

## **Chapter – 4**

### **Geeting to know Plants**

**2marks:**

**1.Can you find a plant in your house or in your neighbourhood which has a long but weak stem? Write its name. In which category will you place it?**

**Answer:**

Yes, lauki (gourd) plant needs support. It is a climber.

**2. What is the function of a stem?**

**Answer:**

**Following are the functions of a stem**

- Stems hold the plant upright.
- Stems conduct water to the leaves.
- Stems conduct food from leaves to other parts of the plant.

**3. Which of the following leaves have reticulate venation?**

**Wheat, tulsi, maize, grass, coriander (dhania), China rose**

**Answer:**

Tulsi, China rose, and coriander have reticulate venation.

**4. If a plant has fibrous roots, what type of venation do its leaves have?**

**Answer:**

If a plant has a fibrous root, its leaves have **parallel venation**.

**5. If a plant has leaves with reticulate venation, what kind of roots will it have?**

**Answer:**

If a plant has leaves with reticulate venation, it will have **a tap root**.

**6. Is it possible for you to find out whether a plant has taproot or fibrous roots by looking at the impression of its leaf on a sheet of paper?**

**Answer:**

Yes, it is possible to find whether a plant has taproot or fibrous roots by looking at the impression of its leaf on a sheet of paper.

**7. What are the parts of a flower?**

**Answer:**

a)Sepals

c) Stamens

d) Pistil

**8. From the following plants, which of them have flowers?**

**Grass, maize, wheat, chilli, tomato, tulsi, peepal, shisham, banyan, mango, jamun, guava, pomegranate, papaya, banana, lemon, sugarcane, potato, groundnut**

**Answer:**

The plants which have flowers are grass, maize, wheat, chilli, tomato, tulsi, peepal, shisham, banyan (flowers lie inside its fruits), mango, jamun, guava, Pomegranate, papaya, banana, lemon, sugarcane, potato, groundnut

**9.Name the part of a plant which produces food. Name the process.**

**Answer:**

Leaves produce food through a process called Photosynthesis.

**10. In which part of a flower will you find the ovary?**

**Answer:**

The ovary is found in the lowermost and most swollen part of the pistil.

**11. Name two plants in which one has joined sepals, and the other has separate sepals.**

**Answer:**

Plants with joined sepals – Datura and cotton

Plants with separate sepals – Rose and Lotus

**12. Correct the following statements and rewrite them in your notebook.**

- (a) Stem absorbs water and minerals from the soil.**
- (b) Leaves hold the plant upright.**
- (c) Roots conduct water to the leaves.**
- (d) The number of petals and stamens in a flower is always equal.**
- (e) If the sepals of a flower are joined together, its petals are also joined together.**
- (f) If the petals of a flower are joined together, then the pistil is joined to the petal.**

**Solution:**

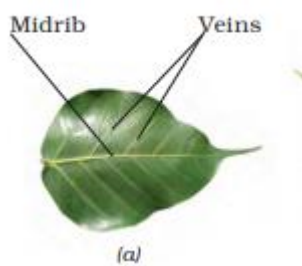
- a) Roots absorb water and minerals from the soil.
- b) Stem holds the plant upright.
- c) Stems conduct water to the leaves.
- d) The number of petals and stamens in a flower may not always be equal.
- e) If the sepals of a flower are joined together, its petals are separate.

f) If the petals of a flower are joined together, then the pistil may or may not be joined to the petal.

**13. Draw (a) a leaf, (b) a taproot and (c) a flower you have studied for Table 7.3**

**Solution:**

**a)**



**b)**



**c)**



**5marks:**

**1.Explain the classification of plants into herbs, shrubs, and trees.**

**Provide examples for each category.**

**Answer:**

Plants are classified into three main categories based on their height, stem characteristics, and branching patterns. Herbs are typically small plants with soft stems and limited branching, such as mint and coriander. Shrubs have a moderate height, a harder stem, and branching near the base, for instance, hibiscus and rose. Trees are large plants with a well-developed, thick stem and branching higher above the ground, like mango and neem trees.

**2.Describe the process of photosynthesis and its significance in plants.**

**Answer:**

Photosynthesis is the process by which green plants, using chlorophyll, convert carbon dioxide and water into glucose in the presence of sunlight. This process releases oxygen as a byproduct. The equation for photosynthesis is  $6\text{CO}_2 + 6\text{H}_2\text{O} + \text{sunlight} \rightarrow \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{O}_2$ . The significance of photosynthesis lies in the

production of glucose, which serves as the primary food source for plants. It also releases oxygen, contributing to the oxygen content in the atmosphere.

**3. Discuss the types of roots and their functions in plants. Provide examples for each type. (5 marks)**

**Answer:**

There are two main types of roots: taproot and fibrous root. Taproot is characterized by a single, dominant root with lateral branches, seen in plants like radish and carrot. Fibrous roots consist of numerous thin, branching roots, as observed in grass and wheat. The functions of roots include absorption of water and minerals from the soil, providing anchorage to the plant, and storing food reserves in some plants.

**4. Explain the process of transpiration in plants. How does it contribute to the overall functioning of the plant? (5 marks)**

**Answer:**

Transpiration is the process by which plants lose water vapor through small openings (stomata) in their leaves. This loss of water occurs primarily in the form of vapor. Transpiration is essential for the plant as it helps in the upward movement of water from the roots to the leaves, contributing to nutrient transport and maintaining turgidity.

Additionally, transpiration aids in cooling the plant and facilitating the absorption of minerals from the soil.

**5. Describe the structure of a flower, highlighting the roles of sepals, petals, stamens, and pistil. Provide an example for each floral part.**

**Answer:**

A flower typically consists of sepals, petals, stamens, and pistil.

Sepals are the outermost protective structures, often green, enclosing the flower bud. Petals are colourful and attract pollinators. Stamens produce pollen and consist of anther and filament. The pistil is the female reproductive part, comprising stigma, style, and ovary.

Examples include rose (petals), marigold (sepals), lily (stamens), and hibiscus (pistil).

**6. Investigate the relationship between leaf venation and the type of roots in plants. Provide examples to support your explanation.**

**Answer:**

Leaf venation and root type are correlated in plants. Plants with leaves showing reticulate venation usually have taproots, such as mango and neem trees. In contrast, plants exhibiting parallel venation in their leaves often have fibrous roots, as seen in grass and wheat. This correlation is due to the common embryonic origin of leaves and roots during plant development.



**Fill in the blanks:**

**1. \_\_\_\_\_ is the process by which green plants convert carbon dioxide and water into glucose in the presence of sunlight.**

**Answer:** Photosynthesis

**2. The outermost protective structures of a flower, often green and enclosing the flower bud, are called \_\_\_\_\_.**

**Answer:** Sepals

**3. \_\_\_\_\_ is the loss of water vapor through small openings (stomata) in plant leaves.**

**Answer:** Transpiration

**4. The primary food source for plants, produced through photosynthesis, is \_\_\_\_\_.**

**Answer:** Glucose

**5. Plants with a single, dominant root with lateral branches, such as radish and carrot, exhibit \_\_\_\_\_ root system.**

**Answer:** Taproot

**6. The male reproductive part of a flower, consisting of anther and filament, is known as \_\_\_\_\_.**

**Answer:** Stamen

**7. Plants with numerous thin, branching roots, like grass and wheat, have a \_\_\_\_\_ root system.**

**Answer:** Fibrous

**8. Leaf \_\_\_\_\_ is the pattern of veins in a leaf, and it is correlated with the type of roots in a plant.**

**Answer:** Venation

**Multiple choice:**

**1. What is the primary function of leaves in a plant?**

- a. Absorbing sunlight**
- b. Anchoring the plant**
- c. Conducting water**
- d. Storing food**

**Answer:**

- a. Absorbing sunlight

**2. Which category of plants is characterized by having a hard and thick stem with branches in the upper part?**

- a. Herbs**
- b. Shrubs**
- c. Trees**
- d. Climbers**

**Answer:**

- c. Trees

**3. What is the process by which water moves up the stem and reaches the leaves of a plant?**

- a. Transpiration**
- b. Respiration**
- c. Photosynthesis**
- d. Absorption**

**Answer:**

- a. Transpiration

**4. Which type of roots do plants with leaves showing reticulate venation usually have?**

- a. Fibrous roots**
- b. Adventitious roots**
- c. Taproot**
- d. Aerial roots**

**Answer:**

- c. Taproot

**5. What is the male reproductive part of a flower called?**

- a. Ovary**
- b. Stamen**
- c. Pistil**

**d. Sepal**

**Answer:**

b. Stamen

**6. Which part of a leaf is responsible for holding it to the stem?**

**a. Lamina**

**b. Veins**

**c. Petiole**

**d. Midrib**

**Answer:**

c. Petiole

**7. What is the term for the pattern of veins on a leaf?**

**a. Venation**

**b. Transpiration**

**c. Photosynthesis**

**d. Respiration**

**Answer:**

a. Venation

**8. Plants with creeping stems that spread on the ground are called:**

**a. Climbers**

**b. Creepers**

**c. Shrubs**

**d. Trees**

**Answer:**

b. Creepers

**9. Which part of the flower develops into the fruit after fertilization?**

**a. Ovule**

**b. Petal**

**c. Stamen**

**d. Ovary**

**Answer:**

d. Ovary

**10. What is the process by which leaves give out water vapor into the air?**

**a. Transpiration**

**b. Photosynthesis**

**c. Respiration**

**d. Absorption**

**Answer: a. Transpiration**

**Summary:**

The provided text discusses various aspects of plant anatomy, including leaves, stems, and roots. It introduces the classification of plants into herbs, shrubs, and trees based on their characteristics. The importance of stems in transporting water, leaves in absorbing sunlight and conducting photosynthesis, and roots in anchoring the plant and absorbing nutrients from the soil is highlighted.

The text also explores the structure of flowers, emphasizing components like sepals, petals, stamens, and pistils. Different types of roots, such as taproots and fibrous roots, are discussed, along with their association with the venation pattern in leaves. The role of transpiration in water movement and the process of photosynthesis in leaves are explained.

In summary, the text provides a comprehensive overview of plant morphology, detailing the functions of various plant parts and their interconnections in supporting the overall growth and development of plants.