

## Long answer questions

(5)

1. What is meant by pollination? Name two types of pollination.

Ans - Pollination is the transfer of pollen grains from the anthers to the stigma of a flower.

The two types of pollination are

(a) self pollination - It occurs within a single flower or between the flowers of same plant.

(b) ~~single~~ <sup>cross</sup> ~~flower~~ <sup>different</sup> pollination: It occurs within ~~single~~ <sup>different</sup> flower or between the flowers of same kind.

3. What is a flower? Draw a typical flower and label its different parts.

Ans - A flower is the most beautiful and coloured part of a plant which serves as a reproductive organ.

8. State the locations of the following in a flower.

(a) sepals: Sepals are the green outermost part of a flower.

(b) petals: This forms the second inner whorl. Petals are the large, fragrant and brightly coloured parts of the flower.

(c) Anthers: It is located in the third whorl of the flower. The filament of the stamen bears the anthers at its tip.

(d) Stigma: It is located in the fourth and the innermost whorl of the flower. The style bears the stigma at its tip.



10

10 Give the difference in the function between the following parts.

(a) Ovary and ovule.

Ovary	Ovule
<ul style="list-style-type: none"> <li>- It is the female reproductive part of a flower.</li> <li>- After fertilization the ovary turns into a fruit.</li> </ul>	<ul style="list-style-type: none"> <li>- Ovule is located inside the ovary.</li> <li>- Ovule turn into seed after fertilization.</li> </ul>

(b) Petal and sepal

Petal	Sepal
<ul style="list-style-type: none"> <li>- Petal is present in the second inner whorl of the flower.</li> <li>- Petals are usually coloured or white but never green. It makes the flower attractive and attracts the insects for pollination.</li> </ul>	<ul style="list-style-type: none"> <li>- It is the outermost whorl of a flower.</li> <li>- Sepals are green like structures. They enclose the inner part of the flower to provide necessary protection to growing buds.</li> </ul>



(c) Filament and style

Filament

- ~~Filament is a thin thread like structure that attaches and support the flower and anther.~~

Style

- Style transfers

Filament

→ Filament is a thin thread like structure which bears the anther at the top.

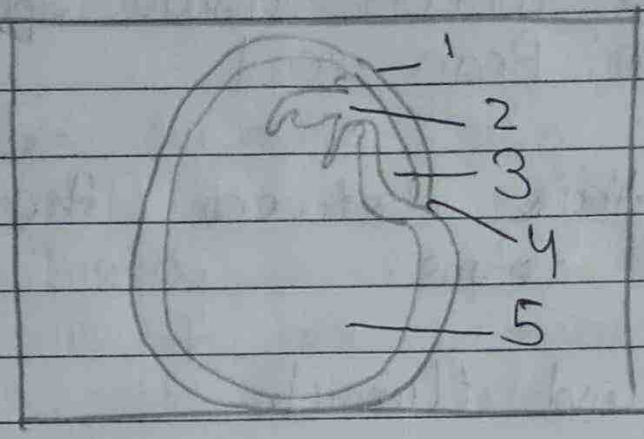
Style

→ Style bears an expanded stigma at its top and transfers the male gametes of the pollen grain into the ovary.



### Short answer questions

1. Given below is a longitudinal section of a bean seed. Label the parts 1 to 5 and write their functions.



- 1- Testa: It is the outer exposed part of the seed.
- 2- Plumule: It is located between the two cotyledons and develops into a shoot.
- 3- Radicle: It is located between the two cotyledons and develops into a root.
- 4- Micropyle: It absorbs and allows the entry of as much as water as it required for germination.
- 5- Cotyledon: It stores the food material which is used by the seedling for growth.

2. Name the following.

- a) A seed which shows hypogeal germination - Pea
- b) A monocot seed - Maize grain
- c) A dicot seed - Bean seed
- d) A seed which shows epigeal germination - Bean seed

3. Differentiate between the following pairs of terms.

(a) Radicle and Plumule

<p><b>Radicle</b></p> <p>- The radicle develops into a root.</p>	<p><b>Plumule</b></p> <p>- The Plumule develops into a shoot.</p>
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(b) Hilum and micropyle

<p><b>Hilum</b></p> <p>- Hilum is the inner concave exposed part of the seed coat.</p>
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### Hilum

- Hilum is the inner concave side of the seed; where the seed was attached to the fruit wall.

### Microphyte

- Microphyte is a small pore which absorbs and allows water required for germination.

### (c) Testa and Tegmen

#### Testa

Testa is the outer exposed part of the seed coat.

#### Tegmen

Tegmen is a thin membrane and lies under the testa. It is the inner part of the seed coat.

### 5. Match the columns

#### Column A

#### Column B

- (a) Radicle
- (b) Plumule
- (c) Cotyledon
- (d) Testa
- (e) Microphyte

- (i) Shoot
- (ii) Store food material
- (iii) Root
- (iv) Absorb water needed for germination
- (v) protection of seed



Ans - (a) iii, (b) i, (c) ii, (d) v, (e) iv

6. Radicle emerges out of the seed earlier than plumule. State one advantage served by this.

Ans - As the radicle emerges out of the seed earlier and develop into a root it helps in providing water and mineral for further growth of the plumule.

7. State whether the following statements are True or False.

(a) Some seeds have no cotyledons. False

(b) Warmth is necessary for the germination of seeds. True

(c) All seeds have two cotyledons. False

(d) Oxygen is necessary for the germination. True

8. State one function of the following



- a) Radicle: It develops into a root.
- b) Cotyledons: It stores the food material which is used by the seedling for growth.
- c) Endosperm: It stores food in the form of starch.
- d) Micropyle: It absorbs and allows the entry of as much as water as is required for germination.

9. The three conditions necessary for germination of seeds are

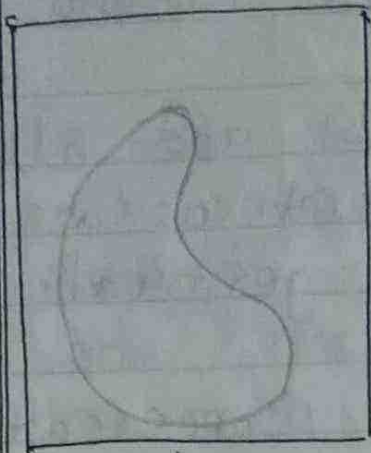
- (a) Oxygen, suitable temperature and water
- (b) Good soil, water and air.
- (c) Good soil, suitable temperature and light.
- (d) Light, oxygen and temperature.
- (e) Oxygen, carbon dioxide and light

10. Name the part of the seed from which the following are given out:

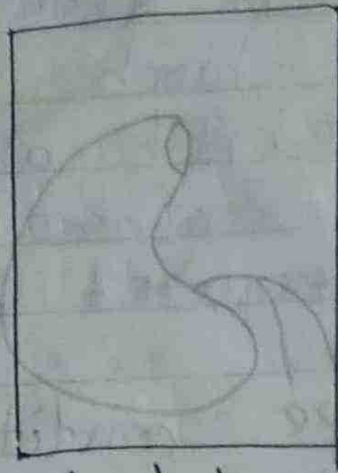
- (a) Roots: Radicles
- (b) Leaves: Plumule



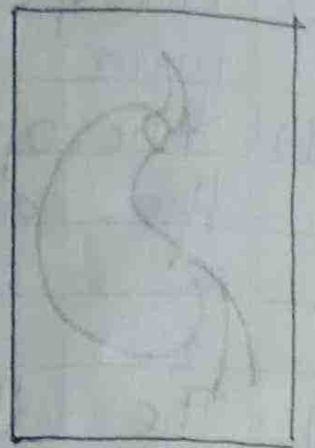
11 - In the spaces provided below, draw labelled diagram to show the three stages in the germination of any seed you have observed.



Complete  
seed



Radicle  
emerged



Plumule  
Emerged

### Long Answer questions

2. Imagine all the seeds produced by a plant happen to fall under the same plant and sprout into new plants. Mention any two problems that will be faced by the new plants.

Ans - If all the seeds produced by a plant will happen to fall under the same

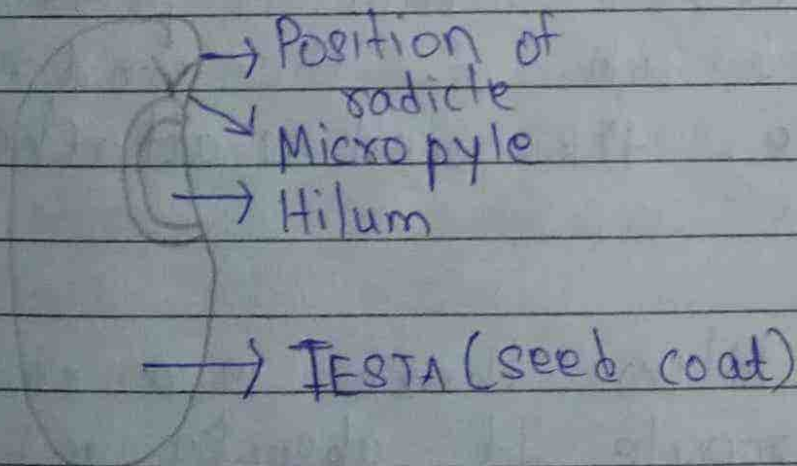


sprouts and plant into new plants, then following problem will happen.

- a) As a large number of plants will grow in a very small area, the water and minerals available for the plants will be very limited.
- b) The air and sunshine for them will be not enough. As a result most of the sprouts will die.

4. With the help of a suitable diagram, describe the structure of a dicot seed.

Ans - The bean seed is an example of a dicot seed whose diagram is shown below.







- The green outermost covering of the seed is called the seed. It protects the seed from insects and bacteria as well as from mechanical injury.
- The seed coat is made again up of two parts. The outer exposed part is called the testa and the inner part is called tegmen.
- A scar called hilum is present in the inner concave side of the seed. This is the place where the seed is attached to the fruit wall.
- Above the hilum there is a small pore called micropyle. It absorbs and allows



the entry of water required for germination.

The seed is made up of two fleshy seed leaves called the cotyledons. They contained stored food material which is used by the seedling for growth.

In between the two cotyledons a delicate embryo is located, which is consist of radicle and plumule. The radicle develops into a root and the plumule develops into shoot.

5. Define germination. Name two types of germination. Explain with example.

Ans- The process by which the embryo in the seed becomes active in the presence of water, air and suitable temperature and grows into a young plant is called germination.

The two types of germination are epigeal germination and hypogeal germination.

**Epigeal Germination:** The type of germination in which the cotyledons are pushed above the soil is called epigeal germination. The leaves unfold and start preparing food for the growing plant.

Germination of a Bean seed is an example of epigeal germination.

**Hypogeal Germination:** The type of germination in which the cotyledons remain below the ground is called hypogeal germination. The plumule only comes out of the soil to form leaves.

Germination of pea and maize seed grain are examples of hypogeal germination.



6. What are the three conditions necessary for the germination of seeds?

Ans - Water, air and favourable temperature are the three conditions required for the germination of seeds.

7 Give the main difference between hypogeal germination and epigeal germination.

Hypogeal germination	Epigeal germination
- Cotyledons remain below the ground	- Cotyledons are pushed above the ground.
- Epicotyl elongates faster than hypocotyl. Hence cotyledons remain below	- Hypocotyl elongates faster than epicotyl. Hence cotyledons get pulled
- Ex- maize, rice, ground nut etc	Ex- Bean, tamarind, papaya, cucumber