10. Dissect and display floral whorls. Dissect anther and take T.S. or V.S. of ovary to show pollen grains and locules of ovary, respectively.

Date : / /

Aim :- To dissect given flower to study and display different whorl . Dissect anther and ovary to show number of locules (chamber.).

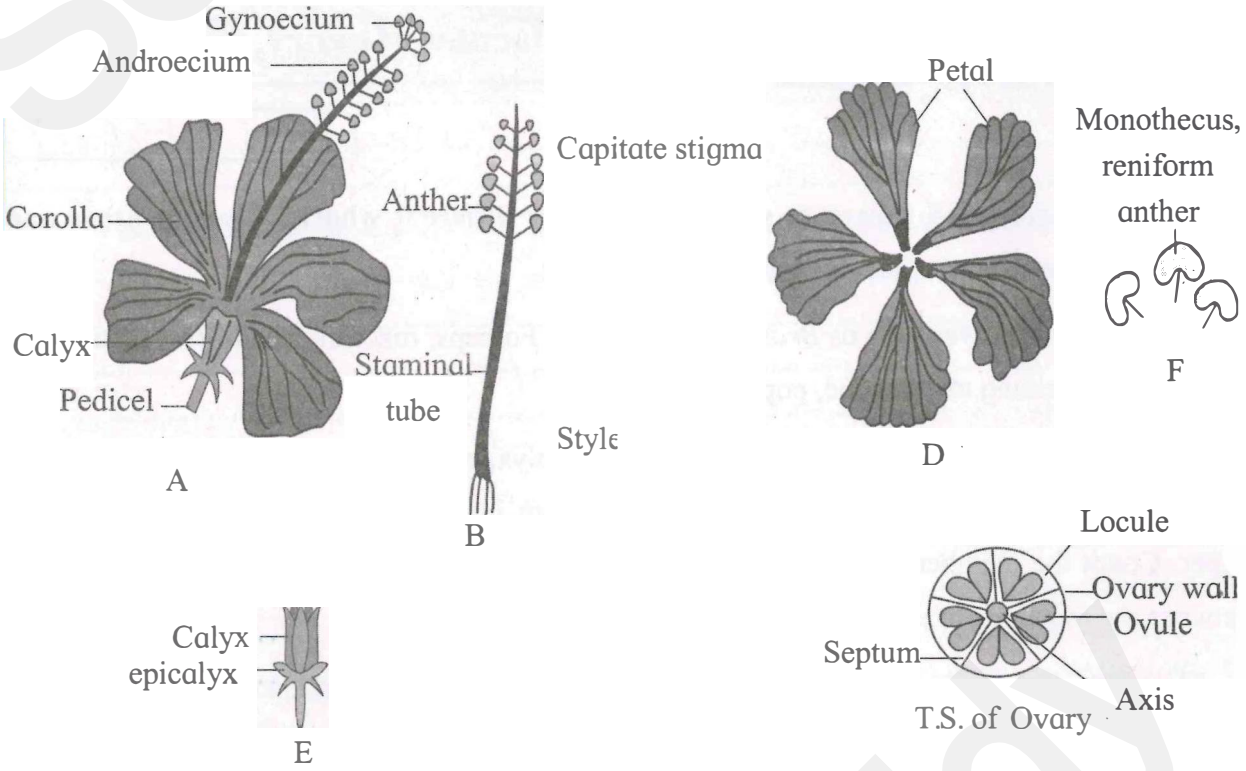
Requirements :- Flower such as *Brassica* or *Hibiscus*. Forceps, razor blade, slides, two needles, coverslips, dissecting microscope, paper, etc.

Procedure :- Observe different floral whorls such as calyx, corolla, androecium and gynoecium. Take out each floral whorl carefully and arrange them in proper ascending order on a white paper. Count the members of each whorl and also note down, if there is cohesion or adhesion between the members of same whorl or different whorls.

- Mount the anthers on slide and observe them under lens or dissecting microscope.
- Take a transverse section of each of anther and T. S. / V. S. of ovary with the help of sharp blade and mount them on a slide in a drop of water, separately.
- Observe under dissecting microscope and count the number of chambers in anther and ovary.
- Draw diagrams of the members of each whorl and sections of anther and ovary. Note down your observations as -

***Hibiscus* flower :-**

- Epicalyx - There are 5-7 free bracteoles.
- Calyx - 5 sepals, green, gamosepalous, valvate aestivation.
- Corolla - 5 petals, polypetalous, large, red coloured and showy, twisted aestivation.
- Androecium - Many stamens, showing monadelphous condition. (Filaments are fused to form hollow staminal tube but anthers free.) Anthers are monothecus and kidney shaped. Note colour, shape and ornamentation of pollen grains.
- Gynoecium - Pentacarpellary, syncarpous (5 carpels-fused), ovary-superior and pentalocular five chambers) with axile placentation, style passes through hollow staminal tube, stigma-5 free capitate.



A : Entire flower, B : Monadelphous stamens, C : Polycarpellary syncarpous gynoecium, D : Corolla with free petals, E : Calyx with epicalyx, F : Anthers, G : T. S. of ovary

Fig. 10.1 Floral parts of *Hibiscus*

Activity : Write floral formula.

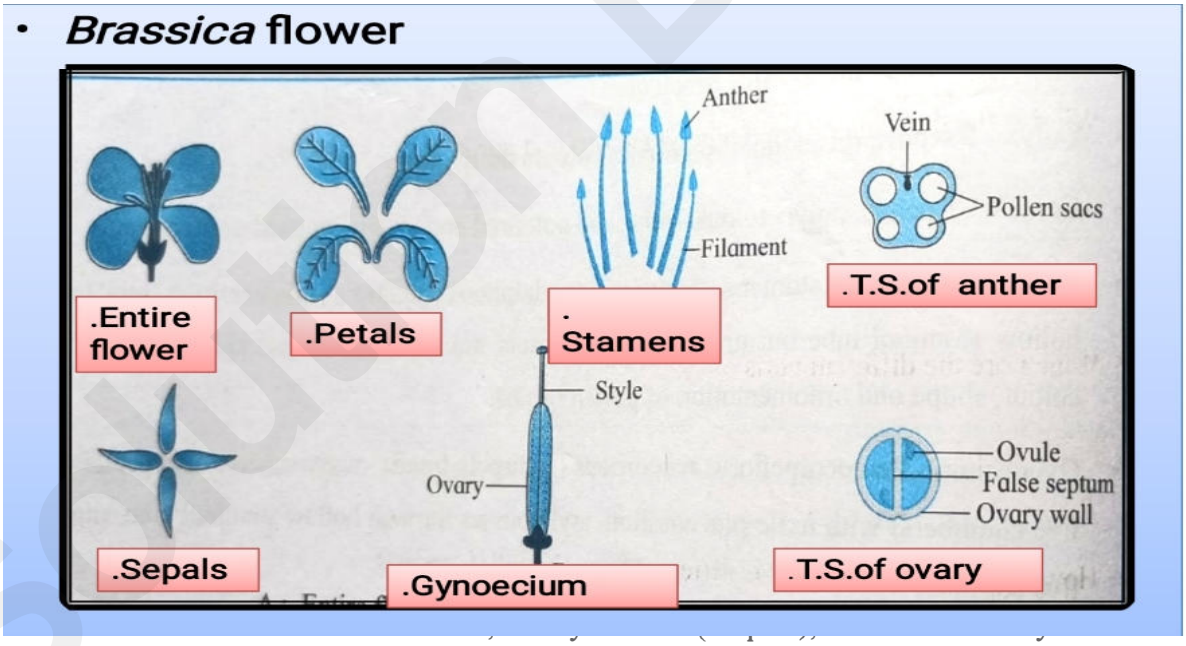


Fig. 10.2 Floral parts of *Brassica*

Observe and describe the floral parts of *Brassica* flower :

Family - : Brassicaceae

Flower- Complete, pedicellate, ebracteate, hermaphrodite, actinomorphic, tetramerous, hypogynous, cyclic.

Calyx - Sepals - 4, polysepalous, petaloid, green.

Corolla - Petals-4, polypetalous, cruciform, valvate aestivation.

Androecium- Stamens-6 in two whorls (2 + 4), polyandrous, tetradynamous, 2 outer short and 4 inner long dithecous.

Gynoecium- Bicarpellar syncarpous, superior ovary with parietal placentation, bilocular ovary, style short, stigma bilobed.

Activity : Write floral formula.

% K 2+2 C4 A2+4 G (2-4)

Questions

1. What is flower?

Flower is a highly modified and condensed shoot part of plant which is meant for sexual reproduction, fruit formation and seed formation.

2. What is the function of flower?

- 1) Many flowers have to Attract pollinators with their bright colors.
- 2) Flowers provide nectar to certain birds and insects, which in turn help in the transfer of pollen from one flower to the other.
- 3)Give protection to reproductive organs like stamen and stigma.
- 4)The most important function of flowers is reproduction.
- 5) Flowers are promote selfing, or cross-fertilization.
- 6) The flowers can produce diaspores without fertilization.
- 7) After fertilization, the ovary of the flower develops into a fruit containing a seed.
- 8)Flowers provide food.
- 9) Flowers is the key point for new generation to come.
- 10) The main purpose of a flower in a plant is to reproduce, plant is monoecious or dioecious its purpose is to reproduce.

3. Which are the essential floral whorls? And why?

The androecium and gynoecium are called essential whorls of a flower. Because they are used for sexual reproduction.

4. What is the difference between polypetalous and gamopetalous corolla?

Polypetalous - corolla consists of petals that are free.
corolla composed of distinct, separable petals.

- Example is Hibiscus

Gamopetalous- corolla consists of petals are united. petals are fused are called Gamopetalous.

- Example is potato

5. Which are the different parts of stamen and carpel?

Stamen is a part of Androecium, the male reproductive part of a flower. The stamen consists of the anther, connective, and filament. Pollen grains are produced inside the anther. The carpel is a part of Gynoecium, Female reproductive whorl of a flower is called gynoecium. Typical carpel has three parts viz, stigma, style, and ovary. The ovary containing the ovules.

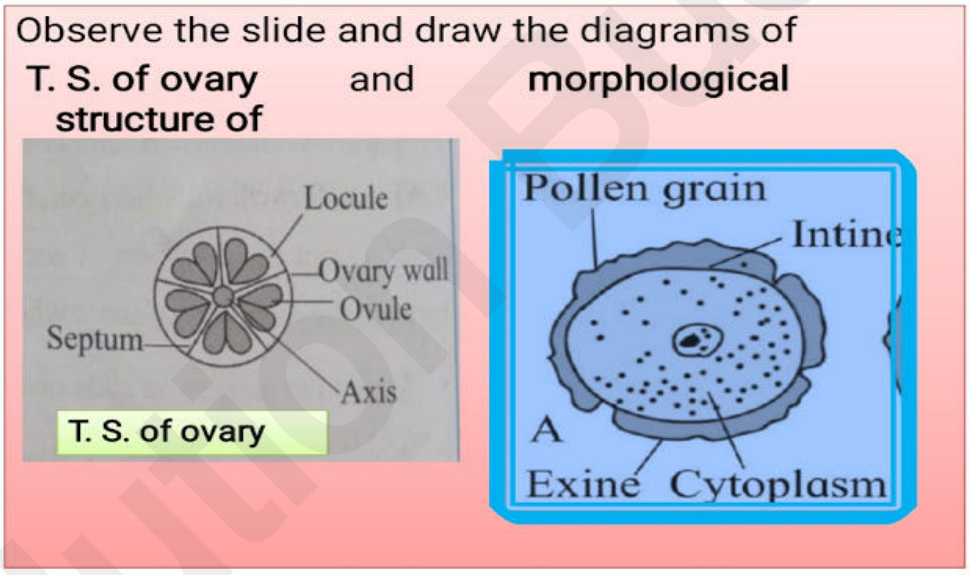
6. How does *Brassica* flower is different from that of *Hibiscus* ?

Hibiscus flower is different from that of Brassica are following point.
Hibiscus is a genus of flowering plants in the mallow familyMalvaceae, Flower, Pentamerous, Epicalyx - There are 5-7, Calyx - 5 sepals, Corolla - 5 petals,.Androecium - Many stamens Gynoecium Pentacarpellary and pentalocular.
Brassica is a mustard family (Brassicaceae). Flower- tetramerous,
Calyx - Sepals - 4,
Corolla - Petals-4,
Androecium- Stamens-6,
Gynoecium- Bicarpellar, bilocular ovary.

Multiple Choice Questions

1. The type of placentation seen in *Hibiscus* ovary is _____
   a. parietal b. marginal
   c. free central d. axile
2. The anthers in *Hibiscus* are _____
   a. monothecus b. monothecus basifixed
   c. bithecus basifixed d. bithecus dorsifixed
3. *Hibiscus* shows protandrous condition. It will favour _____ __
   a. self pollination b. cross pollination
   c. vegetative reproduction d. autogamy
4. In *Hibiscus,* aestivation of calyx is _____ and of corolla is _____
   a. contorted and valvate b. twisted and valvate
   c. valvate and twisted d. vexillary and valvate
5. *Hibiscus* is a hypogynous flower because its ovary is _____
   a. inferior b. semi-superior
   c. superior d. semi-inferior

- **Observe the slide and draw the diagrams of T. S. of o ary and morphological structure of pollen grain.**



Remark and Signature of Teacher .....