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. Which of the following is NOT a characteristic of living beings?

(a) Growth

(b) Respiration

(c) Movement from place to place in all organisms

(d) Reproduction

Q2. The outer covering of a seed is called:

(a) Embryo

(b) Seed coat

(c) Cotyledon

(d) Radicle

Q3. Which of the following conditions is NOT essential for seed germination?

(a) Water

(b) Air

(c) Sunlight

(d) Suitable temperature

Q4. Tiny pores on the surface of leaves through which plants respire are called:

(a) Chlorophyll

(b) Stomata

(c) Chloroplast

(d) Pores

Q5. The process of removing waste products from the body is called:

(a) Nutrition

(b) Respiration
(c) Excretion
(d) Digestion

Q6. Touch-me-not plant is also known as:
(a) Drosera
(b) Mimosa
(c) Amla
(d) Insectivorous plant

Q7. The life cycle of a mosquito has how many stages?
(a) Two
(b) Three
(c) Four
(d) Five

Q8. Which stage comes immediately after the egg stage in the life cycle of a mosquito?
(a) Pupa
(b) Larva
(c) Adult
(d) Tadpole

Q9. The cluster of frog eggs is known as:
(a) Larva
(b) Spawn
(c) Embryo
(d) Froglet

Q10. Jagadish Chandra Bose invented a machine called:
(a) Microscope
(b) Telescope
(c) Crescograph
(d) Seismograph

SECTION B - Short Answer Questions (2 marks each)

Q11. What is germination? Name two conditions essential for seed germination.

Q12. Why do we advise not to allow water to stagnate anywhere in our surroundings?

Q13. What is a stimulus? Give two examples of stimuli and response in plants.

Q14. Differentiate between living and non-living things on the basis of any two characteristics.

SECTION C - Short Answer Questions (3 marks each)

Q15. Describe an experiment to show that air is necessary for seed germination.

Q16. Explain why shoots of plants grow upward while roots grow downward. Support your answer with appropriate reasoning.

Q17. What is the life cycle of a plant? Describe the various stages in the life cycle of a bean plant.

SECTION D - Long Answer Question (5 marks)

Q18. Describe the life cycle of a frog with the help of a well-labelled diagram. Explain the changes that occur in each stage.

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

Q19. Case Study 1:

Avadhi noticed that mosquito breeding happens in stagnant water. She decided to conduct a survey of her neighborhood to identify places where stagnant water collects. She found water in coolers, flower pots, and old containers. She also observed worm-like creatures in the water that repeatedly came to the surface.

Based on the above information, answer the following questions:

(a) What are the worm-like creatures that Avadhi observed in the stagnant water? (1 mark)

(b) Why do these creatures come to the water surface repeatedly? (1 mark)

(c) What measure can Avadhi suggest to prevent mosquito breeding? (1 mark)

(d) Name the diseases transmitted by mosquitoes. (1 mark)

Q20. Case Study 2:

A group of students planted bean seeds in four different pots. Pot A was kept in direct sunlight without water. Pot B was kept in direct sunlight with excess water. Pot C was kept in complete darkness with moist soil. Pot D was kept in direct sunlight with moist soil. After 7-10 days, they observed the germination status in each pot.

Based on the above information, answer the following questions:

(a) In which pot(s) will the seeds germinate successfully? Give reason. (2 marks)

(b) Why did seeds in Pot A not germinate? (1 mark)

(c) What happens to seeds in Pot B with excess water? (1 mark)

DETAILED ANSWER KEY - PAPER 01

SECTION A - Answers to MCQs

Ans 1. (c) Movement from place to place in all organisms

Explanation: While movement is a characteristic of living beings, not all organisms move from one place to another. Plants, for example, show movement but do not change their location.

Ans 2. (b) Seed coat

Explanation: The seed coat is the protective outer covering of a seed that helps protect the embryo inside.

Ans 3. (c) Sunlight

Explanation: Most seeds do not require light for germination. Water, air, and suitable temperature are the essential conditions for seed germination.

Ans 4. (b) Stomata

Explanation: Stomata are tiny pores on the surface of leaves that help plants in taking air in and out for respiration.

Ans 5. (c) Excretion

Explanation: Excretion is the process of removing waste products from the body. In humans, this includes sweat, urine, etc.

Ans 6. (b) Mimosa

Explanation: Touch-me-not plant is also known as Mimosa, chhui-mui, or lajjalu. It folds its leaves when touched.

Ans 7. (c) Four

Explanation: The life cycle of a mosquito has four stages: egg, larva, pupa, and adult.

Ans 8. (b) Larva

Explanation: In the life cycle of a mosquito, the egg develops into a larva, which then grows into a pupa, and finally transforms into an adult mosquito.

Ans 9. (b) Spawn

Explanation: The white jelly-like cluster of frog eggs is known as spawn, which is usually found floating on water or attached to aquatic plants.

Ans 10. (c) Crescograph

Explanation: Jagadish Chandra Bose built a machine called crescograph to record how plants respond to stimuli like light, heat, electricity, and gravity.

SECTION B - Answers to Short Answer Questions

Ans 11.

Germination: Germination is the process by which a seed develops into a new plant (seedling).

Two essential conditions for seed germination are:

1. **Water:** Seeds require water for germination. Water softens the seed coat and helps the embryo inside it to develop into a plant.
2. **Air:** Seeds need air for germination. They use the air available in the spaces between soil particles to carry out the processes necessary for their growth.

Ans 12.

We are advised not to allow water to stagnate anywhere in our surroundings because:

- Stagnant water provides a breeding ground for mosquitoes.
- Female mosquitoes lay their eggs in stagnant water.
- Mosquitoes transmit several diseases like malaria, dengue, and chikungunya.
- By preventing water stagnation, we can disrupt the mosquito life cycle and prevent their breeding.

Ans 13.

Stimulus: Any thing or event that prompts living beings to respond is called a stimulus.

Two examples of stimuli and response in plants:

1. **Touch (Stimulus):** When we touch the touch-me-not (Mimosa) plant, it folds its leaves (Response).
2. **Sunlight (Stimulus):** Certain plants fold their leaves after sunset when darkness sets in (Response). For example, the sleeping leaves of amla (Indian gooseberry) tree.

Ans 14.

Living Things	Non-Living Things
1. They show growth and increase in size over time.	1. They do not show growth.
2. They need food (nutrition) for their growth and energy.	2. They do not need food.
3. They respire to obtain energy from food.	3. They do not respire.
4. They reproduce to produce new ones of their own kind.	4. They do not reproduce.

SECTION C - Answers to Short Answer Questions

Ans 15.

Experiment to show that air is necessary for seed germination:

Materials Required: Two identical pots, bean seeds, water, garden soil

Procedure:

1. Take two identical pots (Pot A and Pot B) filled with garden soil.
2. Sow 4-5 bean seeds in each pot.
3. In Pot A, keep the soil slightly moist by adding a moderate amount of water regularly.
4. In Pot B, add excess water to the soil such that water is always present above the soil level.
5. Place both pots in direct sunlight.
6. Observe both pots for 7-10 days.

Observation:

- Seeds in Pot A germinate successfully.
- Seeds in Pot B do not germinate.

Reason: In Pot B, excess water fills all the spaces between soil particles, preventing air from reaching the seeds. Without air, seeds cannot respire and therefore cannot germinate.

Conclusion: Air is essential for seed germination.

Ans 16.

Why shoots grow upward and roots grow downward:

1. **Shoots grow upward:**
   - Shoots exhibit movement towards sunlight (positive phototropism).
   - Sunlight is necessary for photosynthesis, the process by which plants make their food.
   - Therefore, shoots grow upward towards the source of light.
   - Even when a plant is placed inverted, the shoot bends and grows upward.
2. **Roots grow downward:**
   - Roots grow downward due to positive geotropism (response to gravity).
   - Roots need to anchor the plant in the soil and absorb water and minerals.
   - Growing downward helps roots penetrate deeper into the soil.
   - Even when a plant is inverted, the root bends and grows downward.

Conclusion: The direction of growth in shoots and roots is determined by their response to environmental stimuli like light and gravity.

Ans 17.

Life cycle of a plant: The entire process from a seed to a plant, and then to the next generation of seeds is called the life cycle of a plant.

Various stages in the life cycle of a bean plant:

1. **Stage I - Seed:** The life cycle begins with a seed.
2. **Stage II - Seed Germination:** Under suitable conditions (water, air, and suitable temperature), the seed germinates and a small shoot and root emerge.
3. **Stage III - Appearance of Leaves:** The shoot grows upward and develops leaves. The plant starts making its own food through photosynthesis.
4. **Stage IV - Appearance of Flowers:** The plant matures and produces flowers.
5. **Stage V - Appearance of Fruits:** After pollination, flowers develop into fruits. In bean plants, the fruit is a pod containing seeds.
6. **Death of Plant:** After producing seeds, the plant becomes yellow and dry, even with regular watering, indicating the end of its life cycle.

The seeds produced give rise to a new generation of bean plants, and the cycle continues.

SECTION D - Answer to Long Answer Question

Ans 18.

Life cycle of a frog:

The life cycle of a frog has four main stages:

Stage I - Egg Stage (Spawn):

- Female frogs lay eggs in water.
- The eggs are laid in clusters and appear as a white jelly-like substance called spawn.
- These eggs are usually attached to aquatic plants or float on the water surface.

- Duration: Day 1 to Day 3-4

Stage II - Tadpole Stage:

- **Stage IIA - Tadpole with tail (Day 7-10):** The eggs hatch into tadpoles. Tadpoles have tails but no legs. They live completely in water and breathe through gills. The tail helps them swim in water.
- **Stage IIB - Tadpole with legs (8-10 weeks):** Tadpoles develop legs (first hind legs, then front legs) but still have tails. They continue to live in water.

Stage III - Froglet Stage (12 weeks):

- The tadpole gradually looks like a small frog called a froglet.
- The tail starts to disappear (gets absorbed).
- Froglets begin to spend some time on land but still stay near water.
- They start developing lungs for breathing air.

Stage IV - Adult Frog (14 weeks):

- The froglet becomes a fully developed adult frog.
- The tail disappears completely.
- Legs become strong for jumping and living on land.
- Adult frogs can live both in water and on land (amphibians).
- They breathe through lungs and skin.
- Adult frogs reproduce and lay eggs, continuing the life cycle.

Key Changes During the Life Cycle:

1. Change in habitat: from completely aquatic to amphibious (land and water)
2. Change in breathing: from gills to lungs
3. Development of limbs: from no legs to four legs
4. Loss of tail: tail present in tadpole, absent in adult frog
5. Change in body shape: from elongated to compact body structure

[Note: A well-labelled diagram should be drawn showing all four stages arranged in a circular manner with arrows indicating the progression from one stage to another. Label: Spawn (Eggs), Tadpole with tail, Tadpole with legs, Froglet, and Adult frog]

SECTION E - Answers to Case Study Based Questions

Ans 19.

(a) Worm-like creatures observed: The worm-like creatures that Avadhi observed are larvae and pupae, which are two distinct life stages during the development of mosquitoes. (1 mark)

(b) Why they come to the water surface: Mosquito larvae and pupae live in water but require air to respire. They repeatedly come to the water surface to breathe air. (1 mark)

(c) Measure to prevent mosquito breeding: Avadhi can suggest the following measures:

- Spray kerosene oil on stagnant water. Kerosene forms a thin layer over the water surface that separates water from air and prevents larvae and pupae from breathing, causing them to die.
- Empty water from coolers, flower pots, and old containers regularly.
- Cover water storage containers properly.
- Any other relevant answer

(1 mark)

(d) Diseases transmitted by mosquitoes:

- Malaria
- Dengue
- Chikungunya

(1 mark - any three)

Ans 20.

(a) Pot(s) where seeds germinate successfully: Seeds will germinate successfully in Pot C and Pot D.

Reason:

- **Pot C:** Even though it is kept in darkness, the seeds receive moist soil (water) and air from spaces between soil particles. Since most seeds do not require light for germination, seeds in Pot C will germinate.
- **Pot D:** This pot provides all favorable conditions - moist soil (water), air from soil spaces, and sunlight. Seeds will germinate successfully here.

(2 marks)

(b) Why seeds in Pot A did not germinate: Seeds in Pot A did not receive water. Water is essential for seed germination as it softens the seed coat and enables the seed to carry out processes necessary for growth. Without water, germination cannot occur. (1 mark)

(c) What happens to seeds in Pot B: In Pot B, excess water fills all the spaces between soil particles, preventing air from reaching the seeds. Without air, seeds cannot respire. Therefore, seeds in Pot B will not germinate and may eventually rot. (1 mark)
