

CLASS 9 SCIENCE — CHAPTER 11

NCERT SOLUTIONS

Reproduction: How Life Continues

New NCERT *Exploration* Textbook | 2026–27

The chapter-end “Revise, Reflect, Refine” section has **11 questions**.

Q1. Pollination

Question:

A flower's anthers are removed before it matures. Later, pollen from another plant of the same species is dusted onto its stigma and seeds are produced. Which process has been ensured?

- (i) Self-pollination
- (ii) Cross-pollination
- (iii) Fertilisation
- (iv) Tissue culture

 **Answer: (ii) Cross-pollination**

Explanation:

The anthers of the flower were removed, so its own pollen could not reach the stigma.

Pollen was then taken from **another plant of the same species** and placed on the stigma.

Therefore, pollen transfer occurred between two different plants.

Hence:

Cross-pollination = Transfer of pollen from one plant to another plant of the same species.



Q2. Sequence of Sexual Reproduction in Plants

Arrange the stages in the correct order:

- (i) Pollen germination on stigma
- (ii) Fertilisation
- (iii) Pollination
- (iv) Formation of zygote

Step 1 Pollination

Pollen grains are transferred to the stigma.

Step 2 Pollen germination

The pollen grain germinates on the stigma and forms a pollen tube.

Step 3 Fertilisation

The male gamete fuses with the female gamete.

Step 4 Zygote formation

The fusion produces a **zygote**.



Correct sequence:

(iii) → (i) → (ii) → (iv)

This is also the sequence given in the textbook answer key.



Q3. Assertion and Reason — Implantation

Assertion (A):

The zygote formed after fertilisation immediately attaches to the uterus wall.

Reason (R):

The uterus wall is always prepared to receive the zygote.

Options:

- (i) Both A and R are true, and R explains A.
- (ii) Both A and R are true, but R does not explain A.
- (iii) A is true, but R is false.
- (iv) A is false, but R is true.

 **Assertion is false.**

The zygote does **not immediately** attach to the uterus wall.

It undergoes cell divisions and develops into an early embryo while moving towards the uterus.

 **Reason is true.**

The uterus undergoes changes during the menstrual cycle and becomes prepared for possible implantation.

 **Answer:**

(iv) A is false, but R is true.



Q4. Why Does Asexual Reproduction Produce Genetically Identical Offspring?

Answer:

Asexual reproduction involves **only one parent**.

There is no fusion of male and female gametes.

The new organisms are generally produced through **mitotic cell division**, in which the genetic material is copied and passed to daughter cells.

Therefore, the offspring usually have the **same genetic material as the parent**.

★ **Hence:**

Asexual offspring are generally called:

Clones

Q5. Why Does the Menstrual Cycle Stop During Pregnancy?

Answer:

During pregnancy, a fertilised egg develops into an embryo and implants in the uterus.

Hormonal changes maintain the uterine lining so that it can support the developing embryo.

Therefore, the uterine lining is **not shed**.

✓ **Hence:**

Menstruation stops during pregnancy because the uterine lining is maintained to support the developing embryo.

Q6. Why Are Night-Blooming Flowers Often White or Light-Coloured?

Answer:

Flowers that bloom at night are often pollinated by **night-active animals**, such as moths.

White or light-coloured flowers are easier to see in low light.

They may also have strong fragrances that help attract pollinators.

 **Therefore:**

Light colours and fragrance help night-blooming flowers attract nocturnal pollinators.

Q7. Why Are Vegetatively Propagated Plants More Vulnerable to Diseases?

Answer:

Vegetative propagation is a form of **asexual reproduction**.

The new plants are genetically very similar or identical to the parent plant.

Therefore, they have **little genetic variation**.

If one plant is susceptible to a particular disease, many genetically similar plants may also be susceptible.

 **Answer:**

Low genetic variation makes vegetatively propagated plants more vulnerable to diseases because the same susceptibility can occur throughout the population.

Q8. What If a Plant Could Only Self-Pollinate?

Question:

If all flowers in a type of plant were capable of only self-pollination, how would this affect genetic diversity over several generations?

Answer:

Self-pollination transfers pollen from the same plant to its own stigma.

Therefore, there is less opportunity for genes from different plants to mix.

Over several generations:



Genetic variation would generally decrease or remain limited.

This could make the population less adaptable to environmental changes and diseases.

★ **Answer:**

Only self-pollination would reduce genetic diversity because there would be little genetic mixing between different plants.



Q9. Producing Many Genetically Identical Plants

Question:

A farmer wants to produce a large number of genetically identical plants quickly. Suggest suitable reproduction methods and explain why they are effective.

Answer:

The farmer should use **asexual reproduction**, particularly:



1. Vegetative propagation

Methods include:

- Cutting
- Layering
- Grafting

These methods produce new plants from vegetative parts of a parent plant.



2. Tissue culture

Small pieces of plant tissue can be grown under suitable conditions to produce many new plants.

★ Why are these methods effective?

They:

- Require only one parent.
- Are relatively rapid.
- Produce genetically similar plants.
- Can produce many plants from selected healthy plants.

✓ **Best choice for large-scale rapid production:**

Tissue culture

It can produce large numbers of genetically similar plantlets in controlled conditions.

🌻 Q10. Importance of Variation

Question:

Why is variation important in sexual reproduction?

Answer:

Sexual reproduction involves the fusion of gametes from two parents.

During meiosis and fertilisation, genetic material is rearranged and combined in different ways.

This produces **variation among offspring**.

🌍 Importance:

Variation helps populations:

- Adapt to changing environments.
- Survive diseases and environmental stresses.
- Increase the possibility that some individuals will survive under new conditions.

★ Answer:

Sexual reproduction generates genetic variation, which increases adaptability and supports the long-term survival of populations.



Q11. Pollination in Different Plants

Question:

Identify the type of pollination in:

1. Tomato
2. Wheat
3. Papaya

Tomato:

Tomato generally undergoes:

Self-pollination

Wheat:

Wheat generally undergoes:

Self-pollination

Papaya:

Papaya generally undergoes:

Cross-pollination

The textbook answer key specifically gives: **Tomato—self pollination; wheat—self pollination; papaya—cross pollination.**



CHAPTER 11 — COMPLETE ANSWER KEY

Q

Answer

- 1 (ii) **Cross-pollination**
- 2 (iii) → (i) → (ii) → (iv)
- 3 (iv)
- 4 Asexual reproduction produces genetically similar/identical offspring through mitotic reproduction
- 5 Menstruation stops because the uterine lining is maintained during pregnancy
- 6 Light colour helps night pollinators see flowers; fragrance also attracts them
- 7 Low genetic variation makes disease susceptibility widespread
- 8 Genetic diversity would generally be reduced
- 9 Vegetative propagation and especially **tissue culture**
- 10 Sexual reproduction produces variation through genetic mixing
- 11 Tomato — self; Wheat — self; Papaya — cross

The official answer-key file confirms the Chapter 11 answers available there, including **Q1, Q2, Q3 and Q11**.

CHAPTER 11 — IMPORTANT POINTS FOR EXAM

Asexual Reproduction

One parent → No fusion of gametes → Usually genetically similar offspring

Sexual Reproduction

Two gametes → Fusion → Zygote → Genetic variation

Meiosis

Produces **haploid gametes** so that chromosome number does not double after fertilisation.

Pollination

Transfer of pollen from anther to stigma.

Self-Pollination

Pollen transfer within the same flower or same plant.

Cross-Pollination

Pollen transfer between different plants of the same species.

Fertilisation

Fusion of male and female gametes.

Zygote

Cell formed immediately after fertilisation.

After Fertilisation in Plants

Ovule → Seed

Ovary → Fruit

Human Reproduction

Fertilisation → Zygote → Embryo → Pregnancy

Menstruation

The shedding of the uterine lining when fertilisation and pregnancy do not occur.

Remember:

Asexual reproduction → Faster + less variation

Sexual reproduction → More variation

Meiosis → Gametes

Fertilisation → Zygote

Ovule → Seed

Ovary → Fruit