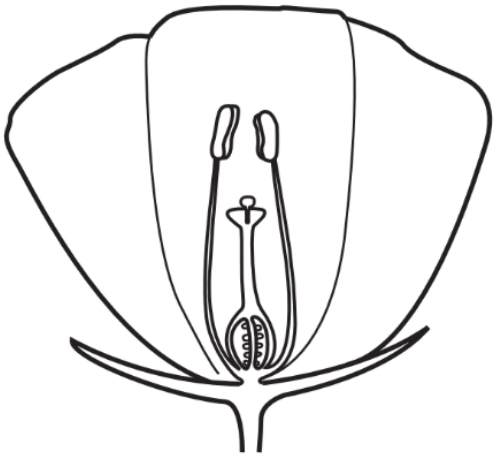
B14 Organisms and their environment

B14.1 Sexual Reproduction in Plants

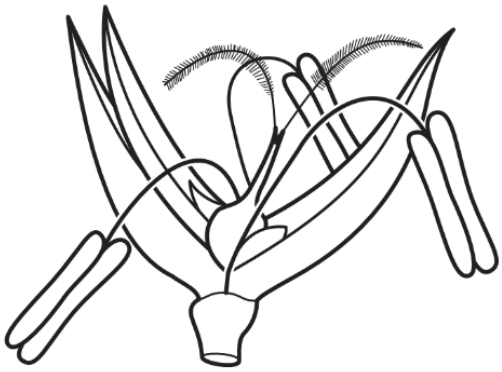
Parts of a flower (insect-pollinated)

- **Sepals** – protect the flower bud.
- **Petals** – attract insects / pollinators with colour and scent.
- **Stamens** – male reproductive part: produce and support pollen.
  - **Filament** – stalk supporting the anther.
  - **Anther** – produces pollen grains (male gametes).
- **Carpels (pistil)** – female reproductive part: receive pollen, allow fertilisation, develop seeds.
  - **Stigma** – sticky tip to catch pollen.
  - **Style** – stalk connecting stigma to ovary.
  - **Ovary** – contains ovules (female gametes).



Wind-pollinated flowers

- **Anthers** – often large, hang outside flower, release large amounts of light smooth pollen.
- **Stigmas** – large, feathery to catch pollen from the wind.



Pollination and Fertilisation

- **Pollination** – transfer of pollen grains from anther → stigma.
  - Can be insect-pollinated or wind-pollinated.
- **Fertilisation** – occurs when a pollen nucleus fuses with a nucleus in an ovule → forms zygote → develops into a seed.

Seed Germination Requirements

- **Water** – activates enzymes, softens seed coat.
- **Oxygen** – needed for **aerobic respiration** to release energy.
- **Suitable temperature** – ensures enzymes work efficiently.

SUMMARY: Flower structures → Pollination → Fertilisation → Seed → Germination