

NCERT Exemplar Solutions for Class 6 Science

Chapter 7: Getting to Know Plants

Multiple Choice Questions

1. Which of the following combination of features would you observe in grass?

- (a) Parallel venation and fibrous root
- (b) Parallel venation and tap root
- (c) Reticulate venation and fibrous root
- (d) Reticulate venation and tap root

Solution: (a) Parallel venation and fibrous root

Explanation:

- Parallel venation and fibrous roots are characteristic features found in grass, maize, wheat, and other monocotyledonous plants.
- In parallel venation, the veins run parallel to one another throughout the leaf blade.
- Fibrous roots are thin, thread-like roots that arise in clusters from the base of the stem, providing excellent soil anchoring.

2. Which of the following is the correct match between the characteristics of stem and the category of plant?

- (a) Weak stem which cannot stand upright: Creeper
- (b) Green tender stem: Shrub
- (c) Thick, hard stem with branching near the base: Tree
- (d) Thick, hard stem with branches high on the plant: Herb

Solution: (a) Weak stem which cannot stand upright: Creeper

Explanation:

- **Herbs:** Small plants with green, tender stems that are generally soft and cannot support much weight.
- **Shrubs:** Medium-sized plants with thick, hard stems that branch near the base, creating a bushy appearance.
- **Trees:** Tall plants with thick, hard, woody stems (trunks) that branch high above the ground.
- **Creepers:** Plants with weak stems that cannot stand upright and spread along the ground.

3. Which of the following is NOT a primary function of the stem?

- (a) Conduction of water
- (b) Photosynthesis
- (c) Formation of branches
- (d) Bears flowers and fruits

Solution: (b) Photosynthesis

Explanation:

- The primary function of photosynthesis is performed by leaves, not stems.
- **Primary functions of stem include:**
 - Supporting the plant structure and holding it upright
 - Conducting water and minerals from roots to leaves
 - Transporting food from leaves to other parts
 - Formation of branches

- Bearing flowers and fruits

4. Which of the following is NOT a correct match?

- (a) Petiole: attaches leaf to stem
- (b) Lamina: green flat part of leaf
- (c) Margin: gives shape to the leaf
- (d) Veins: transpiration

Solution: (d) Veins: transpiration

Explanation:

- **Veins** primarily function to transport water, minerals, and food throughout the leaf and provide structural support.
- **Transpiration** is the process of water evaporation that occurs through stomata (tiny pores) on the leaf surface, not through veins.
- The other matches are correct:
 - Petiole connects the leaf blade to the stem
 - Lamina is the broad, flat, green portion of the leaf
 - Margin forms the outer edge and gives shape to the leaf

5. Read the following sentences about photosynthesis:

- (i) Sunlight, carbon dioxide, chlorophyll and water are necessary
- (ii) Oxygen is absorbed
- (iii) Leaves carry out photosynthesis
- (iv) Proteins are made during photosynthesis

Choose the correct pair of sentences that are true for photosynthesis. (a) (iii) and (iv)

- (b) (i) and (iii)
- (c) (ii) and (iv)
- (d) (i) and (iv)

Solution: (b) (i) and (iii)

Explanation:

- **(i) Correct:** Photosynthesis requires sunlight, carbon dioxide, chlorophyll, and water as essential components.
- **(ii) Incorrect:** Oxygen is **released** during photosynthesis, not absorbed. Carbon dioxide is absorbed.
- **(iii) Correct:** Leaves are the primary organs that carry out photosynthesis due to their chlorophyll content.
- **(iv) Incorrect:** **Carbohydrates (glucose)** are produced during photosynthesis, not proteins.

6. Which of the following terms constitute the female part of the flower?

- (a) Sepals, petal and stamen
- (b) Stigma, style and ovary
- (c) Ovary, stamen and stigma
- (d) Ovary, style and stamen

Solution: (b) Stigma, style and ovary

Explanation:

- The female reproductive part of a flower is called the **pistil** or **carpel**.
- The pistil consists of three parts:
 - **Stigma:** The sticky top part that receives pollen
 - **Style:** The tube-like structure connecting stigma to ovary

- **Ovary:** The swollen base containing ovules
- **Sepals and petals** are accessory parts of the flower.
- **Stamens** are the male reproductive parts.

Very Short Answer Questions

7. Fill in the blanks:

- (a) The small green leaves at the base of flowers are known as ____.
- (b) The swollen basal part of the pistil is the ____ which bears the ____.
- (c) Stamen has two parts called ____ and ____.
- (d) The young unopened flower is termed as ____.

Solutions: (a) **sepals**

(b) **ovary, ovules**

(c) **filament, anther**

(d) **bud**

8. Solve the riddles given below:

- (a) "I have a green tender stem and I am much shorter than you. Who am I?"
- (b) "I come out first from the seed when it is soaked in water. I provide anchorage to plants. Who am I? Write another function that I perform."

Solutions: (a) **I am a Herb.** Herbs are small plants characterized by green, soft, tender stems that lack woody tissue.

(b) **I am a Root.** When a seed germinates after soaking in water, the root (radicle) emerges first to anchor the plant. **Another important function:** Roots absorb water and essential minerals from the soil for plant nutrition.

Short Answer Questions

9. Match the parts of plant given in Column I with their function in Column II:

Column I Column II

- (a) Flower (i) Excretion
- (b) Leaf (ii) Photosynthesis
- (c) Stem (iii) Reproduction
- (d) Root (iv) Bears branches
- (v) Anchorage

Solution:

Column I Column II

- (a) Flower (iii) Reproduction
- (b) Leaf (ii) Photosynthesis
- (c) Stem (iv) Bears branches
- (d) Root (v) Anchorage

Long Answer Questions

10. Boojho wanted to test the presence of starch in leaves. He performed the following steps:

(1) He took a leaf and boiled it in water.

(2) He placed the leaf in a petri dish and poured some iodine over it.
He did not get the expected result. Which step did he miss? Explain.

Solution: Boojho missed a crucial step in the starch test procedure. **The missing step was boiling the leaf in alcohol after boiling it in water.**

Complete procedure for starch test:

1. Boil the leaf in water to soften it
2. **Boil the leaf in alcohol to remove chlorophyll** (this step was missing)
3. Wash the leaf with water to remove alcohol
4. Add iodine solution to test for starch

Explanation: The alcohol treatment removes the green chlorophyll pigment, making it possible to observe the blue-black color change when iodine reacts with starch. Without removing chlorophyll, the green color masks the expected color change.

11. Will a leaf taken from a potted plant kept in a dark room for a few days turn blue-black when tested for starch? Give reasons for your answer.

Solution: No, the leaf will not turn blue-black when tested for starch.

Reasons:

1. **Starch depletion:** All the starch previously stored in the leaf would have been consumed by the plant for energy during the dark period.
2. **No photosynthesis:** In the absence of sunlight, photosynthesis cannot occur, so no new starch can be synthesized.
3. **Continuous respiration:** The plant continues to use stored starch for cellular respiration even in darkness.
4. **Iodine test result:** Since no starch is present, iodine will not show the characteristic blue-black color change.

12. Can the stem of a plant be compared with a street with two-way traffic? Give reason.

Solution: Yes, the stem of a plant can be accurately compared to a street with two-way traffic.

Explanation: The plant stem facilitates transport in two directions simultaneously:

Upward movement:

- Water and dissolved minerals absorbed by roots travel upward through the stem to reach leaves and other aerial parts
- This occurs through specialized tissues called xylem

Downward movement:

- Food (glucose) prepared by leaves during photosynthesis travels downward through the stem to reach roots and other parts that need nutrition
- This occurs through specialized tissues called phloem

Just like a two-way street allows traffic to flow in opposite directions, the stem allows essential materials to move both up and down to meet the plant's needs.

13. Read the function of parts of a plant given below:

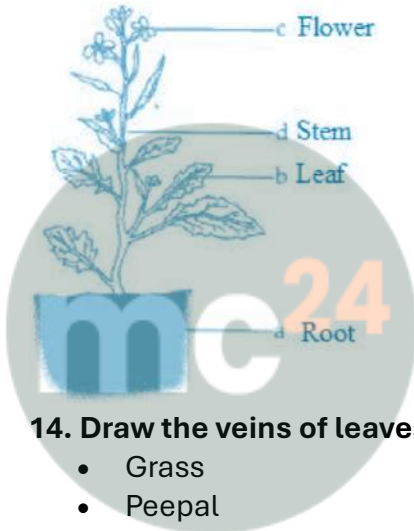
- (a) Fixes plant to the soil
- (b) Prepares starch
- (c) Takes part in reproduction
- (d) Supports branches and bears flowers

Write the names of the parts whose functions you have just read.

Solution:



- (a) **Root** - Fixes plant to the soil
- (b) **Leaf** - Prepares starch
- (c) **Flower** - Takes part in reproduction
- (d) **Stem** - Supports branches and bears flowers



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14. Draw the veins of leaves and write the type of venation for the following:

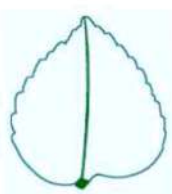
- Grass
- Peepal
- China Rose



Grass



Peepal



China Rose

Solution:



Grass,
(Parallel
venation)



Peepal
(Reticulate
venation)



China rose
(Reticulate
venation)

Grass: Parallel venation

- Veins run parallel to each other from base to tip
- Commonly found in monocotyledonous plants

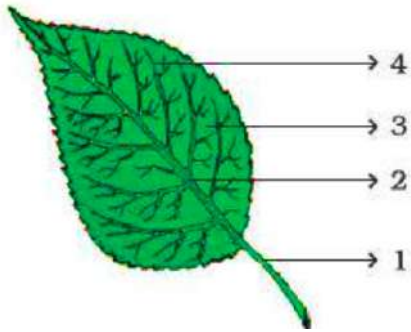
Peepal: Reticulate venation

- Veins form a network pattern branching from the midrib
- Characteristic of dicotyledonous plants

China Rose: Reticulate venation

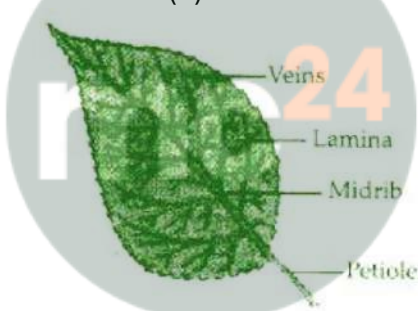
- Similar network pattern of veins
- Also a dicotyledonous plant

15. Observe the leaf diagram and answer:



- (a) Label the parts 1, 2, 3 and 4
 (b) What type of venation does the leaf have?
 (c) What type of venation is seen in grass leaves?

Solution: (a) **Part labels:**



- **Part 1:** Petiole
- **Part 2:** Midrib
- **Part 3:** Lamina
- **Part 4:** Veins

(b) **The leaf has reticulate venation.** In reticulate venation, veins branch from the midrib and form a network-like pattern throughout the leaf blade.

(c) **In grass leaves, parallel venation is seen.** The veins run parallel to each other without forming a network pattern.

16. Observe the activity with leaves and polythene bag. Answer the following:



- (a) Which process is demonstrated in the activity?
- (b) When will this activity show better results - on a bright sunny day or a cloudy day?
- (c) What will you observe in the polythene bag after a few hours?
- (d) Mention any one precaution for this activity.

Solution: (a) **The process of transpiration is demonstrated.** This activity shows how plants lose water vapor through their leaves.

(b) **This activity shows better results on a bright sunny day** because:

- Higher temperature increases the rate of transpiration
- Sunlight enhances metabolic activities
- More water evaporation occurs from leaf surfaces

(c) **After a few hours, small water droplets will be observed inside the polythene bag.** This condensed water vapor proves that plants release water through transpiration.

(d) **Precautions:**

- The setup must be airtight to prevent water vapor from escaping
- Use a dry polythene bag initially
- Select fresh, healthy leaves with 10-12 leaves for better results
- Ensure the bag doesn't tear during the experiment

17. Identify the wrong statements and correct them:

- (a) Anther is a part of the pistil.
- (b) The visible parts of a bud are the petals.
- (c) Lateral roots are present in a tap root.
- (d) Leaves perform the function of transpiration only.

Solution: (a) **Wrong statement.**

Correction: Anther is a part of the **stamen** (male reproductive part), not the pistil.

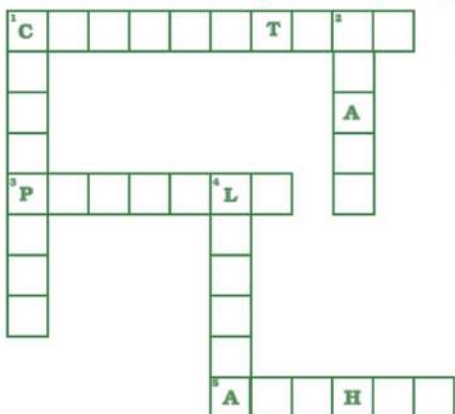
(b) **Wrong statement. Correction:** The visible parts of a bud are the **sepals**, which protect the developing flower parts inside.

(c) **Correct statement.** Lateral roots do branch out from the main tap root.

(d) **Wrong statement. Correction:** Leaves perform various functions including:

- Photosynthesis (primary function)
- Transpiration
- Gas exchange through stomata
- Food storage in some plants

18. Solve the crossword puzzle:



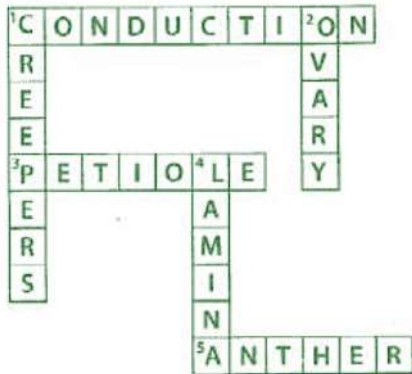
Across:

1. The term that describes upward movement of water in a stem
2. The part of leaf which is attached to the stem
3. This part is attached to the tip of filament

Down:

1. Plants that are weak and spread on the ground
2. Ovules are present in this part of flower
3. Is the broad part of leaf

Solution:



Across:

1. CONDUCTION
2. PETIOLE
3. ANTHWER

Down:

1. CREEPERS
2. OVARY
3. LAMINA

19. Fill in the blanks with appropriate terms:

Sepals, (a) _____, stamens and (b) _____ are the parts of a flower. Stamen is made up of (c) _____ and (d) _____ and it represents the (e) _____ part of the flower. The female part of the flower is called the (f) _____. The basal, swollen part of the pistil is called the (g) _____ which contains the (h) _____.

Solution: (a) petals

- (b) pistil
- (c) anther
- (d) filament
- (e) male
- (f) pistil
- (g) ovary
- (h) ovules

Key Concepts Summary

Plant Parts and Functions:

- **Roots:** Anchorage, absorption of water and minerals
- **Stem:** Support, transport, bearing branches and reproductive parts

- **Leaves:** Photosynthesis, transpiration, gas exchange
- **Flowers:** Reproduction

Types of Plants:

- **Herbs:** Small, tender stems
- **Shrubs:** Medium, woody stems with basal branching
- **Trees:** Tall, thick woody stems with high branching
- **Creepers:** Weak stems, spread on ground

Leaf Features:

- **Parallel venation:** Monocots (grass, wheat)
- **Reticulate venation:** Dicots (mango, rose)
- **Parts:** Petiole, lamina, midrib, veins

Flower Structure:

- **Male parts:** Stamen (anther + filament)
- **Female parts:** Pistil (stigma + style + ovary)
- **Accessory parts:** Sepals and petals



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