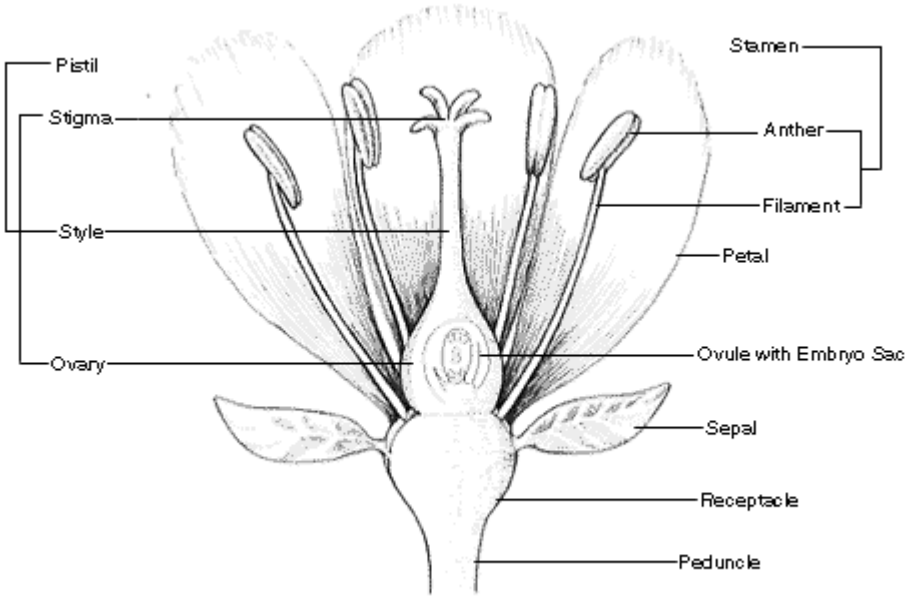
NEET BIOLOGY

ANATOMY OF A FLOWER

NCERT Concepts • Diagrams • NEET MCQs • Revision Mind Map

Mature Flower — Major Parts



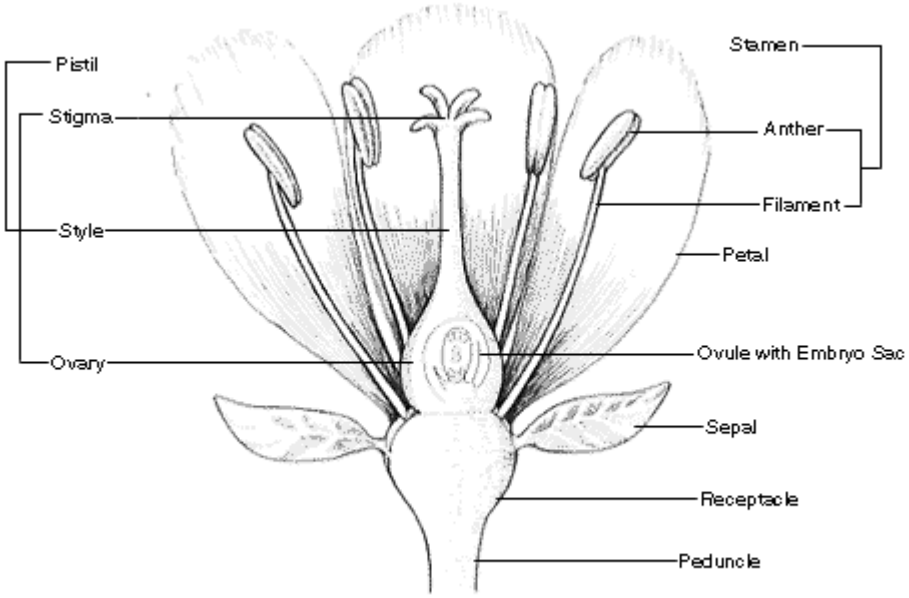
Biology Study & Teaching Sample

A focused sample chapter designed to demonstrate clear concepts, accurate diagrams and exam-oriented question practice.

1. Anatomy of a Flower — The Big Picture

A typical flower is a modified reproductive shoot. Its parts are arranged in concentric whorls on the receptacle. The four commonly recognised floral whorls are **calyx, corolla, androecium and gynoecium**.

Mature Flower — Major Parts



High-yield point: Calyx and corolla are generally accessory whorls, while androecium and gynoecium are the essential reproductive whorls.

2. Floral Whorls

Whorl	Individual units	Type	Major role
Calyx	Sepals	Accessory	Protects the flower in bud stage
Corolla	Petals	Accessory	Often attracts pollinators
Androecium	Stamens	Essential	Male reproductive whorl; pollen-bearing
Gynoecium	Carpels / pistils	Essential	Female reproductive whorl; contains ovules

3. Androecium — Male Reproductive Whorl

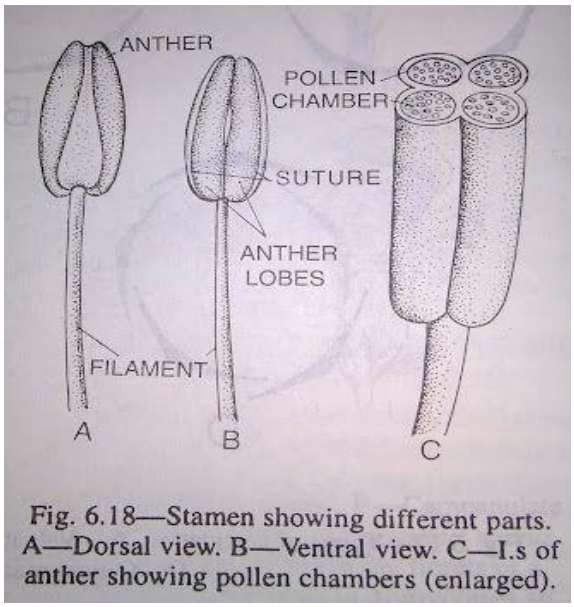


Fig. 6.18—Stamen showing different parts. A—Dorsal view. B—Ventral view. C—I.s of anther showing pollen chambers (enlarged).

Androecium is the collection of stamens. A typical stamen has two parts: anther and filament.

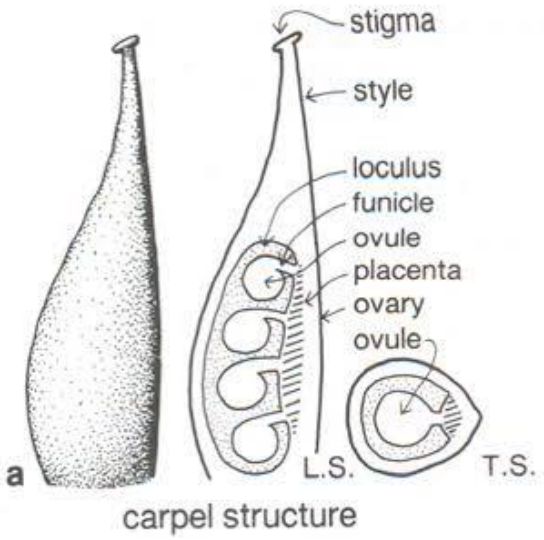
Anther: Usually bilobed and dithecous. Each lobe commonly has two thecae. The thecae contain pollen sacs (microsporangia), where pollen grains develop.

Filament: The stalk that supports the anther and helps position it for pollen release.

NEET trap: If the question says “pollen sacs”, “microsporangia” o anther, not filament.

4. Gynoecium — Female Reproductive Whorl

Gynoecium is the female reproductive whorl and may consist of one or more carpels. A typical carpel has stigma, style and ovary.



carpel structure

Identify these structures

1. Stigma
   pollen-receptive surface
2. Style
   connects stigma and ovary
3. Ovary
   contains ovules
4. Ovule
   develops into seed
5. Anther
   contains pollen sacs
6. Filament
   supports anther

Stigma: receives pollen. Style: connects stigma to ovary. Ovary: basal swollen region that contains ovules.

5. Ovary, Ovules and the Seed–Fruit Connection

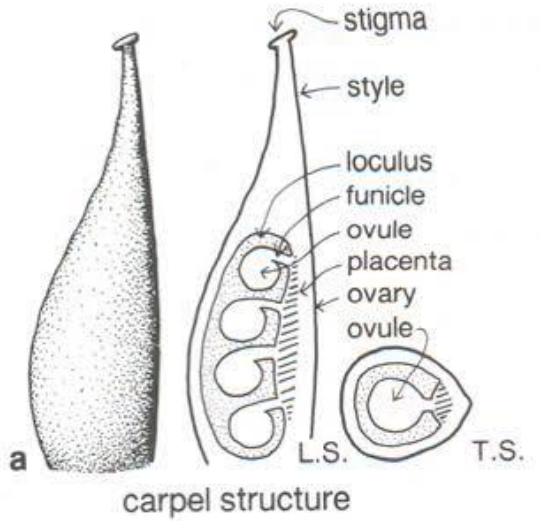
The ovary contains one or more ovules. In angiosperms, the ovules are enclosed within the ovary. This relationship is frequently tested through diagrams and statement-based questions.

After fertilisation:

Structure before fertilisation	Develops into
Ovule	Seed
Ovary	Fruit
Zygote	Embryo

Important: Pollination is the transfer of pollen grains from the anther to the stigma. Fertilisation is a later event involving fusion of gametes. Do not use these terms interchangeably.

6. Diagram-Based Revision



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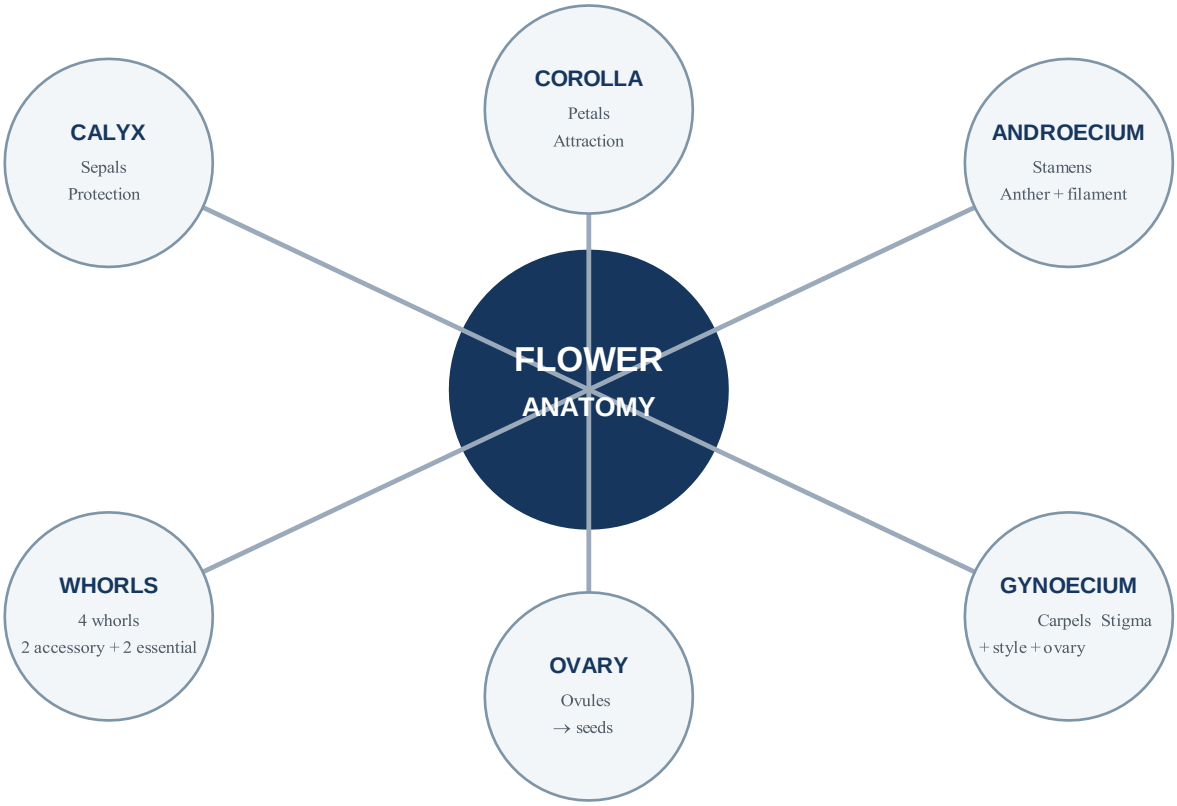
7. One-Page NEET Revision Mind Map



Rapid recall: Calyx Corolla Androecium Gynoecium | Stamen = anther + filament | Carpel = stigma + style + ovary | Ovary contains ovules | Ovule seed | Ovary fruit

8. NCERT / NEET High-Yield Points

1. Four floral whorls are calyx, corolla, androecium and gynoecium.

2. Androecium and gynoecium are the essential reproductive whorls.

3. A stamen consists of anther and filament.

4. Anther contains pollen sacs (microsporangia).

5. A carpel has stigma, style and ovary.

6. Stigma is the receptive surface for pollen.

7. Ovules occur inside the ovary in angiosperms.

8. After fertilisation, ovule becomes seed and ovary becomes fruit.

9. Pollination and fertilisation are distinct processes.

10. Diagram questions often test structure–function matching.

9. NEET-Based MCQs — Core + Application

1. Which of the following is an essential floral whorl?

A. Calyx
B. Corolla
C. Androecium
D. Perianth

Answer: C — Androecium is an essential reproductive whorl.

2. The pollen sacs are present in the:

A. Filament
B. Anther
C. Stigma
D. Style

Answer: B — The anther contains microsporangia/pollen sacs.

3. Ovules are enclosed within the:

A. Anther
B. Filament
C. Ovary
D. Stigma

Answer: C — The ovary encloses the ovules in an angiosperm flower.

4. Correct order from stigma towards the base is:

A. Stigma style ovary
B. Ovary style stigma
C. Style stigma ovary
D. Stigma ovary style

Answer: A — The style connects the stigma to the ovary.

5. The ovule develops into the:

A. Fruit
B. Seed
C. Pericarp
D. Stigma

Answer: B — Ovule becomes seed after fertilisation.

6. The filament primarily:

A. Receives pollen
B. Contains ovules
C. Supports the anther
D. Forms fruit

Answer: C — Filament is the supporting stalk of the anther.

7. Which pair represents accessory whorls?

A. Stamens + carpels
B. Sepals + petals
C. Stamens + petals

D. Carpels + sepals

Answer: B — Calyx and corolla are accessory whorls.

8. The pollen-receptive surface is the:

A. Anther
B. Filament
C. Stigma

D. Ovule

Answer: C — Stigma receives pollen.

9. The ovary is the:

A. Terminal part of stamen
B. Basal swollen part of carpel
C. Stalk of anther
D. Outer floral whorl

Answer: B — Ovary forms the basal swollen region of the carpel.

10. Which is correctly matched?

A. Anther — receives pollen
B. Stigma — contains pollen sacs
C. Ovary — contains ovules
D. Filament — contains ovules

Answer: C — Ovules are enclosed in the ovary.

11. Which pair contains only reproductive whorls?

A. Calyx + corolla
B. Corolla + androecium
C. Androecium + gynoecium
D. Calyx + gynoecium

Answer: C — These are the two essential reproductive whorls.

12. Which structure is NOT a part of a typical carpel?

A. Stigma
B. Style
C. Ovary
D. Anther

Answer: D — Anther is a part of the stamen.

13. A flower with both androecium and gynoecium is called:

A. Unisexual
B. Bisexual
C. Sterile
D. Neuter

Answer: B — A bisexual flower has both male and female reproductive organs.

14. The main function of the stigma is to:

A. Produce pollen
B. Receive pollen
C. Produce ovules
D. Form fruit directly

Answer: B — The stigma is the pollen-receptive region.

15. The fruit develops mainly from the:

A. Ovule
B. Ovary

C. Anther
D. Stigma

Answer: B — The ovary develops into the fruit after fertilisation

16. A question describes a structure as "bilobed and dithecous". It is most likely the:

A. Stigma
B. Anther
C. Ovary
D. Filament

Answer: B — The typical anther is bilobed and dithecous.

17. Which statement correctly differentiates pollination from fertilisation?

A. Both occur only inside ovary
B. Pollination is pollen transfer; fertilisation involves gamete fusion
C. Pollination is gamete fusion; fertilisation is pollen transfer
D. They are identical

Answer: B — They are distinct reproductive events.

18. If ovules are absent from a diagram but the ovary is labelled, which conclusion is most appropriate?

A. Ovary cannot exist
B. The diagram may be simplified or the ovules may be hidden in section
C. Ovary must be anther
D. Ovules occur in filament

Answer: B — A simplified diagram may not show every internal detail.

19. Which structure–function pair is incorrect?

A. Stigma — pollen reception
B. Filament — anther support
C. Ovary — houses ovules
D. Anther — receives pollen

Answer: D — Anther is pollen-bearing; stigma receives pollen.

20. A student says "ovary becomes seed." The correct correction is:

A. Ovary becomes fruit; ovule becomes seed
B. Ovary becomes embryo; ovule becomes fruit
C. Ovary becomes pollen; ovule becomes anther
D. Both become seeds

Answer: A — This is a classic NEET distinction.

21. Which sequence moves from an individual structure to a collection?

A. Anther, stamen, androecium
B. Androecium, stamen, anther
C. Carpel, stigma, gynoecium
D. Ovule, ovary, carpel

Answer: A — Anther is part of stamen; androecium is collection of stamens.

22. The receptive region that allows pollen germination is generally the:

A. Stigma
B. Filament
C. Sepal
D. Ovary wall

Answer: A — The stigma is the receptive pollen surface.

23. Which floral whorl is most directly associated with pollen production?

A. Calyx
B. Corolla
C. Androecium
D. Gynoecium

Answer: C — Androecium consists of stamens, including the anther.

24. If the anther is removed before pollen release, the immediate reproductive process most directly affected is:

A. Pollen availability for pollination
B. Fruit ripening
C. Seed dispersal
D. Germination

Answer: A — Removal of anther prevents normal pollen release.

25. Which one is a correct structure–development pair?

A. Ovule → fruit
B. Ovary → seed
C. Ovule → seed
D. Anther → fruit

Answer: C — Ovule develops into seed.

26. In a typical flower, the whorl immediately inside the corolla is:

A. Calyx
B. Androecium
C. Pedicel
D. Sepal

Answer: B — In the usual four-whorl arrangement, androecium lies inside corolla.

27. Which is the best reason a diagram-based question can be solved without memorising every label?

A. Structures have no relationships
B. Structure and function provide clues
C. All flowers are identical
D. Labels are always alphabetical

Answer: B — Understanding structure–function relationships helps infer labels.

28. Which pair is homologous in role as reproductive whorl components?

A. Anther and stigma
B. Petal and filament
C. Sepal and ovary
D. Petal and ovule

Answer: A — Anther is male reproductive; stigma is female reproductive.

29. A line points to the stalk supporting a pollen-bearing structure. The label should be:

A. Filament
B. Style
C. Pedicel
D. Sepal

Answer: A — Filament supports the anther.

30. Which statement is most accurate for a typical complete flower?

A. It has only reproductive whorls
B. It has four floral whorls
C. It lacks accessory whorls
D. It has no ovary

Answer: B — A complete flower has calyx, corolla, androecium and gynoecium.

10. Assertion–Reason Questions

Codes: A — Both A and R are true and R is the correct explanation of A; B — Both true but R is not the correct explanation; C — A true, R false; D — A false, R true.

1. **Assertion: Androecium is an essential floral whorl.**

R: Reason: It consists of stamens involved in male reproduction.

Answer: A

2. **Assertion: The ovule develops into a fruit after**

fertilisation. R: Reason: The ovary develops into the

fruit.

Answer: D

3. **Assertion: Stigma is part of the**

gynoecium. R: Reason: Stigma is the

pollen-receptive surface. **Answer: B**

4. **Assertion: Filament is a part of the**

gynoecium. R: Reason: Filament supports

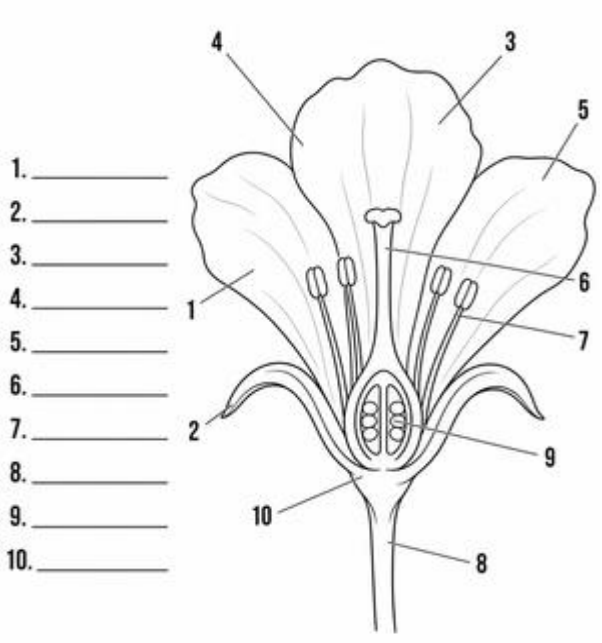
the anther.

Answer: D

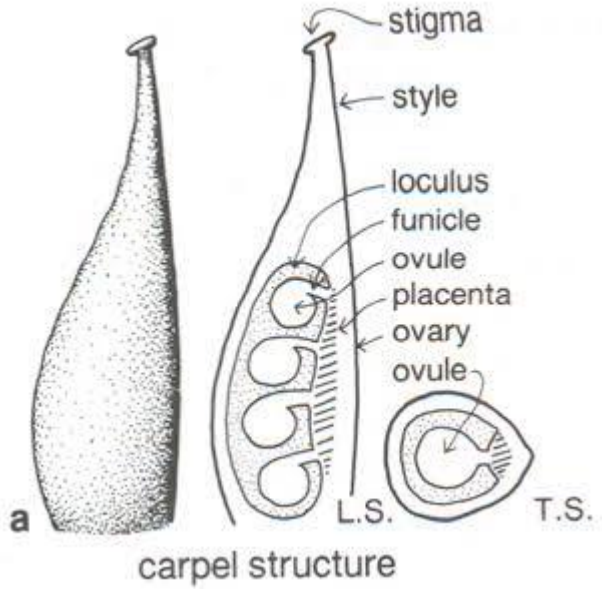
11. Diagram-Based Questions

Q1. On the flower diagram, identify: stigma, style, ovary, ovule, anther and filament.

Mature Flower — Major Parts



Q2. In the L.S. diagram, trace the female reproductive axis from stigma to ovule-containing region.



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12. Rapid Revision Sheet

Concept	One-line recall
Four whorls	Calyx Corolla Androecium Gynoecium
Accessory	Calyx + Corolla
Essential	Androecium + Gynoecium
Stamen	Anther + Filament
Carpel	Stigma + Style + Ovary
Pollen	Produced / borne in anther
Pollen reception	Stigma
Ovules	Inside ovary
After fertilisation	Ovule seed; ovary fruit
Pollination	Transfer of pollen from anther to stigma

13. Answer Key

Q	Ans
1	C
2	B
3	C
4	A
5	B
6	C
7	B
8	C
9	B
10	C
11	C
12	D
13	B
14	B
15	B
16	B
17	B
18	B
19	D
20	A
21	A
22	A
23	C
24	A
25	C
26	B
27	B
28	A
29	A
30	B

Diagram source note

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