

Reproduction in Plants

In text Questions

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1. How do the plants of sugarcane, potato and rose reproduce when they cannot produce seeds?

Ans. Sugarcane and rose are propagated by stem cutting, a method of vegetative reproduction, in which stem is capable of growing into a mature independent plant that are identical to their parents.
 Whereas, potato is an underground modified stem have buds called eyes, which sprouts and develops into a

new identical plant. Thus, the plants which cannot produce seeds, can be propagated vegetative with the help of vegetative parts such as stem, roots, buds and leaves.

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2. What are the advantages of vegetative propagation?

Ans. The method of producing plants by vegetative propagation requires less time to grow into a mature plants bearing flower and fruits as compared to plants produced from seeds. Besides the plants propagated vegetatively are identical to parent plant as only one parent is involved and no mixing of parental characters occur.

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3. How the male gametes present inside pollen grain reaches the female gamete present in the ovule?

Ans. After pollination, the pollen grain falls on the surface of stigma and germinates to form a long tube, reaching the ovule inside the ovary, the egg or female gamete is present in the ovule. The outer surface (exine) of pollen grain ruptures and male gametes are released to fuse with egg.

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4. Why are flowers so colourful and fragrant? Is it to attract insects?

Ans. Flowers are so colourful because of the light energy they reflect and absorb. And flowering plants produce volatile chemical in flowers which evaporate into the air and produce their fragrances. Petal is the colourful part of flower which attracts insects. Yes, it is too attract insects.



Exercises

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- 1. Fill in the blanks:
 - (a) Production of new individuals from the vegetative part of parent is called
 - (b) A flower may have either male or female reproductive parts. Such a flower is called

(c) The transfer of pollen grains from the anther to the stigma of the same or of another flower of the same kind is known as

- (d) The fusion of male and female gametes is termed as
- (e) Seed dispersal takes place by means of and
- Ans. (a) Production of new individuals form the vegetative part of parent is called vegetative propagation.
 - (b) A flower may have either male or female reproductive parts. Such a flower is called unisexual flower.

(c) The transfer of pollen grains from the anther to the stigma of the same or of another flower of the same land is known-as pollination.

- (d) The fusion of male and female gametes is termed as fertilization.
- (e) Seed dispersal takes place by means of wind, water and animals.

2. Describe the different methods of asexual reproduction. Give examples.

Ans. Different methods of asexual reproduction are

(i) **Fragmentation** Parent body divides into distinct pieces or fragments, each of which grows into new individuals, e.g. *Spirogyra* (an alga).



(ii) **Budding** A small part of parent body grows out as a bud, which detaches and becomes a new individual. Sometimes, a chain of buds is also formed, e.g. yeast, corals, sponges, etc.



(iii) **Spores formation** Parent plant develops and releases thousands of tiny, spherical and unicellular asexual spores, which are protected by cell wall. When these spores find favourable environment, they grow into identical new plants, e.g. mosses, ferns, bread, moulds, etc.



Reproduction through spore formation in fungus

(iv) **Vegetative propagation** Many plants like cacti, potato, rose, sugarcane, etc reproduce by this method. New plants are produced from vegetative parts of mother plant such as roots, stem, buds and leaves.

3. Explain what do you understand by sexual reproduction.

Ans. Sexual reproduction is a process of formation of new individuals by involving two parents or gamete formation. In sexually reproducing plants, new plants are produced from seeds. In this method, gametes fuse to form zygote that gives rise to new individual.

4. State the main differences between asexual and sexual reproduction.

Ans. The main differences between asexual and sexual reproduction are

Asexual reproduction	Sexual reproduction
Only one parent is needed.	Two parents male and female are required.
Offsprings are genetically identical to their parents.	Offsprings exhibit variation with respect to their parents.
No seed is formed. Fragmentation, budding, spore formation, vegetative propagation are its different types.	Seeds are formed due to fusion of male and female gametes.
Spirogyra, yeast, moulds and potato exhibit asexual reproduction.	Fruit bearing plants like mango and China rose, reproduce sexually.

5. Sketch the reproductive parts of a flower.

Ans. The reproductive parts of a flower are stamen and pistil.



6. Explain the differences between self-pollination and cross-pollination.

Ans.	The differences between self-pollination and cross-pollination are	
	Self-pollination	Cross-pollination

Pollens are transferred to the stigma of same flower.	Pollens are transferred to the stigma of different flower.
Do not require pollinating agents.	Requires pollinating agents.
Occurs in legumes, peanuts and sunflower.	Common in most of flowers like rose, China rose,
	etc.

7. How does the process of fertilization take place in flowers?

Ans. The steps involved in the process of fertilization are

(i) After pollination, pollen grains start growing into a pollen-tube on the stigma passing through pistil.

(ii) The tube extends through the style and reaches to the ovules.(iii) The pollen-tube carries the male gametes called pollen grains.

(iv) Male gametes fuse with the egg (female gamete) present inside ovule and forms a zygote. This process is called fertilization.

(v) Later zygote develops into an embryo and ovules develop into a seed.

(vi) Thus, seed carries an embryo with stored food and is covered by a hard protective covering called seed coat.

8. Describe the various ways by which seeds are dispersed.

Ans. Scattering of seeds or fruits to distant places by various agents is called seed dispersal.

Following are some agents of seeds dispersal:

(a) **Wind** Seeds of cotton have hairs surrounding it, which is easily carried by wind. Similarly, seeds of maple has wings which help in its dispersal.

(ii) Water Coconut seeds which have thick fiber that help it to float in water and reach at distant places.

(iii) Animals Seeds like Xanthium have spines which help them to stick to fur or skin of the animals. Some seeds eaten by birds and animals along with fruit that pass out unharmed with their faecal matter. They germinate where they fall.

(iv) **Explosion mechanism** Fruits of balsam, castor and pea burst on drying and spread the seeds in surroundings.

9. Match items in Column I with those in Column II.

	Column I		Column II
(a)	Bud	(i)	Maple
(b)	Eyes	(ii)	Spirogyra
(c)	Fragmentation	(iii)	Yeast
(d)	Wings	(iv)	Bread mould
(e)	Spores	(v)	Potato
		(vi)	Rose

Ans. The correctly matched options of both the columns are

	Column I		Column II
(a)	Bud	(iii)	Yeast
(b)	Eyes	(v)	Potato
(c)	Fragmentation	(ii)	Spirogyra
(d)	Wings	(i)	Maple
(e)	Spores	(iv)	Bread mould

10. Tick (Right) the correct answer.

- (i) The reproductive part of a plant is the
- (a) leaf (b) stem
- (c) foot (d) flower
- (ii) The process of fusion of the male and the female gametes is called
- (a) fertilization (b) pollination
- (c) reproduction (d) seed formation
- (iii) Mature ovary forms the
- (a) seed (b) stamen
- (c) pistil (d) fruit
- (iv) A spore producing plant is
- (a) rose (b) bread mould
- (c) potato (d) ginger.
- (v) Bryophyllum can reproduce by its
- (a) stem (b) leaves
- (c) roots (d) flower
- Ans. (i) (d) The reproductive part of a plant is the flower.
 - (ii) (a) The process of fusion of the male and the female gametes is called fertilization.
 - (iii) (d) Mature ovary forms the fruit.
 - (iv) (b) A spore producing plant is bread mould.
 - (v) (b) *Bryophyllum* can reproduce by its leaves.



	Multiple Choice Questions			
1	Which of the following parts	of a plant take part in sexual reproduction?		
1.	(i) Elower	(ii) Sood		
	(iii) Fruit	(iv) Branch		
	Choose the correct answer fro	am below:		
	(a) (i) and (ii)	(b) (i), (ii) and (iii)		
	(c) (iii) and (iv)	(d)(ii), (iii) and (iv)		
Ans.	(b) The reproductive part of	plant is flower that takes part in sexual reproduction. The result of sexual		
	reproduction is fruit, which co	ntains seeds. Seeds in turn on germination give rise to another new similar plant.		
2. Lila observed that a pond with clear water was covered up with a green algae within a wee method of reproduction did the algae spread so rapidly?		th clear water was covered up with a green algae within a week. By which he algae spread so rapidly?		
	(a) Budding	(b) Sexual reproduction		
	(c) Fragmentation	(d) Pollination		
Ans.	(c) The algae most probably re the surface of pond within a w	eproduced by fragmentation (an asexual method) to spread, so rapidly to cover reek.		
3.	Seeds of drumstick and maple (a) winged seeds	e are carried to long distances by wind because they possess		
	(b) large and hairy seeds (c) long and ridged fruits			
	(d) spiny seeds			
Ans.	(a) Seeds of drumstick and ma	ple are carried to long distances by wind because they possess winged seeds.		
4.	The ovaries of different flowe	rs may contain		
	(a) only one ovule	(b) many ovules		
A	(c) one to many ovules	(a) only two ovules		
Ans.	(c) The ovaries of different flow	wers may contain one to many ovules-		
5.	Which of the following staten	nents is/are true for sexual reproduction in plants?		
	(i) Plants are obtained from seeds			
	(II) Two plants are always ess	ential 		
	(III) Fertilization can occur onl	y after pollination		
	(iv) Unly insects are agents of	polination		
	(a) (i) and (iii)	(b) only (i)		
	(a) (i) and (iii)	(d) (i) and (iv)		

Ans. (a) Statements (i) and (iii) are true for sexual reproduction in plants. Two plants are not always essential for reproduction. Some plants bear bisexual flowers having both male and female reproductive parts required for sexual reproduction in the same flower.

6. Pollination refers to the

- (a) transfer of pollen from anther to ovary
- (b) transfer of male gametes from anther to stigma
- (c) transfer of pollen from anther to stigma
- (d) transfer of pollen from anther to ovule
- Ans. (c) Pollination refers to the transfer of pollen from anther to stigma.

Very Short Answer Type Questions

- 7. Fungus, moss and fern reproduce by a common method of asexual reproduction. Name the method.
- Ans. Fungus, moss and fern reproduce by the common method of spore formation which is a type of asexual reproduction.
- 8. Pick the odd one out from the following on the basis of mode of reproduction and give reason for it, Sugarcane, Potato, Rice, Rose.
- Ans. The odd one out is rice, in the above given pairs as rice reproduces by sexual reproduction and sugarcane, potato and rose reproduces vegetatively.
- 9. Boojho had the following parts of a rose plant-a leaf, rote, a branch, a flower, a bud and pollen grains. Which of them can be used to grow a new rose plant?
- Ans. Branch can be used to grow a new rose plant. As, rose reproduces by vegetative propagation, i.e. stem cutting method.
- 10. Which type of pollination does the given figure indicate?



- Ans. The given figure shows self pollination, as the pollen grains from anther of flower are transferred to the stigma of same flower.
- 11. One morning as Paheli strolled in her garden she noticed many small plants, which were not there a week ago. She wondered, where they had come from as nobody had planted them there. Explain the reason for the growth of these plants.
- Ans. The small plants which were not there in the garden a weak ago have grown up due to seed dispersal. The seeds from the tree may have fallen below or have been dispersed by wind or animals on the ground, which on germination developed into new small plants.

Short Answer Type Questions

12. In the figure given below label the part marked (i), (ii) and (iii).



Ans. The parts in the given figure are labelled as follows:



- 13. When you keep food items like bread and fruits outside for a long time especially during the rainy season, you will observe a cottony growth on them.
 - (a) What is this growth called?
 - (b) How does the growth take place?
- Ans. (a) When food items like, .bread and fruits are kept outside for a long time especially during rainy season, a' cottony growth of bread mould, a fungus is observed.

(b) This growth of fungus takes place by spores present in air, which when comes in the contact with moisture in bread germinates and grow to produce spores.

Group the seeds given in fig. (i)-(iii) according to their means of dispersion.
(a) Seed dispersed by wind
(b) Seed dispersed by water
(c) Seed dispersed by animal







- Ans. (a) Seed (i) is the seed of maple and is dispersed by wind as it has wings.
 (b) Seed of madar (aak) (ii) is dispersed by wind as it is light
 (c) Seed of Xanthium, (iii) is dispersed-by animal as its has hooks and spines on it.
- 15. Coconut is a large and heavy fruit. How is it adapted for dispersal by water?
- Ans. The outer covering of coconut having spongy jute fibres, help it to float easily in water, thus it is adapted for dispersal by water.

Long Answer Type Questions

16. Fill in the blanks with correct terms.

The male and female gametes fuse to form a (a) during the process of ...(b)... . This grows into an (c) which is enclosed within a seed. After fertilization the ovules develop into (d) and the ovary develops into a (e)

- Ans. The male and female gametes fuse to form a (a) zygote during the process of (b) fertilization. This grows into an (c) embryo which is enclosed within a seed. After fertilization the ovules develop into (d) seed and the ovary develops into a (e) fruit.
- 17. In the figure of a flower given below, label the parts whose functions are given below and give their names.



- (a) The part which contains pollen grains.
- (b) The part where the female gamete is formed.
- (c) The female reproductive part, where pollen grains germinate.
- (d) The colourful part of flower which attracts insects.
- Ans. The various parts of a flower whose functions are mentioned above are labelled as follows:



18. Write how the following seeds are dispersed.

- (a) Seeds with wings.
- (b) Small and light seeds.
- (c) Seeds with spines/hooks.
- Ans. (a) The seeds with wings are dispersed by wind as wings help it to carry to distant places.
 - (b) Small and light seeds with hairs often present on them are also dispersed by wind.

(c) Seeds with spines and hooks are dispersed by animals, which stuck to their body or fur and are carried to different places.

19. In the figure of a bisexual flower given along side draw the missing part and label the parts marked (i), (ii) and (iii) Also, label the missing part that you draw.



Ans. In the given figure, the missing part is pistil and all the parts of flower can be labelled as follows:

