

CHAPTER – 5

GERMINATION OF SEEDS

P. 59 CHECK YOUR PROGRESS 1

A. Fill in the blanks.

1. ovule
2. epicotyl
3. cotyledons; radicle
4. Endosperm
5. radicle; plumule.

P. 63 CHECK YOUR PROGRESS 2

A. State whether the following statements are true or false. Rewrite the incorrect statements correctly.

1. True
2. False

Correct statement: Water is absorbed by the seed mainly through micropyle.

3. False

Correct statement: The region of axis above the cotyledons is epicotyl.

4. True
5. False

Correct statement: In bean seeds, germination is epigeal.

P. 63 EXERCISES

I. Multiple-Choice Questions

A. Choose the most appropriate answer.

1. c 2. a 3. a 4. c
5. b 6. b 7. a 8. b
9. d 10. b

II. Assertion–Reason Type Questions

- A. 1. b 2. c 3. a 4. c

III. Very Short Answer Type Questions

A. Complete the following paragraph by filling in the blanks (1) to (5) with appropriate words.

1. imbibition
2. endosperm
3. radicle
4. hypocotyl
5. Plumule

B. Match the items in Column A with those in Column B and write down the matching pairs.

1. b 2. c 3. a 4. e
5. d 6. f

C. Give two examples each of

1. **Monocotyledonous seed:** Maize, wheat
2. **Albuminous seed:** Custard apple, millets
3. **Exalbuminous seed:** Mustard seeds, orchids

IV. Short Answer Type Questions

A. Answer these questions.

1. If the hypocotyl elongates rapidly, comes above the soil and cotyledons are pushed above the soil, it is called epigeal germination.

Examples – Castor and bean

2.

	Monocotyledonous seeds	Dicotyledonous seeds
a. No. of cotyledons	One	Two
b. Thickness of cotyledons	Thin	Thick and fleshy
c. Endosperm	Present	Absent
d. Plumule and Plumule leaves	Plumule is very small and plumule leaves are rolled.	Plumule is large and plumule leaves are folded.

3. The food is stored in cotyledons of the non-endospermic seeds.

V. Long Answer Type Questions

A. Answer these questions.

1.	Hypogeal germination	Epigeal germination
	Cotyledons remain underground.	Cotyledons are pushed above the ground.
	Epicotyl elongates	Hypocotyl elongates
	Can be seen in seeds of pea, gram, maize, etc.	Can be seen in seeds of castor, bean, cotton etc.

Maize and pea: Hypogeal germination

Castor and bean seeds: Epigeal germination

2. **Albuminous seed** also known as endospermic seed, i.e., endosperm is present, and cotyledons are thin and membranous.

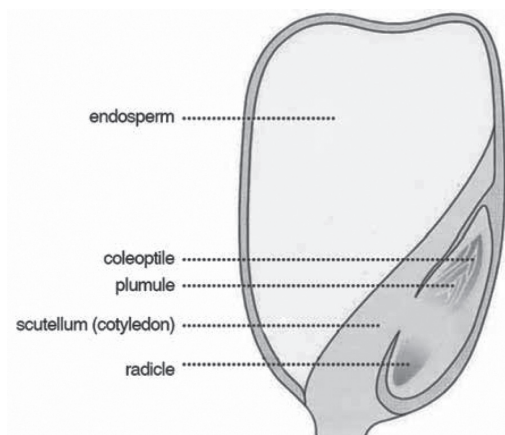
Exalbuminous seed also known as non-albuminous seed, i.e., endosperms are absent and the cotyledons are fleshy and thick.

On the basis of presence or absence of special food storing tissue called endosperm, seeds are classified as albuminous and exalbuminous.

3. Please refer to Activity 1 on page 61 of textbook.

VI. Structured/Application/Skill Type Questions

A. 1.



2. **Coleoptile:** In monocot seeds, the sheath that protects the plumule is coleoptile.

Endosperm: Provides nourishment to the developing embryo and the seed.

3. In maize, hypogeal germination occurs.

- B. 1. To show that oxygen is necessary for seed germination.

2. **Flask A:** Contains gram seeds and pyrogallol acid solution to absorb oxygen.

Flask B: Contains gram seeds and water. The test tube in flask does not contain pyrogallol acid solution but contains water so that oxygen is available.

3. Flask B has water; therefore oxygen was available in the flask and the seeds germinated.

But, in flask A, since there was pyrogallol acid solution that absorbs oxygen, therefore oxygen was not freely available and the seeds did not germinate. Hence, it is proved that oxygen is necessary for seed germination.

- C. The diagram has three bean seeds.

- The bean seed in air does not germinate since it turns dry.
- The bean seed partially submerged in water germinated as it gets sufficient moisture, oxygen and temperature.
- The bean seed submerged in water does not germinate much as it cannot respire due to very little oxygen in water.

- D. 1. The three factors required for germination are—moisture, air, suitable temperature.

2. No, since for germination seedlings require light for photosynthesis and suitable temperature.