

Question Bank

The Flower

1. Name the floral whorls and their constituent units. Mention the part to which the floral whorls are attached.

Ans. Floral whorls from outside are —

- (i) Calyx — constituent units are called sepals;
- (ii) Corolla — constituted by petals;
- (iii) Androecium — constituted by stamens; and
- (iv) Gynoecium — constituted by carpels.

The four floral whorls arise on the thalamus (or receptacle).

2. Describe the parts of a typical flower along with their functions.

Ans. A typical flower consists of four sets of members arranged in four whorls — the calyx, the corolla, the androecium, and the gynoecium (or pistil). These floral whorls arise from the thalamus. The flower is borne on a stalk called the **pedicel**.

Calyx : Calyx is the outermost whorl of the flower. Its constituent units are called **sepals**.

Functions :

- (i) Sepals protect the flower in the bud stage.
- (ii) Sepals being green in colour manufacture food for the plant.

Corolla : Corolla forms the second whorl inner to calyx and consists of a number of brightly coloured units called petals.

Functions :

- (i) Petals attract insects and help in pollination.
- (ii) In the bud stage, petals protect the inner essential organs.

Androecium : It is the male reproductive whorl of the flower inner to corolla, and is composed of units called **stamens**. A stamen consists of anther, filament and connective. The main function of androecium is to produce male gametes.

Gynoecium : It is the innermost whorl of the flower and its constituents units are called **carpels**. A carpel consists of style, stigma and ovary.

Female gametes are produced inside carpels. After pollination and fertilization, formation of seeds and fruits takes place.

3. What do you mean by accessory and essential whorls?
Mention their functions.

Ans. In a flower, calyx and corolla constitute the accessory or non-essential whorls, as they have only secondary role in reproduction. These whorls protect the flower in bud condition and help in pollination by attracting insects.

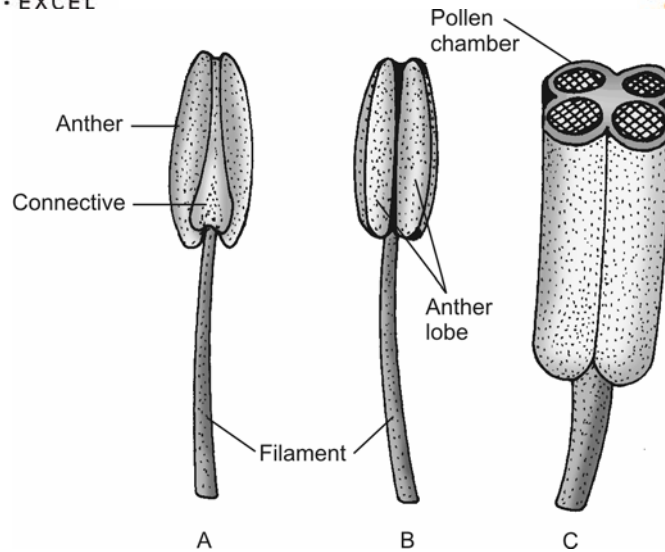
The androecium and gynoecium are the essential whorls, being involved in the production of male and female gametes respectively. Ultimately seed formation occurs.

4. Make labelled drawings of (a) a stamen and (b) a pistil to show their various parts, and state functions of each of the labelled parts.

Ans. (a) Structure of a Stamen

A stamen consists of three parts — filament, connective and anther.

- (i) The filament helps to expose the anther out of the flower, helping the disposal of pollen grains.
- (ii) The anther consisting of four pollen sacs produces pollen grains within which male gametes develop. The pollen grains are liberated from the anther through longitudinal slits (sutures) or pores.

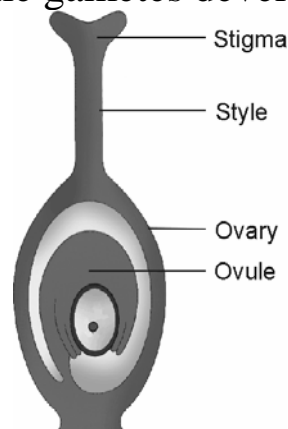


Stamen showing parts. A. Dorsal view. B. Ventral. C. Enlarged portion showing T.S. of anther

(b) Structure of a Pistil

A pistil consists of three parts — stigma, style and ovary.

- (i)** The stigma receives the pollen grains from the anthers; germination of pollen grains also takes place on it.
- (ii)** After germination, the pollen tube passes through the style.
- (iii)** The ovary contains one or more ovules within which female gametes develop.



Parts of a typical carpel

5. What is a neuter flower? Give one example of such a flower.

Ans. A flower in which both androecium and gynoecium are absent is called a neuter flower.

Example — Ray florets of sunflower.

6. Define inflorescence. Name the two types of inflorescences, along with examples.

Ans. A cluster of flowers borne on a single axis is called inflorescence. The two major types of inflorescence are

(i) Racemose, and (ii) Cymose.

Racemose inflorescence is found in mustard, sweet pea, and coriander.

Jasmine, cotton, madar show cymose inflorescence.

7. Define the following terms :

(i) Actinomorphic flower (ii) Zygomorphic flower

(iii) Hypogyny (iv) Epigyny

(v) Apocarpous gynoecium (vi) Bicarpellary ovary

(vii) Placentation (viii) Perianth

(ix) Epipetalous stamens (x) Complete flower

Ans. (i) Actinomorphic flower — A flower which can be divided into two equal halves by any vertical section passing through the centre is called actinomorphic.

(ii) Zygomorphic flower — A flower which can be divided into two equal halves by only one particular plane is called zygomorphic.

(iii) Hypogyny — When in a flower the ovary occupies the topmost position on the thalamus, and the sepals, petals and stamens are present below it, the condition is called hypogyny.

(iv) Epigyny — When in a flower the thalamus encloses the ovary completely and the other floral parts arise above the ovary, the condition is called epigyny.

- (v) **Apocarpous gynoecium** — In a polycarpellary gynoecium, when the carpels are free, it is called an apocarpous gynoecium.
 - (vi) **Bicarpellary ovary** — When the gynoecium consists of two carpels, it is called bicarpellary.
 - (vii) **Placentation** — The arrangement of placentae (which bear ovules) within the ovary is called placentation.
 - (viii) **Perianth** — When the accessory whorls, calyx and corolla are similar in shape and colour and cannot be distinguished, the term perianth is used.
 - (ix) **Epipetalous stamens**. When filaments of stamens are united with the petals in a flower, the stamens are called epipetalous.
 - (x) **Complete flower** — A flower possessing all the four floral whorls (calyx, corolla, androecium and gynoecium) is called a complete flower.
8. Give one term for the following :
- (i) Flower which contains all the four whorls.
 - (ii) Male and female flowers on the same plant.
 - (iii) Filaments united to form a single staminal tube.
 - (iv) Arrangement of flowers on a twig.
 - (v) A flower in which the ovary occupies the highest position and all other whorls arise below it.

Ans. (i) Complete flower (ii) Monoecious
(iii) Monadelphous stamens (iv) Inflorescence
(v) Hypogynous flower.

9. Match the items in Column A with those in Column B

Column A	Column B
(i) Neuter flowers	(a) Maize
(ii) Syngenesious anthers	(b) Pea
(iii) Perianth	(c) Ray floret of sunflower
(iv) Standard petal	(d) China-rose
(v) Monadelphous stamens	(e) Disc floret

Ans. (i) (c) (ii) (e) (iii) (a) (iv) (b) (v) (d)

- 10.** Complete the following statements :
- (a) A flower having both the reproductive organs is called _____ . (bisexual / complete / dioecious)
 - (b) When a flower can be divided into two equal halves through one plane only, the flower is said to be _____. (actinomorphic / zygomorphic / irregular)
 - (c) A unisexual flower that has only stamens is called _____. (staminate / monoecious / dioecious)
 - (d) A pistil which is composed of two carpels is called _____. (monocarpellary / bicarpellary / syncarpous)
 - (e) Thalamus is the expanded part of _____.
(pedicel / filament / style)
 - (f) Petals and sepals collectively are called as _____.
(perianth / bisexual / tepal)

Ans. (a) bisexual (b) zygomorphic
(c) staminate (d) bicarpellary
(e) pedicel (f) perianth.

- 11.** Distinguish between the following :
- (a) Epigyny and Perigyny
 - (b) Polysepalous and Gamosepalous calyx
 - (c) Apocarpous and Syncarpous gynoecium.
 - (d) Superior and Inferior Ovary
 - (e) Actinomorphic and Zygomorphic flower.

Ans. (a) Differences between Perigyny and Epigyny

Perigyny	Epigyny
1. Thalamus forms a cup-shaped structure around the ovary, covering it half the way, ovary is thus half-inferior.	Thalamus grows around the ovary and covers it completely, ovary is thus inferior.
2. Sepals, petals and stamens are borne on the thalamus at its rim, half the way of ovary.	Sepals, petals and stamens are borne above the ovary.

- (b) When the sepals are free in a flower, the calyx is called polysepalous; when sepals are united, the calyx is called gamosepalous.
- (c) In a polycarpellary gynoecium, when the carpels are free, it is called apocarpous, when the carpels are fused, the gynoecium is called syncarpous.

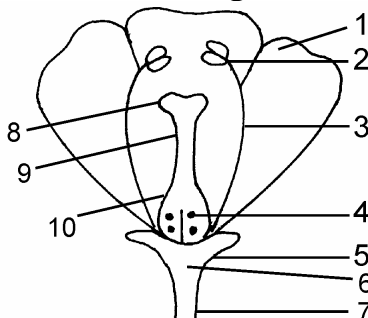
(d) Differences between Superior and Inferior Ovary

Superior ovary (Hypogyny)	Inferior ovary (Epigyny)
1. Ovary occupies the topmost Position on the thalamus.	Thalamus grows around the ovary and completely covers it upto the top.
2. Sepals, petals and stamens are Present below the ovary.	Sepals, petals and stamens are borne above the ovary.

- (e) A flower which can be divided into two equal halves by any vertical section passing through the centre is called actinomorphic or regular.

When a flower can be divided into two equal halves by only one particular plane, it is said to be zygomorphic.

12. Label the parts 1 to 10 in the figure shown below.



- Ans. 1.** Petal **2.** Anther **3.** Filament **4.** Ovule
5. Sepal **6.** Thalamus **7.** Pedicel **8.** Stigma
9. Style **10.** Ovary

- 13.** Mention whether the following statements are **True (T)** or **False (F)** :
- (i) The flower develops as branch from a bud, growing in the axil of a bract.
 - (ii) All the floral whorls arise from the thalamus.
 - (iii) Ovary is superior in a epigynous flower.
 - (iv) Petals when green are called petaloid.
 - (v) The condition in which filaments of stamens are united with the petals in a flower is called epipetalous.
 - (vi) In racemose inflorescence, the main axis never ends in a flower and continues to grow.
 - (vii) The additional whorl of bracts outside the calyx and resembling calyx is called epicalyx.
- Ans.** (i) T (ii) T (iii) F (iv) F (v) T (vi) T (vii) T