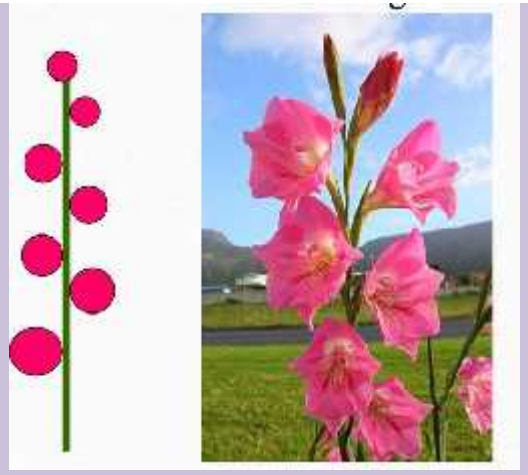
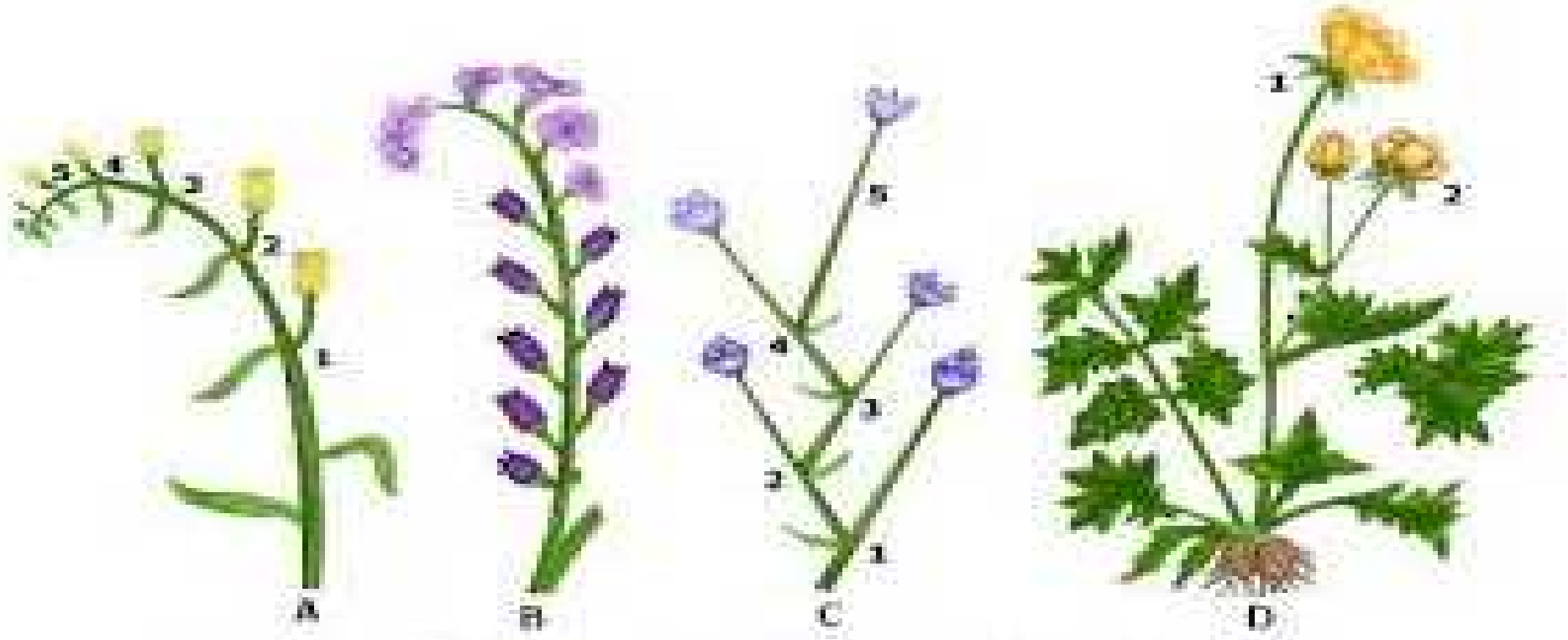
II YEAR BOTANY
PAPER – I
TAXONOMY AND EMBRYOLOGY
OF
ANGIOSPERMS
PRACTICAL

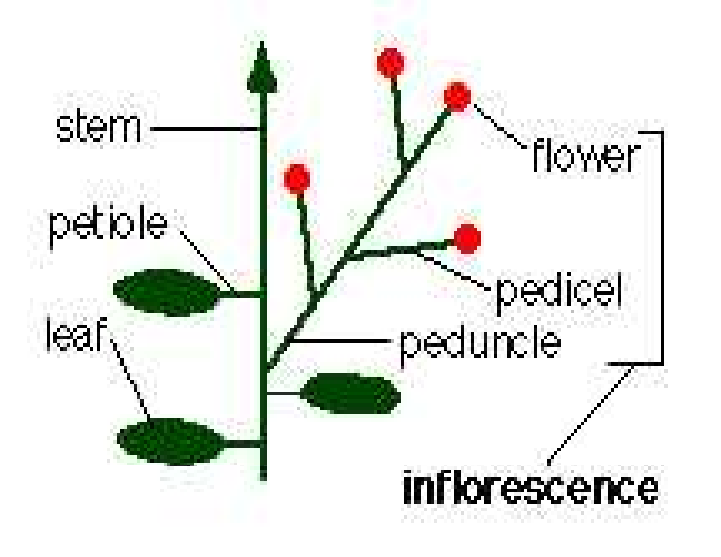


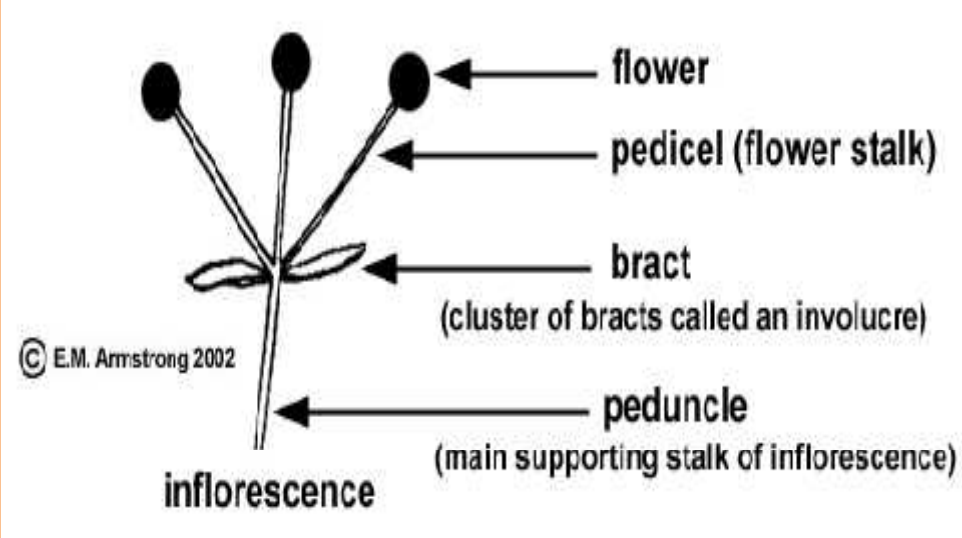
Inflorescence

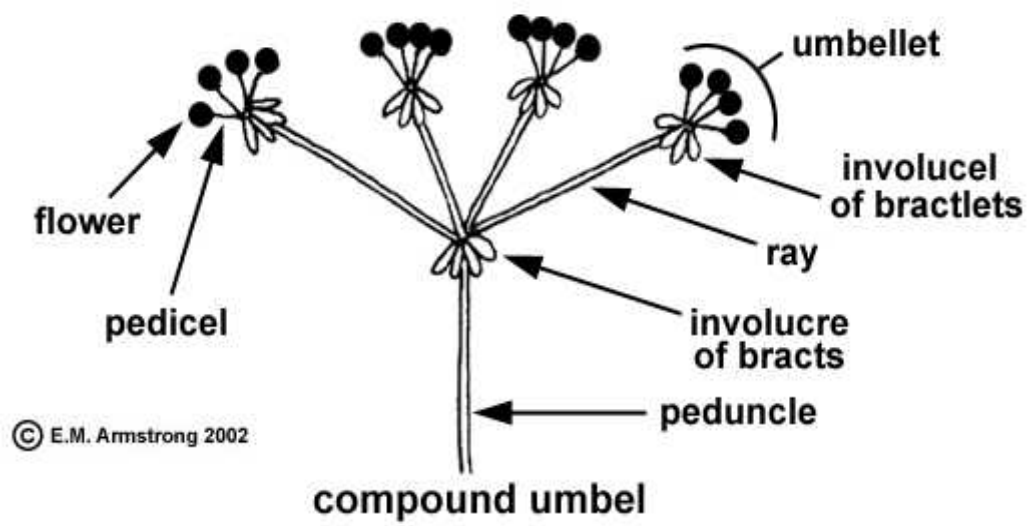


Racemose inflorescence (A), (B) Raceme (C), (D) Corymb

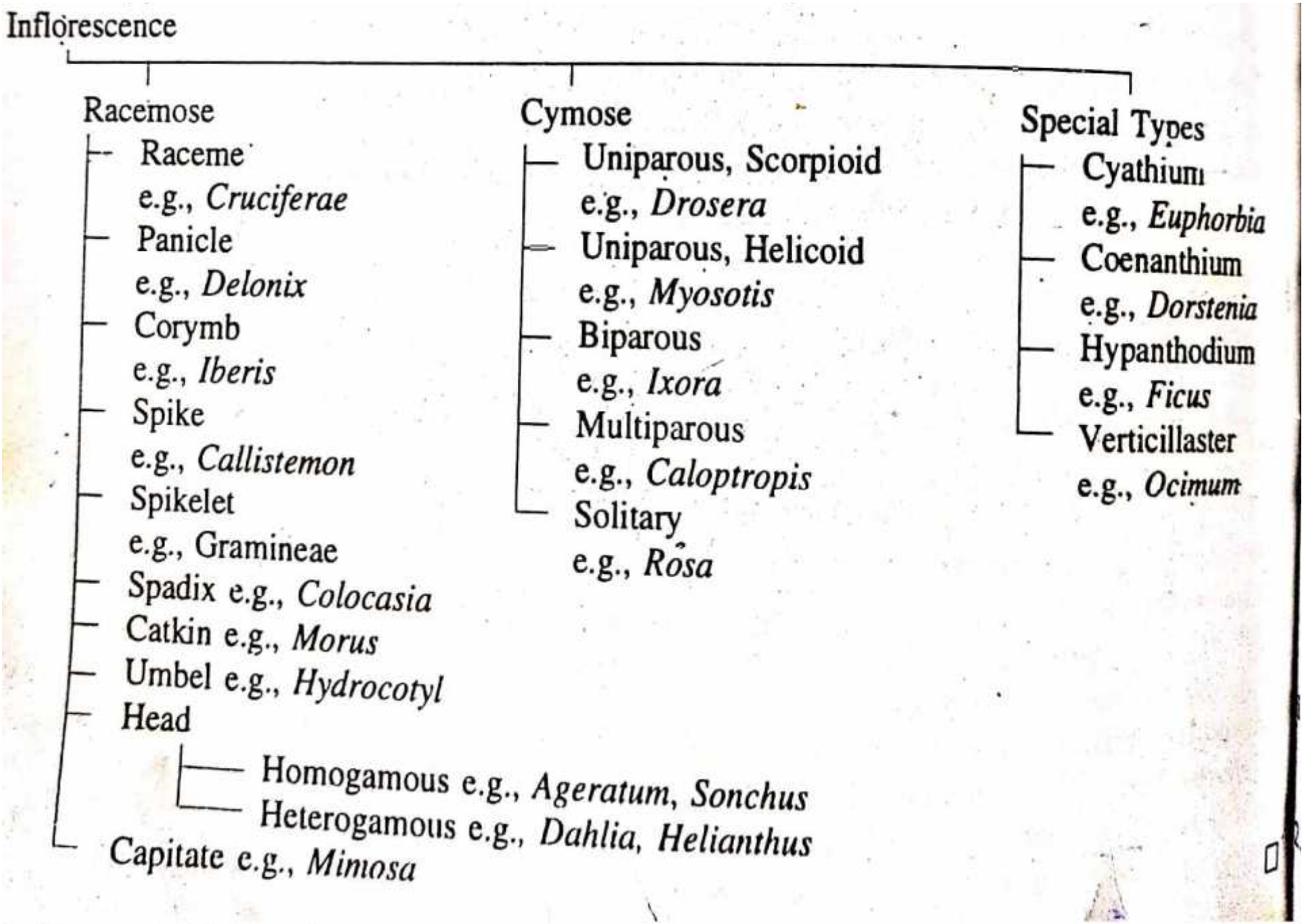
Inflorescence : arrangement of flowers on floral axis.

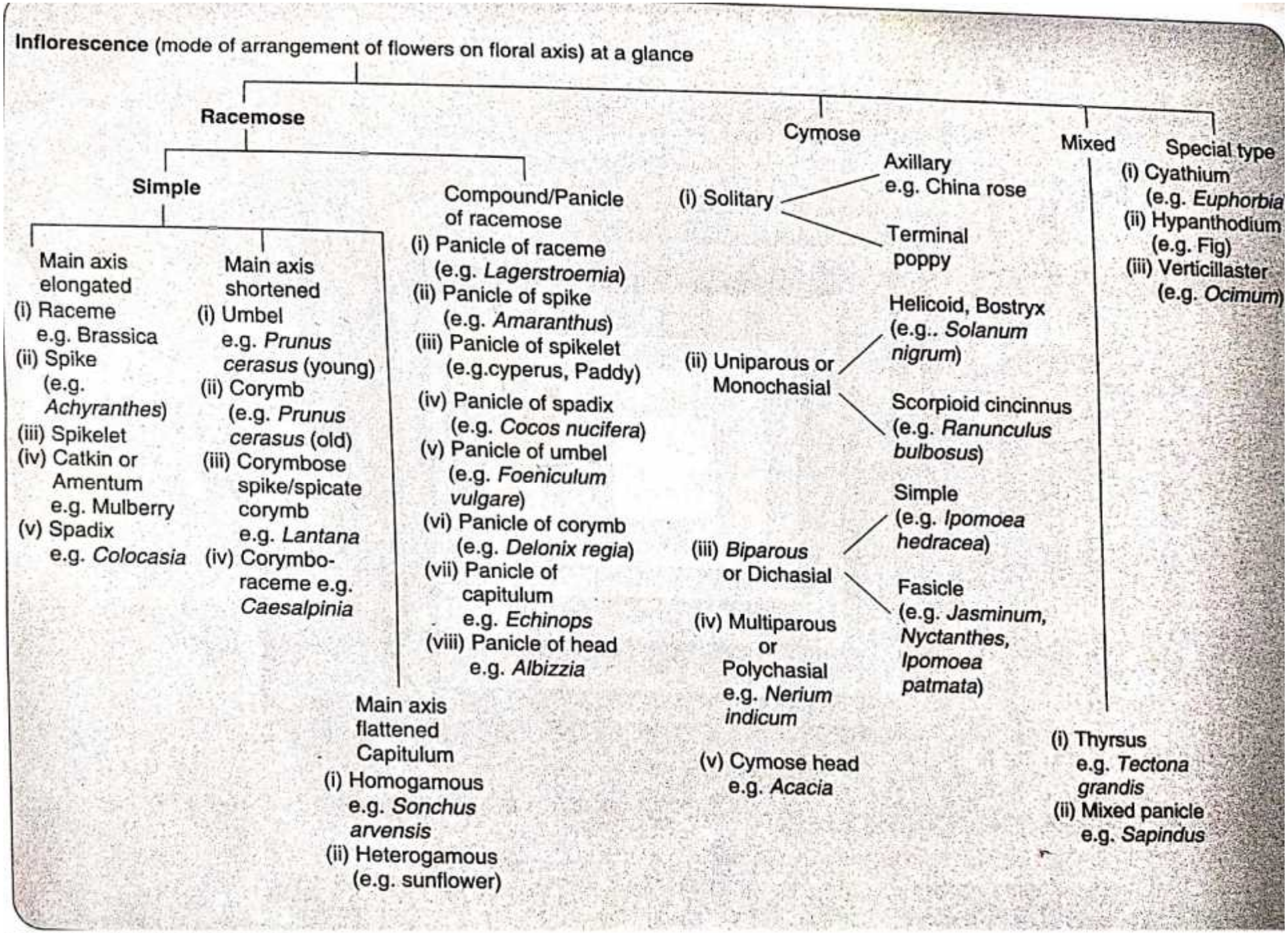






Typical inflorescence of the carrot family (Apiaceae = Umbelliferae)





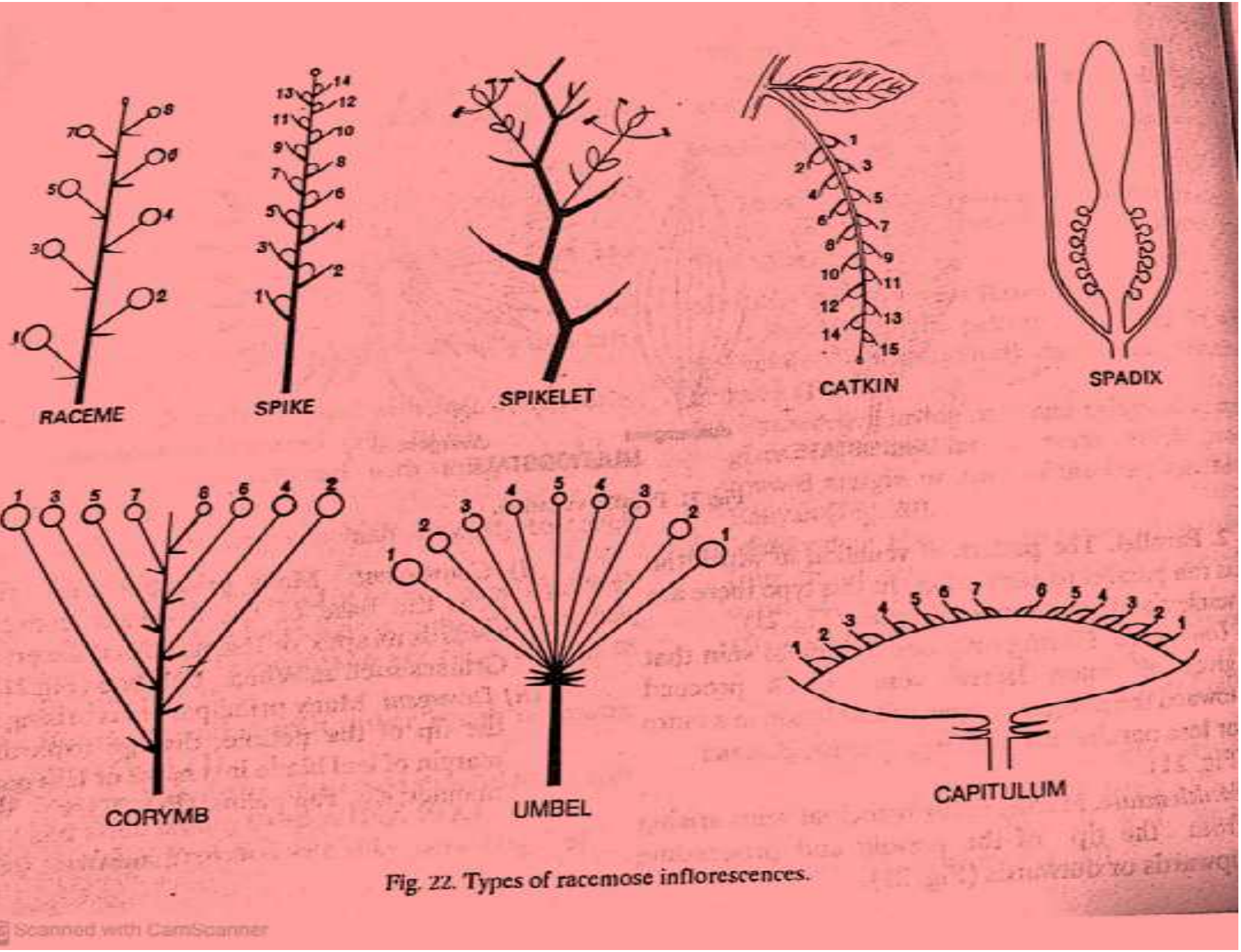


Fig. 22. Types of racemose inflorescences.

(a)		Racemose inflorescence		Cymose inflorescence
	1.	The main axis has indefinite growth because there is no terminal flower.	1.	The growth of the main axis is definite because the growing point of peduncle is used up in the formation of a flower.
	2.	The flowers are borne laterally in acropetal succession, i.e., oldest flowers are borne at the base and younger ones are borne near tip.	2.	The flower are borne in a basipetal succession i.e., the oldest flower is borne at the top and the younger ones are lateral.
	3.	The order of opening of flowers is centripetal	3.	The order of opening of the flowers is basipetal or centrifugal.

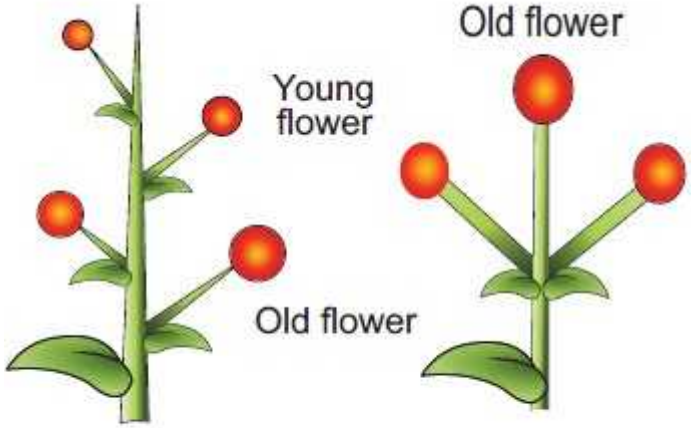
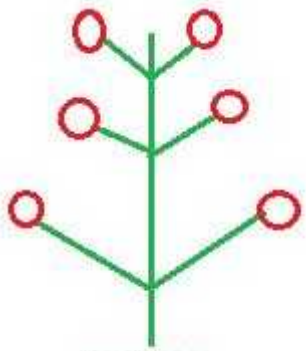


Figure 4.2: (a) Racemose



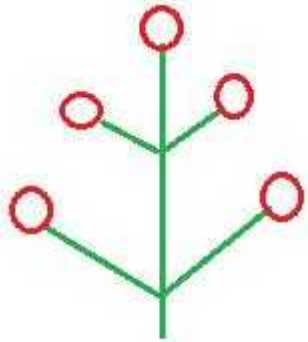


Figure 4.2: (b) Cymose inflorescence

(A) Simple racemose inflorescence:
Inflorescence in which peduncle is unbranched. It is of following type :

1. Raceme : The main axis is elongated & bear stalked flowers arranged in acropetal succetion.
E.g. Mustard.

2.Spike : Peduncle is elongate but the flowers are not stalked.i.e sessile.
e.g. Acyranthes

(3) **Catkin or Ament :** A pendulous or spike like inflorescence consisting of small unisexual flowers e.g. *Salix*, Mulberry.

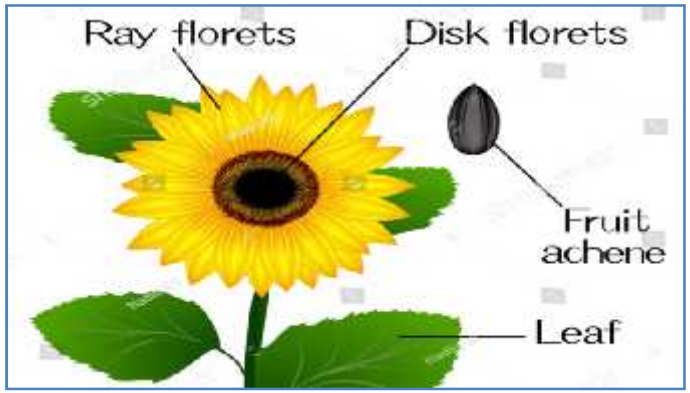
(4) **Spadix :** A spike with thick and fleshy axis covered by one or more large bracts e.g. Maize.

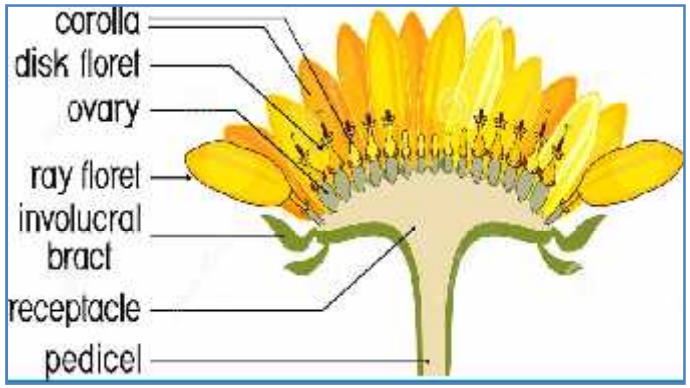
(5) **Corymb :** It is a modified raceme with relatively short peduncle in which lower flowers have much elongated pedicels than the upper ones so that all the flowers come to same level e.g. Candytuft.

(6) **Umbel :** It is a modified raceme in which flowers have stalks (pedicels) of nearly equal length and they seem to arise from the same point of axis of a short peduncle forming an open umbrella e.g. *Coriandrum.* onion

(7) Capitulum : It is modified raceme in which the main axis is flattened called receptacle . It may be concave , convex ,flat or spherical & bears sessile flowers called florets . Florets are arranged in centripetal order . There is whorl of bract i.e. Involucre.

Sunflower





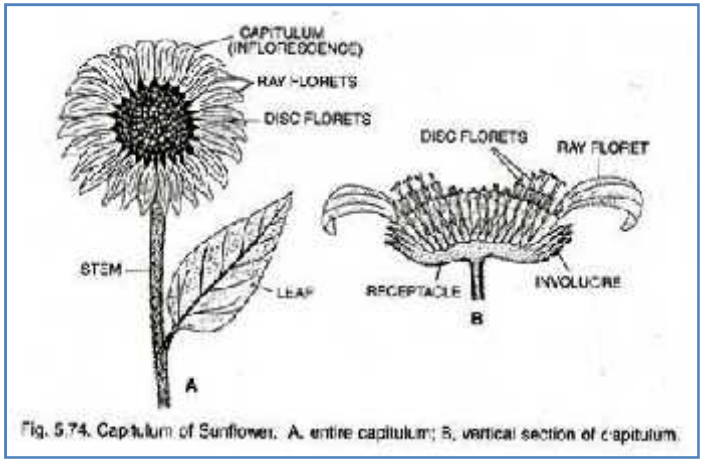


Fig. 5.74. Capitulum of Sunflower. A, entire capitulum; B, vertical section of capitulum.

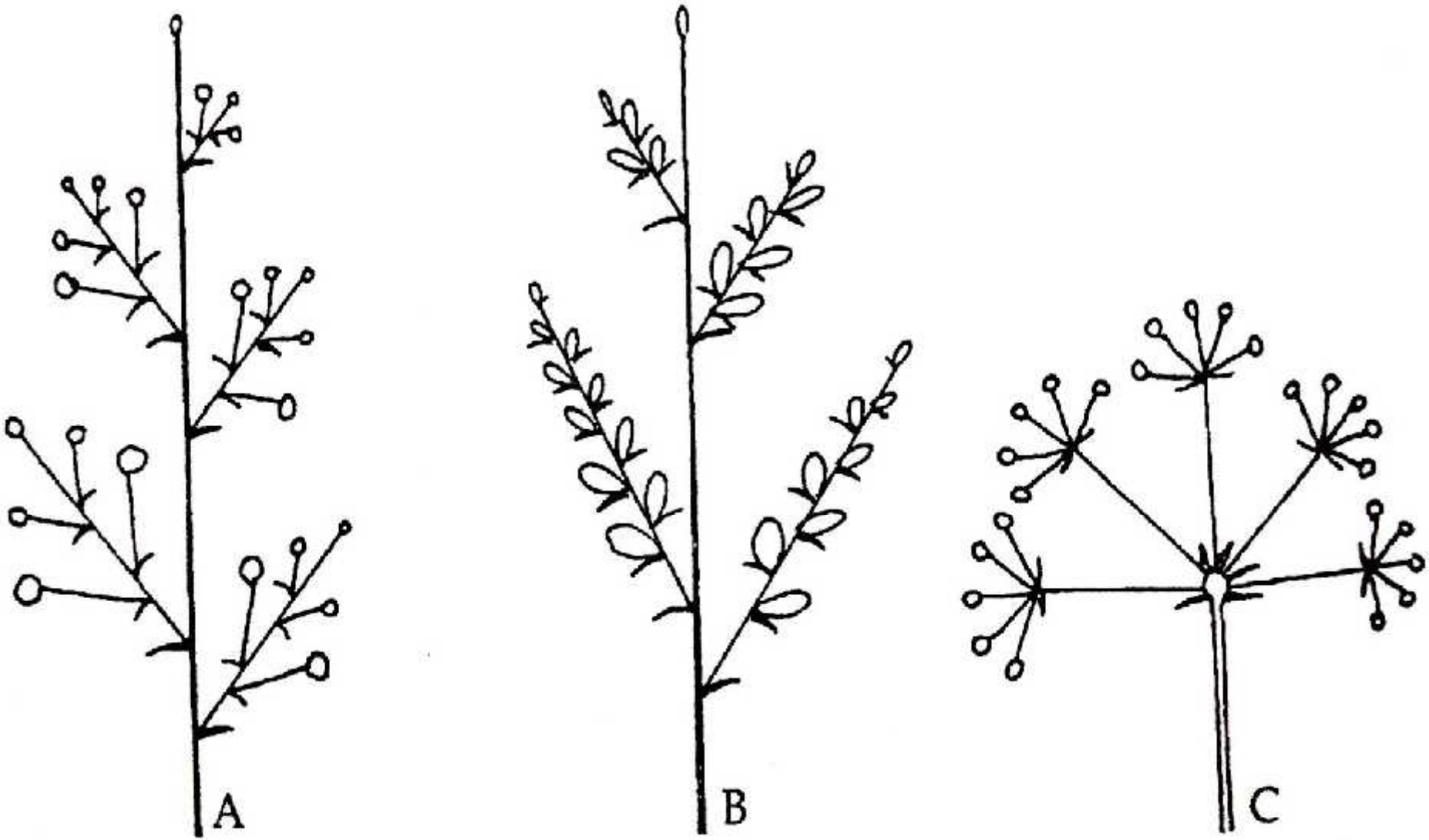


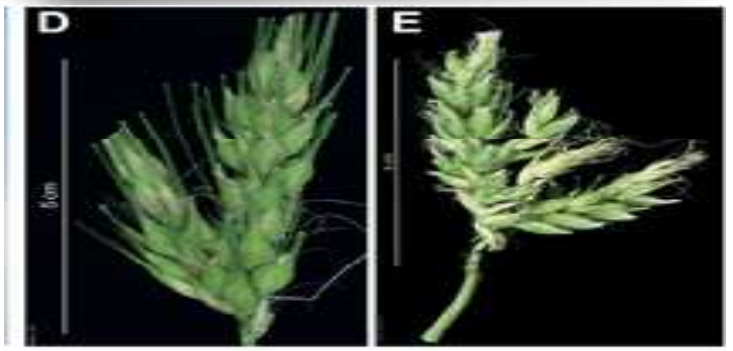
Fig: Compound racemose inflorescences. A. Compound raceme or Panicle. B. Compound Spike & C. Compound Umbel

(B) Compound racemose inflorescence: It is a kind of racemose inflorescence in which the peduncle is branched.

(1) **Panicle :** It is typical racemose inflorescence in which the axis is branched and flowers are borne in acropetal succession on lateral branches e.g. *Cassia fistula.*

(2) **Compound spike :** It is a typical spike inflorescence in which the axis is branched and sessile flowers are borne in acropetal succession on lateral branches. The spikelet is a very small spike of a compound spike forming a unit e.g. Grasses. Wheat

(3) **Compound spadix :** It is a kind of spadix in which the axis is branched. Usually the whole inflorescence is covered by a stiff boat shaped spathe e.g. Coconut.



(4) **Compound corymb :** It is a typical corymb in which the axis is branched and each branch bears a corymb like inflorescence e.g. *Brassica oleracea* (Cauliflower).

(5) **Compound umbel :** It is typical umbel in which the axis is branched and the branches appear to arise from one point. Each branch bears an umbel called umbellule. An involucre of bracts is present at the base of branches and the flowers of umbellule e.g. *Coriandrum sativum.*

(6) **Compound capitulum :** The main axis of capitulum inflorescence is branched and several capitula are included within the same involucre of bracts e.g. *Echinops.*

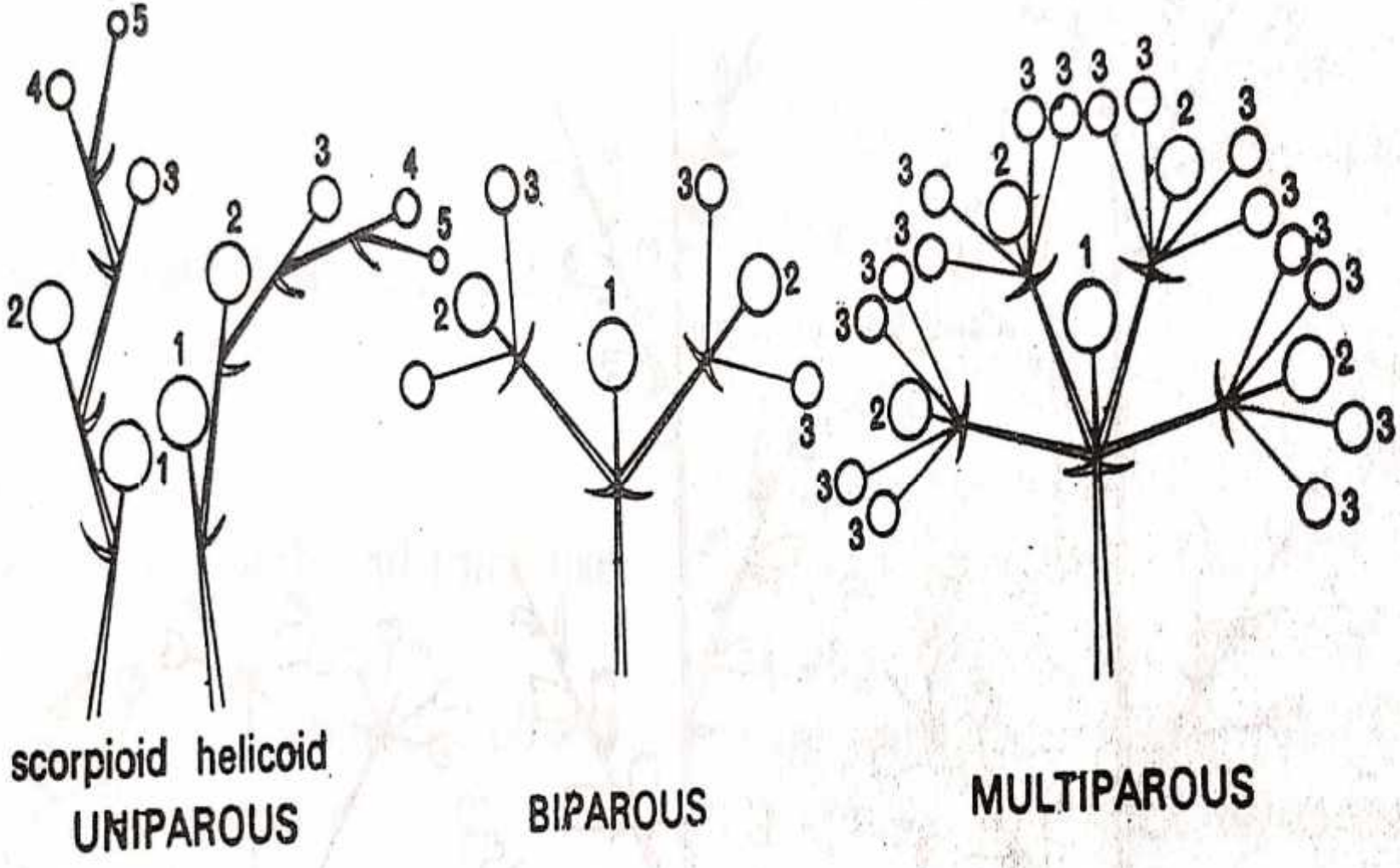


Fig. 24. Types of cymose inflorescences.

2. Cymose. An inflorescence where the growth of the main axis is soon checked by the development of a flower its apex, and the lateral axix which develops below the terminal flower also ends in a flower, thus its growth is also checked (Fig. 24).

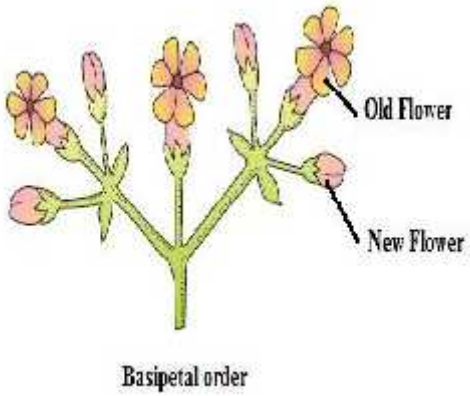
(a) Uniparous. (Monochasial). The main axis ending in a flower producing only one lateral branch at a time ending in a flower (Fig. 24).

(i) Scorpioid. Uniparous cyme in which the lateral branches develop on alternate sides evidently forming a zigzag; *e.g., Ranunculus bulbosus* (Fig. 24).

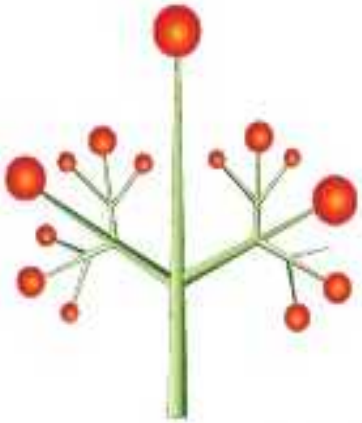
(ii) Helicoid. Uniparous cyme in which the lateral branches develop successively on the same side, evidently forming a sort of helix; *e.g., Juncus, Begonia, Heliotropium* (Fig. 24).

scorpioid cyme

helicoid cyme



Basipetal order



(b) ***Biparous (Dichasial).*** A determinate inflorescence in which the main axis ends in a flower after producing two daughter axes of flowers; *e.g., Ixora, Saponaria, Mussaenda,* etc. (Fig. 24).

(c) ***Multiparous (Polychasial).*** A determinate inflorescence in which the main axis ends in a flower after producing a number of daughter axes or flowers around. This inflorescence looks like an umbel but can be distinguished from umbel by the opening of the middle flower first; *e.g., Calotropis.*

Solitary : when the apical bud or axillary bud forms a single flower.It includes in cyme because the growth of axis is checked.

Solitary axillary flower : China rose

Solitary terminal flower : Poppy.

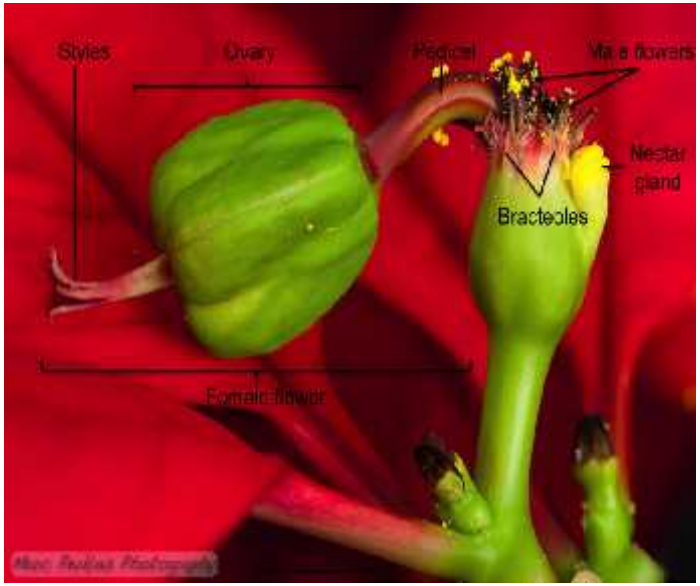
Poppy

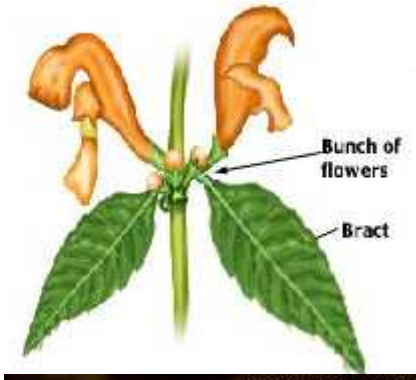
3. Special types

(a) *Cyathium.* A type of inflorescence characteristic of *Euphorbia,* in which a cup-shaped involucre, often provided with nectary, encloses a single female flower (reduced to pistil) in the centre and a number of male flowers (each reduced to a solitary stamen) around it (Fig. 25).

Figure 4.9: (a) diagrammatic, (b) Cyathium

Poinsettia





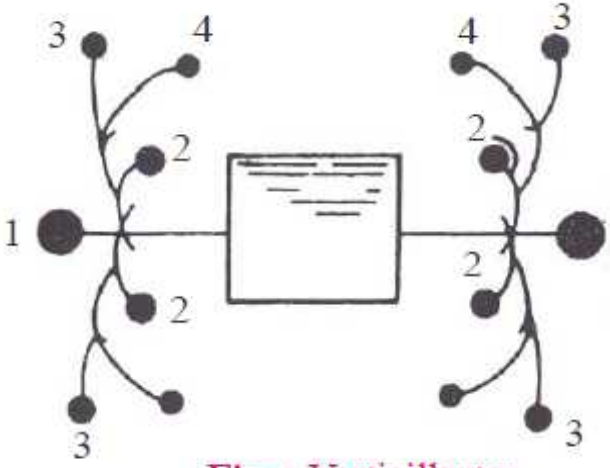
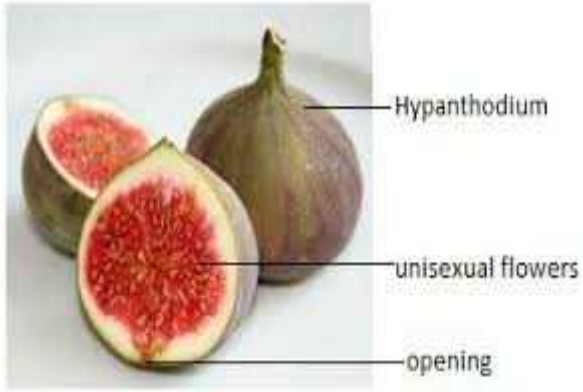
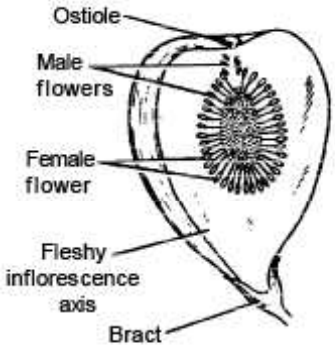


Fig. : Verticillaster

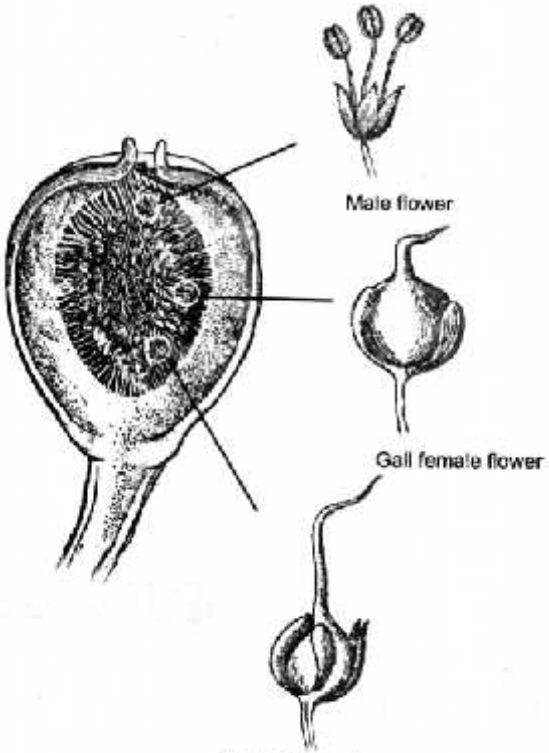
(c) ***Verticillaster.*** It consists of a series of nodes. At each node there is a condensed dichasial cyme with a cluster of almost sessile flowers arranged opposite one another in the axils of opposite bracts or leaves; *e.g.*, *Ocimum* (Fig. 25).



Ficus



Hypanthodium



Hypanthodium inflorescence of Ficus sp.

(d) Hypanthodium. **The fleshy receptacle forms a cup like cavity with an apical opening (ostiole) guarded by scales and bearing flowers on the inner wall of the cavity; *e.g.*, Fig, Peepul, (Fig. 25).**

THANKS