Mohanlal Sukhadia University

Department of Botany

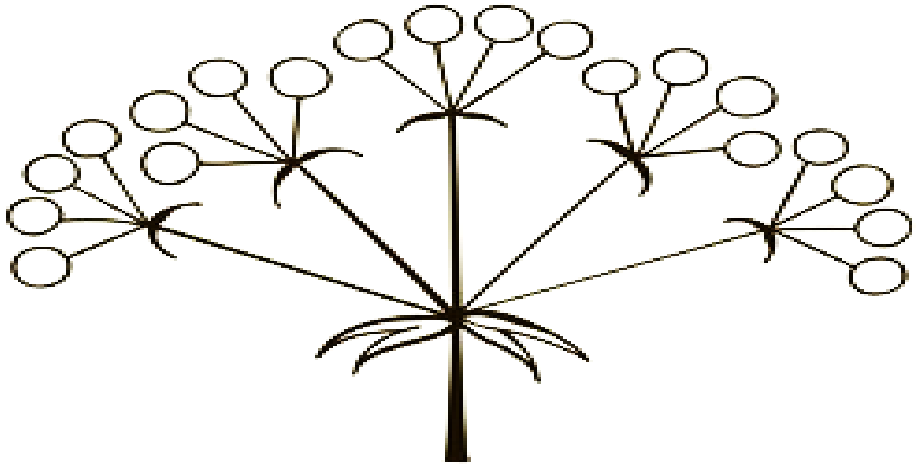
B.Sc. II year Practical (Group II)

Monday 09-11 am

Plant Taxonomy

Images taken from internet.

Inflorescence



Images taken from internet.

Inflorescence

- Definition

  It is the aggregation of the flower on the plant.

- Types of inflorescence

  According to model of branching

  1. Racemose
  2. Cymose
  3. Special type or Mixed

Images taken from internet.

Inflorescence

Racemose

- Indefinite
- Monopodial branching
- Youngest flower at the apex or at the center
- Oldest flower at the base or to the outside

Cymose

- Definite
- Sypodial branching
- Youngest flower near the base or to the outside

Images taken from internet.

Racemose inflorescence

Simple Racemose

1. Receme
2. Corymb
3. Umbel
4. Capitulum
5. Spike
6. Spadix
7. catkin
8. strobile

Compound Racemose

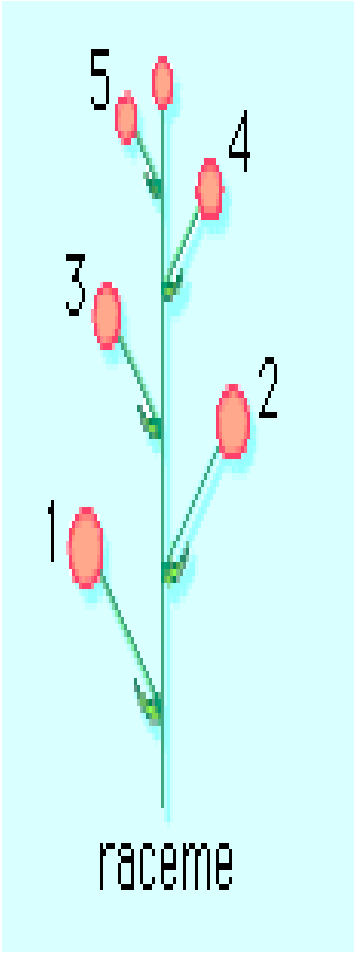
1. Panicle
2. Compound corymb
3. Compound umbel
4. Compound capitulum
5. Compound spike
6. Compound spadix

Images taken from internet.

Simple Racemose

Raceme

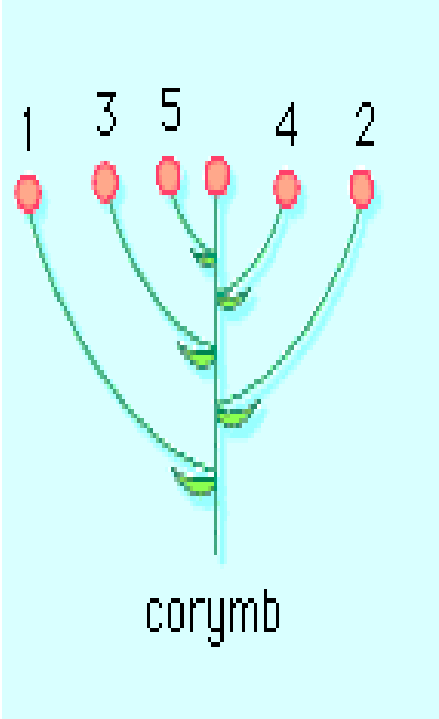
With elongated axis
carrying pedicellate flower
(pedicel of equal lengths)
eg. Lobelia



Images taken from internet.

Corymb

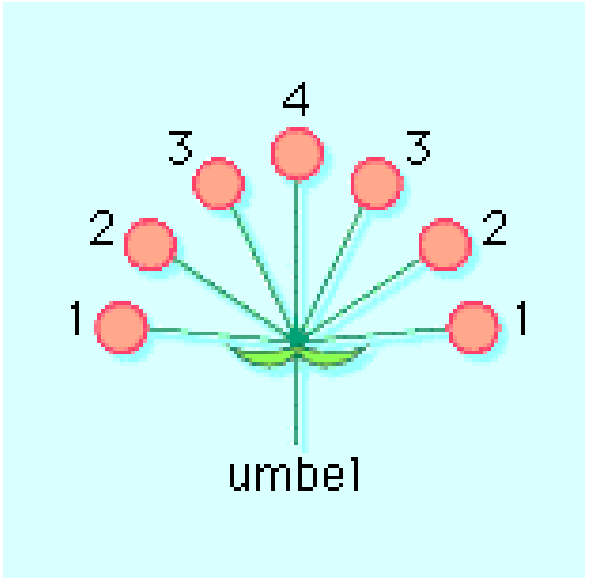
With elongated axis carrying pedicellate flower (pedicel of different length) eg. Cruciferae



Images taken from internet.

Umbel

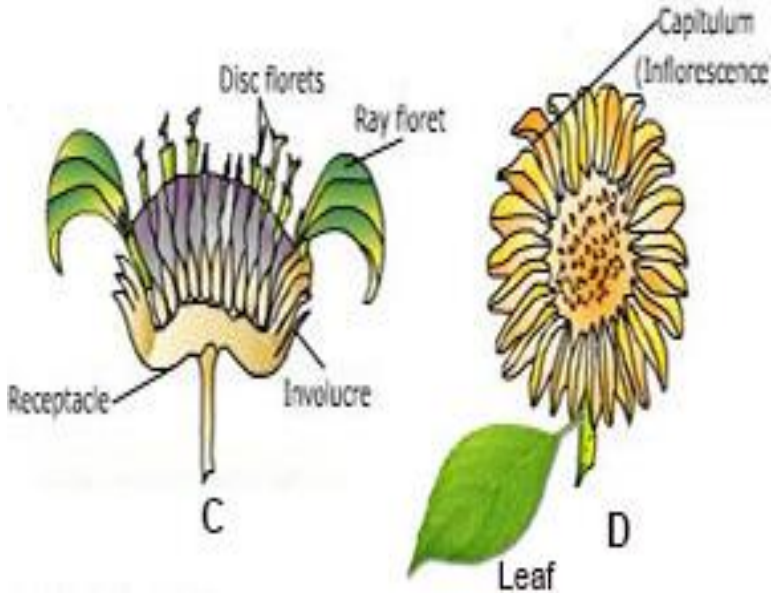
With very short axis carrying pedicellate flower (pedicel of equal lengths are radiating) eg. Umbeliferae

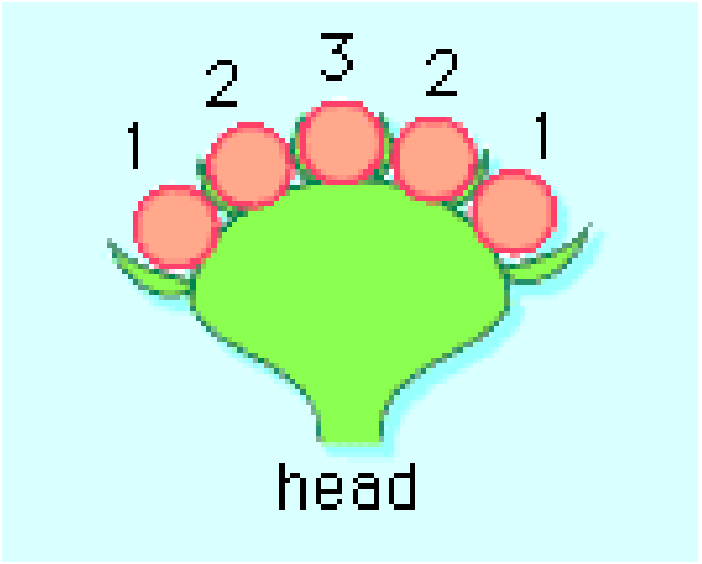


Images taken from internet.

Capitulum (flower head)

It is a racemose inflorescence having very short swollen flattened axis and on which are inserted sessile flowers.
It is encircle by involucre consisting of bracts, the flowers are small and called florets

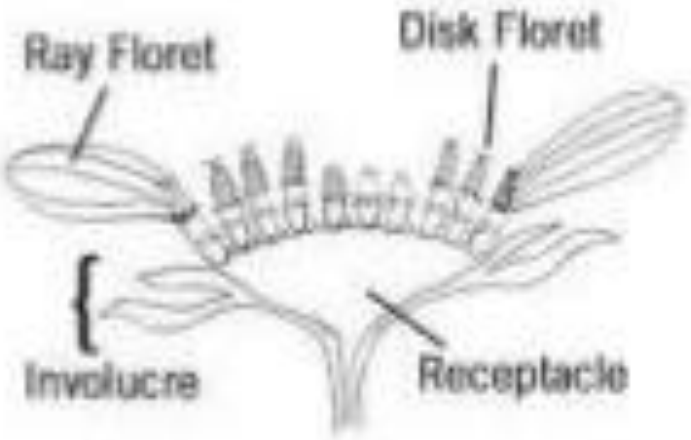




Images taken from internet.

There are two types of florets inserted on the same capitulum:

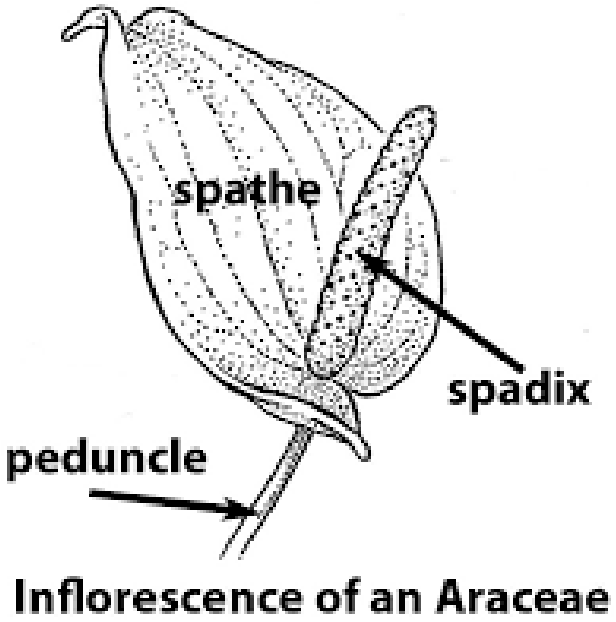
- The central which have tubular corolla and called tubular or disc floret.
- The marginal which have strap-like corolla and called ligulate or ray florets.



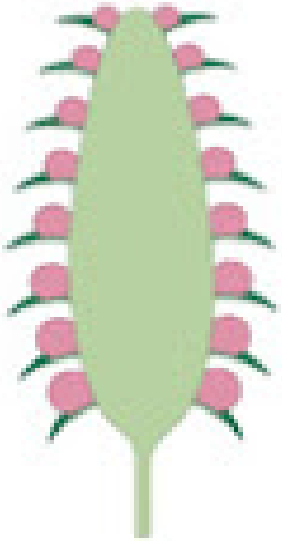
Images taken from internet.

Spadix

With elongated, thick and fleshy axis carrying sessile florets usually unisexual flowers, e.g. Acarus.



Inflorescence of an Araceae


spadix

Images taken from internet.

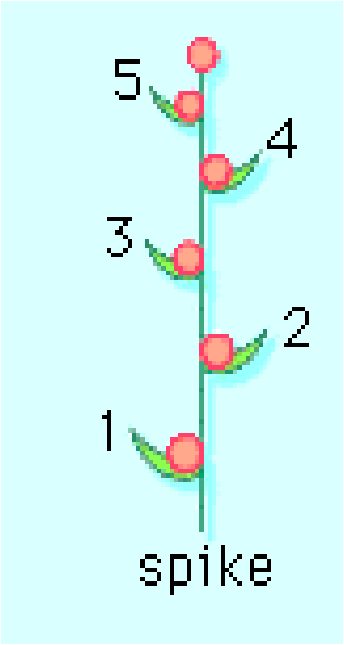
Strobile

A spike with large membranous scales (bract or bracteoles), as in *Humulus*

Images taken from internet.

Spike

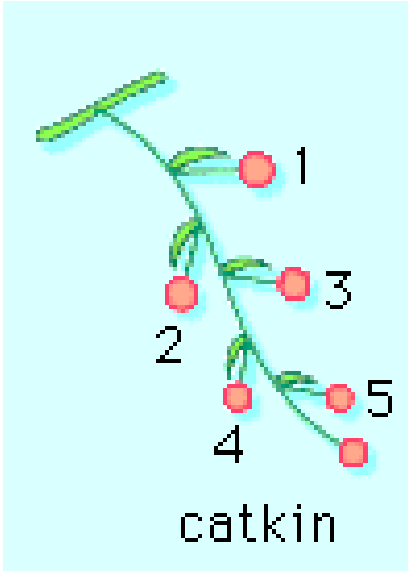
Peduncle is elongated but the flowers are not stalked (i.e. sessile) and arranged in acropetal succession e.g. Acyranthes.



Images taken from internet.

Catkin

A peduncle or spike like inflorescence consisting of small unisexual flowers e.g. *Salix*, Mulbery.

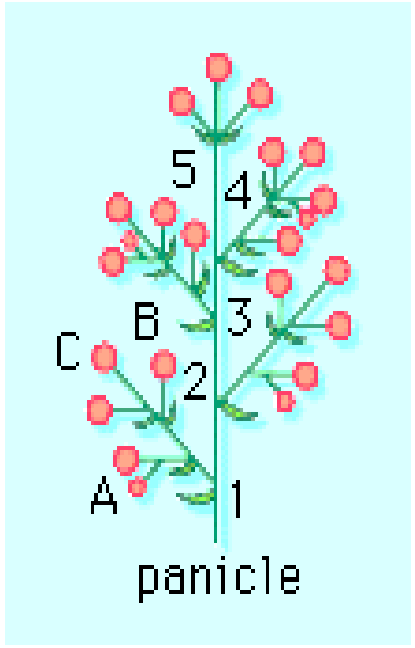


Images taken from internet.

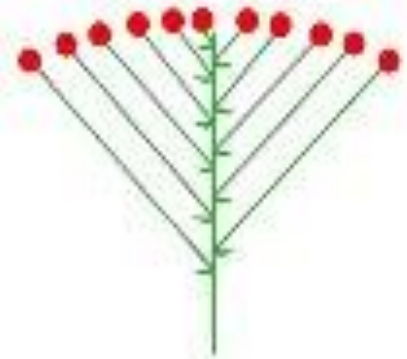
Compound Racemose Inflorescence

Panicle

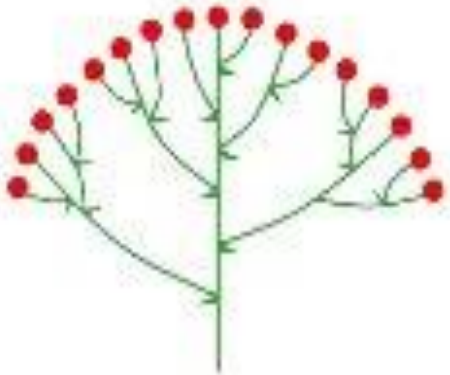
A compound raceme consisting of racemes arranged in racemose manner e.g. *Eguevia*



Images taken from internet.

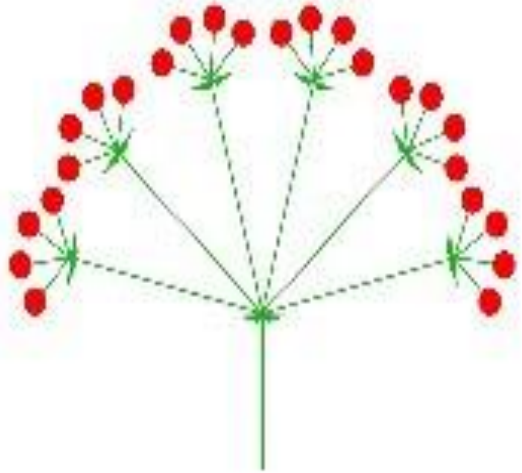


Corymb



Compound Corymb

2. **Compound Corymb:** as in F: Cruciferae.



3. **Compound Umbel:** as in F: Umbelliferae.

Images taken from internet.

4- Compound Spike: as in Wheat.

Images taken from internet.

5- Compound Capitulum: as in F: Composiate.

Images taken from internet.

6- Compound Spadix: as in Palm.

Images taken from internet.

II- Cymose inflorescence

- Cymose inflorescence is characterized by the sympodial branching with the oldest flowers present on the top of the elongated pedicel or occupied in the central position of the flat receptacle. The primary axis and the daughter branches end in a flower i.e. growth of the axis is limited by the formation of a flower.

- Cymose inflorescence may be either simple or compound.

Images taken from internet.

1- Simple Cyme:

The main axis terminate in a flower and one, two or more stalked flower arises on its pedicel, thus resemble the simple umbel but differ from the umbel in that the oldest flower is present in the centre.

Cyme

Images taken from internet.

2- Compound Cymose

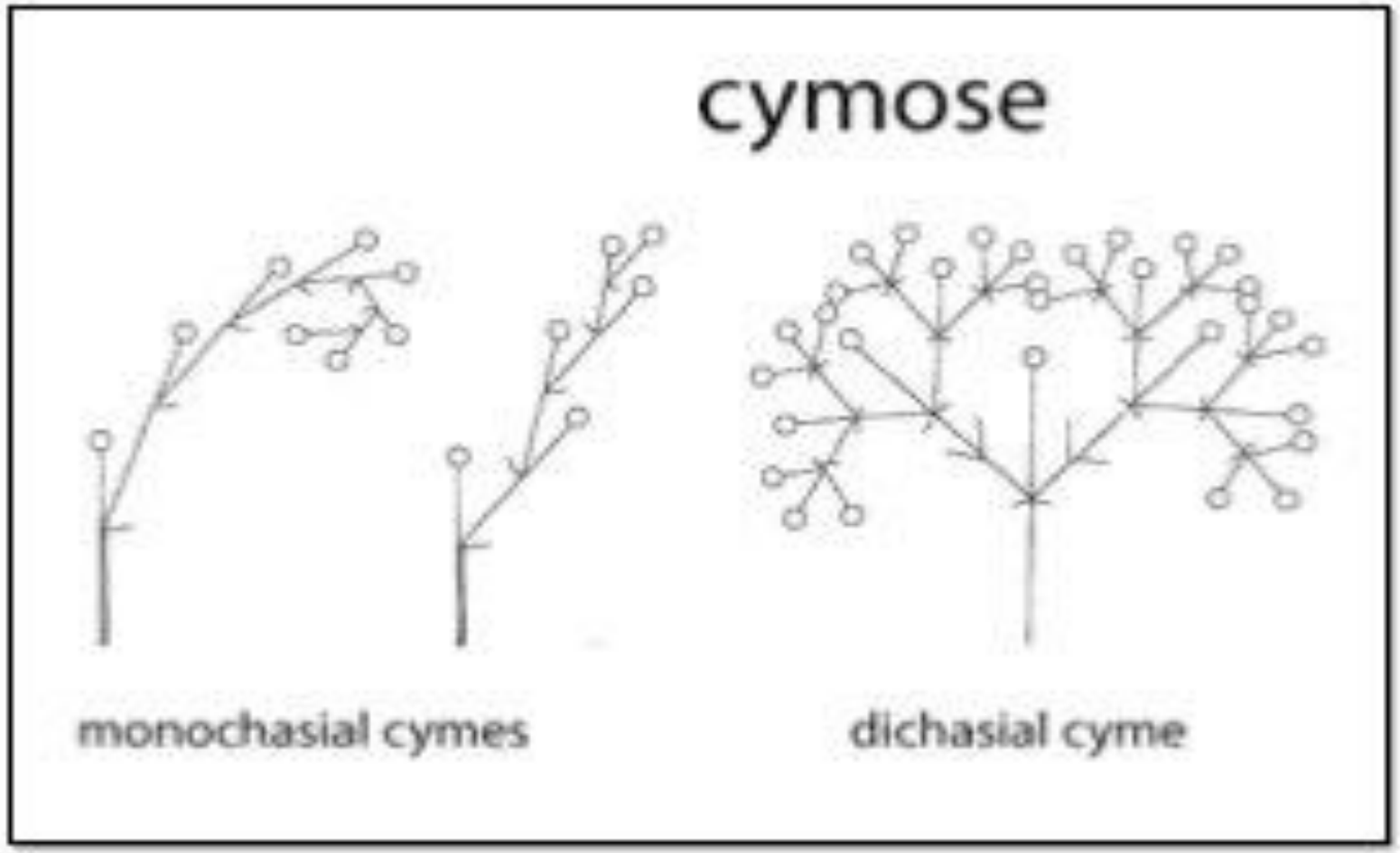
- In which the lateral branches continue to give further branches. It may be:

1- Monochasium (or one sided cyme): where the main axis terminate in a flower, the pedicel of which posses two bracteoles, one of which develop one branch from the bud in its axil and so on. There are two kinds:

a- Helicoid cyme: produced as a development of the bud of only one side (either right or left e.g. Juncus).

b- Scorpoid cyme: produced as a development of the bud of two sides (right and left) alternatively, e.g Iris.

Images taken from internet.



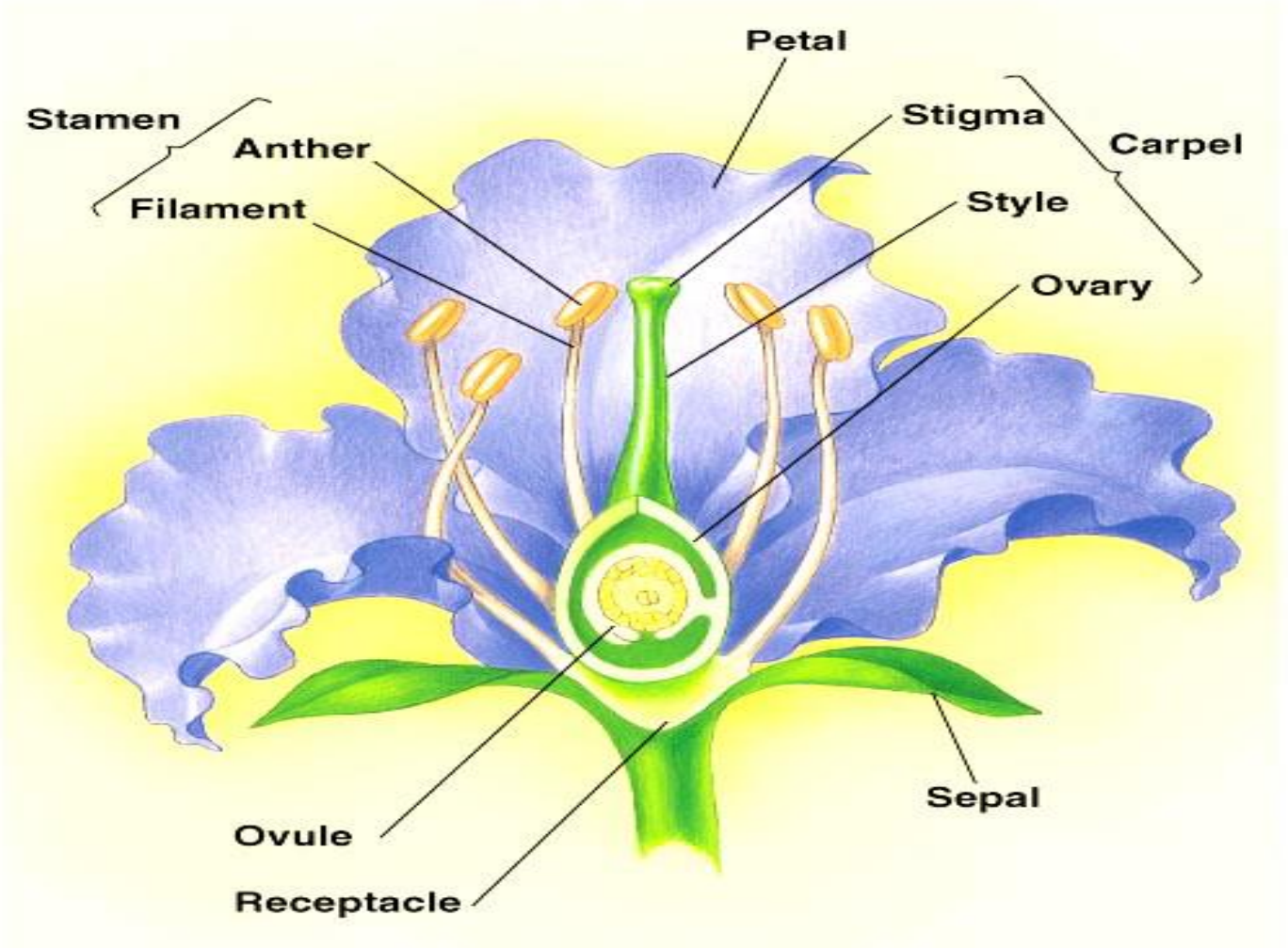
Images taken from internet.

III- Mixed Inflorescence

When both **racemose** and **cymose** types of branching occur on the same inflorescence.

Images taken from internet.

Structure of the flower



Images taken from internet.

What is flower?

A flower, sometimes known as a **bloom** or **blossom**, is the reproductive structure found in flowering plants (plants of the division **Magnoliophyte,** also called **angiosperms**). The stalk of the flower is called the **pedicel** and is swollen at the tip forming the **receptacle**.

Images taken from internet.

Symmetry of flower

Actinomorphic (Regular)
If the perianth is bisected through the central axis from any point, symmetrical halves are produced.

Zygomorphic (Irregular)
When flowers are bisected and produce only one line that produces symmetrical halves.

Images taken from internet.

Sex of the flower

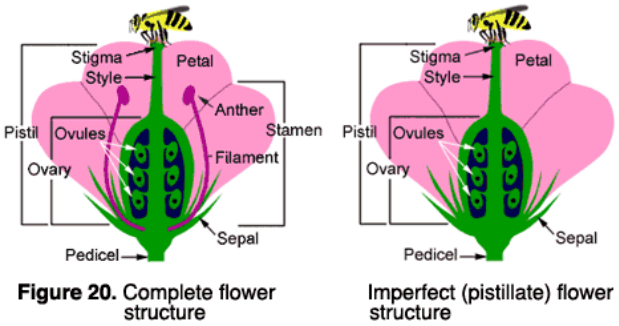


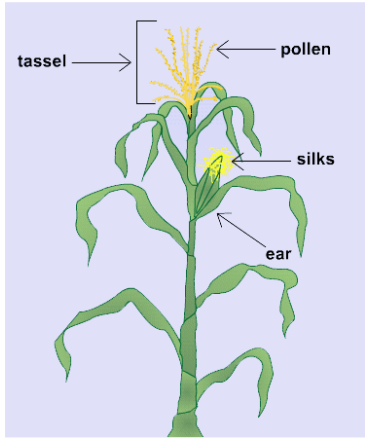
Figure 20. Complete flower structure

Imperfect (pistillate) flower structure

Perfect or **bisexual**
Flowers having both carpels and stamens.

Imperfect or **unisexual**
Flowers lack one of the reproductive organ.

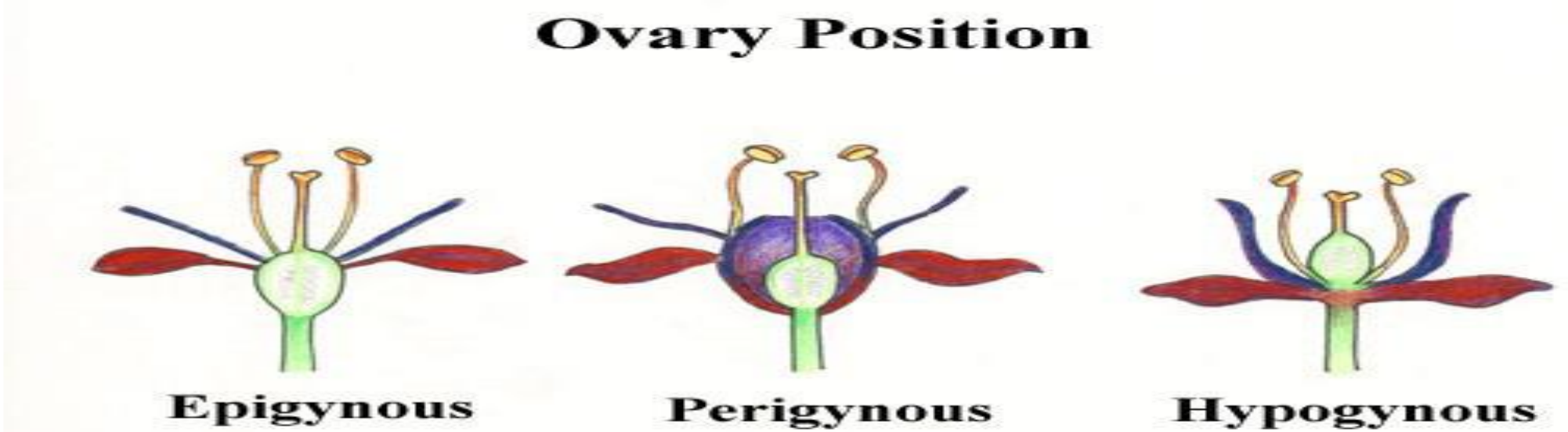
Monoecious
Unisexual flowers are found on the same individual plant but in different locations.



Dioecious
Unisexual flower is found only on separate individuals.

Images taken from internet.

Types of flowers based on placentation in whorls of receptacles



The sepals, petals and stamens are placed above the ovary (inferior ovary)

The sepals, petals, stamens and ovary lie in the same plane.

Sepals, petals and stamens arranged at the base of the ovary in a convex receptacle (superior ovary)

Images taken from internet.

Floral whorls

Calyx

The outermost whorl consisting of units called **sepals**.

Types Based on Fusion

Polysepalous: free sepals or in other words, the sepals are not fused.

Gamosepalous: fused sepals, either wholly or at the base only.

Corolla

The next whorl, composed of units called **petals**, which are colored to attract insects that help the process of pollination.

Types Based on Fusion

Polypetalous: Flowers having free petals.
Gamopetalous: Flowers have fused or united petals.

Images taken from internet.

Aestivation

Valvate: sapals meeting at the edge e.g. *Petunia*

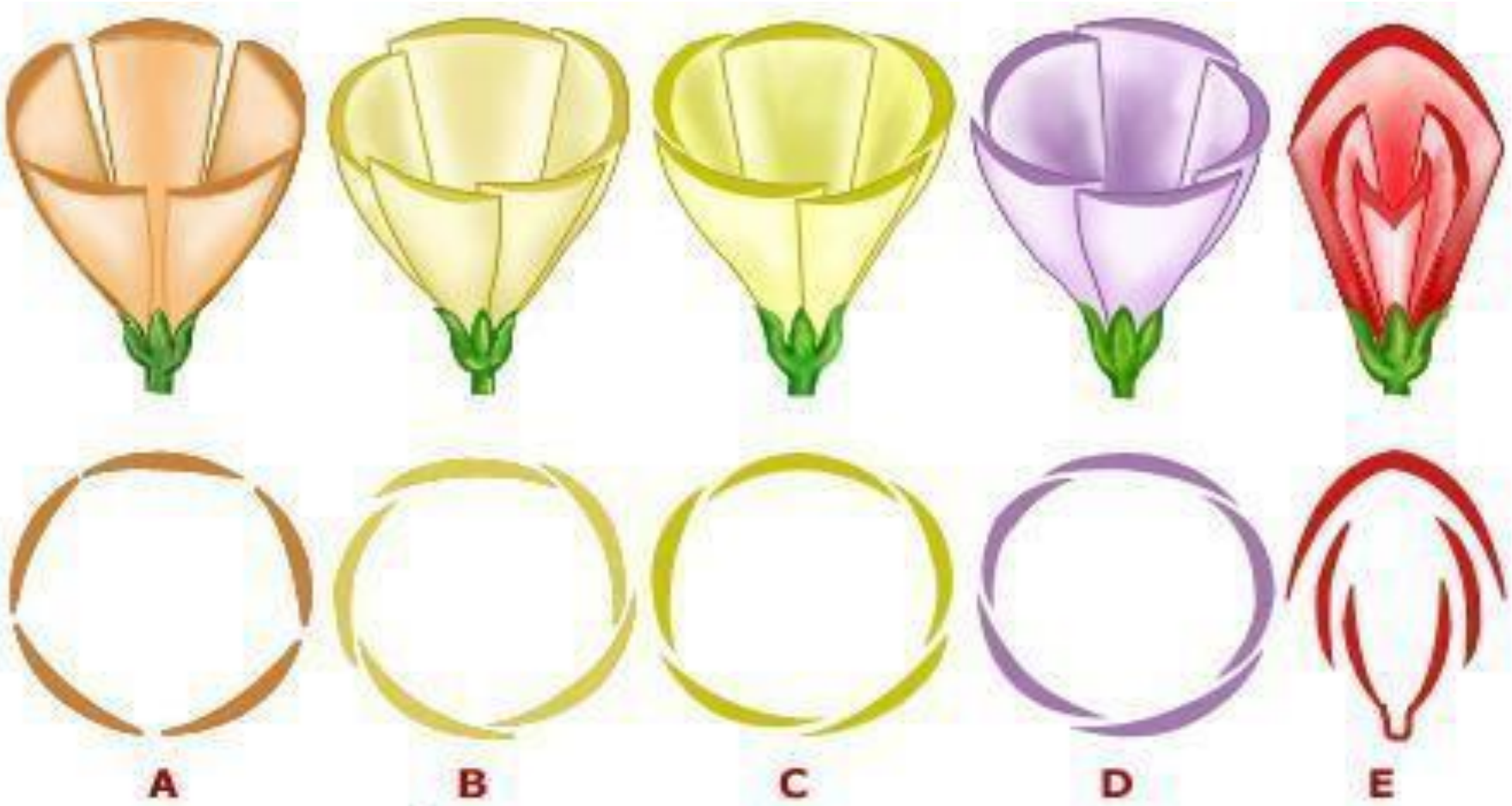
Twisted: one sepal overlaps the margin of next and is overlapped by the previous on the other e.g. *Thevetia*

Imbricate: one sepal is completely internal and remaining three are partly external and partly internal e.g. *Callistemon*

Quincuncial: two sepal completely external and two are completely internal and the fifth is partly internal and external e.g. *Ipomea*

descending imbricate / Vexillary: where posterior petal is largest and the outermost, cover the lateral two petals, the laterals petals cover the two anterior and smallest petals e.g. *Papilionaceae*

Images taken from internet.



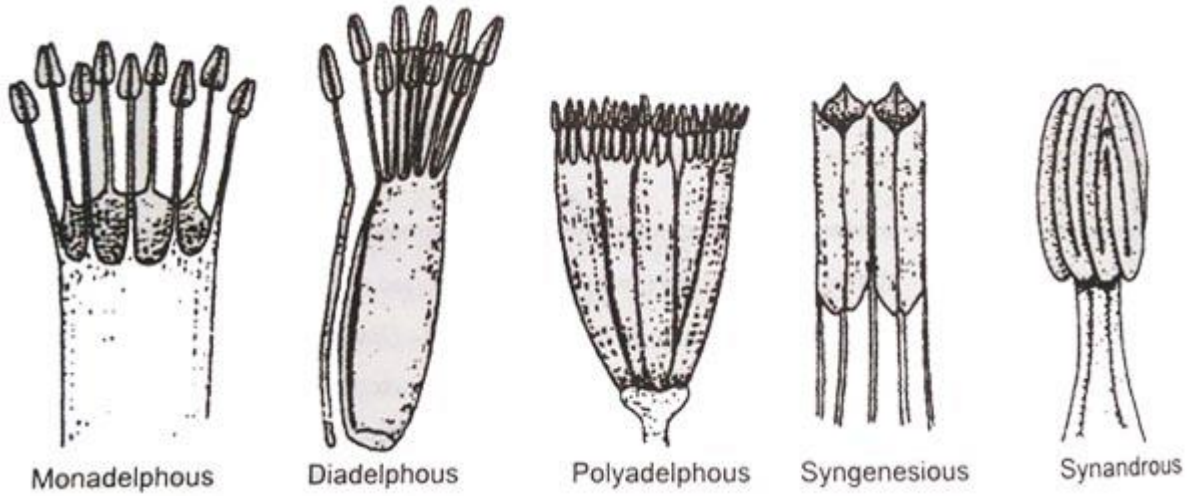
Different types of aestivation of calyx and corolla
A, Valvate, B, Twisted, C. Imbricate, D.Quincuncial, E. Vexillary

Images taken from internet.

Androecium

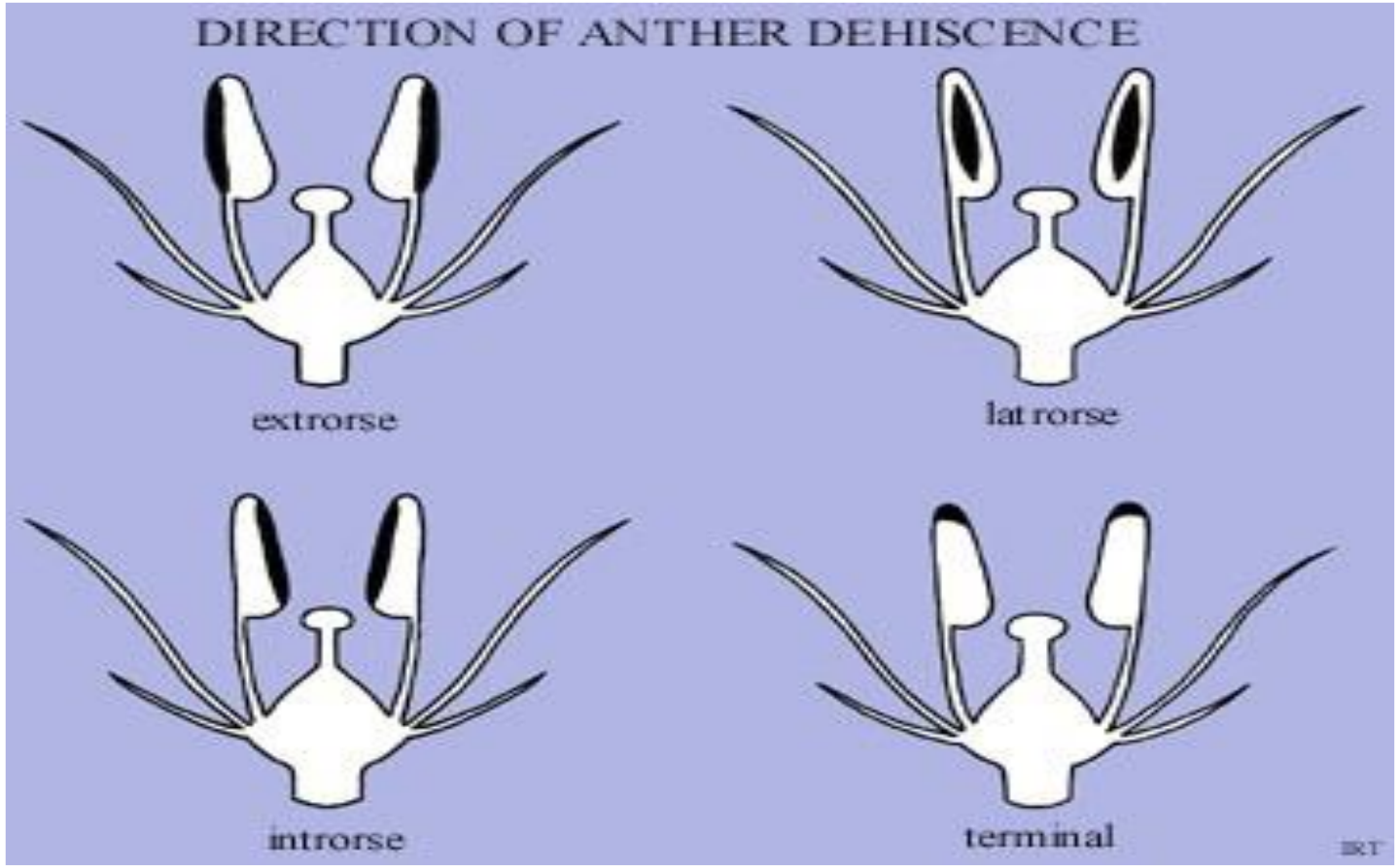
Androecial Types Based on Fusion of Parts

Apostemonous
With separate stamens.
Monadelphous
With one group of stamens connate by filaments.
Diadelphous
With two groups of stamens connate by filaments.
Polydelphous
With several groups of stamens connate by filaments.



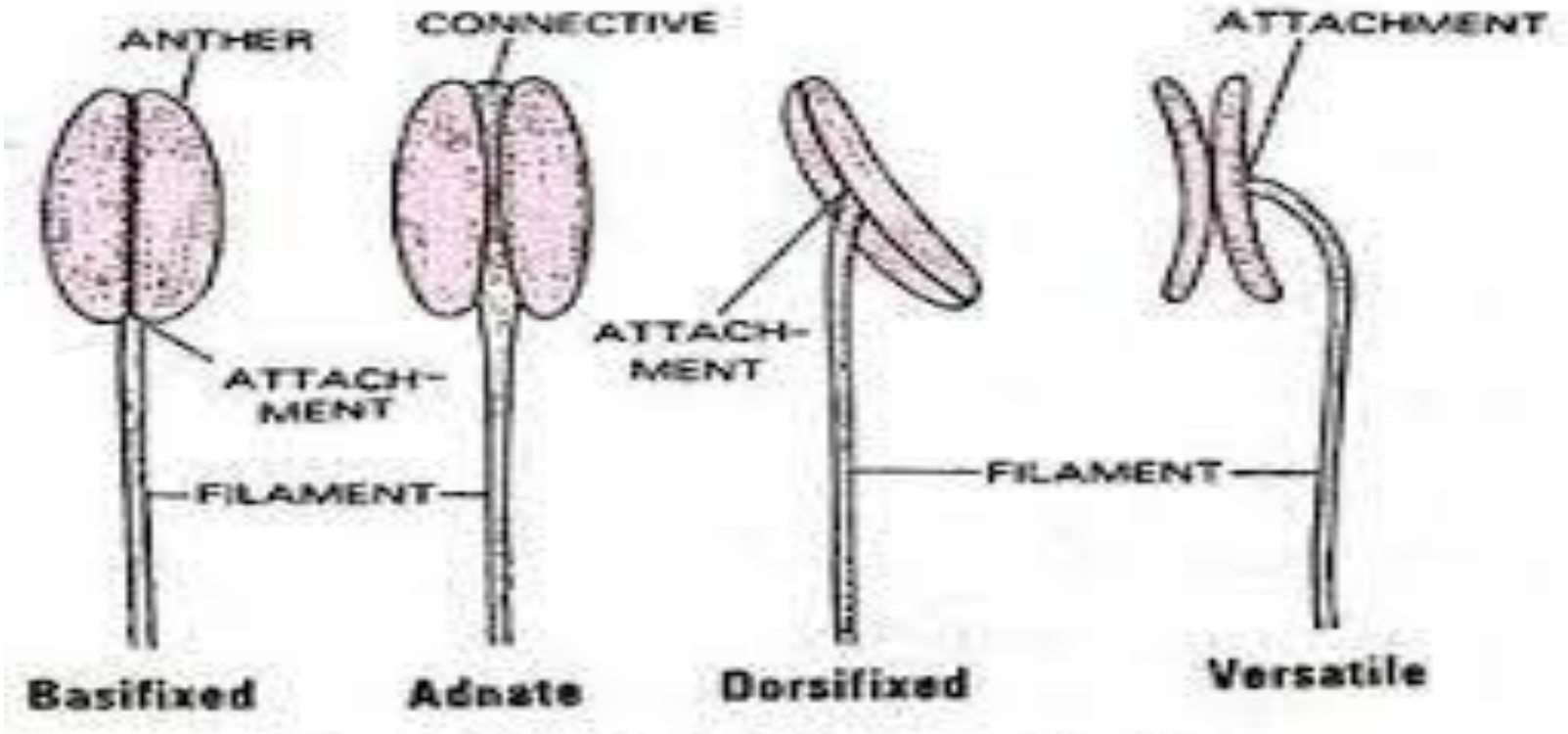
Images taken from internet.

Anther attachment



Images taken from internet.

Anther types based on dehiscence



Images taken from internet.