

FIRST TERM EVALUATION 2026–2027

Standard VII • Basic Science • Scoring Key & Detailed Solutions

Question Paper Code: E 706 / A-E 706

Time: 2 Hours 15 Mins

Medium: English Medium

Question 1 (Vegetative Propagation - Budding & Plant Reproduction)

1. a) Method of vegetative propagation shown in picture & its peculiarities:

- **Name of the method: Budding** (T-budding / Patch budding)
- **Peculiarities:**
 - A single bud from a superior quality plant is inserted into the bark/stem of an indigenous rooted plant of the same species.
 - Combines the high yield and quality of the parent plant with the disease resistance and hardy root system of the native plant.
 - Flowering and fruiting occur in a shorter period compared to plants grown from seeds.

1. b) Two other propagation methods to make superior quality saplings:

- **Layering** (Air layering / Ground layering)
- **Grafting** (or **Tissue Culture**)

1. c) Choose the correct statement:

Correct Option: **A** Superior quality plants are produced through budding.

Explanation: Budding cannot be done on monocots like arecanut palm, and it requires plants of the same or closely related species.

Question 2 (Electric Circuits & Cells)

2. a) Electric circuit observation:

- **(i) Type of circuit: Open Circuit** (or Incomplete circuit / Series connection with wrong cell polarity)
- **(ii) Required change to make bulb glow:** The cells are connected wrongly (+ to + terminal). **Connect the positive (+) terminal of one cell to the negative (–) terminal of the other cell** (proper series polarity).

2. b) Classification of devices that use cells:

Primary Cells (Non-rechargeable)	Secondary Cells (Rechargeable)
• Clock • Remote control • Calculator	• Mobile phone • Laptop • Emergency lamp

2. c) Find the statement related to an open circuit:

Correct Option: **B** a bulb which is switched off

Explanation: When switched off, the circuit is broken/open, stopping the current flow.

Question 3 (Acids, Bases & Indicators)

3. a) Classification of Indicators:

Natural Indicators	Synthetic (Chemical) Indicators
A) Turmeric powder B) Pathimugam water	C) Methyl Orange D) Phenolphthalein

3. b) Substance that turned pathimugam water into yellow:

Answer: Lemon juice (or any acid / citrus solution)

Explanation: Pathimugam water turns yellow/light orange with acidic substances like lemon juice, and turns pink/purple/violet with alkaline substances like soap/baking soda.

3. c) Two other natural indicators:

- Hibiscus paper / Hibiscus extract (Chembarathi)
- Red cabbage extract / Beetroot extract / Blue tea (Sankhupushpam) extract

Question 4.A (Plant Reproduction & Layering) — Choice A

4.(A) a) Method of producing new plants from parts other than seeds:

Answer: Vegetative propagation

4.(A) b) Factors to be considered while selecting seeds:

- Statement A is irrelevant to seed quality; Statement C is wrong (seeds should be collected from fruits formed in the *middle* period, not initial).
- Statements B and D are correct (high yielding, healthy plant). Hence, A and C are incorrect.

Correct Option: 3 A and C are incorrect

4.(A) c) Complete stages of Layering in Sapota:

- **A:** Select a pencil-sized stem of the mother plant.
- **B:** Peel off the bark (1-2 cm wide) from the selected region in a ring shape without damaging the wood.
- **C:** Cover the peeled area with a mixture of moist soil, cow dung/coir pith and wrap it securely with a plastic sheet to retain moisture.
- **D:** Many roots will sprout in the area of layering within two months.
- **E:** Cut the rooted stem below the covered region and plant it in a potting mixture/polythene bag.

— OR —

Question 4.B (Grafting & Reproduction Types) — Choice B

4.(B) a) Identify Rootstock and Scion:

- **Rootstock (Stock):** Rooted stem of indigenous variety **gomav** (native mango tree).
- **Scion:** High-yielding branch of **malgoa** mango tree.

4.(B) b) Find out the incorrect statements:

- Statement C is incorrect (Ginger propagates through rhizomes / vegetative propagation, not sexual).
- Statement D is incorrect (Production from seeds is sexual reproduction, not vegetative propagation).

Correct Option: **ii C and D**

4.(B) c) Three advantages of the grafted mango tree:

1. Starts flowering and yielding fruits much earlier than seed-grown trees.
2. Retains all the superior qualities and high yield of the Neelam variety.
3. Possesses high disease resistance and strong root anchorage inherited from the indigenous rootstock.

Question 5 (Fertilizers, Soil Health & Pest Management)

5. a) Incorrect statement about organic fertilizers:

Correct Option: **B Destroys soil structure**

Explanation: Organic fertilizers improve soil structure and water-holding capacity; only excessive chemical fertilizers destroy soil structure.

5. b) Two methods to control harmful pests other than organic pesticides:

- **Biological pest control** (using natural predators like ladybird beetles, ducks/birds, Trichoderma).
- **Mechanical & physical traps** (Pheromone traps, light traps, yellow sticky traps, hand-picking of pests).

5. c) Comment on: "Excess use of chemical fertilizers destroys soil structure":

Comment / Scientific Explanation:

- Excessive chemical fertilizers kill beneficial soil microorganisms, earthworms, and fungi that naturally aerate and enrich the soil.
- They disrupt the natural pH (making soil excessively acidic or alkaline), reduce humus content, and harden the topsoil, severely diminishing fertility over time.

Question 6.A (Acids, Bases & Properties) — Choice A

6.(A) a) Identify the nature of Solution 1 and Solution 2:

- **Solution 1: Acidic** (Turns blue litmus red)
- **Solution 2: Basic / Alkaline** (Turns red litmus blue)

6.(A) b) General properties of Solution 1 (Acid) and Solution 2 (Base):

- **Properties of Solution 1 (Acids):** Sour in taste, reacts with metals to produce hydrogen gas, gives light pink colour with methyl orange.
- **Properties of Solution 2 (Bases):** Bitter/alkaline taste, soapy and slippery to touch, turns turmeric paper red, turns phenolphthalein deep pink.

6.(A) c) Classification of statements:

Acid	Base
i) Sour taste	ii) Turns red litmus, blue
iii) Gives a light pink colour when methyl orange is added	iv) Alkaline taste

— OR —

Question 6.B (Litmus Tests & Acid-Base Identification) — Choice B

6.(B) a) Statement & Reason evaluation:

- Statement: Turns Blue litmus, red.
- Reason: Substance contains acid.

Correct Option: **A** Statement is correct. The Reason is suitable for the Statement.

6.(B) b) Experiment to identify acids and bases using given materials:

Procedure & Observations:

- Take samples of lime juice, vinegar, tamarind solution, soap water, and baking soda solution in test tubes or watch glasses.
- Dip **Hibiscus paper** into each: It turns *red/pink* in Lime juice, Vinegar, and Tamarind solution (→ **Acids**). It turns *green/blue* in Soap water and Baking soda solution (→ **Bases**).
- Touch **Turmeric paper** with each solution: Turmeric paper remains *yellow* with acids (lime juice, vinegar, tamarind), but turns *reddish-brown* with Soap water and Baking soda (→ **Bases**).

6.(B) c) Two common characteristics of Lemon juice, vinegar, and buttermilk:

1. They all have a distinct **sour taste**.
2. They are all **acidic substances** (contain organic acids like citric acid, acetic acid, and lactic acid).