of a single type of particle throughout.
- b) Classification of Mixtures:

Homogeneous Mixture	Heterogeneous Mixture
Salt dissolving in water	Tea dust settling in tea
Carbon dioxide dissolved in soda water	Iron powder mixed with sand

- c) Odd One Out:
  - C. Brass
  - Reason: Brass is a solid solution (solid-in-solid), whereas Soda water, Vinegar, and Salt solution are liquid solutions (where the solvent is liquid).

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2. Reproduction in Plants

2. (A)

- a) Prevention of Self-Pollination:
  - Method 1: In some plants (like Gloriosa), the stamens and gynoecium are positioned in opposite directions to prevent pollen from falling on the stigma of the same flower.
  - Method 2: In some flowers (like Sunflower), the male (androecium) and female (gynoecium) reproductive parts mature at different times (protandry or protogyny), making self-pollination impossible.
- b) Pollination vs. Fertilisation:
  - Pollination: The transfer of pollen grains from the anther to the stigma of a flower.
  - Fertilisation: The fusion of the male gamete (from the pollen) with the egg (inside the ovule) to form a zygote.

OR

2. (B)

- a) Complete Flower:
  - Selection: Lady's Finger.
  - Reason: A complete flower must have all four main parts: Calyx, Corolla, Androecium, and Gynoecium. Lady's Finger is bisexual and has all these parts. Pumpkin flowers are unisexual (incomplete) as they lack either the androecium or gynoecium.
- b) Fruit Formation:
  - Jackfruit: Multiple Fruit (formed from an inflorescence).

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3. Cell Structure

- a) Cell Identification:
  - Type of Cell: Animal Cell.
  - Reason for absent Cell Wall: Animal cells do not possess a cell wall; this is a characteristic feature unique to plant cells (and some microbes), providing rigidity which animals do not need in the same way.
- b) Match the Following:

  1. Ribosome — b. Synthesises protein
  2. Vacuole — d. Stores water (and excretory products)
  3. Nucleus — a. Controls cellular activities
  4. Mitochondrion — c. Synthesises energy

- c) Discovery:
  - Scientist: Robert Hooke (1665).
  - Observation: He observed thin slices of cork under a microscope and saw honeycomb-like structures consisting of many tiny chambers, which he named "cells" (Latin cella means small room).

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4. Separation Techniques and Human Body

- a) Kidneys and Dialysis:
  - Artificial Method: Dialysis.
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  - Similarity: Dialysis filters blood to remove waste just like filtration in science separates insoluble impurities from a liquid using a filter (membrane). It mimics the kidney's natural filtration process.
- b) Separation of Paddy Mixture:
  - Step 1: Winnowing (to remove husk/chaff).
    - Reason: Husk is lighter than paddy and stones, so wind can blow it away.
  - Step 2: Hand-picking or Sieving (to remove stones).

        - Reason: Stones are different in size and color from paddy, making them easy to pick or sift out.

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5. Fruits and Air

- a) Pseudo Fruits:
    - Correct Statement: Statement 2 (In Apple and Cashew, parts other than the ovary become the fruit).
    - Explanation: Cashew Apple is called a pseudo fruit because the fleshy edible part develops from the pedicel (stalk), not the ovary.
- b) Aggregate Fruit:
    - Explanation: An Aggregate Fruit is a fruit that develops from a single flower that has more than one ovary (multicarpellary apocarpous). Each ovary develops into a small fruitlet, and they cluster together.
- c) Gas in Air:
    - Nitrogen.

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6. Molecules and Life Organization

6. (A)

- a) Dissolving Sugar:
    - Where it went: The sugar molecules separated and spread into the spaces between the water molecules.
    - Sweetness: Yes, the sweetness is the same throughout.
    - Why: It is a homogeneous mixture (solution), meaning the sugar molecules are distributed uniformly throughout the water.
- b) Monoecious vs. Dioecious:
    - Monoecious: Male and female flowers are found on the same plant. (e.g., Pumpkin, Cucumber, Coconut).
    - Dioecious: Male and female flowers are found on different plants (separate male and female plants). (e.g., Nutmeg, Date Palm).
- c) Powerhouse:
    - B. Mitochondrion.

OR

6. (B)

- a) Tissues:
    - Definition: A tissue is a group of similar cells that perform a specific function.
    - Examples:
        - Animal: Epithelial tissue (skin/protection).

        - Plant: Epithelial tissue (though often referred to as epidermal tissue/cells in plants).
- b) Properties of Molecules:
    - Yes, it will still retain sweetness.
    - Explanation: Even the smallest powder particle consists of millions of sugar molecules. A single molecule is the smallest unit that retains the properties of the substance. Therefore, as long as the molecule remains sugar, the property (sweetness) remains.
- c) Protection in Plant Cell:
    - Cell Wall.