

STD 6 Science

Questions and Answers

Unit 3-Flower to flower

Answers for questions in the textbook

1. Which part developed to form the cashew apple?

The pedicel (the stalk of the flower) develops to form the cashew apple.

2. Explain the advantage of false fruits based on seed dispersal.

False fruits, like the apple and cashew apple, can attract animals and birds, which helps in the dispersal of seeds. The fleshy part of the false fruit is often eaten by animals, and the seeds are either discarded at different locations or pass through the digestive system of the animal and are excreted far from the parent plant, aiding in seed dispersal.

3. Identify the season when the pepper vine blooms.

The pepper vine typically blooms during the monsoon season.

4. Observe the peculiarities of the beaks of birds that suck honey.

Birds that suck honey, such as hummingbirds, have long, slender, and curved beaks that are adapted to reach deep into flowers to extract nectar. This beak structure allows them to access nectar from flowers while simultaneously helping in pollination by transferring pollen grains from one flower to another.

5. What inferences can be made about the bitter gourd flower?

The bitter gourd flower is unisexual, meaning that there are separate male and female flowers on the same plant. This ensures cross-pollination, which enhances genetic diversity.

6. Explain the reason why parts like petals, androecium, etc., wither and fall down after fertilization.

After fertilization, the primary function of the flower, which is to facilitate reproduction, has been achieved. The petals, androecium, and other floral parts wither and fall off as they are no longer needed. The plant then redirects its energy towards the development of the fruit and seeds.

7. What is the advantage of small flowers growing as an inflorescence?

Small flowers growing in an inflorescence can collectively attract more pollinators than a single flower. This increases the chances of pollination. Additionally, the close arrangement of flowers in an inflorescence can facilitate easier transfer of pollen between flowers.

8. What is the advantage of the leaves surrounding a Mussaenda flower changing color and appearing like the flower?

The colored leaves, known as bracts, surrounding the Mussaenda flower mimic the appearance of petals. This adaptation helps to attract pollinators by making the flower cluster more conspicuous.

9. Are the parts in Bougainvillea that change color, flowers?

No, the parts in Bougainvillea that change color are not flowers; they are bracts. The actual flowers are small and usually white or yellow, located in the center of the brightly colored bracts.

10. In which of the following situations does pollination become effective?

- Pollen grains of pumpkin flower falling on the stigma of ash gourd flower.
- Pollen grains of ash gourd flower falling on the stigma of another ash gourd flower.

Pollination becomes effective in the second situation: Pollen grains of ash gourd flower falling on the stigma of another ash gourd flower.

11. What may be the function of flowers then?

The primary function of flowers is reproduction. Flowers facilitate the production of seeds through the process of pollination and fertilization. They

attract pollinators, provide a site for gamete fusion, and develop into fruits that encase seeds.

12. Where is the male gamete seen in a flower?

The male gamete is seen in the pollen grain found in the anther of the androecium.

13. Where can we see the egg of a flower?

The egg is seen in the ovule inside the ovary.

14. Where does fertilization take place?

Fertilization takes place in the ovary of the flower.

15. Draw the pathway of the pollen grain and male gamete in the figure shown.

To illustrate the pathway:

- Pollen grain lands on the stigma.
- Pollen tube grows down the style.
- Male gamete travels through the pollen tube to reach the ovule in the ovary.
- Fertilization occurs when the male gamete fuses with the egg in the ovule.

16. Which part grows into a seed?

The ovule grows into a seed.

17. Which part grows into a fruit?

The ovary grows into a fruit.

18. How does the process of reproduction occur in a flower?

The process of reproduction in a flower involves pollination (transfer of pollen grains from anther to stigma), followed by fertilization (fusion of male gamete with the egg in the ovule). This results in the formation of seeds and the development of fruit from the ovary.

Short Questions and Answers

1. What are the main parts of a flower?
 - The main parts of a flower are sepals, petals, stamens, and pistils.
 2. What is the function of sepals?
 - Sepals protect the flower bud before it opens.
 3. Which part of the flower produces pollen?
 - The anther, which is part of the stamen, produces pollen.
 4. What is pollination?
 - Pollination is the transfer of pollen from the anther to the stigma of a flower.
 5. Name two types of pollination.
 - The two types of pollination are self-pollination and cross-pollination.
 6. What is the function of the stigma in a flower?
 - The stigma captures and holds pollen.
 7. Which part of the flower develops into fruit?
 - The ovary develops into a fruit.
 8. Give an example of a unisexual flower.
 - An example of a unisexual flower is the pumpkin flower.
 9. What is the role of petals in a flower?
 - Petals attract pollinators with their bright colors and scents.
 10. How do dandelion seeds disperse?
 - Dandelion seeds disperse by wind.
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Detailed Questions and Answers

1. Describe the structure and function of the androecium.

- The androecium is the male reproductive part of a flower, consisting of stamens. Each stamen has two main parts: the filament and the anther. The filament is a stalk that supports the anther, where pollen grains (male gametes) are produced. The primary function of the androecium is to produce and release pollen.

2. Explain the process of fertilization in flowering plants.

- Fertilization in flowering plants occurs after pollination. Once pollen grains land on the stigma, they germinate and form a pollen tube that grows down the style towards the ovary. The male gamete travels through the pollen tube and fuses with the female gamete (ovule) in the ovary, resulting in the formation of a zygote. The ovule then develops into a seed, and the ovary becomes the fruit.

3. What adaptations do flowers have to attract specific pollinators?

- Flowers have various adaptations to attract specific pollinators, including:
 - Bright colors to attract bees, butterflies, and birds.
 - Fragrant scents to attract insects and mammals.
 - Nectar production to provide food for pollinators.
 - Specific shapes and sizes to accommodate particular pollinators (e.g., tubular flowers for hummingbirds, large and sturdy flowers for bats).

4. How does cross-pollination promote genetic diversity in plants?

- Cross-pollination involves the transfer of pollen from the anther of one plant to the stigma of a flower on a different plant. This mixing of genetic material from different plants results in offspring

with greater genetic variation, which enhances the ability of the plant population to adapt to changing environments and resist diseases and pests.

5. Compare and contrast wind pollination and insect pollination.

○ Wind Pollination:

- Involves the transfer of pollen by wind.
- Flowers are typically small, inconspicuous, and lack fragrance.
- Produce large quantities of lightweight pollen.
- Examples: Grasses, pine, wheat.

○ Insect Pollination:

- Involves the transfer of pollen by insects.
- Flowers are usually colorful, fragrant, and produce nectar.
- Produce smaller quantities of sticky pollen.
- Examples: Hibiscus, rose, sunflower.

Application-Level Questions and Answers

1. Why might a plant species with brightly colored flowers be more successful in an environment with many insect pollinators?

- Brightly colored flowers are more likely to attract insect pollinators, which can increase the chances of successful pollination and fertilization. This leads to higher seed and fruit production, enhancing the plant's reproductive success and its ability to spread and thrive in the environment.

2. How would the process of pollination and fertilization be affected if the stigma of a flower were not sticky?

- If the stigma were not sticky, it would be less effective at capturing and holding pollen grains. This would reduce the chances of successful pollination and fertilization, leading to lower seed and fruit production and potentially affecting the plant's reproductive success.
3. Explain how seed dispersal methods can impact the survival and spread of a plant species.
- Different seed dispersal methods (wind, water, animals, self-dispersal) help plants spread their seeds to new locations, reducing competition for resources among seedlings and the parent plant. Effective seed dispersal increases the chances of seedlings finding suitable habitats for growth, which enhances the survival and spread of the plant species.
4. A farmer wants to ensure the cross-pollination of his apple trees. What strategies could he use to achieve this?
- The farmer could plant different varieties of apple trees in close proximity to encourage cross-pollination.
 - Introduce or maintain a healthy population of pollinators, such as bees, by providing habitats and reducing pesticide use.
 - Use artificial pollination techniques, such as hand pollination, to transfer pollen between flowers manually.
5. Consider a plant species that relies on water for seed dispersal. How might climate change, resulting in reduced water availability, affect this plant species?
- Reduced water availability due to climate change could limit the effectiveness of water-based seed dispersal. This might result in fewer seeds being transported to new locations, leading to decreased plant distribution and potentially lower population sizes. Over time, the plant species might struggle to survive and reproduce effectively in its changing environment.