Reproduction in Plants

1. Which of the following is an incorrect match?

	Fruit	Agent of dispersal	Part of seed which helps in dispersal
(a)	Drumstick	Wind	Wings of seed
(b)	Madar	Water	Hairy seeds
(c)	Coconut	Water	Spongy outer coat
(d)	Xanthium	Animals	Hooks in fruits

2. Prashant observed flowers of two different plants X and Y. Flowers of X are large, coloured, showy and produce nectar while flowers of Vare small, dull without nectar. Pollen grains of X are sticky and bigger while pollen grains of Y are small in size and dry.
Which of the following is correct regarding X and Y?
(a) X could be pollinated by insect whereas Y could be pollinated by wind.
(b) X could be pollinated by wind whereas Y could be pollinated by water,
(c) X could be pollinated by wind whereas Y could be pollinated by insect.
(d) X could be pollinated by water whereas Y could be pollinated by insect.

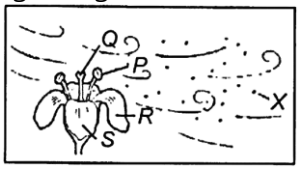
3. Read the given statements (i to vii) describing the events that lead to the maturation of a plant.
(i) The root grows first.
(ii) The seedling obtains the food it needs from the cotyledons.
(iii) The part that comes out next is the shoot.
(iv) It grows downwards because of gravity.
(v) The seedling develops its leaves and starts making food.
(vi) More leaves will develop as the plant grows.
(vii) The seed leaves now no longer needed, wither, die and fall off.

Now, select the correct option from the codes given below to put the events in a correct order.
(a) (i) → (iii) → (ii) → (iv) → (v) → (vii) → (vi)
(b) (i) → (iii) → (v) → (iv) → (ii) → (vii) → (vi)
(c) (i) → (iv) → (iii) (v) → (ii) → (vii) → (vi)
(d) (i) → (iv) → (iii) (ii) → (v) → (vii) → (vi)

4. Which of the following characteristics are common to both wind and water pollinated flowers?
(i) Pollen grains are long and ribbon-like.
(ii) Stigma is large and feathery.
(iii) The flowers are not colourful.
(iv) The flowers do not produce nectar.

(a) (i) and (ii) only (b) (iii) and (iv) only
(c) (ii) and (iii) only (d) (i) and (iv) only

5. Refer to the given figure.

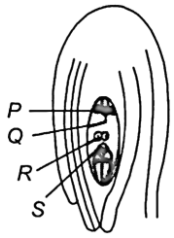


Bees that collect nectar from the flower help carry X to other places. Which part of the flower should the bees touch to collect X?
(a) P (b) Q
(c) R (d) S

6. Select the plants which are pollinated by water.
(i) Vallisneria (ii) Zostera
(iii) Wheat (iv) Coconut
(v) Sunflower (vi) Rafflesia

(a) (i), (ii), (iii) and (iv) only
(b) (i) and (ii) only
(c) (i)), (ii), (iv) and (iv) on)y
(d) (iii) and (vi) only

7. Refer to the given figure. Which of the labelled parts is the egg cell?



(a) P (b) Q
(c) R (d) S

8. Study the given table and select the correct option.

Methods of reproduction	Examples
Budding	P
Spore formation	Q
Fragmentation	R
Vegetative propagation	S

	P	Q	R	S
(a)	Dahlia	Spirogyra	Rhizopus	Begonia
(b)	Yeast	Rhizopus	Spirogyra	Begonia

(c)	Spirogyra	Rhizopus	Begonia	Dahlia
(d)	Dahlia	Yeast	Spirogyra	Rhizopus

9. Anushka bagged four different kinds of flowers on the potted plants as shown below and left them undisturbed. Which of these four flowers is most likely to produce fruits and seeds?

(a) 

(b) 

(c) 

(d) 

10. Consider the following statements and select the option which correctly identifies true (T) and false (F) ones.
(i) Ovary ripens to form seed and ovule ripens to form fruit after fertilisation.
(ii) Seed dispersed through water usually develop floating ability in the form of spongy or fibrous outer coat as in coconut.
(iii) Pollination occurs before fertilisation.
(iv) Cutting, layering, grafting and tissue culture are the natural methods of vegetative propagation.

	(i)	**(ii)**	**(iii)**	**(iv)**
(a)	F	F	T	F
(b)	F	T	T	F
(c)	T	T	T	F
(d)	F	T	T	T

11. The given table lists some plants and their reproductive structures.

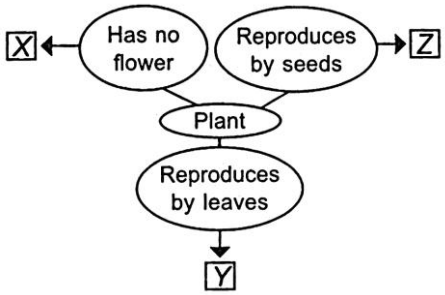
Plants	**Reproductive structures**
Bean plant X Onion	Seeds Spores

What should be at X and V?
(a) X - Fern, Y - Spores
(b) X - Pineapple, Y - Corms
(c) X - Moss, Y - Bulbs
(d) X - Moss, Y – Leaves

12. Read the given passage.

The flowers of X plant contain either stamen or pistil while flowers of plant Y contain both stamens as well as pistil.
Select the correct statement regarding X and y.
(a) In X, seed setting is assured even in the absence of pollinating agent.
(b) X could be mustard while Y could be papaya.
(c) In normal conditions, all the plants of V changes into seeds after fertilisation.
(d) The flowers of X prevents cross pollination.

13. Refer to the given flow chart and select the option which correctly identifies X, Y and Z.

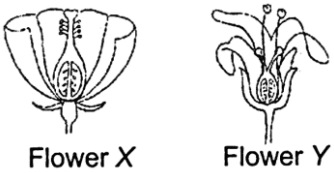


X	**Y**	**Z**
(a) Moss	Bryophyllum	Maize
(b) Moss	Pineapple	Begonia
(c) Bryophyllum	Begonia	Moss
(d) Moss	Papaya	Pineapple

14. Read the given statements (i-iv) with one or two blanks and select the option that correctly fills any two of the statements,
(i) In grafting, a cutting having buds from one plant called the ____ is kept over the stem with roots of another plant called the ____.
(ii) Unorganised mass of the cells in the tissue culture is called___.
(iii) The shoot forming part of embryo is called ___ while the root forming part of embryo is called__.
(iv) The process of fusion of male gamete with female gamete to form a zygote is called__.

(a) (i) Scion, Stock; (iv) Pollination
(b) (ii) Callus; (iii) Plumule, Radicle
(c) (ii) Explant; (iii) Radicle, Plumule
(d) (i) Stock, Scion; (ii) Reproduction

15. Study the given diagrams showing the cross-section of two flowers. Which of the following statements is/are incorrect regarding them?



(i) These plants have developed from seeds.
(ii) Flower X is a female flower and flower Y is a bisexual flower.
(iii) Fertilisation can take place in both flowers.

(a) (i) only (b) (ii) only
(c) (i) and (iii) only (d) (ii) and (iii) only

Achievers Section (HOTS)

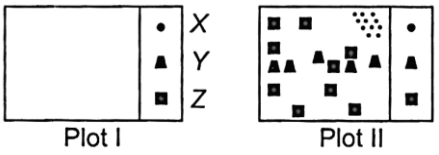
16. Refer to the given dichotomous key and select the correct statement.
(i) (A) Single parent is involved - Go to (ii)
(B) Two parents are involved - Go to (v)
(ii) (A) New plants are produced by natural method - Go to (iii)
(B) New plants are produced by artificial method - Go to (iv)
(iii) (A) Plant produced through stem - P
(B) Plant produced through root - Q
(iv) (A) Plant produced from unorganized cell mass - R
(B) Plant produced by bending young branch towards the ground and covered with moist soil - S
(v) (A) Plant produced when pollen grains are transferred to the stigma of same flower of the same plant - T
(B) Plant produced on transferring pollen grains to the stigma of different flower - U

(a) P could be sweet potato while S could be Asparagus.
(b) R could be Asparagus which grows in suitable nutrient medium.
(c) T could be papaya while U could be Hibiscus.
(d) Q could be potato which possesses scars or depressions called *eyes*.

17. Ruchi collected four different kinds of seeds (W, X, Y and Z). The characteristic of each seed is given below. Identify the seeds and the agent of their dispersal and select the correct option.
W- Surrounded by tiny hair
X- Thick coat of fibres
Y- Presence of hooks or spines
Z - Enclosed in a fruit that bursts open when mature

Seed	Agent of dispersal
(a) W - Dandelion	Animals
(b) X - Coconut	Water
(c) Y - Xanthium	Air
(d) Z - Cotton	Explosion

18. Refer to the given figure showing three parent species, X, Y and Z (in plot I) and their respective seedlings after dispersal (in plot II).



Select the incorrect statement regarding species X, Y and Z.
(i) X could be pea plant in which fruits burst open forcibly after drying.
(ii) Y could be Xanthium in which seeds are hooked i.e., have spines.
(iii) Z could be Acer in which fruits and seeds have wings or hair like structure.
(iv) X could be coconut, Y could be lotus and Z could be Calotropis.

(a) (iii) and (iv) only (b) (i) and (ii) only
(c) (iii) only (d) (iv) only

19. The following investigation was carried out using flower buds growing on three plants of the same species :
Plant 1 - The anthers were carefully removed and the buds left open to the air.
Plant 2 - The anthers were left untouched and a paper bag was tied tightly around each bud.
Plant 3-The anthers were carefully removed and a paper bag was tied tightly around each bud.
All flowers were opened normally but only those on plant 1 produced seeds.

What can be inferred from it?
(a) Only cross-pollination can take place in this plant species.
(b) Only wind-pollination can take place in this plant species.
(c) Only insect-pollination can take place in this plant species.
(d) Both self and cross-pollination can take place in this plant species.

20. Refer to the given figure and select the correct statement(s).
(i) The part labelled as P gives rise to fruit.

(ii) The part labelled as R is responsible for transfer of female gamete.
(iii) The part labelled as Q transforms into endosperm,
(iv) The part labelled as Q is ferns -gamete.
(v) The part labelled as R carries pollen.

(a) (i) only
(b) (i) and (iii)
(c) (iii) and (iv) only
(d) (ii) and (v) only

Answer key

1. B	**2.** A	**3.** D	**4.** B	**5.** A
6. B	**7.** D	**8.** B	**9.** C	**10.** B
11. B	**12.** C	**13.** A	**14.** B	**15.** B
16. B	**17.** B	**18.** D	**19.** A	**20.** B

HINTS & EXPLANATIONS

1. (b): Seeds and fruits of different plants are carried away by wind, water and animals. Hairy seeds of Madar get blown or dispersed away by the wind to far off places.

2. (a): Insect pollinated flowers are large, coloured, showy and produce nectar. Its pollen grains are usually sticky and bigger in size while in wind pollinated flowers, pollen grains are non-sticky or dry and small in size. The wind pollinated flowers are very small, dull, have no nectar and are not scented.

3. (d) Not Available

4. (b): Long, ribbon-like pollens are found in some water pollinated plants such as Zostera while large and feathery stigma is found in some wind pollinated flowers especially grasses. The flowers in both wind pollinated and water pollinated are not colourful and also do not produce nectar.

5. (a): In the given figure, P is anther which bears pollen grains (X), Q is stigma whereas, R and S are petals. During collection of nectar, bees accidentally carry pollen grains along with them to other places and help in pollination to occur.

6. (b) Not Available

7. (d) Not Available

8. (b) Not Available

9. (c): Flower (c) is most likely to produce fruits and seeds, because it is a complete flower bearing both male and female reproductive. parts at a suitable height,

10. (b): Ovary ripens to form fruit while ovule ripens to form seed after fertilisation. Cutting, layering, grafting and tissue culture are the artificial methods of vegetative propagation.

11. (c): Plants such as mosses, ferns, moulds, etc., reproduce by spore formation. A spore is a tiny, spherical, unicellular body protected by a thick wall. New plants of onion are produced from its bulbs. Bulbs are short underground stems with thick fleshy bulb scales which are modified leaves.

12. (c): X is unisexual flower which could be staminate or pistillate while Vis bisexual flower. Seed setting does not occur in staminate flower while in pistillate flower seed setting is assured only in the presence of pollinating agents.

13. (a) Not Available

14. (b): (i) Scion, Stock, (ii) Callus, (iii) Plumule, Radicle, (iv) Fertilisation

15. (b): Flower X and Y bear both the stamens and the carpels so, these are bisexual flowers.

16. (b): P could be potato that has buds in the scars or depressions called eyes which give rise to new plants. Q could be sweet potato, Asparagus and Dahlia which propagate vegetatively by roots. R could be Asparagus and Chrysanthemum which are grown in "a nutrient medium consisting of hormones required for division and growth of cells could be jasmine, rose or Bougainvillea which can be developed using the technique layering. T could be Hibiscus where self-pollination occurs whereas U could be papaya where cross pollination occurs.

17. (b): The coconut seed has a thick coat of fibre that enables it to float in water and thus dispersed by water (Water dispersal). Seeds of cotton and dandelion have tiny hair surrounding them, which help the seeds to be carried by wind (Wind dispersal). Some seeds such as Xanthium have hooks or spines which help them to stick to the fur of animals or to our clothes and get carried away (Animal dispersal). Fruits of some legumes such as pea and castor burst open forcibly after drying, so that their seeds get scattered in all directions.

18. (d): In the given plots, X, Y and Z represent, dispersal by explosion, animal and wind respectively. Coconut, lotus and Calotrop is are dispersed by water, water and wind respectively.

19. (a): In plant 1, pollen grains must have been carried from some another plant bringing about pollination (cross-pollination) and fertilisation resulting in the production of seeds. In plant 2, both male and female reproductive parts are available, still the plant did not produce seeds. This shows that self-pollination cannot occur in this plant and cross-pollination could not occur due to the presence of paper bag tied to it. In plant 3, there was only carpel left in the flower bud which was covered with paper bag, so there was no chance of pollination or fertilisation.

20. (b) Not Available