# Worksheet

# Adaptations in Plants

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**Give two examples of the following**

**Question 1:**

- Underwater plants **tape grass, hydrilla**
- Plants in mountains **pine, fir, spruce**
- Floating plants **duckweed, water hyacinth**
- Plants in deserts **Cactus, Brittlebush**
- Plants in heavy rainfall areas **teak, rice, cotton**

**Tips:**

- These plants are aquatic and grow in the water. The plant's roots anchor it to the muddy soil. They have thin, narrow leaves that lack stomata. Carbon dioxide and oxygen are absorbed straight through the leaves' surface. The stems are pliable and contain air holes between them. Tape grass, hydrilla, and pond weed are examples.
- They're fashioned like cones to readily shrug off snow. Conifers have needle-shaped leaves that are extremely robust and can withstand cold weather. Conifers include trees like pine, fir, spruce, and cedar.
- These plants have a sponge-like texture. There are a lot of empty places in their body that are filled with air. The plant is now light enough to float in water. Duckweed and water hyacinth, for example.
- Desert plants have used both physical and behavioural mechanisms to adapt to the extremes of heat and aridity in order to thrive.
- They are evergreen plants that stay green for virtually the entire year. Rubber, teak, rice, cotton, and sugarcane are just a few examples.

**MCQs**

**Question 2: Coconut trees grow well in _____ areas.**
**(a) swampy**
**(b) hilly**
**(c) desert**
**(d) coastal**

**Answer :**

**Correct Answer is Option** C.

Coconut is a tropical crop and grows well in a hot climate. Coconuts do best in spots that are 70 degrees or warmer. The trick to growing a coconut palm tree is to keep the coconut well-watered during germination without letting it sit in overly wet soil.

**Question 3: These trees usually have waxy coating to prevent evaporation and loss of water.**
**(a) Hydrilla**
**(b) Mangrove**
**(c) Fir**
**(d) Coconut**

**Answer :**

**Correct Answer is Option A**

Mountain plants have waxy coating on the leaves to prevent evaporation and loss of water. They also have a waxy coating. They have thin, hollow, flexible and light stems which help the leaves to float. Eg; Hydrilla and Pondweed.

**Question 4: Light and spongy water plants like _____ can float on the surface of the water.**
**(a) duckweed**
**(b) cactus**
**(c) mangroves**
**(d) lotus**

**Answer :**

**Correct Answer is Option** A.

Plants such as duckweed, mosquito fern, water hyacinth, and water meal are free floating. These plants are anchored by roots to the bottom of the pond, but their leaves and flowers grow to and float on the water surface.

**Question 5: _____ is an underwater plant.**
**(a) Water lily**
**(b) Duckweed**
**(c) Eelgrass**
**(d) Lotus**

**Answer :**

**Correct Answer is Option** C.

They have narrow thin leaves with no stomata. The leaves absorb carbon dioxide and oxygen directly through their surface. The stems are flexible and have air spaces. For example, tape grass, hydrilla and pond weed.

**Question 6: Plants in heavy rainfall areas are**
**(a) Sundew, pitcher plant**
**(b) Mango, pine**
**(c) Cotton, sugar cane**
**(d) Indian pipe, fir**

**Answer :**

**Correct Answer is Option** C.

They are the evergreen plants and remain green almost round the year. Example rubber, teak, rice, cotton and sugarcane.

**Fill in the blanks**

**Question 7:**

- Underwater plants such as pondweed and eelgrass have narrow leaves without **Stomata.**
- Neem, peepal and sheesham are some trees that grow in **Tropical Deciduous Forests.**
- Roots of some plants that grow out of the soil to breathe from air are called **Pneumatophores** roots.
- **Floating plants** plants like duckweed and Pistia have lots of empty spaces
- filled with air.
- Long **Root** systems in desert plants go deep into the ground to absorb the available water.

**Tips:**

- They have thin, narrow leaves that lack stomata. Carbon dioxide and oxygen are absorbed straight through the leaves' surface. The stems are pliable and contain air holes between them. Tape grass, hydrilla, and pond weed are examples.
- Sal, neem, peepal, teak, and sheesham are important trees that may be found in Madhya Pradesh, Uttar Pradesh, Bihar, Jharkhand, Chattisgarh, Odisha, and Maharashtra.

- A specialised root that rises upwards out of the water or mud to reach the air and get oxygen for the root systems of marshy or tidal trees.
- Duckweed, green algae, water hyacinth, and pistia are examples of floating plants that float freely on the surface of the water. Floating plants are what they're called. Their bodies are spongy.
- Far roots are developed by the plants in order to collect water deep beneath the earth's surface. The water evaporates much more slowly at such a depth than it does closer to the surface due to the desert heat.

**True & False**

**Question 8:**

- Some terrestrial plants grow in water. **(True)**
- Evergreen plants do not shed their leaves at once. **(True)**
- The trees in heavy rainfall areas are called conifers. **(True)**
- The cactus plant stores water in its stem. **(True)**
- Spines protect cactus from animals. **(True)**

**Tips:**

- Terrestrial plants are defined as any plant that grows on, in or from the land. By contrast, aquatic plants are plants that thrive when their roots are submerged in water.
- Leaves do not have to fall off evergreen trees. Their leaves stay greener and stay linked longer than their deciduous counterparts because they have more water. The waxy covering on evergreen needles also helps to conserve water in the summer and winter.
- The trees in heavy rainfall areas are called conifers.
- When it rains, water is stored in the thick, hard-walled, succulent stem of cacti. The stems are fleshy, green, and photosynthetic. The stem is either spongy or hollow on the inside (depending on the cactus). The water inside the cactus is kept from evaporating by a thick, waxy layer.
- By shading the cactus, these spines also help prevent the cactus from losing water through evaporation. So all in all, spines are adaptations that protect and help cacti hide from animals that may want to eat them.

**Match the following**

**Question 9:**

| | |
|---|---|
| (a) Floating plant | (i) Peepal |
| (b) Plant in the plains | (ii) Eelgrass |
| (c) Plant in coastal area | (iii) Wolffia |
| (d) Underwater plant | (iv) Teak tree |
| (e) Deciduous trees | (v) Coconut |

**Floating plant - Wolffia**

Wolffia species are free-floating thalli, green or yellow-green, and without roots. The flower is produced in a depression on the top surface of the plant body.

**Plants in Plains - Peepal**

Many of these plants grow in the warmer climate of the plains and shed most of their leaves in autumn. Example, Neem, Peepal, Ashoka and Mango. The evergreen plants of the plain are those which grow in hot and wet climates.

**Plants in coastal area - Coconut**

Coconuts have a high-water requirement. So, it is easier for them to grow in those areas. In non-coastal regions the high necessity of water is matched by using coco peat near the roots of coconut trees, so that the water stays near the root for a long time.

**Underwater plant - Eelgrass**

Eelgrass is a flowering underwater plant.

**Deciduous tree - Teak tree**

Teak, (genus Tectona grandis), large deciduous tree of the family Verbenaceae, or its wood, one of the most valuable timbers. Teak has been widely used in India for more than 2,000 years.

**Answer the following questions in brief.**

**Question 10: What is a habitat?**

**Answer :** A habitat is the natural home or environment of a plant, animal, or other organism. It provides the organisms that live there with food, water, shelter and space to survive.

**Question 11: Why do mountain plants have waxy coatings on leaves?**

**Answer :** Mountain plants have waxy coating on the leaves to prevent evaporation and loss of water.

**Question 12: What are breathing roots?**

**Answer :** Mangroves thrive in marshy environments. Because their primary underground roots do not acquire enough oxygen from the earth, some plants produce special roots for breathing. Parts of their roots emerge from the earth above the water line, sucking oxygen from the air. Breathing roots are the name given to these roots.

**Question 13: How does long root system help desert plants?**

**Answer :** Many desert plants have adapted to the harsh environment by growing deep roots that can gather water from several feet under the surface. Without these long roots, these desert plants could not stay alive, nor could the wildlife that depends on them for food, drink and shade.

**Question 14: Define coniferous trees. Give two examples**

**Answer :** Conifers are trees which produce cones. Almost all of them are evergreen. Examples include pine, fir, cypress. The larch is a deciduous conifer.

**Answer the following questions in detail.**

**Question 15: How do plants in marshy areas survive? Explain.**

**Answer :** The plants must be able to survive in wet mud with low oxygen levels. Many of these plants, therefore, have aerenchyma, channels within the stem that allow air to move from the leaves into the rooting zone. Marsh plants also tend to have rhizomes for underground storage and reproduction.

**Question 16: Explain some adaptations in desert plants.**

**Answer :** Leaves are reduced into spines to prevent loss of water from the surface of leaves. Stomata are less in number and sunken. Both leaves and stems have a thick waxy coating to prevent loss of water in hot weather.

**Question 17: Draw a cactus plant and label its adaptations.**

**Question 18: Choose the odd one out. State a reason for selection.**

**(a)** 

**(b)** 

**(c)**