▶ Video explanation (YouTube Short)

Sexual Reproduction in Flowering Plants: Chapter Introduction

1. The flower is a reproductive organ

We gift and decorate with flowers, but for the plant the flower is the site of sexual reproduction.

Part	Structure	Role
Stamen (androecium, ♂)	anther + filament	pollen grains (male gametophytes) form in the anther
Pistil (gynoecium, ♀)	stigma, style, ovary	stigma receives pollen; ovules lie in the ovary

2. Pollination

Transfer of pollen from an anther to a stigma. **Self-pollination**: within the same flower or plant. **Cross-pollination**: between plants. Agents: **wind** (light, dry pollen; e.g. grasses, maize), **water** (e.g. Vallisneria), **insects** and other animals (bright, scented flowers with nectar).

3. The pollen tube

On a compatible stigma the pollen grain germinates; the **pollen tube** grows through the style into the ovule (usually through the micropyle) and releases **two male gametes** into the embryo sac.

4. Double fertilisation

Syngamy: male gamete + egg → **zygote (2n)** → embryo.
Triple fusion: male gamete + two polar nuclei → **primary endosperm nucleus (3n)** → endosperm (food for the embryo).
Both together = **double fertilisation**, characteristic of flowering plants.

Solved example. If the egg has 12 chromosomes (n = 12): zygote = 2n = 24; primary endosperm nucleus = 3n = 36.

5. Seed and fruit

- Ovule → **seed** (embryo + endosperm or cotyledons + seed coat).
- Ovary → **fruit** (a mango is a ripened ovary).
- **Apomixis**: seeds formed without fertilisation (e.g. some grasses).

Key takeaways

- Stamen = male, pistil = female.

- Pollination brings pollen to the stigma.
- The pollen tube delivers 2 male gametes.
- Double fertilisation: zygote (2n) + PEN (3n).
- Ovule → seed; ovary → fruit.

Practice questions (CBSE style)

1. (MCQ) Pollen grains form in the (a) stigma (b) anther (c) ovary (d) style
2. (MCQ) The primary endosperm nucleus is (a) n (b) 2n (c) 3n (d) 4n
3. (Very short) Name two agents of pollination.
4. (Very short) What does the ovary become after fertilisation?
5. (Short) Describe double fertilisation.
6. (Numerical) The egg has 10 chromosomes. How many in the zygote and the PEN?
7. (Numerical) 6 ovules are fertilised. How many pollen tubes and male gametes take part?
8. (Application) Why are wind-pollinated flowers usually small and dull?

Answer key

1. (b).
2. (c) 3n.
3. Wind, water, insects (any two).
4. The fruit.
5. The pollen tube releases two male gametes; one fuses with the egg (syngamy → zygote, 2n), the other with the two polar nuclei (triple fusion → PEN, 3n).
6. Zygote 20, PEN 30.
7. 6 pollen tubes, 12 male gametes.
8. They need not attract animals; they produce large amounts of light pollen and have exposed stamens and feathery stigmas instead.

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