CHAPTER

10

LIVING CREATURES: EXPLORING THEIR CHARACTERISTICS

CLASS 6TH

NCERT EXERCISE AND SOLUTIONS - SCIENCE

P1 P2

Q. 1. List the similarities and differences in life cycles of plants and animals.

ANSWER:-

Similarities and Differences in Life Cycles of Plants and Animals:

Similarities:

- Growth: Both start small (seed/embryo) and mature over time.
- Reproduction: Both produce offspring (seeds in plants, young ones in animals).
- Developmental Stages: Both go through specific life stages.

Differences:

- Mobility: Animals move; plants remain stationary.
- Respiration: Animals use lungs/gills; plants use stomata/lenticels.
- Reproduction: Animals have specialized organs; plants use flowers/cones/spores.
- Growth Pattern: Plants grow continuously; animals stop after maturity.

Q. 2. The table on the next page shows some data. Study the data and try to find out examples appropriate for the conditions given in the second and third columns. If you think that an example for any of the conditions given below is not possible, explain why.

S. no.	Does it grow?	Does it respire?	Example	Remarks
1.	No	No		
2.	No	Yes		
3.	Yes	No		
4.	Yes	Yes		

ANSWER:

S. no.	Does it grow?	Does it respire?	Example	Remarks
1.	No	No	Rock	Non-living, does not grow or respire
2.	No	Yes	Virus	Viruses are non-living outside host cells but respire in host
3.	Yes	No	Crystals (salt)	Non-living, can grow by accumulation
4.	Yes	Yes	Human, Plant	Living beings

Q. 3. You have learnt that different conditions are required for seed germination. How can we use this knowledge for proper storage of grains and pulses?

ANSWER:-

To prevent germination in stored grains and pulses:

- **Keep Dry:** Avoid moisture to prevent sprouting.
- **Cool Storage:** Store in a cool place to slow biological processes.
- **Airtight Containers:** Limit air exposure to prevent germination.

Q. 4. You have learnt that a tail is present in a tadpole but it disappears as it grows into a frog. What is the advantage of having a tail in the tadpole stage?

ANSWER:-

The tail in the tadpole stage of a frog helps with:

- **Swimming Ability:** Enables efficient movement in water.
- **Balance and Stability:** Helps maintain control while swimming.

Q. 5. Charan says that a wooden log is non-living as it cannot move. Charu counters it by saying that it is living because it is made of wood obtained from trees. Give your arguments in favour or against the two statements given by Charan and Charu.

ANSWER:-

Charan's Argument (Wooden log is non-living):

- **For:** It cannot grow, reproduce, move, or respond to stimuli.
- **Against:** It retains cellular structure from its living origin.

Charu's Argument (Wooden log is living):

- **For:** It comes from a once-living tree and has a biological origin.
- **Against**: It no longer performs life processes, making it non-living.

Q. 6. What are the similarities and distinguishing features in the life cycles of a mosquito and a frog?

ANSWER:-

Similarities

- **Egg Stage:** Both frogs and mosquitoes start life as eggs.
- **Larval Stage:** Both have aquatic larvae (tadpole for frogs, larvae for mosquitoes).

Distinguishing Features

Mosquito

- **Stages:** Egg → Larva → Pupa → Adult
- **Habitat:** Larvae and pupae are aquatic, adults are terrestrial.
- **Respiration:** Larvae and pupae breathe through siphons.

Frog

- **Stages:** Egg → Tadpole → Froglet → Adult
- **Habitat:** Tadpoles are aquatic, adults are amphibious.
- **Respiration:** Tadpoles have gills, while adults have lungs and can breathe through their skin.

Q. 7. A plant is provided with all the conditions suitable for its growth (Figure). Draw what you expect to see in the shoot and the root of the plant after one week. Write down the reasons.

Pot kept along the ground

ANSWER:-

Expected Growth of the Plant After One Week

Shoot Growth

- The green part of the plant (the shoot) will grow **upwards** toward the light.
- Leaves will spread out, and new leaves may appear to help the plant make food using sunlight.

Root Growth

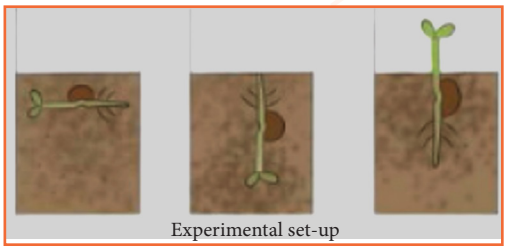
- The roots will grow **downwards** into the soil to anchor the plant and absorb water and nutrients.
- New tiny roots (**root hairs**) will develop to increase water and nutrient absorption.

Reasons for Growth Patterns

- **Light Attraction (Phototropism):** The shoot grows toward the light to capture more sunlight for photosynthesis.
- **Gravity Pull (Gravitropism):** Roots grow downward due to gravity, ensuring stability and access to water and nutrients.
- **Water & Nutrient Absorption:** The roots take in essential nutrients and water, which help the plant grow strong and healthy.

Thus, the plant adjusts to its surroundings to grow and thrive effectively.

Q. 8. During the COVID-19 pandemic, all of us wore masks. Generally, what material are they Tara and Vijay set up the experiment shown in the picture (Figure). What do you think they want to find out? How will they know if they are correct?



Experimental set-up

ANSWER:-

Simple Explanation of the Experiment

Purpose:
Tara and Vijay want to see if the way a seed is placed affects how the shoot (above-ground part) and root (below-ground part) grow.

Observation:
No matter how a seed is positioned, the shoot always grows upwards (towards light), and the root always grows downwards (into the soil). This happens because of natural plant mechanisms like phototropism (response to light) and gravitropism (response to gravity).

Experimental Setup:

- **Left Pot:** Seed placed sideways → Shoot curves up, root curves down.
- **Middle Pot:** Seed placed with shoot facing down → Shoot bends up, root bends down.
- **Right Pot:** Seed placed with shoot facing up → Shoot grows straight up, root grows straight down.

Checking Results:

After a week, they will observe that in all pots, shoots grow upwards and roots grow downwards, proving that plants naturally adjust their growth direction for survival.

Q. 9. Design an experiment to check if temperature has an effect on seed germination.

ANSWER:-

Experiment: Effect of Temperature on Seed Germination

Materials:

- Identical pots, soil, and seeds
- Thermometers
- Temperature-controlled environments (cold, room temperature, warm)

Procedure:

1. Fill each pot with the same soil and plant seeds.
2. Place the pots in different environments with controlled temperatures.
3. Water all pots equally.
4. Record the number of seeds that germinate daily for two weeks.

Observation:
Compare the germination rate in different temperatures.

Conclusion:
Identify the best temperature for seed germination based on the results.
Step 4: Evaporate the water from the salt solution to obtain the salt.