

Biology

Original practice in 13 topic units, with explanations, worked examples and answer guidance. Use alongside the prescribed texts and syllabus.



13 practice units

78 tasks with answer guidance

Name / नाम: _____

Original selected-topic practice. Use alongside school lessons and the prescribed textbook. The contents define this book's scope.

CBSE course 044 · 2026–27 · Selected practice, not a complete syllabus or official examination paper.

UNIT 01 / 13 · LEARN & TRY

Flower pathway: double fertilisation explained

Name: _____ Date: _____

Goal: Trace double fertilisation and distinguish post-fertilisation structures and ploidies.

Learn

Sexual reproduction in a flowering plant links pollen development, pollination, fertilisation and seed formation. Pollination transfers pollen to a receptive stigma; it is not itself the fusion of gametes. A compatible pollen grain can germinate and grow a tube through the style towards an ovule. In the common angiosperm model, two male gametes enter the embryo sac. One fuses with the egg, producing a diploid zygote. The other fuses with the two polar nuclei, producing a triploid primary endosperm nucleus; this event is called triple fusion. Together the two events constitute double fertilisation. The zygote develops into an embryo, the ovule generally becomes a seed, and the ovary generally develops into a fruit. The endosperm supports developing embryo nutrition, though its persistence varies among mature seeds. Follow the ploidy of each participating nucleus and distinguish a whole organ from a cell or nucleus rather than describing every post-fertilisation structure as the embryo.

Worked example

Trace nuclear ploidies and organ development in the common angiosperm model. In a diploid plant, the egg and each male gamete are haploid, n . Egg n + male gamete n gives a $2n$ zygote. Two polar nuclei $n+n$ plus the second male gamete n give a $3n$ primary endosperm nucleus. The ovule becomes the seed, not the fruit; the ovary generally develops into the fruit. These are the common angiosperm pathway and ploidy assumptions used in this model.

1. What is pollination? [1 marks]

2. State the two fusion events in double fertilisation. [2 marks]

UNIT 01 · PRACTISE · 4–6

Flower pathway: double fertilisation explained

4. Compare the developmental origins of a seed and a fruit. [2 marks]

5. Why can pollen landing on a stigma fail to produce a seed? Give two reasons. [3 marks]

6. Distinguish apomixis and parthenocarpy using the product formed. [3 marks]

Explain one answer. Choose a question to revisit after a few days.

UNIT 01 · ANSWER GUIDANCE

Flower pathway: double fertilisation explained

1. Transfer of pollen grains from an anther to a stigma.
2. Syngamy joins one male gamete with the egg. Triple fusion joins the other male gamete with the two polar nuclei in the central cell.
3. Each haploid nucleus has 10 chromosomes. Three haploid contributions give 30 chromosomes, or $3n$.
4. A seed develops from an ovule; a fruit commonly develops from the ovary. Accessory fruits also include tissues outside the ovary.
5. The pollen may be incompatible and fail to germinate or grow successfully. Alternatively, gamete delivery or fertilisation may fail, so no normal embryo begins development.
6. Apomixis produces seeds without fertilisation, and can preserve a parental genotype. Parthenocarp produces fruit without fertilisation, commonly resulting in seedless fruit.

Teaching note

Label n , $2n$ and $3n$ beside the relevant nuclei; a whole ovule is not the same thing as an egg cell.

Curriculum reference: https://cbseacademic.nic.in/web_material/CurriculumMain27/SecPart2/Biology_SecP2_2026-27.pdf

Selected practice; outcomes are publisher-defined. School practicals, projects and prescribed readings require separate preparation.