

Chapter 12- Reproduction in Plants

- Textbook Exercise -(Solved)

1. Fill in the blanks-

(a) Production of new individuals from the vegetative part of the parent is called _____.

Answer- Vegetative Propagation

Explanation- Vegetative propagation is a type of asexual reproduction where new plants are produced from the non-reproductive parts of the parent plant, such as stems, leaves, or roots. This method bypasses the seed formation process, allowing for quicker reproduction.

(b) A flower may have either male or female reproductive parts. Such a flower is called _____.

Answer- Unisexual

Explanation- A flower that has either only the male reproductive part (stamen) or only the female reproductive part (pistil) is termed unisexual. For example, corn, papaya, and cucumber produce unisexual flowers.

(c) The transfer of pollen grains from the anther to the stigma of the same or of another flower of the same kind is known as _____.

Answer- [Pollination](#)

Explanation- Pollination refers to the process where pollen grains are transferred from the anther (male part) to the stigma (female part) of a flower. This can occur within the same flower or between different flowers of the same species.

(d) The fusion of male and female gametes is termed as _____.

Answer- Fertilisation

Explanation- Fertilisation is the process where male and female gametes (or reproductive cells) fuse together to form a zygote. This zygote eventually develops into a new organism.

(e) Seed dispersal takes place by means of _____, _____, and _____.

Answer- Wind, Water, Animals

Explanation- Seed dispersal is the process by which seeds spread from the parent plant to different locations, ensuring the survival and spread of the species. Seeds can be dispersed through various agents including wind (like in the case of winged seeds), water (as seen in seeds with spongy or fibrous outer coats like coconut), and animals (where seeds may stick to fur or be ingested and later excreted).

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Question 2- Describe the different methods of asexual reproduction. Give examples.

Answer 2-Asexual reproduction is a mode of reproduction in which new individuals are produced without the involvement of gametes. There are several methods of asexual reproduction, including-

- **Vegetative Propagation-** This is the process where new plants are produced from the vegetative parts of the parent plant, such as stems, roots, or leaves.
Example- The growth of new plants from runners in the strawberry plant or from rhizomes in ginger.
- **Budding-** In this method, a small outgrowth or a bud develops from the body of the parent organism. This bud, after maturing, detaches to become a new organism.
Example- Budding is common in yeast and hydra.
- **Fragmentation-** Here, the parent organism breaks up into several fragments, and each fragment develops into a new individual.
Example- The algae, Spirogyra, reproduces by breaking into small fragments, with each fragment growing into a new individual.
- **Spore Formation-** Some organisms reproduce through specialised reproductive cells called spores. These spores, upon getting favourable conditions, germinate and grow into a new individual.
Example- Fungi, such as Rhizopus, produce spores inside a sac-like structure called a sporangium.
- **Binary Fission-** In this method, a single organism splits into two equal halves to produce two new organisms.
Example- Amoeba and certain bacteria reproduce through binary fission.

[Also Check - Vegetative Propagation- A Detailed Exploration for Young Learners](#)

Question 3- Explain what you understand by sexual reproduction.

Answer- Sexual reproduction is a biological process where plants or animals produce offspring through the fusion of male and female gametes. Gametes are specialised reproductive cells - sperm in males and eggs or ova in females.

Explanation-

- **Involvement of Gametes-**
 - Male and female gametes, which carry genetic information, unite during fertilisation to form a zygote. This zygote eventually develops into a new organism, inheriting traits from both parents.
- **Flower Parts in Plants-**
 - In plants, the flower is the reproductive organ. Stamens are the male reproductive parts, producing pollen grains that contain male gametes. The pistil is the female part, containing the ovary which houses the ovules (female gametes).
- **Pollination-**

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- Pollination involves the transfer of pollen grains from the anther (male part) to the stigma (part of the pistil, female part). This process can be facilitated by various agents like wind, water, and animals.
- **Fertilisation-**
 - The fusion of male and female gametes is called fertilisation, resulting in the formation of a zygote. In plants, this occurs within the ovule of the flower.
- **Formation of Zygote and Development-**
 - The zygote undergoes multiple cell divisions and differentiates into various tissues and organs, developing into a new organism.
- **Genetic Variation-**
 - Sexual reproduction introduces genetic variability within the offspring. The resulting organism inherits a combination of traits from both parents, contributing to biodiversity.

Sexual reproduction is significant as it enhances the genetic diversity of the species, which is essential for adaptation and survival in changing environmental conditions.

Question 4- State the main difference between asexual and sexual reproduction.

Answer- The main difference between asexual and sexual reproduction lies in the process of offspring formation. Asexual reproduction involves a single parent and results in offspring that are genetically identical to the parent, while sexual reproduction involves two parents, and the offspring inherit a mix of traits from both parents, leading to genetic variation.

Explanation-

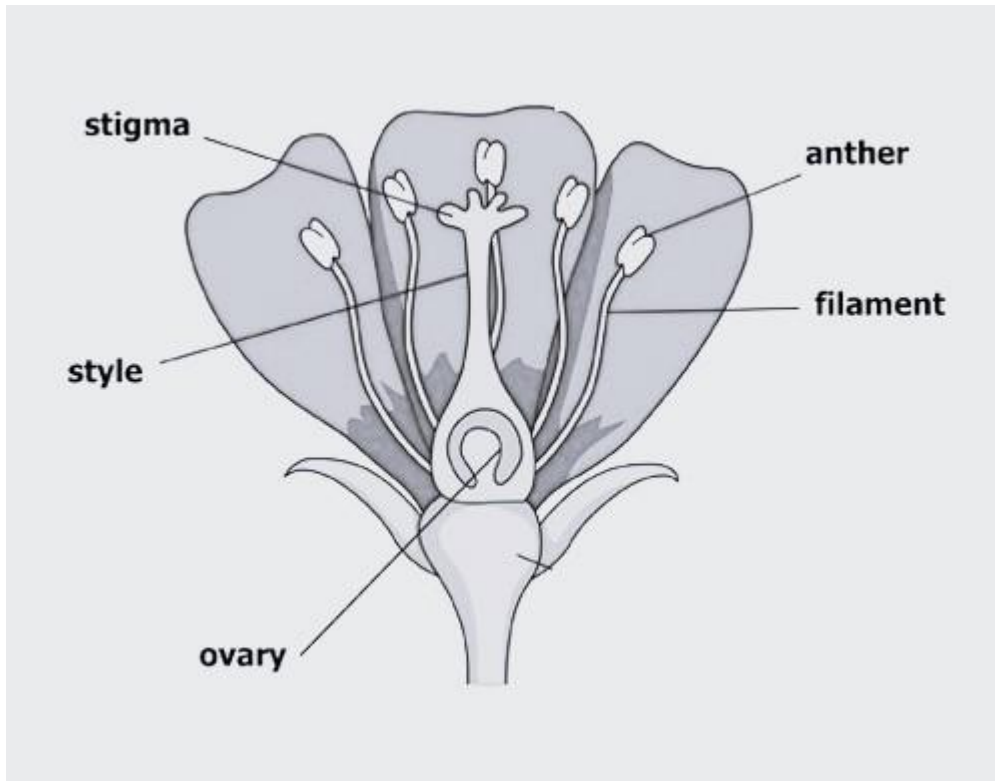
- **Parental Involvement-**
 - **Asexual Reproduction-** Involves one parent. The offspring are clones or exact copies of the parent.
 - **Sexual Reproduction-** Involves two parents. Offspring have a combination of genetic material from both parents.
- **Genetic Variation-**
 - **Asexual Reproduction-** Results in little to no genetic variation in the offspring since they are genetically identical to the parent.
 - **Sexual Reproduction-** Introduces genetic diversity due to the combination of genes from both parents.
- **Gamete Formation and Fertilisation-**
 - **Asexual Reproduction-** Does not involve the formation of gametes or fertilisation.
 - **Sexual Reproduction-** Involves the formation of male and female gametes that fuse during fertilisation.
- **Modes of Reproduction-**
 - **Asexual Reproduction-** Common modes include budding, fragmentation, and spore formation.
 - **Sexual Reproduction-** Occurs through the fusion of gametes, leading to the development of a zygote that grows into a new individual.
- **Energy and Complexity-**

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- **Asexual Reproduction-** Generally simpler and requires less energy and time.
- **Sexual Reproduction-** More complex and energy-consuming due to processes like gamete formation and fertilisation.

Question 5- Sketch the reproductive parts of a flower and give label descriptions.

Answer-



Reproductive

Parts of Flower Diagram

Label Descriptions-

- **Stamen-** The male reproductive part which consists of the Anther and Filament.
 - Anther- Produces pollen grains (male gametes).
 - Filament- Supports the anther.
- **Pistil-** The female reproductive part consisting of the Stigma, Style, and Ovary.
 - Stigma- Receives the pollen grains during fertilisation.
 - Style- Tube connecting stigma and ovary.
 - Ovary- Contains one or more ovules where female gametes or eggs are produced.

Question 6- Explain the difference between self-pollination and cross-pollination.

Answer-

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Aspect	Self-Pollination	Cross-Pollination
Pollen Transfer	From the anther to the stigma of the same flower or another flower of the same plant.	Between flowers of two different plants of the same species.
Genetic Variation	Low; offspring are genetically very similar to the parent.	High; contributes to genetic diversity among offspring.
Dependency on External Agents	Less dependent on wind, water, or animals.	Often depends on wind, water, animals, or insects.
Energy Consumption	Generally requires less energy.	Consumes more energy due to involvement of external agents.
Adaptation	Limited adaptability and evolution due to less genetic variation.	Enhanced adaptability and potential for evolution due to increased genetic diversity.

Difference between self-pollination and cross-pollination. -Tabular FormatExplanation-

1. Difference between self-pollination and cross-pollination in terms of Pollen Transfer

- **Self-Pollination-**
 - In self-pollination, the pollen grains from the anther (male part) of a flower are transferred to the stigma (female part) of the same flower or to another flower on the same plant.
 - This type of pollination doesn't require any external agents like wind or insects, making it a more direct and reliable method of pollination.
- **Cross-Pollination-**
 - In cross-pollination, pollen grains are transferred from the anther of a flower to the stigma of a flower on a different plant of the same species.
 - Since this involves different plants, cross-pollination fosters genetic diversity in plant populations, providing adaptability and resilience.

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2. Difference between self-pollination and cross-pollination in terms of Genetic Variation

- **Self-Pollination-**
 - The offspring produced through self-pollination inherit genetic material from a single parent, leading to less genetic variation.
 - The reduced genetic diversity can limit the plants' adaptability to environmental changes and susceptibility to diseases and pests.
- **Cross-Pollination-**
 - Cross-pollination introduces new genetic combinations by mixing the genetic material from two different plants, increasing genetic variation.
 - This leads to enhanced adaptability, survival rates, and evolution within the plant species.

3. Difference between self-pollination and cross-pollination in terms of Dependency on External Agents

- **Self-Pollination-**
 - Self-pollination is less dependent on external agents such as wind, insects, or animals, making the process more straightforward and less uncertain.
 - The limited need for external pollinators can make it more consistent but also limit its range and diversity.
- **Cross-Pollination-**
 - Cross-pollination relies significantly on external agents, such as insects, wind, or water, to carry pollen from one flower to another.
 - This dependency can introduce variability and uncertainty in the pollination process but also facilitate pollination over longer distances.

4. Difference between self-pollination and cross-pollination in terms of Adaptation

- **Self-Pollination-**
 - Plants produced through self-pollination tend to have reduced genetic diversity, limiting their ability to adapt to changing environmental conditions.
 - The lack of diversity can make the plants more susceptible to diseases and adverse conditions.
- **Cross-Pollination-**
 - Due to increased genetic variation, cross-pollinated plants have a better ability to adapt to changing environments and show resilience to various challenges such as diseases.
 - This type of pollination promotes the development of new plant varieties, which contributes to the evolutionary process and survival of the species.

5. Difference between self-pollination and cross-pollination in terms of Energy Consumption

- **Self-Pollination-**
 - Since self-pollination often occurs within the same flower or between flowers on the same plant, it typically requires less energy and resources.
 - The efficiency of self-pollination can be beneficial in stable environments where little adaptation is needed.
- **Cross-Pollination-**
 - Cross-pollination involves the transfer of pollen over greater distances and often requires additional energy and resources, especially when involving external pollinators like insects.

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- Despite being more energy-consuming, cross-pollination can be advantageous by enhancing genetic diversity and adaptability.

Question 7. How does the process of fertilisation take place in flowers?

Answer- Fertilisation in flowers involves the fusion of the male and female gametes. Here's how the process takes place-

- **Pollen Transfer-** It begins with the transfer of pollen grains from the anther (male reproductive part) to the stigma (female reproductive part) of a flower. This transfer is known as pollination.
- **Pollen Tube Formation-** Once the pollen grain lands on a compatible stigma, it starts to germinate. A pollen tube emerges from the pollen grain and begins to grow down the style towards the ovary.
- **Sperm Movement-** Inside the pollen tube, two sperm cells travel towards the ovary.
- **Fusion of Gametes-** Once the pollen tube reaches an ovule within the ovary, one sperm cell fuses with the egg cell (female gamete). This fusion results in the formation of a zygote.
- **Embryo Formation-** The zygote eventually develops into an embryo, which is enclosed within a seed. The ovary, in turn, matures into a fruit, protecting and nurturing the developing seed.

Question 8. Describe the various ways by which seeds are dispersed.

Answer- Seeds are dispersed in nature to reduce competition and ensure the survival and spread of the species. The various methods of seed dispersal include-

- **Wind Dispersal-** Some seeds are light-weight, winged, or have hair-like structures that allow them to be easily carried by the wind. Examples include seeds of drumstick, maple, and grasses.
- **Water Dispersal-** Seeds and fruits of certain plants can float and are dispersed by water. These seeds usually have a spongy or fibrous outer coat that aids in flotation. The coconut is a prime example.
- **Animal Dispersal-**
 - **External-** Some seeds have spines, hooks, or barbs that get attached to the fur or feathers of animals, allowing them to be transported to new locations. Examples include seeds of Xanthium and Urena.
 - **Internal-** Some fruits are eaten by animals, and while the fleshy part is digested, the seeds pass through the digestive tract unharmed and are excreted at different locations.
- **Explosive Dispersal-** Certain plants have fruits that burst open when they mature, ejecting the seeds forcefully. This "explosion" scatters the seeds far from the parent plant. Castor and balsam are examples of plants that use this method.

These various methods of seed dispersal ensure that seeds reach different habitats, reducing competition and enhancing the survival chances of the next generation of plants.

Question 9. Match items in Column I with those in Column II-

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Column I	Column II
(a) Bud	(i) Maple
(b) Eyes	(ii) Spirogyra
(c) Fragmentation	(iii) Yeast
(d) Wings	(iv) Bread mould
(e) Spores	(v) Potato
	(vi) Rose

Answer-

Column I	Column II
(a) Bud	(i) Maple
(b) Eyes	(ii) Spirogyra
(c) Fragmentation	(iii) Yeast
(d) Wings	(iv) Bread mould
(e) Spores	(v) Potato
	(vi) Rose

Explanation-

- (a) Bud matched with Yeast (iii)- Buds are involved in the asexual reproduction in yeast through a process called budding.
- (b) Eyes matched with Potato (v)- Eyes refer to the buds on the potato tuber which grow into new plants.

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- (c) Fragmentation matched with Spirogyra (ii)- Spirogyra reproduces asexually by breaking into fragments each growing into a new individual.
- (d) Wings matched with Maple (i)- Maple seeds have wings which help in wind dispersal.
- (e) Spores matched with Bread mould (iv)- Bread mould (Rhizopus) reproduces asexually through spores.

Question 10. Tick (✓) the correct answer-

(a) The reproductive part of a plant is the

- (i) leaf
- (ii) stem
- (iii) root
- (iv) flower ✓

Answer- Flower (iv)

Explanation- The flower is the reproductive part of a plant where the formation of seeds takes place after the processes of pollination and fertilisation.

(b) The process of fusion of the male and the female gametes is called

- (i) fertilisation ✓
- (ii) pollination
- (iii) reproduction
- (iv) seed formation

Answer- Fertilisation (i)

Explanation- Fertilisation is the process where male and female gametes fuse together to form a zygote, which later develops into a seed.

(c) Mature ovary forms the

- (i) seed
- (ii) stamen
- (iii) pistil
- (iv) fruit ✓

Answer- Fruit (iv)

Explanation- After fertilisation, the mature ovary develops into a fruit which contains seeds.

(d) A spore producing organism is

- (i) rose
- (ii) bread mould ✓
- (iii) potato
- (iv) ginger

Answer- Bread mould (ii)

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Explanation- Bread mould reproduces by releasing spores, which grow into new organisms when they find suitable conditions.

(e) Bryophyllum can reproduce by its

- (i) stem
- (ii) leaves ✓
- (iii) roots
- (iv) flower

Answer- Leaves (ii)

Explanation- Bryophyllum has the capability to reproduce asexually through its leaves. Small buds are produced along the leaf margins, which can develop into new plants.

Also Check - [Rapid Revision – Class 7 Science- Chapter 12 – Reproduction in Plants](#)

[Also Check - Class 7- Chapter 8 – Reproduction in Plants – 6 Worksheets Solved and Unsolved](#)

Also Check - [Class 7 Science- Chapter 12 – Reproduction in Plants- \(Complete Notes\)](#)

Also Check - [Class 7 – Science- Chapter 12 – Reproduction in Plants question answer \(Long Question Answer\)](#)

Also Check - [Class 7 – Science- Chapter 12 – Reproduction in Plants question answer \(Short Question Answer\)](#)

Also Check - [Chapter 12 – Reproduction in Plants—Class 7 science- Question and Answer \(Solved MCQs\)](#)

Also Check - [Chapter 12 – Reproduction in Plants—Class 7 science- Question and Answer \(Fill in the Blanks\)](#)

Also Check - [Asexual Reproduction Basics – Simplified for Young Learners](#)

Also Check - [NCERT Solutions for Class 7 Science Chapter 12-Reproduction in Plants](#)