3. REPRODUCTION IN PLANTS

TEACHING TASK

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Multiple Choice Questions

1. Which of the following is NOT a method of seed dispersal?

a) Wind b) Water c) Soil d) Animals

Key: C

Solution: Soil is not a dispersal method - seeds grow in soil but don't use it for transport.

2. How are seeds dispersed by wind typically adapted?

a) Heavy and sink in air b) Sticky and attach to animals

c) Lightweight with structures to catch the wind d) Covered in spikes

Key: C

Solution: Wind-dispersed seeds have wings/parachutes (e.g., dandelion fluff).

3. Which animal is commonly involved in the dispersal of seeds through endozoochory?

a) Squirrel b) Butterfly c) Bird d) Snake

Key: C

Solution: Birds eat fruits and excrete seeds elsewhere (endozoochory).

4. Which seed dispersal method involves the sudden release of seeds from a pod or capsule?

a) Gravity dispersal b) Explosive dispersal

c) Animal dispersal d) Wind dispersal

Key: B

Solution: Explosive dispersal shoots seeds out (e.g., touch-me-not plants).

5. What triggers seed germination?

a) Lack of sunlight b) Lack of water

c) Adequate moisture, warmth, and oxygen d) Freezing temperatures

Key: C

Solution: Germination requires water (swells seed), oxygen, and warmth.

ADVANCED LEVEL

More than one answer type

6. Which of the following are methods of seed dispersal? (Select all that apply)

a) Wind b) Water c) Gravity d) Sunlight

Key: A, B, C

Solution: Wind, water, and gravity disperse seeds; sunlight doesn't transport them.

7. How do seeds benefit from being dispersed to new locations? (Select all that apply)

a) Avoiding competition with parent plants b) Ensuring reproduction in the same area

c) Colonizing new habitats d) Attracting predators for protection

Key: A, C

Solution: Dispersal reduces competition and colonizes new areas.

Fill in the blanks

8. Seeds can be dispersed by animals through attachment to their fur, feathers, or _____.
Key: skin
Solution: Seeds attach via hooks/burs (epizoochory).
9. Explosive seed dispersal involves the sudden release of seeds from a pod or _____.
Key: capsule
Solution: Built-up pressure bursts capsules open.

Matching Type

10.	A. Wind dispersal	1. Seeds are eaten by animals and later excreted in new locations.
	B. Water dispersal	2. Seeds fall to the ground near the parent plant and may roll away.
	C. Animal dispersal (endozoochory)	3. Seeds are transported by rivers, streams, or ocean currents.
	D. Gravity dispersal	4. Seeds are carried away from the parent plant by air currents.

Key: A-4, B-3, C-1, D-2

Answer the following questions
11. Name three different ways seeds can be dispersed in nature.
Answer: Wind carries lightweight seeds, water floats buoyant seeds, animals transport seeds in fur or droppings.
12. How does wind help in the dispersal of seeds? Can you give an example of a plant that uses wind dispersal?
Answer: Wind lifts seeds with wing/parachute structures. Example: Maple "helicopter" seeds spin through air.
13. How does water aid in the dispersal of seeds? Can you think of a plant that uses water dispersal?
Answer: Water moves seeds via currents. Example: Coconut floats on ocean waves to new islands.

LEARNER'S TASK

Multiple Choice Questions
1. What is the primary purpose of seed dispersal?
a) Preventing reproduction
b) Concentrating offspring around the parent plant
c) Promoting competition among seeds
d) Helping seeds reach new locations to grow into plants
Key: D
Solution: Dispersal helps seeds find new growing spaces.
2. What type of seed dispersal involves animals eating fruits and then dispersing seeds in their droppings?

Key: C
Solution: Endozoochory = seeds eaten and excreted.
a) Wind dispersal b) Water dispersal
c) Animal dispersal (endozoochory) d) Explosive dispersal
3. Which of the following is NOT a method of seed dispersal by animals?
a) Endozoochory b) Epizoochory
c) Explosive dispersal d) Gravity dispersal
Key: C
Solution: Explosive dispersal is mechanical, not animal-based.
4. Which seed dispersal method involves seeds attaching to the fur or feathers of animals?
a) Wind dispersal b) Water dispersal
c) Animal dispersal (epizoochory) d) Explosive dispersal
Key: C
Solution: Epizoochory = external attachment to animals.
5. What triggers the cracking open of a seed during germination?
a) Lack of water b) Lack of sunlight
c) Absorption of water d) Freezing temperatures
Key: C
Solution: Water absorption cracks the seed coat.

ADVANCED LEVEL

More than one answer type
6. How do seeds get dispersed by animals? (Select all that apply)
a) Through ingestion and excretion b) Attachment to fur or feathers
c) Carrying in their mouths d) Shooting out of pods
Key: A, B, C
Solution: Animals disperse via eating, sticking, or carrying.
7. Which environmental factors can trigger seed germination? (Select all that apply)
a) Adequate moisture b) Sunlight
c) Freezing temperatures d) Warmth
Key: A, D
Solution: Moisture and warmth trigger germination; freezing inhibits it.

Fill in the blanks

8. _____ is the process by which seeds are spread or moved away from the parent plant to new locations.
Key: Seed dispersal
Solution: The spreading process for new growth areas.
9. Seeds dispersed by _____ are typically adapted to be lightweight and have structures to catch the wind.
Key: wind
Solution: Adaptations like parachutes aid wind travel.
10. Seeds can be dispersed by various methods including wind, water, _____, and animals.
Key: gravity
Solution: Gravity makes seeds fall/roll from plants.

Matching Type

10.	A. Germination	1. The process by which seeds are spread or moved away from the parent plant to new locations.
	B. Seed dispersal	2. The process of the seed absorbing water, swelling, and the embryo inside starting to grow.
	C. Wind Dispersal	3. Seeds can also attach to the fur, feathers, or skin of animals and be carried to new locations.
	D. Epizoochory	4. dandelion seeds or maple seeds.

Key: A-2, B-1, C-4, D-3

Answer the following questions

11. Imagine you're a seed. How would you want to be dispersed, and why?
Answer: I'd choose bird dispersal - flying far ensures new space with less competition from parent.
12. Why do you think it's important for seeds to be dispersed away from the parent plant?
Answer: Dispersal prevents overcrowding and gives seeds better access to sunlight/ soil nutrients.
13. What is the role of fruits in seed dispersal by animals?
Answer: Fruits attract animals with nutrients; seeds pass unharmed through digestion or stick to fur.

TEACHING TASK

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Multiple Choice Questions

1. What is the main purpose of using cuttings in vegetative propagation?
A) To produce seeds
B) To create new plants
C) To attract pollinators
D) To increase soil fertility
Key: B
Solution: Cuttings create clones of the parent plant without seeds.
2. In grafting, the upper part of one plant, known as the _____, is joined with the rooted part of another plant, known as the _____.
A) Scion, rootstock
B) Rootstock, scion
C) Bud, stem
D) Stem, bud
Key: A
Solution: Scion (desired variety) joins rootstock (root system) in grafting.
3. What is layering in vegetative propagation?
A) Sprinkling seeds on the soil surface
B) Burying plant stems underground
C) Enclosing plants in a protective covering
D) Encouraging roots to grow while still attached to the parent plant
Key: D
Solution: Layering roots stems while still attached to the parent plant.

4. What is reproduction from roots?
A) A process where plants produce seeds for new plants
B) A method where plants create new plants from their roots
C) A process where plants reproduce through flowers
D) A method where plants grow new leaves from their roots
Key: B
Solution: Some plants grow new shoots from specialized roots.
5. Which of the following is an example of a plant that reproduces from roots?
A) Apple tree B) Potato C) Sunflower D) Wheat
Key: B
Solution: Potatoes grow from tubers (modified underground stems).
6. Which of the following is an example of a plant that reproduces from stems?
A) Apple tree B) Strawberry C) Pine tree D) Corn
Key: B
Solution: Strawberries reproduce via runners (horizontal stems).
7. What role do leaves play in reproduction from leaves?
A) Anchoring the plant in the soil B) Absorbing water and nutrients
C) Producing flowers D) Producing new stems and roots
Key: D
Solution: Some leaves can produce adventitious roots and shoots.

ADVANCED LEVEL

More than one answer type

8. What are the essential components of a grafted plant?
A) Scion B) Rootstock
C) Bud D) Grafting tape
Key: A, B
Solution: Grafting requires scion and rootstock; tape is optional.
9. Which plant parts are involved in the layering process?
A) Stem B) Leaf C) Root D) Node
Key: A, D
Solution: Layering uses stems with nodes (root growth points).

Fill in the blanks

10. Reproduction from _____ involves plants creating new plants from their underground roots.
Key: roots
Solution: Examples: sweet potato, dahlia.
11. Vegetative propagation methods such as cuttings, grafting, and layering are all ways to propagate plants without using _____.
Key: seeds
Solution: These are asexual propagation methods.

Matching Type

12.	1. Reproduction from roots	A. Involves burying a portion of the stem in soil to encourage root growth.

2. Reproduction from stems	B. Development of new plants from leaves or leaf parts.
3. Reproduction from leaves	C. Growth of new plants from specialized roots that grow from the main root.

Key: 1-C, 2-A, 3-B

Answer the following questions

13. Explain about Gutting, Grafting And Layering

Answer: Cuttings use detached plant parts to root. Grafting combines scion and rootstock. Layering roots attached stems before separating.

14. Explain about Reproduction from Leaves

Answer: Some leaves produce plantlets (e.g., Bryophyllum). These drop and root nearby, cloning the parent.

LEARNER'S TASK

Multiple Choice Questions

1. Which part of a plant is not used in a cutting for vegetative propagation?

A) Flower B) Leaf C) Stem D) Root

Key: A

Solution: Flowers aren't used; cuttings use stems, leaves or roots.

2. What is the process of joining the scion and stock together called?

A) Fusion B) Budding C) Grafting D) Pollination

Key: C

Solution: Grafting joins scion and stock to combine traits.

3. Which part of the plant is typically used in layering?

A) Flower B) Leaf C) Stem D) Root

Key: C

Solution: Layering bends stems to soil for rooting.

4. Which of the following plants commonly reproduces from roots?

A) Sunflower B) Cactus C) Carrot D) Daisy

Key: C

Solution: Carrots are taproots that can sprout new shoots.

5. What is reproduction from stems?

A) A process where plants produce seeds for new plants

B) A method where plants create new plants from their stems

C) A process where plants reproduce through flowers

D) A method where plants grow new leaves from their stems

Key: B

Solution: Stems like runners or tubers generate new plants.

6. Which of the following plants commonly reproduces from leaves?

A) Oak tree B) Begonia C) Grass D) Mushroom

Key: B

Solution: Begonia can grow plantlets from leaf veins.

ADVANCED LEVEL

More than one answer type

7. Which of the following plant parts can be used for making cuttings?

A) Stem B) Leaf C) Root D) Flower

Key: A, B, C

Solution: Stems (rose), leaves (snake plant), and roots (horseradish) work.

8. Which of the following are commonly used methods of vegetative propagation?

A) Cuttings B) Grafting C) Layering D) None

Key: A, B, C

Solution: All are asexual propagation techniques.

Fill in the blanks

9. In reproduction from stems, new plants can develop from _____ on the stem.

Key: buds/nodes

Solution: Nodes contain meristem tissue for new growth.

10. Grafting involves attaching a _____ plant part onto another plant to grow as one

Key: scion

Solution: The scion carries desired fruit/flower traits.

Matching Type

11.	1. Cutting	A. A propagation method where a stem is encouraged to form roots while still attached to the parent
	2. Grafting	B. A method where a portion of the plant is severed and used to grow a new plant.
	3. Layering	C. A technique where a scion from one plant is attached to the rootstock of another plant.

Key: 1-B, 2-C, 3-A

Answer the following questions

12. Explain about Reproduction from Stems

Answer: Stems like rhizomes (ginger) or stolons (mint) grow sideways and sprout new plants. Nodes develop roots when buried.

13. Explain about Reproduction from Roots

Answer: Root buds (dahlia) or split roots (horseradish) produce shoots. Storage roots (sweet potato) also regenerate.