



Class - VI Science August Month Notes

7. Living and Non - Living

I. Technical Words:

1. Autotroph - an organism that makes its own food
2. Cell - the basic unit of life
3. Digestion - changes that do not occur after fixed intervals of time
4. Excretion - the process by which the waste is sent out of the body
5. Heterotroph - an organism that depends on other organisms for its food
6. Nutrition - the process by which organisms obtain food
7. Reproduction - the process by which living things produce young ones of their own
Kind
8. Respiration - the process by which energy is obtained from food
9. Stimulus - any change in the surroundings that causes a change in behaviour

II. Very short answer question.

1. Say if the statements are true or false.

- a. All living things continue growing larger through their life span.
- b. Animals are the only organisms that can move.
- c. Non-living things do not move by themselves.
- d. All plants reproduce through seeds.
- e. All plants live for years or decades.
- f. Every stimulus has a response.

[Answer] a. false

- b. false
- c. true
- d. false
- e. false
- f. true

2. Select five out of the list and classify them as living or non-living. Write why each is a living thing or a non-living thing in a table similar to the one given.

(rock, bees, furniture, jewellery, chimpanzee, cactus, decorations, cake, toys, butterfly, shark, penguin, computer, wolf, book, musical instruments, elephant, goldfish, air, water, horse, tree)

Name	Living/ Non-living	Why?
1. Rock	Non-living	It does not grow; it does not move on its own
2. Chimpanzee	Living	It eats food; it moves on its own
3. Toys	Non-living	They do not eat food; they do not move on their own
4. Computer	Non-living	It does not grow; it does not eat food
5. Elephant	Living	It respire; it gives birth to young ones

III. Short answer question.

1. What is a cell? How are cells important to organisms?

A cell is the basic structural and functional unit of life. It carries out different functions in the body of a living organism.

2. All young ones of living things look like their parents. Is this statement true or false? Explain.

False. While some young organisms do look like their parents, some organisms go through changes as they grow, and their appearance is different from their parents. For example, a tadpole looks different from a frog.

3. Explain how both living and some non-living things can grow in size.

Living things grow in size with increase in the number of cells. Non-living things can grow in size through the addition of matter from outside. For example, a snowball gets bigger as more snow sticks to it.

4. What kind of living thing are we—autotroph or heterotroph? Why?

We are heterotrophs. This is because we cannot produce our own food and depend on other organisms like plants and animals, for nutrients.

5. Give two examples of animals that do not move from place to place. Why do they not move?

Three examples of animals that do not move from place to place are corals, sponges and barnacles. They attach themselves to a surface and obtain food from the surrounding water, so there is no need for them to move.

6. Name the four main kinds of organisms on Earth.

The four main kinds of organisms on Earth are animals, plants, fungi and microorganisms (bacteria).

IV. Long answer question.

1. Differentiate between unicellular organisms and multicellular organisms with examples.

[Answer] Unicellular organisms are made up of a single cell, while multicellular organisms are composed of many cells. For example, Amoeba is a single-celled organism that moves and carries out all its life processes through one cell. Humans are multicellular organisms made up of large number of cells organised into different tissues and organs, each with specific functions. Trees are also multicellular organisms with roots, stems, leaves and flowers, all made up of different types of cells performing different functions.

2. Why is respiration important to organisms?

Respiration is the process by which energy is released from food to perform various life processes. Breathing is a part of respiration, during which organisms take in oxygen. During respiration, cells break down food molecules (glucose) with the help of oxygen, to release energy. This energy is essential for activities such as growth, movement and reproduction. Without respiration, organisms would not have the energy required to survive and carry out these essential processes.

3. Explain the different ways that wastes are excreted by organisms.

Excretion is the process of removing unwanted waste material from the body. Humans excrete waste through the following ways:

(i) Liquid and dissolved waste (urine) is removed by the kidneys. (ii) Undigested food (faeces) is removed through the anus. (iii) Dissolved waste (sweat) is removed through the skin. (iv) Carbon dioxide is removed by the lungs.

Plants also excrete waste. They send out the carbon dioxide formed during respiration through the stomata. They store some waste in their leaves, and these are removed when the leaves fall off the plant. They also excrete waste in the form of gum and resin.

4. A plant cannot move from place to place. Explain why the plant is considered to be a living thing.

Plants cannot move in the same way animals can, but still they are considered living things because they show other characteristics of life. Plants grow, reproduce, respond to their environment and carry out various life processes such as photosynthesis (making food), respiration and reproduction. Even though they do not move like animals, they exhibit all the characteristics of living organisms.

5. Why is reproduction important to life in general?

Reproduction is important because it ensures the continuation of a species (a group of living organisms consisting of similar individuals) and the survival of life on earth.

Without reproduction, a species would become extinct because new individuals would not be born.

Reproduction also maintains the balance of populations within ecosystems.

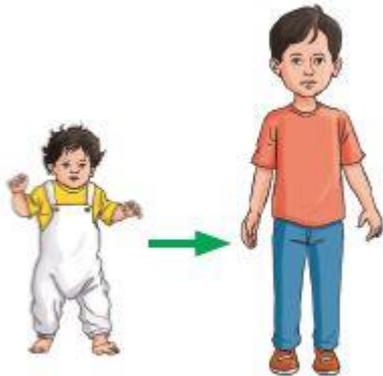
6. What is meant by 'response to stimulus'? Explain with an example.

Response to stimulus means how living organisms react or respond to changes in their environment or surroundings. It is a fundamental characteristic of living things. For example, When we touch a hot object accidentally (stimulus), our immediate reaction is to pull our hand away quickly (response). We do this to prevent injury. Similarly, plants also respond to stimuli. For example, they may bend to a particular side, in response to bright sunlight available. These responses help organisms adapt to their surroundings and improve their chances of survival.

V. Image-based question.

Identify the characteristics of life.

1.



Growth

2. Reproduction

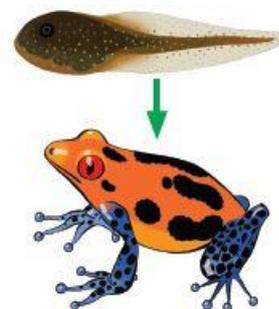


3.



Movement (locomotion)

4.



Growth

VI. Assertion and reasoning type questions .

The question below consists of an assertion and a Reason. Use the following key to choose the appropriate answer.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true

1. Assertion (A): All living things reproduce to create offspring.

Reason (R): Non-living things cannot reproduce because they do not have the biological processes needed for reproduction.

Ans - (a) Both and R are true and R is the correct explanation of A.

2. Assertion (A): Rocks are considered living things because they can be found in nature.

Reason (R): Living things are those that have life processes such as growth, reproduction, and response to stimuli.

Ans - (c) A is true but R is false.

8. Getting to know plants

I. Technical Words:

- 1. Ovule - the female part of the flower
- 2. plumule - the baby shoot growing from a seed
- 3. pollination - the transfer of pollen grains from the anther to the stigma
- 4. radicle - the baby root growing from a seed
- 5. root cap - the structure at the end of the radicle that protects the delicate tip of the root from damage
- 6. stamen - the male part of the flower
- 7. transpiration - the loss of water in the form of water vapour mainly through the Stomata
- 8. Venation - the arrangement of veins in a leaf

II. Very short answer question

Give one word for the following.

1. Roots that grow from a branch towards the ground

[Answer] Aerial roots

2. The green, spirally coiled structure growing from the stem of a bitter gourd plant

[Answer] Tendril

3. The primary vein of a leaf

[Answer] Midrib

4. The stalk of a flower

[Answer] Pedicle

5. A ripened ovary

[Answer] Fruit

III. Short Answer Questions:

1. Differentiate between taproots and fibrous roots.

In plants with the taproot system, the radicle grows down from the seed and becomes the primary root or taproot. Smaller roots called secondary roots, which look like branches, grow from the main taproot. The taproot holds the plant firmly to the ground. Plants like the mango, apple and rose have a taproot system. If the primary root does not develop any further, a cluster of thin, thread-like roots develop from a common point at the base of the stem, forming the fibrous root system. They spread out in the soil and give support to the plant. Grass, wheat and bamboo are examples of plants that have a fibrous root system.

2. Without uprooting a plant, how could you determine whether the plant has a taproot or fibrous root?

We can check the venation of the leaves to determine the plant's root structure.

3. Where is the food prepared in a ginger plant?

Food is prepared in the leaves of a ginger plant.

4. For testing the presence of starch in leaves, why is the leaf boiled in alcohol?

Boiling the leaf in alcohol removes chlorophyll, making it easier to test for starch.

5. With the help of examples, state the function of leaf tendrils.

The entire leaf (wild pea plant) or a part of the leaf (Glory lily plant) is modified

into thin, delicate, closely coiled structures called tendrils that help these plants to cling to a support and climb.

6. What would happen if there were no pollination?

Without pollination, many plants would not produce fruits or seeds. Hence the plants will become extinct

7. Give reasons for the following

The radicle is the first part to appear when a seed germinates.

- b. Mangrove trees have breathing roots.
- c. Most leaves have a flat and broad surface
- d. A pitcher plant feeds on small animals
- e. Some flowers are brightly coloured.

[Answer] a. The radicle is the first part to appear because it is responsible for anchoring the seedling and absorbing water and nutrients from the soil.

- b. Mangrove trees grow in waterlogged soils. So they have breathing roots (pneumatophores) that grow above the ground to take in oxygen .
- c. Most leaves have a flat and broad surface to maximise sunlight absorption for photosynthesis.
- d. A pitcher plant generally grows in nitrogen-deficient soil. Hence it has modified leaves to trap and digest small animals to obtain nutrients from them.
- e. Some flowers are brightly coloured to attract pollinators like bees and butterflies for pollination.

IV. Long answer question

1. What are the functions of the root?

Functions of roots: (i) Roots anchor the plant firmly into the soil, which prevents it from being uprooted by wind or other forces. (ii) They absorb water and minerals from the soil, which are necessary for the plant's survival. (iii) Some plants store food and water in their roots, which can be used during unfavourable conditions. (iv) In trees like the banyan, long, rope-like roots grow downwards from the branches and enter the soil. These are like pillars supporting the heavy branches. (v) Some plants grow in waterlogged soils. They have aerial roots which help them to take in air.

2. Describe the various modifications found in a cactus plant.

Cactus plants have several modifications: (i) They have thick, fleshy stems that store water to survive in dry regions. (ii) The leaves are reduced to spines, which reduce water loss from the plant. (iii) They have shallow root systems to quickly absorb water after rain. (iv) The green, thick stems carry out photosynthesis.

3. How will you prove that leaves can prepare food only in the presence of light?

To demonstrate that leaves can prepare food only in the presence of sunlight, we can perform a simple experiment: (i) Keep a potted plant in a dark cupboard. After a day, take the plant out and cover a part of one leaf of the plant with black chart paper, and keep the plant outside for an hour. (ii) Carefully remove the black chart paper and drop the leaf into boiling water for a few minutes. (iii) Remove the leaf from boiling water and heat it in alcohol to remove chlorophyll. (iv) Now, wash the decolourised leaf in water and place it on a Petri dish. Add a few drops of iodine solution on the leaf. (v) The uncovered part of the leaf will turn blue-black, indicating the presence of starch. The covered part will not turn blue-black as this part of the leaf could not produce starch. (vi) Thus, the plant performs photosynthesis in the presence of sunlight, to produce starch.

4. What is transpiration? How does this process help a plant?

Transpiration is the process by which excess water is released in the form of vapour through the stomata. It helps plants in many ways: (i) It helps the roots of a plant to absorb water from the soil. (ii) As water evaporates through the stomata, more water is drawn up from the root to the leaves. (iii) The water brings along minerals that get distributed throughout the plant body. (iv) As the water evaporates, it removes heat from the leaves, and thus cools the leaves and the plant. (v) The constant flow of water from the roots to the leaves allows the plant to stay erect and straight.

5. With the help of a diagram, describe the structure of a flower.

(Diagram: Refer to the textbook.)

The main parts of a flower are: (i) Pedicel: It is the stalk that attaches the flower to the stem. (ii) Peduncle: It is the thickened part to which all the parts of the flower are attached. (iii) Sepals: Green, leaf-like structures present at the base of a flower, protect the flower when it is still a bud. (iv) Petals: These are colourful part of a flower to attract pollinators. (v) Stamen: The male reproductive part consisting of anther and filament. The anther produces pollen. (vi) Carpel (pistil): The female reproductive part consisting of stigma, style, and ovary. The ovary contains ovules.

V. Image-based question.

1.

a.



b.



Study the images and identify the types of modification. Explain your answer

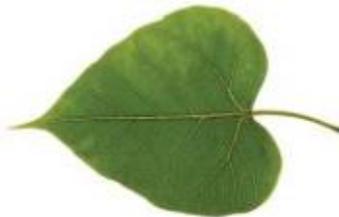
- a. The structure shown here are buds (nodes) of a potato. The potato is a modified stem, and the buds help in reproduction.
- b. The structure shown here is the taproot of a turnip. The structure has root hairs. It is modified to store food

2.

a.



b.



c.



Look at the leaves and identify the type of roots present in these plants

[Answer] a. Fibrous root system

b. Taproot system

c. Taproot system

VI . Assertion and reasoning type questions .

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(c) A is true but R is false.

(d) A is false but R is true.

1. Assertion (A): Plants need water to perform photosynthesis.

Reason (R): During photosynthesis, plants convert water, carbon dioxide, and sunlight into glucose and oxygen.

Ans - (a) Both A and R are true and R is the correct explanation of A.

2. Assertion (A): All plants have roots, stems, and leaves.

Reason (R): The roots, stems, and leaves are essential for the plant's survival as they help in the transport of nutrients and photosynthesis.

Ans- (d) A is false but R is true.