

## 9th Science Lesson 19 Questions in English

## 19] Plant Physiology

1. What is the common name of *Mimosa pudica*?

- a) Sunflower
- b) Hemp
- c) **Touch-me-not plant**
- d) Lily

**Explanation**

Animals move in search of food, shelter and for reproduction. Have you observed the leaves of ***Mimosa pudica* (touch-me-not plant)** closes on touching, whereas *Helianthus annuus* (sunflower) follows the path of the sun from dawn to dusk, (from east to west). These movements are triggered by an external stimulus.

2. For which of the following plants are sensitive?

- 1) Light
  - 2) Gravity
  - 3) Temperature
- a) 1, 2
  - b) 1, 3
  - c) 2, 3
  - d) **All the above**

**Explanation**

Unlike animals, plants do not move on their own from one place to another, but can move their body parts for getting sunlight, water and nutrients. They are **sensitive to external factors like light, gravity, temperature, etc.**

3. \_\_\_\_\_ is a unidirectional movement of a whole or part of a plant.

- a) Polarisation
- b) Tropism
- c) Eutrovison
- d) Monothesium

**Explanation**

**Tropism** is a unidirectional movement of a whole or part of a plant towards the direction of stimuli. Based on the nature of stimuli, tropism can be classified into some types.

4. Assertion (A): Shoot of a plant moves towards the light is positive tropism

Reason (R): Tropism is generally termed positive if growth is towards the signal

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) **Both (A) and (R) are correct and (R) explains (A)**
- d) (A) is Correct and (R) is wrong

#### Explanation

**Tropism is generally termed positive if growth is towards the signal and negative if it is away from the signal.** Shoot of a plant moves towards the light, the roots move away. Thus, the shoots are **positively phototropic**.

5. Which of the following are the features of shoot system of a plant?

- 1) Positively phototropic
  - 2) Negatively geotropic
  - 3) Negatively phototropic
  - 4) Positively geotropic
- a) 1, 3
  - b) 2, 3
  - c) 1, 4
  - d) 1, 2

#### Explanation

Usually **shoot system of a plant is positively phototropic and negatively geotropic** and root system is negatively phototropic and positively geotropic.

6. Roots of which plant turn 180° upright for respiration?

- a) Hemp
- b) Lily
- c) **Rhizophora**
- d) Mimosa Pudica

#### Explanation

Some halophytes produce negatively geotropic roots (e.g. **Rhizophora**). These **roots turn 180° upright for respiration**.

7. Nastic movements are \_\_\_\_\_ response of a plant

- a) Directional
- b) Non- directional**
- c) Uni- directional
- d) None

**Explanation**

Nastic movements are **non-directional** response of a plant or part of a plant to stimulus. Based on the nature of stimuli, nastic movements are classified.

8. Which of the following plant flower blooms in morning and closes in the evening?

- a) Ipomea alba
- b) Moon flower
- c) Taraxacum officinale**
- d) Hemp

**Explanation**

Movement of a part of a plant in response to light is called Photonasty. e.g. **Taraxacum officinale**, **blooms in morning and closes in the evening.**

9. Which of the following flower opens in the night and closes during the day?

- a) Taraxacum officinale
- b) Sunflower
- c) Ipomea alba**
- d) Mimosa Pudica

**Explanation**

**Ipomea alba** (Moon flower), **opens in the night and closes during the day.** Movement of a part of a plant in response to light is called Photonasty.

10. \_\_\_\_\_ is also known as Seismonasty

- a) Photonasty
- b) Thigmonasty**
- c) Thermonasty
- d) Geotropism

**Explanation**

Movement of a part of plant in response to touch is called **Thigmonasty**. It is also known as Seismonasty.

11. Which of the following is an example of Thigmonasty?

- a) Mango
- b) Mimosa pudica**
- c) Sun hemp
- d) Ipomea alba

**Explanation**

Movement of a part of plant in response to touch. e.g. **Mimosa pudica, folds leaves and droops when touched.**

12. \_\_\_\_\_ exhibits one of the fastest known nastic movement

- a) Venus Flytrap
- b) Mimosa pudica,
- c) Oriza sativa
- d) Tulip flowers

**Explanation**

The **Venus Flytrap** (*Dionaea muscipula*) presents a spectacular example of thigmonasty. It **exhibits one of the fastest known nastic movement.**

13. Which of the following are the features of Tropic movements?

- 1) Growth dependent movements
  - 2) Temporary and reversible
  - 3) Slow action
- a) 1, 2
  - b) 2, 3
  - c) 1, 3**
  - d) All the above

**Explanation****Tropic movements**

Unidirectional response to the stimulus.  
Growth dependent movements.  
More or less permanent and irreversible.  
Found in all plants.  
Slow action.

14. Which of the following are the features of Nastic movement?

- 1) Immediate action
- 2) Growth independent movements
- 3) Found only in a few specialized plants

- a) 1, 2
- b) 1, 3
- c) 2, 3
- d) **All the above**

**Explanation****Nastic movements**

Non-directional response to the stimulus.  
Growth independent movements.  
Temporary and reversible.  
Found only in a few specialized plants.  
Immediate action.

15. \_\_\_\_\_ bloom as the temperature increases

- a) Venus Flytrap
- b) **Tulip flowers**
- c) Dionaea muscipula
- d) Lily

**Explanation**

Movement of part of a plant is associated with change in temperature. e.g. **Tulip flowers bloom as the temperature increases.**

16. What does the term 'synthesis' mean in photosynthesis?

- a) Movement
- b) **To build**
- c) To escape
- d) None

**Explanation**

'Photo' means 'light' and '**synthesis' means 'to build'**'. Thus, photosynthesis literally means 'building up with the help of light'.

17. Assertion(A): Green plants are autotrophic in their mode of nutrition

Reason(R): They prepare their food materials through a process called photosynthesis

- a) Both (A) and (R) are correct, but (R) does not explain (A)
- b) Both (A) and (R) are wrong
- c) **Both (A) and (R) are correct and (R) explains (A)**

d) (A) is Correct and (R) is wrong

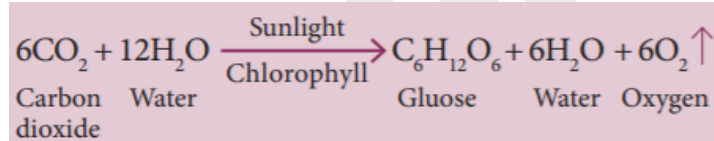
### Explanation

Green plants are **autotrophic** in their mode of nutrition because they **prepare their food materials** through a process called photosynthesis. During this process, the light energy is converted into chemical energy.

18. What is the by-product of photosynthesis?

- 1) Water
- 2) Glucose
- 3) Oxygen
  - a) 1, 2
  - b) 1, 3
  - c) 2, 3
  - d) **All the above**

### Explanation



19. \_\_\_\_\_ have capabilities to trap solar energy

- a) Venus Flytrap
- b) Homo habilis
- c) Sun Flea
- d) **Vespa orientalis**

### Explanation

Tel Aviv University Scientists have found out that **Vespa orientalis** (Oriental Hornets) have **capabilities to trap solar energy**.

20. Where part of Vespa orientalis contain yellow light sensitive pigment xanthopterin?

- a) Eyes
- b) **Abdomen**
- c) Legs
- d) Wings

### Explanation

**Vespa orientalis** (Oriental Hornets) have a yellow patch on its abdomen and an unusual cuticle structure which is a stack of 30 layers thick. The cuticle does not contain chlorophyll but it contains the yellow light sensitive pigment called **xanthopterin**. This works as a **light harvesting molecule transforming light energy into electrical energy**.

21. Which of the following statement about Photosynthesis is correct?

- 1) The end product of photosynthesis is glucose which will be converted into starch
  - 2) Plants take in carbon dioxide for photosynthesis
  - 3) For living plants also need oxygen to carry on cellular respiration
- a) 1, 2
  - b) 1, 3
  - c) 2, 3
  - d) **All the above**

#### Explanation

The end product of photosynthesis is glucose which will be converted into starch and stored in the plant body. **Plants take in carbon dioxide for photosynthesis**; but for its **living**, plants also need **oxygen** to carry on **cellular respiration**.

22. Which of the following are the things necessary for photosynthesis?

- 1) Sun light
  - 2) Chlorophyll
  - 3) CO<sub>2</sub>
- a) 1, 2
  - b) 2, 3
  - c) 1, 3
  - d) **All the above**

#### Explanation

Certain things are necessary for photosynthesis. They are:

1. Chlorophyll - Green pigment in leaves
2. Water
3. Carbon dioxide (from air)
4. Sun light

23. The loss of water in the form of water vapour from the aerial parts of the plant body is called as

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- a) Translocation
- b) **Transpiration**

- c) Transcutation
- d) All the above

**Explanation**

The **loss of water in the form of water vapour from the aerial parts of the plant body** is called as **transpiration**. The leaves have tiny, microscopic pores called stomata.

24. \_\_\_\_\_ % of the water transpired from leaves.

- a) 50
- b) 35
- c) **90-95**
- d) 65-70

**Explanation**

Stomatal transpiration is the loss of water from plants through stomata. It accounts for **90- 95%** of the water **transpired from leaves**.

25. Which of the following statement is correct?

- 1) The lenticels are tiny openings that protrude from the barks in woody stems and twigs
  - 2) Loss of water from plants as vapour through the lenticels is called as Lenticular transpiration
- a) 1 alone
  - b) 2 alone
  - c) **1, 2**
  - d) None

**Explanation**

In Lenticular transpiration, **Loss of water from plants as vapour through the lenticels**. The lenticels are tiny openings that protrude from the barks in woody stems and twigs as well as in other plant organs.

26. Which of the following are the reasons for transpiration?

- 1) It creates a pull in leaf and stem
  - 2) It regulates the temperature of the plant.
  - 3) It is necessary for continuous supply of minerals
- a) 1, 2
  - b) 1, 3
  - c) 2, 3
  - d) **All the above**

**Explanation**

Transpiration is necessary for the following reasons:

1. It creates a pull in leaf and stem.
2. It creates an absorption force in roots.
3. It is necessary for continuous supply of minerals.
4. It regulates the temperature of the plant.

27. The leaves have minute pores called as\_\_\_\_\_

- a) Stomata
- b) Guard cells
- c) Chloroplast
- d) Vacuole

### Explanation

The leaves have minute pores called stomata through which the exchange of air takes place. These minute pores can be seen through a microscope.

28. Which of the following statement is correct?

- 1) Air exchange takes place continuously through the stomata.
  - 2) Plants exchange gases ( $\text{CO}_2$  to  $\text{O}_2$ ) continuously through these stomata.
- a) 1 alone
  - b) 2 alone
  - c) 1, 2
  - d) None

### Explanation

Air exchange takes place continuously through the stomata. Plants exchange gases ( $\text{CO}_2$  to  $\text{O}_2$ ) continuously through these stomata. You will study more about these physiological process in your higher classes.

29. Which of the following is an example of Phototropism?

- a) Shoot of a plant
- b) Root of a plant
- c) Climbing vines
- d) All the above

### Explanation

Phototropism is the movement of a plant part towards light. e.g. shoot of a plant. Geotropism is the movement of a plant in response to gravity. e.g. root of a plant.

30. Growth of a pollen tube in response to sugar present on the stigma is an example of \_\_\_\_\_

- a) **Chemotropism**
- b) Geotropism
- c) Thigmotropism
- d) Phototropism

**Explanation**

Movement of a part of plant in **response to chemicals is called as Chemotropism**. e.g. growth of a pollen tube in response to sugar present on the stigma.

31. Movement of a plant part due to touch is called as \_\_\_\_\_

- a) Chemotropism
- b) Geotropism
- c) **Thigmotropism**
- d) Phototropism

**Explanation**

**Thigmotropism** is the **movement of a plant part due to touch**. e.g. climbing vines. Hydrotropism is the movement of a plant or part of a plant towards water. e.g. root of a plant.