



Natural Sciences: NATS4
Lesson 9

Unit Standard: 7507

THEME: Life and living
TOPIC: Flowering plant and pollination

At the end of this unit, you should be able to:

1. Identify parts of the flowering plant structure?
2. Explain the functions of the parts of the flowering plant.
3. Define what pollination is and how it occurs.
4. Discuss the benefits of pollination in ecosystem.

A. MAIN FUNCTION OF THE FLOWERING PLANT

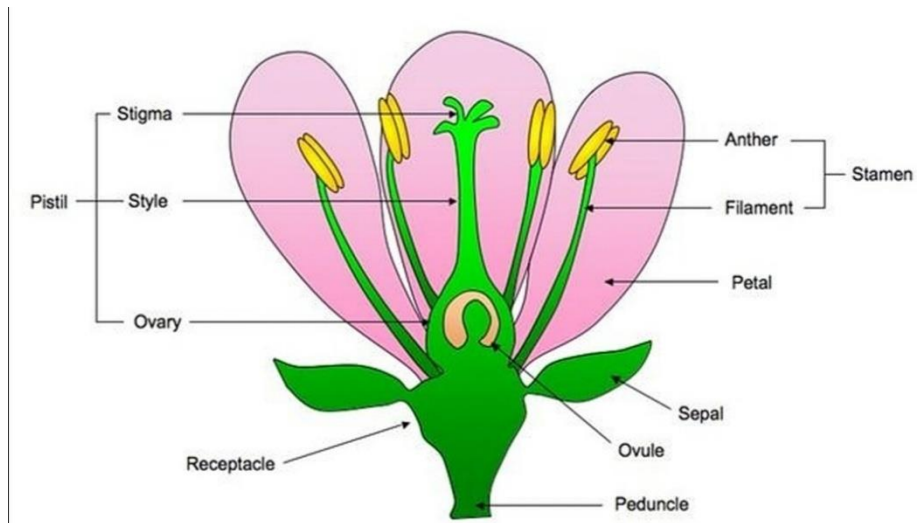
1. A flower is the organ of sexual reproduction in flowering plants (**angiosperms**).
2. Most flowers have both the male **stamens** and female **carpels** inside the same flower.
3. Many flowers attract insects which help in **pollination**.

Pollination is the transfer of **pollen** (*a fine powdery substance comprising of pollen grains which carry male seed of a plant*) from a male part of a plant to a female part of a plant, enabling fertilization and the production of seeds, most often made possible by an animal or wind.

TYPES OF POLLINATION

- **Self or Auto-pollination** takes place in one flower and it occurs when pollen grains from the anther fall directly onto the stigma of the same flower. This type of pollination is simple and quick but it results in a reduction in genetic diversity because the sperm and egg cells of the same flower share genetic information.
- **Cross or Mixed-pollination** involves movement of pollen from one flower to another. This pollen movement is facilitated by wind, water, and animal pollinators. Animal pollinators complete a greater amount of pollinators.

B. STRUCTURE OF FLOWERING PLANT



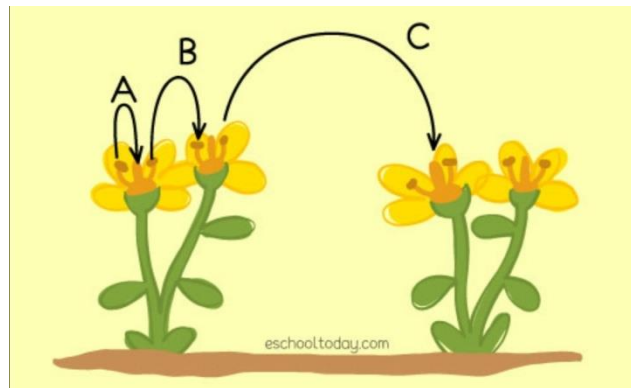
C. FUNCTIONS OF PARTS OF FLOWERING PLANT

1. The **receptacle** is the expanded tip of the flower stalk which bears the sepal, petals, stamens and carpels. *After fertilization the receptacle may swell up to form a fleshy false fruit.*
2. A **sepal** is a small protective leaf-like structure found around a flower bud. *When the flower opens, the sepals may fall off or remain as a ring underneath the petals.*
3. **Calyx** is the collective name for all sepals.
4. A **petal** is a flower structure which surrounds the reproductive organs (stamens and carpels) of the flower. *Petals are often brightly colored and scented to attract insects).*
5. **Corolla** is a collective name for all petals.
6. A **nectary** is an area of cells at the base of the petals which can secrete sweet sugary liquid called 'nectar', which attracts insects for pollination.
7. A **stamen** is the male reproductive organ of flower. *Typically, each has **filament** with an **anther** at its tip.*
8. A **filament** is the stalk of the **stamen** which supports the **anther**.
9. The **anther** is the pollen-producing part of the **stamen**. *It normally consists of two lobes, each containing two 'pollen sacs' with the grains of **pollen**.*
10. **Androecium** is the collective term for all the male parts of a flower (i.e. stamens and filaments).
11. A **carpel** (also known as **pistil**) is the female reproductive organ of a flower. *Typically, each carpel has a **stigma**, **style** and **ovary**. Some flowers have a single carpel, others have several clustered together.*

12. The **stigma** is the uppermost part of the carpel. *During pollination it secretes a sticky substance so that pollen attach to it.*
13. The **style** is the part of the carpel between the stigma and ovary. *The length of the style varies with the species of flower. The pollen tubes grow through the style after pollination.*
14. The **ovary** is the main reproductive structure of the carpel which contains one or more ovules.
15. An **ovule** is the structure in a female seed plants which contains the female sex cells (**gametes**). *It is attached to part of the ovary wall, all after fertilization it develops into the seed.*
16. **Gynoecium** is the collective term for all the female parts of a flower (i.e. stigma, style and ovary).

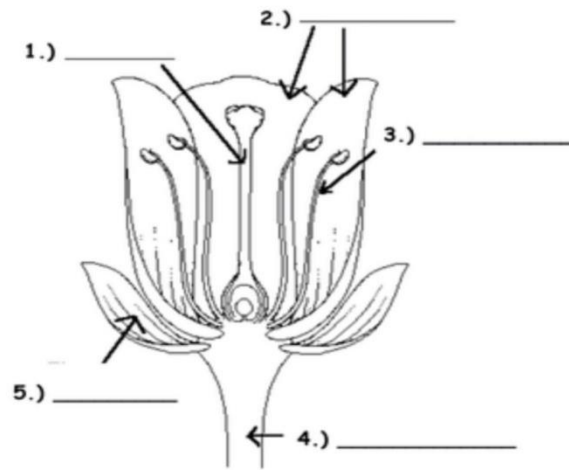
ACTIVITY

1. Study the diagram and answer the questions.



- 1.1 What type of pollination that occurs in A, B and C?
- 1.2 Name TWO pollinators that would complete the pollination process taking place from B to C, the quickest.
- 1.3 Some people are allergic to flowers. They would normally sneeze around flowers. What is in the plant that triggers this reaction?
- 1.4 How is pollination beneficial to the ecosystem?

2. Study the plant structure below and answer the question.



- 2.1 What type of plant is this?
- 2.2 Label parts 2, 3 and 5.
- 2.3 What is the function of part 1?
- 2.4 Name the sweet liquid that attracts insects for pollination?
- 2.5 Which part of the plant protects the base of the flowering bud?