

UNIQUE STUDY POINT

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Class: VI	Subject: Science	Session: 2025-26
Chapter: 10 - Living Creatures: Exploring their Characteristics	Time: 1½ Hours	Max. Marks: 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

Q1. When a living being is not able to exhibit essential characteristics despite availability of resources, it is said to be:

- (a) Sleeping
- (b) Dead
- (c) Resting
- (d) Inactive

Q2. Which part of the bean plant develops into fruit containing seeds?

- (a) Leaf
- (b) Root
- (c) Flower
- (d) Stem

Q3. Female mosquitoes transmit diseases like:

- (a) Malaria, dengue, chikungunya
- (b) Tuberculosis, typhoid
- (c) Cholera, diarrhea
- (d) Common cold, flu

Q4. The tiny developing plant inside a seed is called:

- (a) Seed coat
- (b) Embryo
- (c) Sprout
- (d) Seedling

Q5. Climber plants show movement by:

- (a) Moving from one place to another
- (b) Folding their leaves
- (c) Winding themselves around objects
- (d) Opening and closing flowers

Q6. In which organization has India set up centers for silk production?

- (a) ISRO
- (b) KVIC
- (c) DRDO
- (d) CSIR

Q7. Seeds of which plants require light to germinate?

- (a) Bean and gram
- (b) Coleus and Petunia
- (c) Calendula and Zinnia
- (d) All of the above

Q8. The process of seed turning into sprout is called:

- (a) Photosynthesis
- (b) Germination
- (c) Respiration
- (d) Reproduction

Q9. Where do frogs lay their eggs?

- (a) On land
- (b) In water or near water
- (c) On trees
- (d) Underground

Q10. Adult frogs are classified as:

- (a) Aquatic animals
- (b) Terrestrial animals
- (c) Amphibians
- (d) Reptiles

SECTION B - Short Answer Questions (2 marks each)

Q11. How do plants excrete waste products? Give two examples.

Q12. Why do roots of plants grow downward even when the plant is inverted?

Q13. What changes occur in a tadpole as it develops into an adult frog?

Q14. Define the term "life cycle". Why is it important for living beings?

SECTION C - Short Answer Questions (3 marks each)

Q15. Compare and contrast the characteristics of living and non-living things with suitable examples.

Q16. How can we use our knowledge of seed germination conditions for proper storage of grains and pulses?

Q17. Describe the contribution of Jagadish Chandra Bose in the field of plant science.

SECTION D - Long Answer Question (5 marks)

Q18. Draw and explain the complete life cycle of a bean plant from seed to seed. What happens to the plant after fruits are formed?

SECTION E - Case Study Based Questions (4 marks each)

Q19. Case Study 1:

A gardener notices that some seeds he stored in a wet cloth germinated within a few days, while seeds stored in a completely dry place did not germinate even after a month. He also observed that seeds stored underwater in an airtight container failed to germinate. When he planted seeds in moist soil with proper air circulation, they germinated successfully.

Based on the above information, answer the following questions:

- Why did seeds in the wet cloth germinate? (1 mark)
- Why didn't seeds in the completely dry place germinate? (1 mark)
- Explain why seeds stored underwater in an airtight container failed to germinate. (1 mark)
- What are the three essential conditions for seed germination based on this case? (1 mark)

Q20. Case Study 2:

During a field trip to a pond, students observed different stages of frog development. They saw jelly-like clusters floating on water, tiny creatures with tails swimming, some with both tails and legs, and adult frogs near the pond. The teacher explained that each stage has specific features that help the organism survive in its environment.

Based on the above information, answer the following questions:

- What are the jelly-like clusters that students observed? (1 mark)
- How many stages are there in the life cycle of a frog? Name them. (2 marks)
- Why is the tail important for tadpoles? (1 mark)

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SECTION A - Answers to MCQs

Ans 1. (b) Dead

Explanation: When a living being cannot exhibit essential characteristics despite having all necessary resources like food, air, and water, it is considered dead.

Ans 2. (c) Flower

Explanation: After pollination, flowers develop into fruits. In bean plants, the fruit is a pod containing seeds.

Ans 3. (a) Malaria, dengue, chikungunya

Explanation: Female mosquitoes are bloodsucking insects that transmit diseases like malaria, dengue, and chikungunya.

Ans 4. (b) Embryo

Explanation: The embryo is the tiny developing plant inside the seed that grows into a new plant when conditions are suitable.

Ans 5. (c) Winding themselves around objects

Explanation: Climber plants show movement by winding themselves around any object placed close to them for support.

Ans 6. (b) KVIC

Explanation: The Khadi and Village Industries Commission (KVIC) has set up several centers for silk production in India.

Ans 7. (b) Coleus and Petunia

Explanation: Some seeds like Coleus and Petunia require light to germinate, while Calendula and Zinnia need darkness.

Ans 8. (b) Germination

Explanation: When a seed turns into a sprout, it is said to have germinated. This is the process of germination.

Ans 9. (b) In water or near water

Explanation: Frogs lay their eggs in water or near water bodies. The eggs appear as jelly-like clusters called spawn.

Ans 10. (c) Amphibians

Explanation: Adult frogs are amphibians - they can live both in water and on land.

SECTION B - Answers to Short Answer Questions

Ans 11.

How plants excrete waste products:

Plants also excrete waste products, though the process is different from animals.

Two examples:

1. **Water droplets on leaves:** Plants excrete excess water and minerals in the form of small droplets on leaves. This can be seen on grasses and roses early in the morning.
2. **Fallen leaves:** Plants shed old leaves which contain accumulated waste products. This is a form of excretion.

(Other examples: Resins, gums, latex secreted by some plants also contain waste products)

Ans 12.

Why roots grow downward even when plant is inverted:

- Roots show positive geotropism - they respond to gravity by growing in the direction of gravitational pull.
- Even when a plant is inverted, the root bends and grows downward because gravity acts downward.
- This response is independent of the plant's position and ensures that roots always grow into the soil where they can absorb water and minerals.

Ans 13.

Changes that occur in tadpole as it develops into adult frog:

1. **Development of legs:** Tadpoles initially have no legs. They first develop hind legs, then front legs.
2. **Loss of tail:** The tail gradually gets shorter and is eventually completely absorbed.
3. **Change in breathing:** Tadpoles breathe through gills. As they mature, they develop lungs for breathing air.
4. **Change in body shape:** The elongated body of tadpole becomes more compact like an adult frog.

(Any two changes with proper explanation)

Ans 14.

Life cycle: The entire process from birth/seed to death, including all the stages of growth and development that a living being goes through, is called its life cycle.

Importance of life cycle:

- Life cycle ensures the continuity of species on Earth.
- It allows reproduction to occur, producing new generations.
- It maintains the balance in nature by ensuring that species continue to exist even after individual organisms die.

SECTION C - Answers to Short Answer Questions

Ans 15.

Comparison of living and non-living things:

LIVING THINGS:

1. **Movement:** Show movement (plants show movement of parts, animals can move from place to place).
Example: Dog running, flower opening.
2. **Growth:** Grow and increase in size. Example: A child growing into an adult, a seed growing into a tree.
3. **Nutrition:** Need food for energy and growth. Example: Humans eating food, plants making food by photosynthesis.
4. **Respiration:** Breathe to obtain energy. Example: Humans breathing air, plants respiring through

stomata.

5. **Excretion:** Remove waste products. Example: Humans excreting through sweat and urine, plants excreting through water droplets.
6. **Response to stimuli:** React to changes in environment. Example: Touch-me-not plant folding leaves, human pulling hand away from hot object.
7. **Reproduction:** Produce offspring of their own kind. Example: Dogs giving birth to puppies, plants producing seeds.

NON-LIVING THINGS:

1. Do not show growth
2. Do not need food
3. Do not breathe or respire
4. Do not excrete
5. Do not respond to stimuli
6. Do not reproduce

Examples of non-living things: Stone, book, table, car, etc.

CONTRAST (Key Difference): Living things exhibit all the above characteristics together, while non-living things do not show any of these characteristics. Movement alone (like a car moving) does not make something living - all characteristics must be present together.

Ans 16.

Using knowledge of seed germination for proper storage of grains and pulses:

Seeds require specific conditions for germination: water, air, and suitable temperature. We can prevent germination during storage by controlling these conditions:

1. **Keep grains dry:**
 - Store grains and pulses in a dry place.
 - Avoid moisture as water is essential for germination.
 - Dry grains thoroughly before storage.
2. **Ensure airtight storage:**
 - Store in airtight containers to limit air supply.
 - This prevents both germination and attack by insects.
3. **Control temperature:**
 - Store in cool places as high temperature can trigger germination.
 - Avoid direct sunlight.

Additional measures:

- Use neem leaves or other natural preservatives
- Regular checking for moisture or pest infestation

By controlling these conditions, we can prevent premature germination and ensure long-term storage of grains and pulses.

Ans 17.

Contribution of Jagadish Chandra Bose in plant science:

Jagadish Chandra Bose (1858-1937) was an Indian scientist who made significant contributions to plant science:

1. **Invented the Crescograph:**

- He built a machine called crescograph.
- This machine could record and measure the growth of plants very accurately.
- It could magnify plant growth movements up to 10,000 times.

2. **Demonstrated plant sensitivity:**

- He proved that plants can sense and respond to stimuli.
- He showed plants respond to light, heat, electricity, and gravity.
- This challenged the common belief that plants are inactive organisms.

3. **Studied plant responses:**

- He recorded how fast plants grow under different conditions.
- He studied how plants respond to various environmental factors.
- His work showed that plants have a complex system of response to their environment.

Significance: His work laid the foundation for understanding that plants are living beings with complex responses to their environment, not just passive organisms.

SECTION D - Answer to Long Answer Question

Ans 18.

Complete life cycle of a bean plant:

STAGE I - SEED:

- The life cycle begins with a seed.
- The seed contains an embryo protected by a seed coat.
- The seed remains dormant until it gets suitable conditions for germination.

STAGE II - SEED GERMINATION:

- When the seed gets water, air, and suitable temperature, it germinates.
- The seed coat softens and the embryo starts to grow.
- A small root (radicle) emerges first and grows downward.
- A small shoot (plumule) emerges and grows upward.
- Duration: Approximately 3-7 days

STAGE III - SEEDLING WITH LEAVES:

- The shoot grows upward and develops green leaves.
- Leaves start performing photosynthesis to make food.
- The root system develops and absorbs water and minerals from soil.
- The plant continues to grow in height and develops more leaves.
- Duration: Several weeks to months depending on conditions

STAGE IV - FLOWERING PLANT (MATURE PLANT):

- The plant reaches maturity and produces flowers.
- Flowers contain reproductive parts.
- Pollination occurs (transfer of pollen).
- Duration: Varies with variety, usually 60-90 days after sowing

STAGE V - FRUIT FORMATION (POD WITH SEEDS):

- After pollination, the flower develops into a fruit (pod in bean plant).
- Inside the pod, seeds develop.
- The pod protects the seeds as they mature.
- Seeds contain embryos that can give rise to new plants.
- Duration: 2-3 weeks after flowering

DEATH OF PLANT:

- After producing seeds and fruits, the bean plant completes its life cycle.
- The leaves turn yellow and the plant begins to dry.
- Even with regular watering, the plant continues to dry and die.
- This is a natural process indicating the end of the plant's life cycle.

CONTINUATION OF LIFE CYCLE:

- The seeds produced can be sown again.
- They will germinate and grow into new bean plants.
- This ensures the continuity of the species.
- The cycle continues generation after generation.

[Note: A circular diagram should be drawn showing all stages: Seed → Germination → Seedling with leaves → Flowering plant → Pod with seeds → Death of plant → back to Seed. Each stage should be clearly labeled with arrows showing the progression.]

SECTION E - Answers to Case Study Based Questions

Ans 19.

(a) Why seeds in wet cloth germinated: Seeds in the wet cloth germinated because they received adequate water (moisture from the cloth) and air (from the surrounding atmosphere). These are two essential conditions for germination. (1 mark)

(b) Why seeds in completely dry place didn't germinate: Seeds in the completely dry place did not germinate because they did not receive water. Water is essential for seed germination as it softens the seed coat and activates the enzymes needed for the embryo to grow. (1 mark)

(c) Why seeds stored underwater in airtight container failed to germinate: Seeds stored underwater in an airtight container failed to germinate because they could not get air. Although water was available, the water filled all spaces and prevented air from reaching the seeds. Seeds need air for respiration during germination. (1 mark)

(d) Three essential conditions for seed germination:

1. Water (adequate moisture)
2. Air (oxygen)
3. Suitable temperature

(1 mark)

Ans 20.

(a) Jelly-like clusters observed: The jelly-like clusters floating on water are frog eggs, collectively known as spawn. Female frogs lay these eggs in water, and they are covered with a protective jelly-like substance. (1 mark)

(b) Number of stages and their names: There are four main stages in the life cycle of a frog:

1. **Stage I:** Egg (Spawn) stage
2. **Stage II:** Tadpole stage (with tail, then with legs)
3. **Stage III:** Froglet stage
4. **Stage IV:** Adult frog stage

(2 marks)

(c) Why tail is important for tadpoles: The tail is important for tadpoles because they live completely in water during the early stages of their life. The tail acts as a swimming organ that helps them move around efficiently in water to find food and escape from predators. As they develop legs and prepare to live on land, the tail is gradually absorbed. (1 mark)

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