2. REPRODUCTION IN PLANTS

TEACHING TASK

Multiple Choice Questions

1. What is the main function of sepals in a flower?
   A) Producing pollen B) Attracting pollinators
   C) Protecting the flower in its bud stage D) Supporting the anther

Key: C

Solution: Sepals protect the flower when it is still in the bud stage.

2. Which part of the flower attracts pollinators with its colors, shapes, and fragrances?
   A) Sepals B) Stamens C) Petals D) Ovary

Key: C

Solution: Petals are colorful and fragrant to attract insects and birds.

3. What are the two main parts of a stamen?
   A) Stigma and style B) Ovary and ovules
   C) Filament and anther D) Sepals and petals

Key: C

Solution: The stamen consists of the filament (stalk) and anther (pollen sac).

4. What connects the stigma to the ovary in a flower?
   A) Filament B) Anther C) Style D) Sepals

Key: C

Solution: The style is the tube-like structure joining stigma to ovary.

5. Which part of the flower contains pollen sacs?
   A) Filament B) Anther C) Style D) Ovary

Key: B

Solution: The anther has pollen sacs that produce pollen grains.

6. What is the primary function of petals in a flower?
   A) Protecting reproductive organs B) Producing pollen
   C) Attracting pollinators D) Supporting the anther

Key: C

Solution: Petals attract pollinators through color, shape, and fragrance.

ADVANCED LEVEL

(i) More than one answer type

7. Which parts of a flower are involved in the reproductive process?
   A) Sepals B) Petals
   C) Stamens D) Pistil (or Carpel)

Key: C, D

Solution: Stamens (male organ) and pistil/carpel (female organ) are the reproductive parts.

8. Which flower part(s) are not involved in attracting pollinators?
   A) Sepals B) Petals C) Stamens D) Ovules

Key: A, C, D

Solution: Sepals, stamens, and ovules are not for attraction; petals attract pollinators.

(ii) Fill in the blanks

9. _____ attract pollinators like insects or birds with their colors, shapes, and fragrances

Solution: Petals

10. _____ are the outermost parts of the flower, usually green in color, and protect the flower

Solution: Sepals

(iii) Matching Type

11.

s.no	Column I	Column II
1	Sepals	A. The most noticeable part of the flower, they attract pollinators with their colours, shapes, and fragrances, and protect the reproductive organs
2	Petals	B. The male reproductive organs of the flower, consisting of a filament and an anther where pollen grains are produced.
3	Stamens	C. These are the outermost parts of the flower, usually green in colour, and protect the flower in its bud stage.

Key: C, A, B

(iv) Answer the following questions

12. What is the main function of sepals in a flower?

Answer: The main function of sepals is to protect the flower when it is in the bud stage. They enclose and shield the delicate inner parts until the flower blooms.

13. Describe the two main parts of a stamen and their functions.

Answer: The two main parts of a stamen are:

1. **Filament :** It is a thin stalk that holds the anther in position.
2. **Anther :** It produces pollen grains, which contain the male reproductive cells of the plant.

LEARNER'S TASK

Multiple Choice Questions

1. Which part of the flower serves as the female reproductive organ?

   A) Sepals B) Petals C) Pistil D) Stamens

Key: C

Solution: The pistil/carpel is the female organ of the flower.

2. What is the function of the stigma in a flower?

   A) Producing pollen B) Receiving pollen grains

   C) Protecting the ovules D) Supporting the anther

Key: B

Solution: The stigma receives pollen grains during pollination.

3. What is the swollen base of the pistil where ovules are produced?

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

Key: C

Solution: The ovary produces and contains ovules.

4. After fertilization, what does the ovary develop into?

Key: C

Solution: The ovary develops into a fruit after fertilization.

A) A seed B) A petal C) A fruit D) A stamen

5. What is contained within the ovary of a flower?

A) Pollen grains B) Stigma C) Ovules D) Sepals

Key: C

Solution: Ovules are present in the ovary.

ADVANCED LEVEL

(i) More than one answer type

6. Which flower parts are responsible for protecting the reproductive organs?

A) Sepals B) Petals C) Stamens D) Ovary

Key: A, B

Solution: Sepals and petals protect the flower's reproductive organs.

7. Which part (s) of the flower develops into a fruit after fertilization?

A) Filament B) Stigma C) Ovary D) Style

Key: C

Solution: The ovary turns into a fruit after fertilization.

(ii) Fill in the blanks

8. _____ are the male reproductive organs of the flower

Solution: Stamens

9. The pistil, or carpel, is the female reproductive organ of the flower, comprising three main parts which are _____

Solution: stigma, style, and ovary.

(iii) Matching Type

10.

s.no	Column I	Column II
1.	Pistil	A. The swollen base of the pistil where ovules are produced and which develops into a fruit after fertilization.
2.	Ovary	B. Female reproductive cells contained within the ovary that develop into seeds if fertilized.
3.	Ovules	The female reproductive organ, consisting of the stigma, style, and ovary.

Key: C, A, B

(iv) Answer the following questions

11. What are the components of the pistil, and what is the function of each part?

Answer: The pistil is the female reproductive part of a flower. It has three main components:

1. **Stigma:**
1. The topmost part of the pistil.
2. **Function:** It is sticky and helps in receiving pollen grains during pollination.
2. **Style:**
1. A slender stalk that connects the stigma to the ovary.
2. **Function:** It provides a passage for the pollen tube to grow from the stigma to the ovary.
3. **Ovary:**
1. The swollen base of the pistil.
2. **Function:** It contains ovules, which develop into seeds after fertilization. The ovary itself develops into a fruit.

12. What is the relationship between the filament and the anther in a stamen?

Answer:

The stamen is the male reproductive part of a flower.

1. The **filament** is a slender stalk that supports the anther.
2. The **anther** is located at the top of the filament and produces pollen grains, which contain male gametes.

Relationship: The filament holds the anther in a suitable position so that pollen can be easily transferred to pollinators or dispersed by wind.

TEACHING TASK

Multiple Choice Questions

1. What is the main purpose of pollination in plants?
   A) To make flowers colorful
   B) To produce seeds for growing new plants
   C) To attract insects
   D) To create nectar

Key: B

Solution: The main purpose of pollination is to produce seeds for growing new plants.

2. Where does the pollen need to go for successful pollination?
   A) Anther B) Petal C) Stigma D) Leaf

Key: C

Solution: For successful pollination, pollen must land on the stigma.

3. What happens when the wind is involved in pollination?
   A) It carries pollen from one flower to another
   B) It attracts insects to the flowers
   C) It makes the flowers open
   D) It helps plants produce nectar

Key: A

Solution: Wind carries pollen grains from one flower to another.

4. What happens after pollen lands on the stigma of a flower?
   A) The flower wilts
   B) The pollen travels down to the ovary.
   C) The ovary immediately turns into a fruit.
   D) The stigma becomes a seed

Key: B

Solution: After pollen lands on the stigma, it grows a tube and travels down to the ovary.

5. What role does the ovary of the flower play after fertilization?
   A) It becomes the stigma.
   B) It grows and changes into a fruit.
   C) It dies off.
   D) It produces more pollen.

Key: B

Solution: After fertilization, the ovary grows and develops into a fruit.

ADVANCED LEVEL

(i) More than One Answer Type

6. Which of the following statements about pollination are true?
   A) It involves moving pollen from one part of the flower to another.
   B) It is necessary for plants to make seeds.
   C) It only happens with the help of insects.
   D) It can occur through wind and water.

Key: A, B, D

Solution: Pollination involves moving pollen, is needed for seeds, and can happen by wind/water.

7. What happens after pollination in a flower?
   A) The ovary directly turns into a fruit.
   B) Pollen travels down to the ovary.
   C) Seeds are immediately dispersed by animals.
   D) Fertilization occurs when pollen meets an ovule.

Key: B, D

Solution: After pollination, pollen travels to the ovary, and fertilization occurs when it meets the ovule.

(ii) Fill In the Blanks

8. The _____ is the part of the flower where pollen is produced, and it is part of the flower's male part.

Key: Anther

9. Inside the ovary are _____, which are like tiny eggs.

Key: Ovules

(iii) Matching Type

10.

s.no	Column I	Column II
1.	Pollination	A. The sticky part where pollen needs to go.
2.	Pollen	B. This is where the pollen comes from, part of the flower's male part.
3.	Anther	C. A process that involves moving pollen from one part of the flower to another to make seeds
4.	Stigma	D. Tiny powdery substance that needs to be moved for plants to make seeds, style, and ovary.

Key: C, D, B, A

(iv) Answer the Following Questions

11. What is the anther, and what role does it play in pollination?

Answer: The anther is the part of the stamen that produces pollen grains. It plays a key role in pollination by releasing pollen, which is transferred to the stigma of a flower.

12. What happens when pollen moves from the anther to the stigma?

Answer: When pollen reaches the stigma, it sticks to it and grows a pollen tube through the style to the ovary. This allows the male gametes to reach the ovule for fertilization, leading to seed formation.

LEARNER'S TASK

Multiple Choice Questions

1. Which part of the flower produces pollen?

   A) Stigma B) Anther C) Petal D) Sepal

Key: B

Solution: The anther produces pollen grains, which contain male gametes for reproduction.

2. How do bees and butterflies help with pollination?

   A) By eating the pollen
   B) By drinking nectar and transferring pollen
   C) By making noise
   D) By digging in the soil

Key: B

Solution: Bees and butterflies drink nectar, and pollen sticks to their bodies. When they move to another flower, they transfer pollen to the stigma.

3. Which of the following is NOT a method of pollination mentioned in the text?
   A) Insects B) Wind C) Water D) Birds

Key: D

Solution: Insects, wind, and water help in pollination, but birds are not mentioned.

4. What is fertilization in the context of plant reproduction?
   A) When the flower opens.
   B) When the pollen and ovule join together.
   C) When the fruit is eaten by an animal.
   D) When the seed begins to grow.

Key: B

Solution: Fertilization happens when the pollen (male gamete) joins with the ovule (female gamete) to form a zygote.

5. What happens to each ovule after fertilization?
   A) It turns into a flower. B) It turns into a seed.
   C) It becomes part of the ovary. D) It changes into pollen.

Key: B

Solution: After fertilization, each ovule develops into a seed.

ADVANCED LEVEL

(i) More than One Answer Type

6. Which parts of the flower are involved in pollination?
   A) Anther B) Stigma C) Petal D) Sepal

Key: A, B

Solution: Pollination involves transfer of pollen from the anther to the stigma. Petals and sepals are not directly involved.

7. What changes occur from flower to fruit formation?
   A) The ovules turn into seeds after fertilization.
   B) The petals of the flower turn into fruit.
   C) The ovary starts to grow and change into a fruit.
   D) The pollen turns into seeds.

Key: A, C

Solution:After fertilization, ovules change into seeds (A).
The ovary grows and changes into a fruit (C).

(ii) Fill In the Blanks

8. Insects such as bees and butterflies help with pollination by drinking sweet nectar from flowers, causing pollen to stick to them and transfer to the _____ of the next flower they visit.

Key: stigma

9. After fertilization, each ovule turns into a _____.

Key: seed

(iii) Matching Type

10.

s.no	Column I	Column II
1.	Fertilization	A. Each ovule turns into this after fertilization
2.	Seed Formation	B. The process by which seeds are spread to new places
3.	Fruit Formation	C. The union of pollen and an ovule
4.	Seed Dispersal	D. The ovary starts to grow and change into this to protect the seeds

Key: C, A, D, B

(iv) Answer the Following Questions

11. What is the stigma, and why is it important in pollination?

Answer:

1. The stigma is the sticky part of the pistil at the top of the style.
2. It is important because it receives pollen grains during pollination and helps them stick, so they can germinate and reach the ovule for fertilization.

12. What is pollination? What is pollen?

Answer:

Pollination is the process of transferring pollen grains from the anther (male part) to the stigma (female part) of a flower.

Pollen is the fine, powdery substance produced by the anthers of flowers that contains the male gametes (sperm cells).

TEACHING TASK

Multiple Choice Questions

1. What is the function of the seed coat?
   A) Storing food for the embryo B) Providing initial nutrients for growth
   C) Protecting the embryo from harm D) Assisting in photosynthesis

Key: C

Solution: The seed coat protects the embryo from harm like drying out or damage.

2. What role do the cotyledons play in the seed's development?
   A) Protecting the embryo B) Providing initial nutrients for growth
   C) Storing food for the embryo D) Assisting in seed dispersal

Key: B

Solution: Cotyledons provide nutrients to the seedling until it makes its own food.

3. Which part of the seed reaches down into the soil during germination?
   A) Shoot B) Leaves C) Radicle D) Plumule

Key: C

Solution: The radicle grows downward into the soil to form the root.

4. What is the main function of leaves in the germination process?
   A) Soaking up water B) Capturing sunlight
   C) Anchoring the plant in the soil D) Producing flowers and fruits

Key: B

Solution: Leaves capture sunlight to make food by photosynthesis.

5. How do some seeds use the wind for dispersal?
   A) By attaching themselves to animals
   B) By floating on water
   C) By having wings or parachutes
   D) By exploding when touched

Key: C

Solution: Some seeds have wings or parachutes to travel with wind.

6. What mechanism do some plants use to spread their seeds through explosions?
   A) Releasing them from high branches
   B) Shooting them from a cannon-like structure
   C) Popping open seed pods upon touch
   D) Launching them with elastic energy stored in stems

Key: C

Solution: Some plants pop open seed pods to scatter seeds.

ADVANCED LEVEL

(i) More than One Answer Type

7. What are the essential components of the seed?
   A) Seed Coat B) Embryo
   C) Endosperm D) Seed Leaves (Cotyledons)

Key: A, B, C, D

Solution: A seed has seed coat, embryo, endosperm, and cotyledons.

8. Which factors contribute to the process of germination?
   A) Planting the seed in soil B) Providing warmth
   C) Exposing the seed to sunlight D) Supplying water

Key: A, B, D

Solution: Seeds need soil, warmth, and water. Sunlight is required after germination.

(ii) Fill In the Blanks

9. The _____ stores all the food the baby plant needs to start growing until it can make its food through photosynthesis.

Key: Endosperm

10. _____are like solar panels, capturing sunlight and turning it into food through photosythesis.

Key: Leaves

(iii) Matching Type

11.

s.no	Column I	Column II
1	Seed Coat	A. Stores all the food the baby plant needs to start growing.
2	Embryo	B. Protects the tiny baby plant inside from harm.
3	Endosperm	C. Contains essential parts such as the root, first leaves, and stem.
4	Seed Leaves (Cotyledons)	D. Provides the initial nutrients to kickstart growth until the plant can produce its food.

Key: B, C, A, D

(iv) Answer the Following Questions

12. What are the essential parts contained within the embryo of a seed?

Answer: The embryo of a seed has three main parts:

1. **Radicle –** the first part that grows into the root.
2. **Plumule –** grows upward and forms the shoot system.
3. **Cotyledons –** seed leaves that store and supply food for the young plant.

Together, these parts ensure the seed can grow into a new plant.

13. Describe the roles of roots and shoots during germination.

Answer:

1. The **root (radicle)** comes out first, grows downward into the soil, anchors the seedling, and absorbs water and minerals.
2. The **shoot (plumule)** grows upward toward the light, develops into stem and leaves, and starts photosynthesis.

Thus, roots supply nutrients while shoots help in growth above the ground.

LEARNER'S TASK

Multiple Choice Questions

1. Which part of the seed serves as the "pantry" for the baby plant?
   A) Embryo B) Seed coat
   C) Endosperm D) Seed leaves (cotyledons)

Key: C

Solution: The endosperm stores food that nourishes the embryo during germination.

2. What is contained within the embryo of a seed?
   A) Root, stem, and leaves B) Food storage
   C) Protective covering D) Protective shell

Key: A

Solution: The embryo contains the radicle (root), plumule (shoot), and cotyledons (seed leaves).

3. Which of the following processes helps the plant make food during germination?
   A) Transpiration B) Germination
   C) Photosynthesis D) Respiration

Key: C

Solution: Once the shoot emerges and leaves develop, photosynthesis begins to make food.

4. What is the primary purpose of soil in the germination process?
   A) Providing warmth B) Offering a cozy home for the seed
   C) Capturing sunlight D) Assisting in photosynthesis

Key: A

Solution: Soil provides warmth, moisture, and anchorage needed for germination.

5. How do seeds from plants near rivers or oceans travel to new areas?
   A) By attaching to passing clouds B) By being carried by animals
   C) By floating on water D) By being propelled by strong winds

Key: C

Solution: Water-dispersed seeds (like coconut) float and travel to new areas.

ADVANCED LEVEL

(i) More than One Answer Type

6. Which parts of the seed contribute to the initial nourishment of the developing plant?
   A) Seed Coat B) Embryo
   C) Endosperm D) Seed Leaves (Cotyledons)

Key: C, D

Solution: Endosperm and cotyledons supply food to the embryo until it can make its own food.

7. Which plant structures are not involved in the process of capturing sunlight and
   converting it into food?
   A) Roots B) Shoots C) Leaves D) Flowers

Key: A, D

Solution: Roots absorb water/nutrients, flowers help in reproduction, but neither captures sunlight.

(ii) Fill In the Blanks

8. The _____ protects the tiny baby plant inside the seed from harm begins when a seed gets planted in soil

Key: seed coat

(iii) Matching Type

9.

s.no	Column I	Column II
1.	Planting the Seed	A. Softens the seed and initiates the germination process.
2.	Water	B. Formation of root (radicle) and shoot (plumule) To absorb water, nutrients, and sunlight.
3.	Warmth	C. Begins the process by providing a suitable environment for seed growth.
4.	Roots and Shoots	D. Wakes up the seed and signals the start of growth.

Key: C, A, D, B

(iv) Answer the Following Questions

10. How do seed leaves (cotyledons) support the initial growth of the baby plant?

Answer: Seed leaves (cotyledons) provide stored food to the young plant and support its initial growth until it can perform photosynthesis.

11. How does water contribute to the germination process?

Answer: Water softens the seed coat, activates enzymes, and allows the embryo to swell and grow, thereby starting the germination process.