

M.Sc. Botany (Semester II)
Course Title : Systematics and Evolution

Unit II: Rosaceae (Rose family)

Dr. Ram Prasad

Department of Botany

Mahatma Gandhi Central University

Motihar, Bihar

A Rose is a Rose: the family Rosaceae



Roses have always been a source of inspiration

Scientific classification:

- Kingdom : Plantae
- Phylum : Angiosperms
- Class : Magnoliopsida (Dicotyledonae)
- Order : Rosales
- Family : Rosaceae (Rose Family)

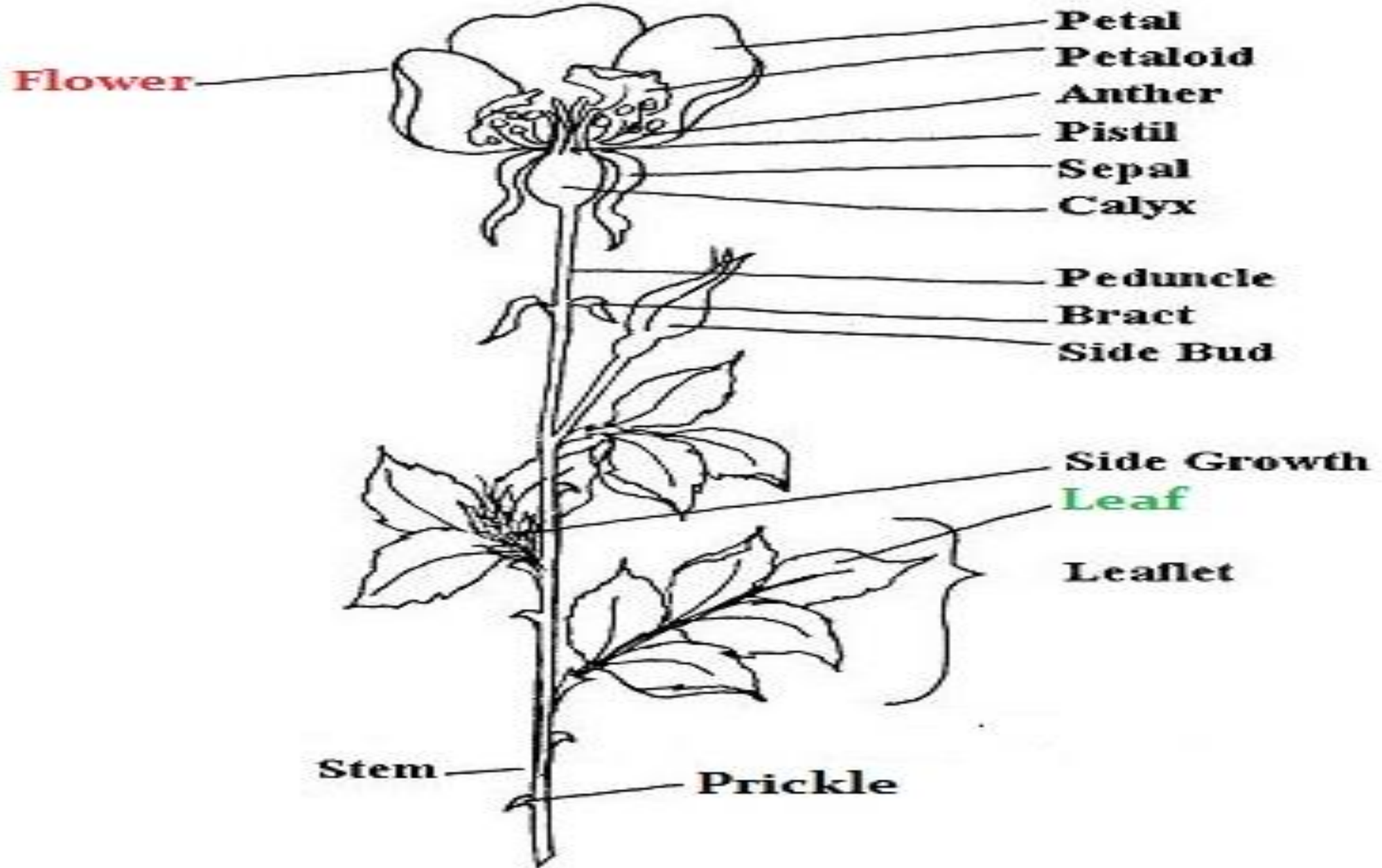
6- subfamilies

- Genera : 115
- Species : 3,200 (257 species in India)

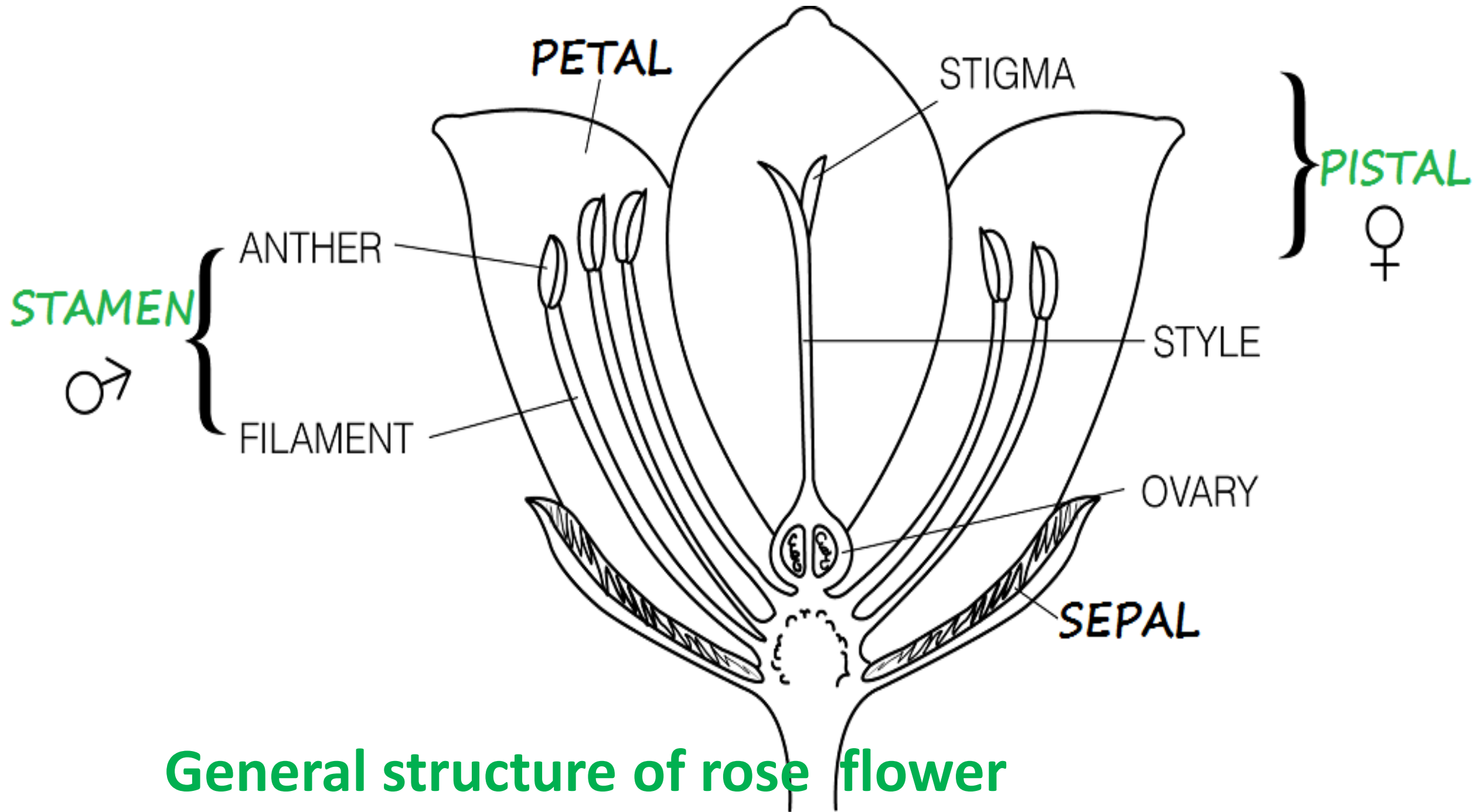
Morphological characters

- **Habit:** Perennial (seasonal) herbs, shrubs (bushes) and trees (woody plants)
- **Roots:** Tap, branches adventitious arise from stem (produced by cutting)
- **Stem:** Erect, prostrate or climber, branched, hard and woody. Sometimes, vegetative propagation by runner or sucker or cuttings, in some prickles are present (*Rosa* spp.).

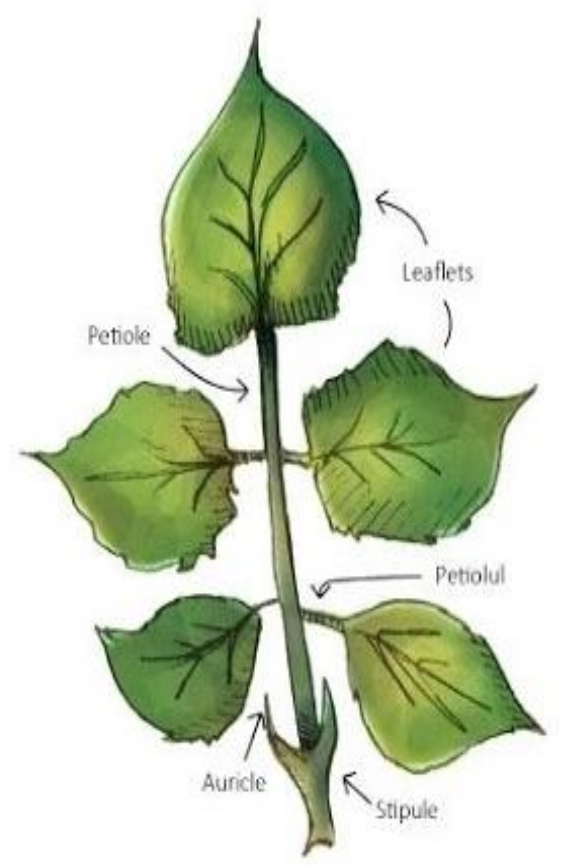
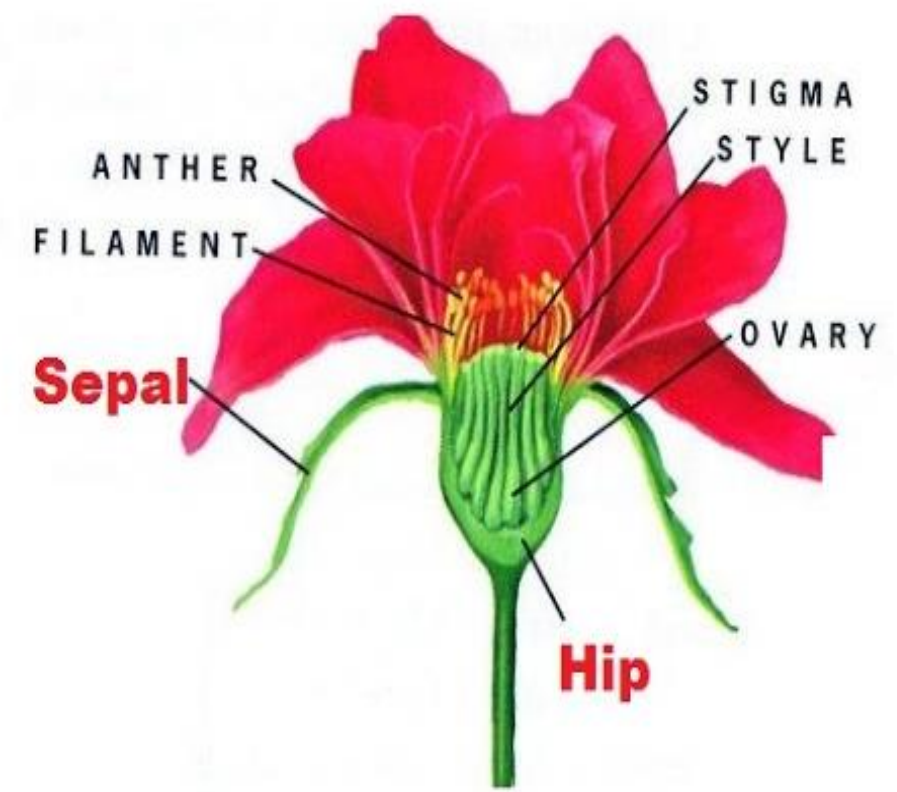
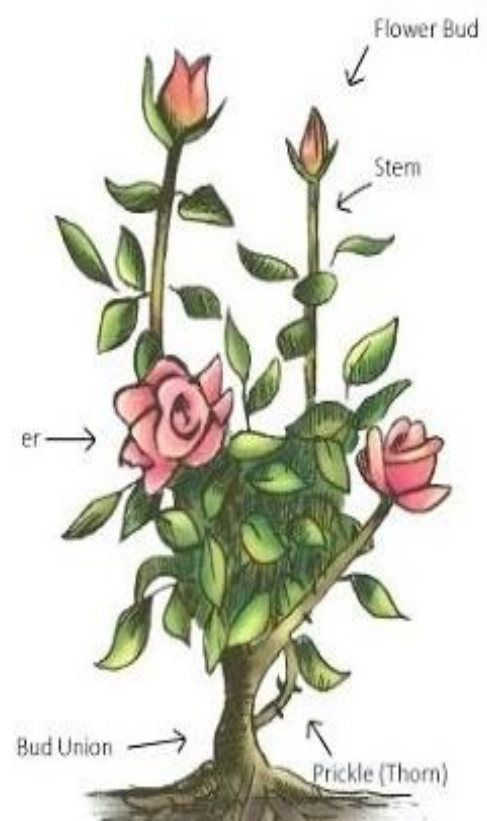
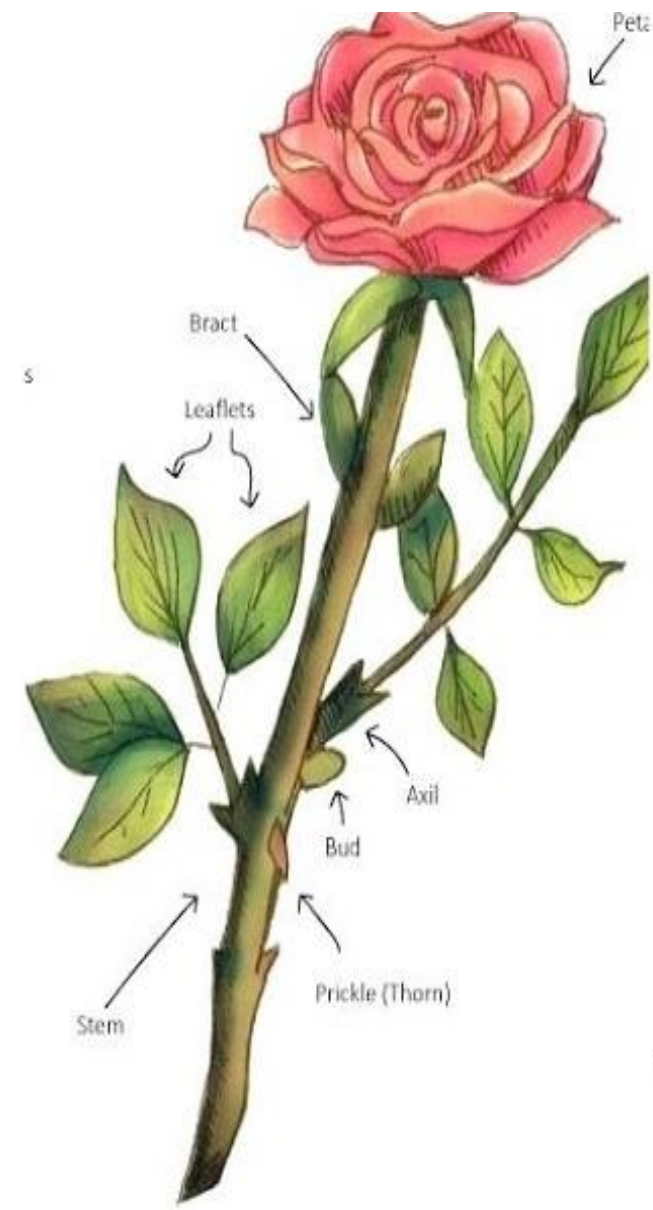
- **Leaves:** Alternate, simple or compound sometimes pinnately compound, stipulate, adnate and persistent (*Rose, Rubus*)
- **Inflorescence:** Solitary (*Potentilla, Rosa sericea*) or grouped in racemose (*Agrimonia*). terminal corymbose (*Rosa moschata*), terminal cyme (*Geum*) or corymbose cyme (*Potentilla sibbaldi*).



General structure of rose plant



General structure of rose flower



Reproductive characters

- **Flower:** Actinomorphic, bisexual, pentamerous or tetramerous, hypogynous or epigynous (*Pyrus*) or perigynous (*Rosa*); stipules may be represented by epicalyx (*Fragaria*, *Potentilla*)
- **Calyx:** 5 sepals; gamosepalous, sometimes epicalyx present; calyx tube remains free or adnate to the ovary,
- **Corolla:** Petals 5, or multiples of 5, polypetalous, petals unlimited (*Rosa* spp.)

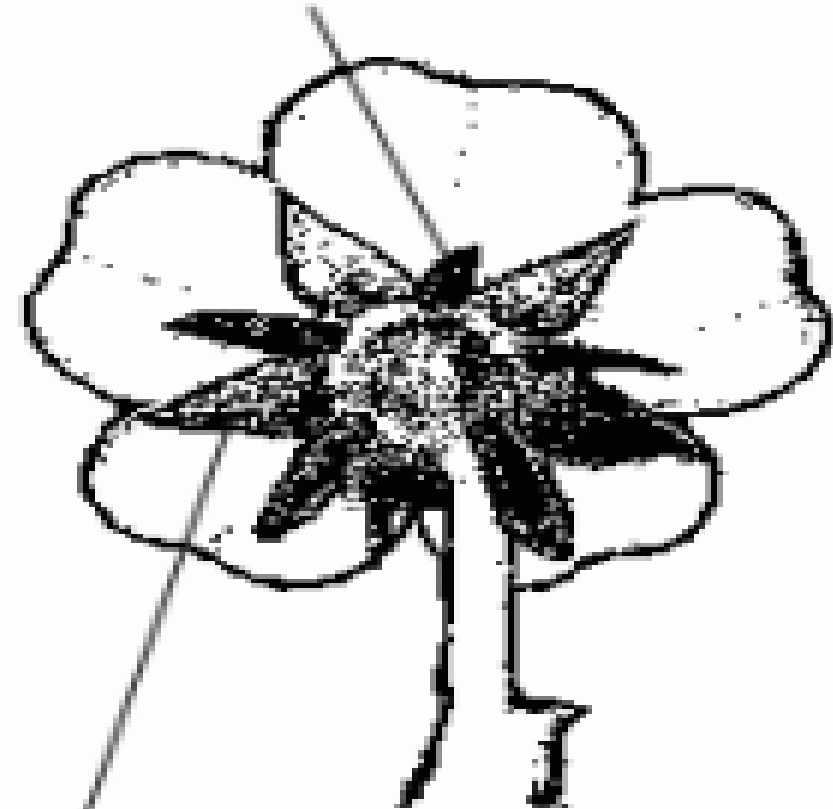
5 separate petals



numerous styles

numerous stamens

**5 bracteoles
opposite petals**



**5 sepals or lobes of the calyx
alternate with petals**

Typical Rose Flower

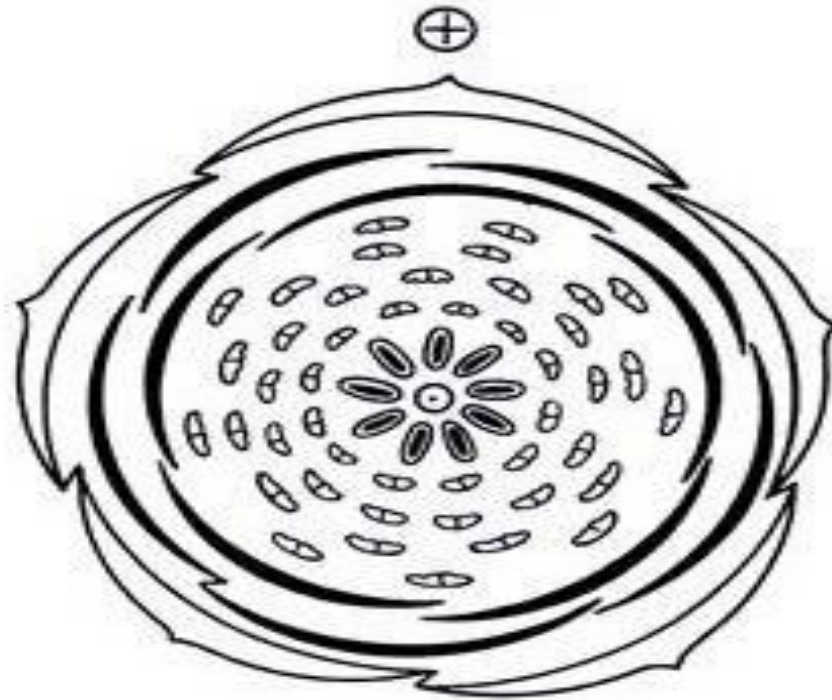
- **Androecium (Stamen):** Stamens 2, 3 or 4 times the number of petals, may be indefinite, free
- **Gynoecium (Pistil) (carpel):** 1 (*Prunus*) to several (*Fragaria* and *Rosa*), ovary superior occasionally inferior (*Pyrus*), nectar secreting disc present between stamens and carpels; Placentation: axile during Syncarpous, and basal during apocarpous

- **Fruits:** Pome (*Pyrus*), drupe (*Prunus*), or an etaerio of drupes or achenes follicles
- **Seed:** Non-Endospermic
- **Pollination:** By insects are attracted by nectar, color, aroma



- **Floral Formula**

\oplus rarely o_p δ $K (5)$ C_5 or α $A \alpha$ $G_{\underline{1 - \alpha}}$ or $(\underline{2 - 5})$



Floral diagram of rose plant

Economic Importance

- The angiospermic rosaceae family has a great economic significance for humanity
- Third ranked of the flowering families for commercial importance in the temperate region (Cold) except Antarctica

Commercial and Medicinal importance:

- Rose petals are used for making Gulkand
- Rose flower are used for extraction of rose oil and used in perfumes for scented purposes
- Ark-Gulab (curing eye disease) isolated from rose petals after distillation with water
- Fruits of *Prunus domestica* are used in leucorrhoea and irregular menstruation

- **Fruit:**
- Several species of eatable fruits are:

- *Pyrus malus*: Apple
- *Prunus dulcis*: Almond
- *Prunus persica*: Peach
- *Prunus armeniaca*: Apricot
- *Fragaria ananassa*: Strawberry



▪ ***Wood***

- The branches of *Cydonia indica* are used as walking sticks
- The wood of *Cydonia indica*, and *Crataegus oxyacantha* is used in making tool handles
- The wood of *Pyrus pastia* is used for making tobacco pipes

Ornamentals plants



Mountain avens
(*Dryas octopetala*)



Rosa spp.



Goats beard
(*Aruncus dioicus*)

Acknowledgements

- Pandey BP (2010) A Textbook of Botany: Angiosperms. S. Chand & Co. Ltd. (ISBN: 9788121904049, 9788121904049)
- Stussy TF (1990) Plant taxonomy. Columbia University Press, USA
- Sharma OP (1993) Plant Taxonomy. Tata McGraw-Hill Education
- <https://en.wikipedia.org/wiki/rosaceae>
- <https://www.syedgilanis.com/2019/01/rosaceae.html>
- I apologize to all authors whose findings could not be substantiated or cited in our presentation due to reasons of

Thank you for your attention

