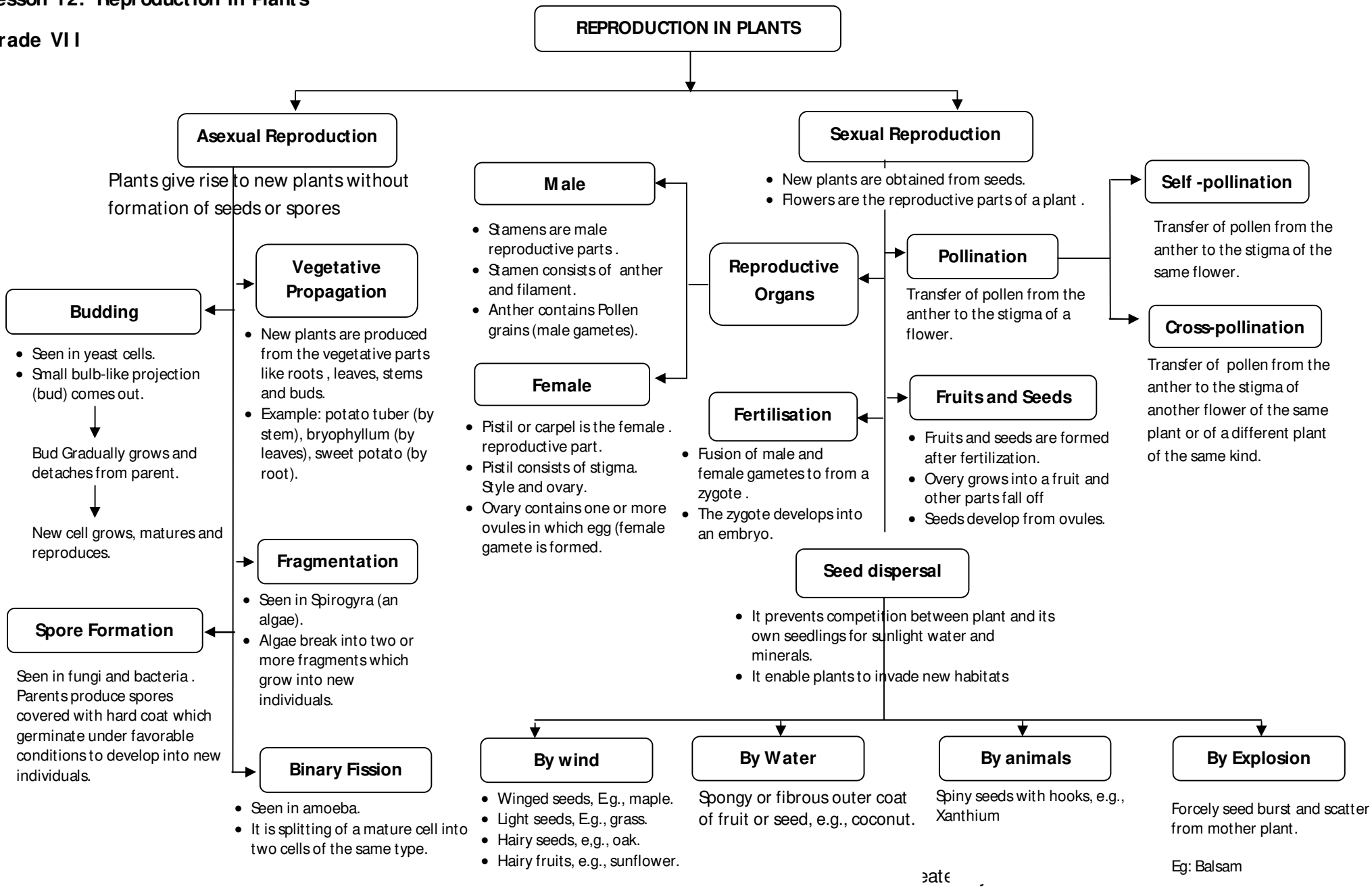
Lesson 12. Reproduction in Plants

Grade VII



Know the Terms

- **Asexual Reproduction** : In asexual reproduction, plants can give rise to new plants without seeds.
- **Bisexual flowers** : The flowers which contain both stamens and pistil are called bisexual flowers.
- **Embryo** : The zygote develops into an embryo.
- **Fertilization** : The process of fusion of male and female gametes (to form a zygote) is called fertilization.
- **Flower** : Flowers are the reproductive parts of a plant.
- **Pistil** : Pistil is the female reproductive part.
- **Pollination** : The transfer of pollen from the anther to the stigma of a flower is called pollination.
- **Reproduction** : The product of new individuals from their parents is known as reproduction.
- **Sexual reproduction** : In sexual reproduction, new plants are obtained from seeds.
- **Stamen** : The stamens are male reproductive parts.
- **Unisexual flowers** : The flowers which contain either only the pistil or only the stamens are called universal flowers.

Objective Type Questions

(1 Mark each)

I. Multiple choice questions

1. Coconut is dispersed by

a. Water b. Animals c. Wind d. All of these

2. Which is not a part of pistil?

a. Stigma b. Style c. Filament d. Ovary

3. Pollination is transfer of pollen grains from

a. Anther to ovary b. Anther to style c. Anther to stigma d. All of these

4. Seed dispersal helps the plant to

a. Prevent over crowding
b. Avoid competition
c. Invade new habitats
d. All of these

5. Which of the following parts of plant take part in sexual reproduction? **[NCERT Exemplar]**

i. Flower ii. Seed iii. Fruit iv. Branch

Choose the correct answer from below.

a. i and ii b. i, ii and iii c. iii and iv d. ii, iii and iv

6. Lila observed that a pond with clear water was covered up with a green algae within a seek. By which method of reproduction did the algae spread so rapidly? **[NCERT Exemplar]**

a. Budding b. Sexual reproduction c. Fragmentation d. Pollination

7. Seeds of drumstick and maple are carried to long distances by wind because they possess. **[NCERT Exemplar]**

a. Winged seeds
b. Arge and hairy seeds
c. Long and ridged fruits
d. Spiny seeds

8. The 'eye' of the potato plant is what. **[NCERT Exemplar]**

a. The root is to any plant
b. The bud is to a flower
c. The bud is to Byrophyllum leaf
d. The anther is to stamen

9. The ovaries of different flowers may contain. **[NCERT Exemplar]**

a. Only one ovule b. Many ovules c. One to may ovules d. Only two ovules

10. Which of the following statements is/are true for sexual reproduction in plants? **[NCERT Exemplar]**

i. Plants are obtained from seeds
ii. Two plants are always essential
iii. Fertilisation can occur only after pollination
iv. Only insects are agents of pollination

Choose from the option given below.

a. i and iii b. i only c. ii and iii d. i and iv

11. Pollination refers to the **[NCERT Exemplar]**

a. Transfer to 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 another to ovule

1. a	2. c	3. c	4. d	5. b	6. c	7. a	8. c	9. c	10. a	11. c

II. Multiple choice questions

1. Vegetative reproduction in rose takes place by

a. Leaves b. Roots c. Stem d. Seed

2. Fertilisation in plants takes place.

a. On stigma b. Inside ovary c. Outside ovary d. Inside the anther

3. The process of fusion of male and female gamete is called.

a. Pollination b. Ovulation c. Fertilisation d. Gametogenesis

1. c	2. b	3. c

I. (1) Fill in the blanks

1. Buds in the potato are also called _____.
2. The _____ develops into an embryo.
3. The fruits are ripened _____.
4. Xanthium seeds are dispersed by _____.
5. Fungi, fern and mosses reproduce vegetatively by _____.
6. Seeds of grams are dispersed by _____.

1. eyes	2. zygote	3. ovary	4. Animals	5. spores	6. air

I. (2) Fill in the blanks

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 fertilisation the ovules develop into _____ (d) _____ and the ovary develops into a _____ (e) _____.

a. zygote	b. fertilization	c. embryo	d. seed	e. fruit

II. Fill in the blanks

1. The flowers having both stamen and pistil are called _____.

2. The process which ensures continuity of life on earth is called _____.

1. bisexual	2. reproduction

I. Match the following

Column A	Column B
a. Yeast	i. Leaves
b. Rose	ii. Spores
c. Bryophyllum	iii. Cutting
d. Bread mould	iv. Detached body part
e. Cactus	v. budding
f. Spirogyra	vi. Leaves
g. Potato	vii. Cutting
h. Money plant	viii. Budding

a. viii	b. vii	c. vi	d. v	e. iii	f. iv	g. ii	h. i

II. Match the following

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

a. iii	b. v	c. ii	d. i	e. iv

I. True or False

i. The spores are asexual bodies.

ii. The process of fusion of male and female gametes is called pollination.

iii. The transfer of pollen grains from anther to stigma is called fertilisation.

iv. The fruits are the ripened ovary after fertilisation.

v. Anther and filaments are two parts of pistil

i. True	ii. False	iii. False	iv. True	v. False

Quiz Time

1. Name the process by which new individuals are produced.

2. Name two modes of reproduction.

3. What are vegetative parts of the plants?

4. What is the process of transfer of the pollen grains from anther to stigma called?

5. Name the various kinds of pollination.

6. What are reproductive parts of the plants?

7. Name the types of flowers on the basis of present of reproductive parts.

8. What is the male reproductive part of the flower?

9. What are the various parts of the pistil (female reproductive party)?

10. Name the process by which zygote is formed.

1. Reproduction

2. i. Sexual reproduction ii. Asexual reproduction

3. Roots, stems and leaves

4. Pollination

5. i. Self-pollination ii. Cross-pollination

6. Flowers

7. i. Unisexual ii. Bisexual

8. Stamen

9. i. Stigma ii. Style iii. Ovary

10. Fertilisation

NCERT Corner

Intext Questions

1. What is the function of flowers in plants?

Flower are the reproductive parts of plant. Their function is to reproduce the plants.

2. Boojho wants to know why flowers are generally so colourful and fragrant. Is it to attract insects?

Yes.

Textbook Questions

1. Fill in the blanks :

(a) Production of a new individuals from the vegetative part of a parent is called _____.

(b) A flower may have either male or female reproductive parts. Such 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 _____.

(a) vegetative propagation	(b) unisexual flowers	(c) pollination
(d) fertilization	(e) wind, insect, water	

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

Different methods of asexual reproductive are :

(i) Vegetative propagation : It is a sort of asexual reproduction in which new plants are produced from roots, stems, leaves and buds. Since reproduction is through the vegetative parts of the plant, it is called vegetative propagation.

(ii) Budding : Some simple organisms reproduce by producing small outgrowths from their body. These outgrowths called buds, sometimes break off from the parent organism to grow into new individuals.

(iii) Fragmentation : This type of reproduction is common is algae. An algae breaks up into two or more fragments. These fragments or pieces grow into new individuals.

(iv) Spore formation : Many non-flowering plants (plants which do not produce flowers) reproduce by spore formation. When a spore, carried by air, finds the right conditions, i.e., food, warmth and moisture, it grows into a new individual.

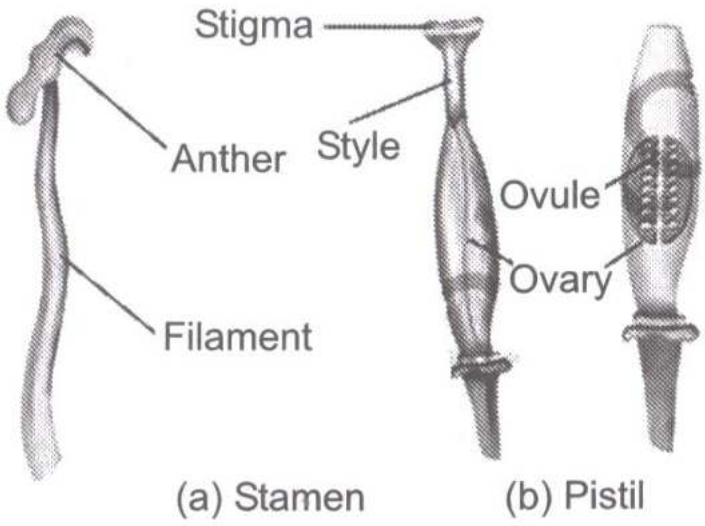
3. Explain what do you understand by sexual reproduction ?

In sexual reproduction, new plants are germinated from seeds.

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

In sexual reproduction, seed is needed but in asexual reproduction seed is unwanted.

5. Sketch the reproductive parts of a flower.



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

Self-pollination is the transference of pollen from the stamen to the pistil of the same flower. Cross-pollination is the transference of pollen from the stamen of one flower to the pistil of another flower of the same kind of plant.

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

Upon reaching the stigma, a pollen grain germinates and grows a long, thin tube called pollen tube. This tube carries the male gamete produced by the pollen grains. The pollen tube pushes through the style, into the ovary. The male gamete then enters into an ovule, which contains the female gamete or egg. After the two gametes fuse, the ovary develops into the fruit and each ovule develops into a seed.

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

The dispersal of seeds occurs in different ways :

1. By the wind : Some plants, like drumstick have winged seeds, while other plant like milkweed have tufts of hair which help them ride on the wind.

2. By water : The fibrous covering of coconut, helps it float in water and is carried far away from the parent plant.

3. By Animals : Birds, monkeys and other animals eat the fruit of many plants have fruits or seeds with hooks, bristles or spines. These get attached to the fur of animals or to our clothes. They are carried a long way before they fall off or are brushed off.

4. By exploding fruits : The fruits of the rubber tree, balsam and beans explode when they ripen.

9. Match the 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

a. iii	b. v	c. ii	d. i	e. iv, vi

10. Tick (✓) the correct answer.

a. The reproductive part of a plant is the

i. leaf ii. stem iii. root iv. flower

b. The process of fusion of the male and the female gametes is called.

i. fertilization ii. pollination iii. reproduction iv. seed formation

c. Mature ovary forms the

i. seed ii. stamen iii. pistil iv. seed formation

d. A spore producing plant is.

i. rose ii. bread mould iii. potato iv. ginger

e. Bryophyllum can reproduce by its.

i. stem ii. leaves iii. roots iv. flower

a. iv. flower	b. i. fertilization	c. iv. fruit	d. ii. bread mould	e. ii. leaves

I. Very Short Answer Type Questions.

1. Name the process by which parent produce new individuals.

Reproduction.

2. What are the vegetative parts of the plants?

The root, stem and leaves are called vegetative parts of the plant.

3. Name the reproductive parts of the plant.

Flowers are the reproductive parts of the plant.

4. Classify the flowers on the basis of their reproductive parts.

There are three types of flowers.

i. Male flowers : Which have only male parts (stamen).

ii. Female flowers: Which have only female parts (Pistil)

iii. Some flowers have both the parts male and female (both Stamen and Pistil).

5. How many types of reproduction are there?

i. Asexual reproduction

ii. Sexual reproduction

6. Name the various modes of asexual reproduction in plants.

i. Vegetative reproduction

ii. Budding

iii. Fragmentation

iv. Spore formation

v. Fission.

7. What are eyes in potato?

The vegetative buds in potato are called eyes.

8. Name one plant for each reproducing by roots, stems and leaves.

(i) Root : Sweet potato

(ii) Stem: Rose

(iii) Leaves: Bryophyllum

9. Give one example of organism each reproducing by budding, spore formation and fragmentation.

(i) Budding: Yeast

(ii) Spore formation: Fungus

(iii) Fragmentation: Spirogyra

10. Name the male reproductive part of the flower.

Stamen

11. Write the name of female reproductive part of the flower.

Pistil

12. Name two types of flowers on the basis of reproductive parts present in them.

(i) Unisexual

(ii) Bisexual

13. What are the two parts of the stamen?

(i) Anther

(ii) Filament

14. Name the various parts of pistil.

(i) Stigma (ii) Style (iii) Ovary

15. What are male gametes in plants?

Anther contains pollen grains which produce male gametes.

16. What are female gametes in plants?

The ovules found in ovary are called female gametes.

17. What is zygote?

The male and female gametes fuse together to form zygote.

18. What do you understand by the term pollination?

The transfer of pollen grains from anther of a flower to the stigma of the same or different flower of same species is called pollination.

19. How many types of pollination are there?

There are two types of pollination:

(i) Self pollination (ii) Cross pollination

20. What is fertilisation?

The fusion of male and female gametes to form zygote is called fertilisation.

21. What is an embryo?

The zygote develops into an embryo.

22. Define fruit.

The ripened ovary after fertilisation is called fruit.

23. What are seeds?

The matured ovules after fertilisation develop into seeds.

24. Which part of the plant perform the function of reproduction?

Flowers.

25. What are cuttings?

The pieces of branch are called cuttings.

26. Name two plants which grow by the cuttings.

(i) Potato (ii) Sugarcane

27. What are vegetative buds?

The buds which develop into shoots are called vegetative buds.

28. What are eyes?

The scars on the potato are called eyes.

29. Name a plant which can grow with the help of leaves.

Bryophyllum.

30. What is yeast?

Yeast is a single celled organism.

31. How do moss and fern plants grow?

Moss and fern plants are reproduce by means of spores.

32. What are gametes?

The reproductive cells are called gametes.

33. Write one advantage of dispersal of seeds.

Dispersal prevents competition between plant and its seedlings for light and water.

34. What are the mediums of dispersal of seeds?

Seeds and fruits are dispersed by wind, water and animals.

II. Very Short Answer Type Questions.

1. What is meant by vegetative part of a plant?

Plant parts not concerned with sexual reproduction are called vegetative part.

2. Give examples of two plants of commercial importance which do not produce seeds.

Sugarcane, banana, potato.

3. How rose or champa are propagated?

By stem cutting.

4. How cacti produce new plants?

Parts of cacti fall off to ground and give rise to new plants.

5. Plants produced by which type of reproduction have characters of both the parents?

Sexual reproduction.

6. Name the asexual reproductive bodies of fern and moss.

Spores.

7. What are bisexual flowers?

Flowers which have both male (stamen) and female (pistil) present in it are bisexual flower.

8. Give an example of a fleshy fruit and a hard fruit.

Mango fleshy, Coconut hart.

9. How the seeds are dispersed in castor and balsam?

On drying they burst with sudden jerk and seeds get dispersed.

10. Name the structure which carries the male gamete to the ovule.

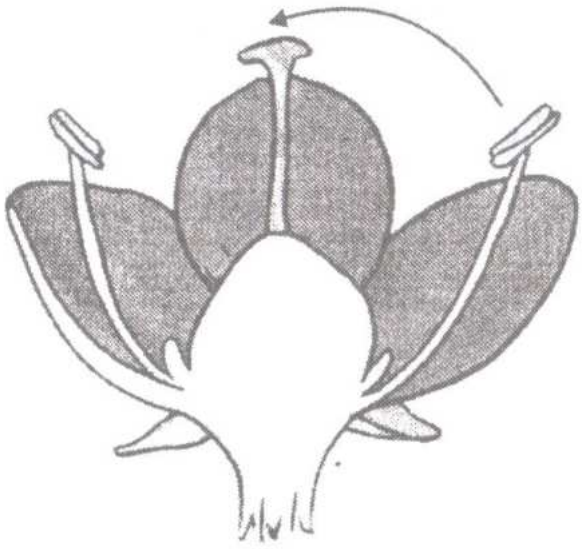
Pollen tube.

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.

[NCERT Exemplar]

The seeds from the tree may have fallen below and germinated into small plants.

12. Which type of pollination does the figure indicate?



Ans : self pollination

13. Coconut is a large and heavy fruit. How is it adapted for dispersal by water?

Coconut fruit has spongy fibres, which helps to float in water.

14. Fungus, moss and fern reproduce by a common method of asexual reproduction. Name the method. **[NCERT Exemplar]**

They can reproduce asexually by means of spore formation.

15. Boojho had the following parts of a rose plant – a leaf, roots, a branch, a flower, a bud and pollen grains. Which of them can be used to grow a new rose plant? **[NCERT Exemplar]**

Branch.

16. Pick the odd one out from the following on the basis of mode of reproduction and give reason for it. **[NCERT Exemplar]**

Sugarcane, Potato, Rice, Rose

Rice, as it does not reproduce by vegetative propagation whereas the other three plants do.

III. Very Short Answer Type Questions.

1. Fungus, moss and fern reproduce by a common method of a sexual reproduction. Name the method. **[NCERT Exemplar]**

They can reproduce asexually by means of spore formation.

2. Which type of pollination does the figure indicate? **[NCERT Exemplar]**

3. What is binary fission?

Binary fission is defined as the splitting of a mature cell into two cells of the same type. It can be seen in Amoeba.

4. 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. [NCERT Exemplar]

The seeds from the tree may have fallen below and germinated into small plants.

5. What is vegetative propagation?

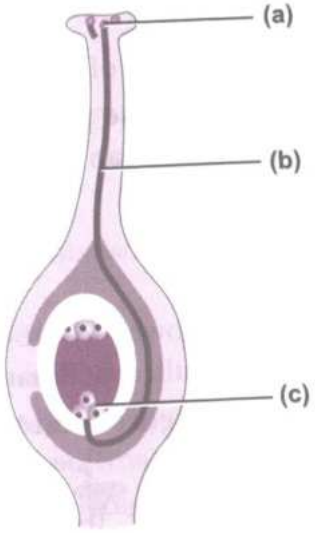
Vegetative propagation is defined as the production of a new individual from a body part like leaves, stems and roots.

6. What is fragmentation?

The breaking of the body into two or more parts is called fragmentation. It can be seen in Spirogyra.

I. Short Answer Type Questions.

1. In the diagram given in figure label the parts marked (a), (b) and (c). [NCERT Exemplar]



a. Pollen grain b. Pollen tube c. Zygote / egg

2. 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? [NCERT Exemplar]

a. It is bread mould, a fungus.

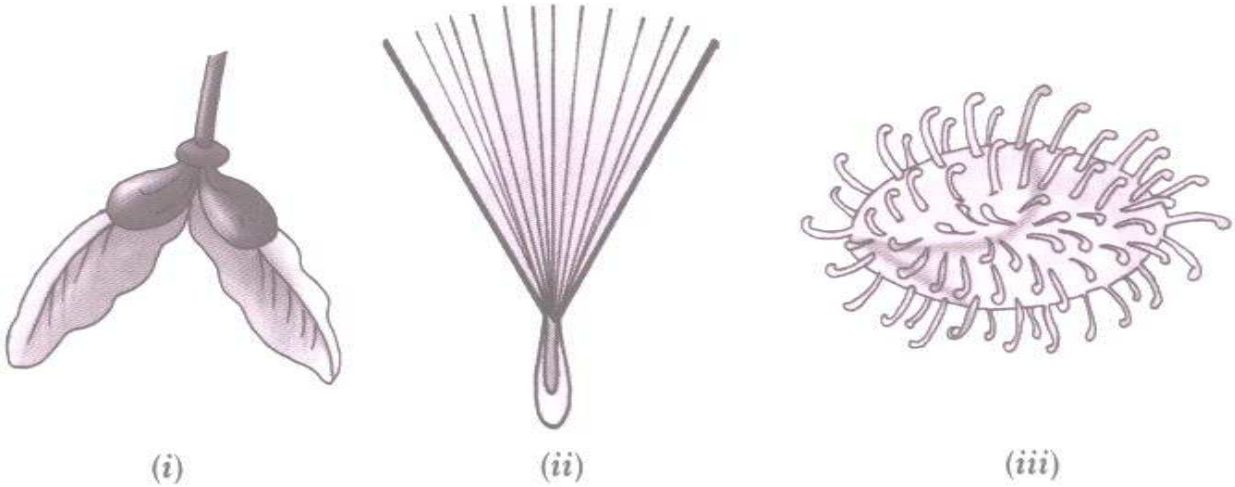
b. They develop from spores.

3. Group the seeds given in figure (i) to (iii) according to their means of dispersion.

a. Seed dispersed by wind

b. Seed dispersed by water

c. Seed dispersed by animal **[NCERT Exemplar]**



(i) (ii) (iii)

i. These are dispersed by wind.

ii. These are dispersed by wind.

iii. These are dispersed by animal.

4. Explain what you understand by sexual reproduction. **[NCERT]**

Sexual reproduction is a process which involves production of seeds. It requires two parents. Most plants reproduce sexually with the help of flowers. The main function of a flower is to reproduce and therefore develop new seeds that can grow into new plants.

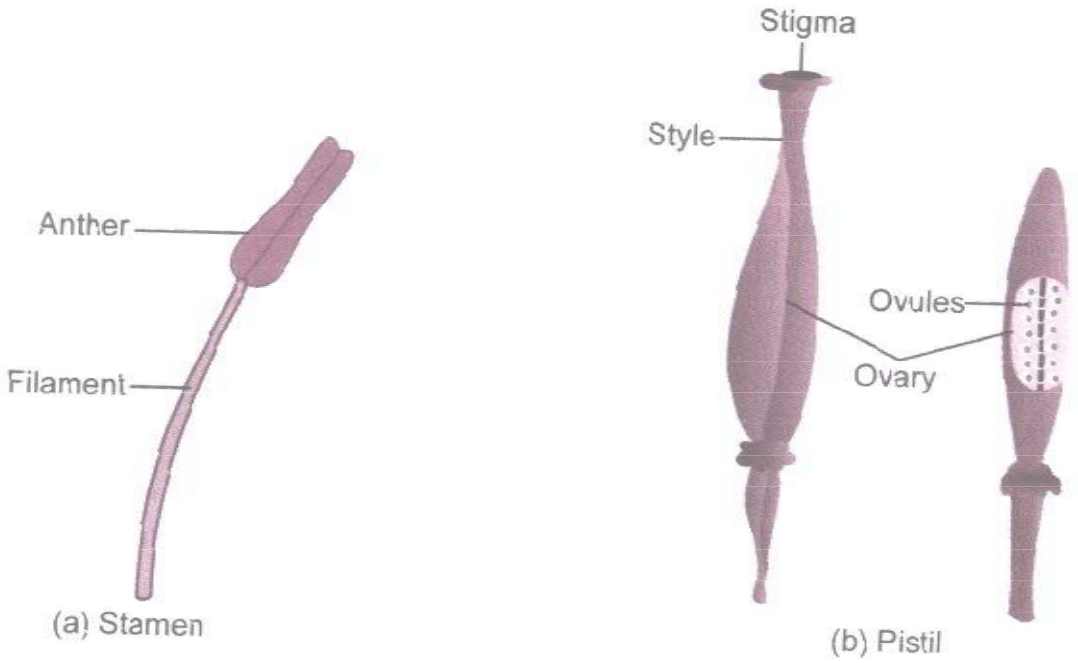
5. State the main difference between asexual and sexual reproduction. **[NCERT]**

S.No	Asexual reproduction	Sexual reproduction
i	It does not involves the fusion of male and female cells.	It involves the fusion of male and female cells.
ii	Offsprings produced are clones of parents.	Offsprings produced vary from parents.
iii	It involves only one parent	It involves two parent.

6. Explain the difference between self- pollination and cross- pollination. **[NCERT]**

S.No	self pollination	cross pollination
i	It is transfer of pollen to stigma of the same flower	It is the transfer of pollen to stigma of another flower of same plant or another plant of same kind.
ii	It occurs only in bisexual flowers	It takes place both in unisexual and bisexual flowers
iii	It does not lead to genetic diversity	It leads to genetic diversity

7. Sketch the reproductive parts of a flower. **[NCERT]**



8. How does the process of fertilisation take place in flowers? **[NCERT]**

When pollen lands on stigma, it germinates and gives rise to a pollen tube that passes through the style and reaches the ovary of a pistil. When the pollen tube reaches an ovule, it releases the male gametes. A male gamete fuses with a female gamete in the ovule. This process is known as fertilisation. The cell which is formed after the fusion of a male and a female gamete is known as zygote. This zygote divides several times in order to form the embryo present inside the seed.

9. Name the four whorls of a flower. Write the function of each.

The four whorls of a flower are: sepals which enclose the entire flower, petals which are coloured to attract insects for pollination, stamens which are the male reproductive organs and the carpels which are the female reproductive organs.

10. Define reproduction. Why is it important?

Reproduction is defined as the production of new individuals by parents of same species. It is important because it replaces death by maintaining the continuity of life so that species do not die out.

11. What would happen if all the seeds of a plant fall under the parent plant?

If all the seeds of a plant fall under the parent plant, it would result in over-crowding and saplings would experience scarcity of nutrients, light, air and space.

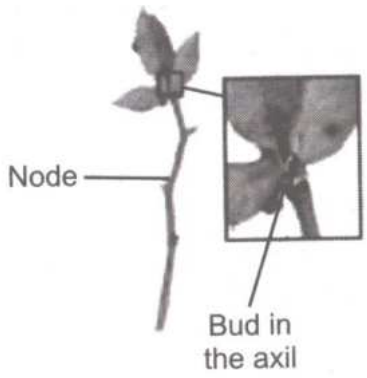
12. What is dispersal? List the agents of dispersal.

Dispersal is the scattering of seeds to far away places. The agents of dispersal are wind, water, insects and animals.

II. Short Answer Type Questions.

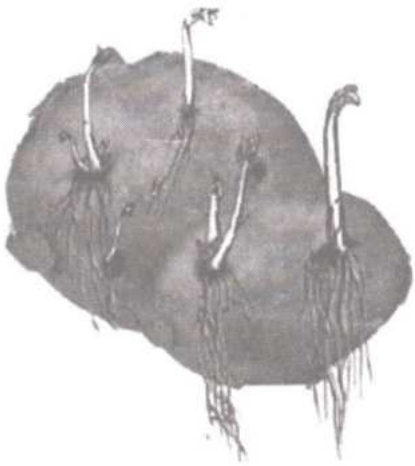
1. How does new plant produce by cutting?

A branch of some plants like rose is called cutting. Bury the cutting of the plant in the soil. The leaves arise from the nodes of cutting. Water the cutting every day. After some time it develops into a new plant.



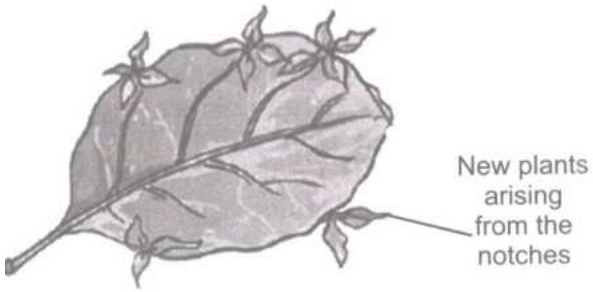
2. Explain the process to obtain new potato plants with the help of a potato.

There are various scars in the potato. These scars are also called eyes. Eyes have buds in them. Cut a few pieces of a potato each with an eye. Bury them in the soil. Water the pieces regularly for a few days. After some days a new plant is germinated from each piece.



3. How does new plant grow from leaves?

Leaves of some plants like Bryophyllurn have buds in the margins of leaves. If a leaf of such plant falls on moist soil, each bud can give rise to a new plant.



4. Write some advantages of vegetative propagation.

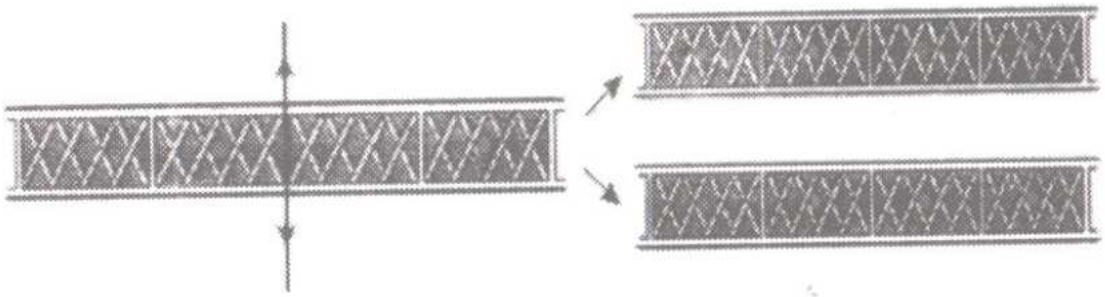
(i) We can grow new plants in short time by vegetative propagation.

(ii) New plants are exact copies of the parent plants.

(iii) We can grow new plants which have no seeds or less seeds.

5. Explain fragmentation with example.

It is a mode of asexual reproduction. When water and nutrients are available, an alga, like Spirogyra grow and multiply rapidly by the process of fragmentation. An alga breaks up into two or more fragments. These fragments or pieces grow into new individuals. This process continues and they cover a large area in a short period of time.



6. What is budding? How does a new plant grow by budding?

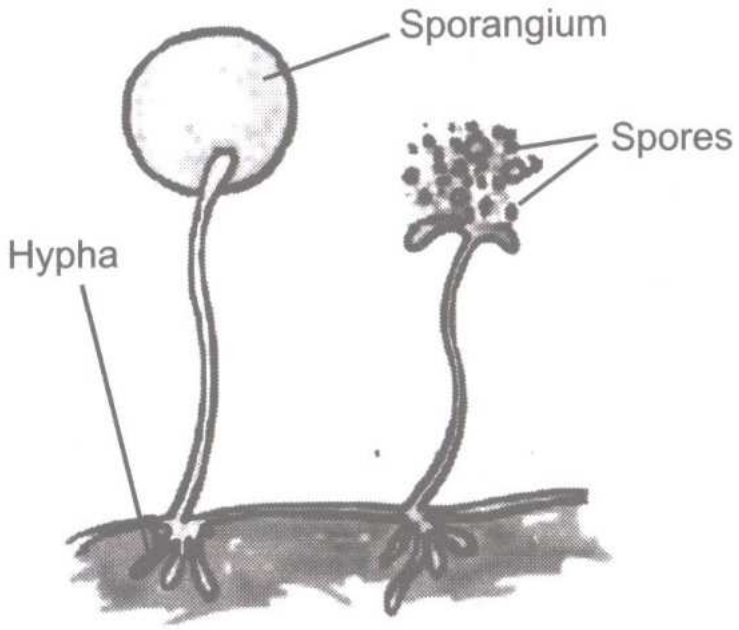
It is a mode of asexual reproduction in some plants and animals e.g. yeast.

In this method, a small bulb like projection comes out from the parent yeast cell. It is called a bud. The bud gradually grows and gets detached from the parent cell and forms a new yeast cell. This new yeast cell grows, matures and produces more yeast cells.

7. How do fungi and fern plants reproduce to give rise to new plants?

Fungi and fern plants grow by the process of spore formation. The spores are asexual reproductive bodies. Each spore is covered by a hard protective coat to withstand unfavourable

conditions such as high temperature and low humidity. Under the favourable conditions spores germinate and develop into new individuals.



8. Name the reproductive parts of the plant. Explain various types of flowers.

The reproductive parts of the plant are flowers. There are following two types of flowers.

i. Unisexual flowers: The flowers which contain either only the pistil or only the stamens are called unisexual flower e.g. corn, papaya flowers, etc.

ii. Bisexual flowers: The flowers which contain both pistil and stamens are called bisexual flowers. e.g.mustard, rose flowers, etc.

9. What are fruits? What are fleshy and dry fruits?

Ripened ovary after fertilisation is called fruit. There are two types of fruits.

i. Fleshy fruits : The fruits which are fleshy and jicy like mango, apple and orange are called fleshy fruits.

ii. Dry fruits : The hard fruits like almonds and walnut are called dry fruits.

10. What are the differences between the plants produced by sexual reproduction and that produced by vegetative propagation?

The plants can grow in less time by vegetative propagation. They bear flowers and fruits earlier than those produced by sexual reproduction or from the seeds. The new plants produced by vegetative propagation are exact copies of the parent plant, as they are produced from a single parent, while the plants produced by sexual reproduction are not true copy of any parent but have the characters of both parents.

11. What are vegetative and reproductive parts of a plant?

The roots, stems and leaves are called vegetative parts of the plants. After a certain period of growth most of the plants bear flowers. The flowers perform the function of reproduction in plants. The flowers are called reproductive parts of the plants.

12. What is vegetative propagation? What are various methods of it?

The reproduction through vegetative parts of a plant is known as vegetative propagation. The various methods of vegetative propagation are

i. By stems ii. By leaves iii. By roots

13. What is zygote? How is if formed?

i. Male gametes ii. Female gametes

These two games fuse together. This process is called fertilisation. After fusion of two cells zygote is formed.

III. Short Answer Type Questions- I

1. What is the fate of ovary and ovule after pollination and fertilization in a flower ?

After pollination and fertilization the ovary develops into fruit and ovules develop into seeds.

2. If you keep a moist bread in open mould starts growing on it within few days. From where does this mould come from ?

The air contains spores of bread mould which can survive in air for long time due to presence of a thick wall. When they fall on a piece of moist bread they germinate on it.

3. How do the pollen grain of a unisexual flower reaches the pistil of another flower ?

The pollen grain is carried to the pistil by pollinating agents. The pollinating agent can be wind, water, air or insect as per adaptation of the flower.

4. A Bryophyllum leaf gives rise to new plants when it falls in moist soil but not a mango leaf, why ?

Leaf of bryophyllum contains buds on the margin of leaf when these buds come in contact with the soil, new plants arise from soil. No such buds are present on leaf margin of mango leaf.

5. When you keep food items like bread and fruits outside for a long time especially during the rainy reason, you will observe a cotton growth on them.

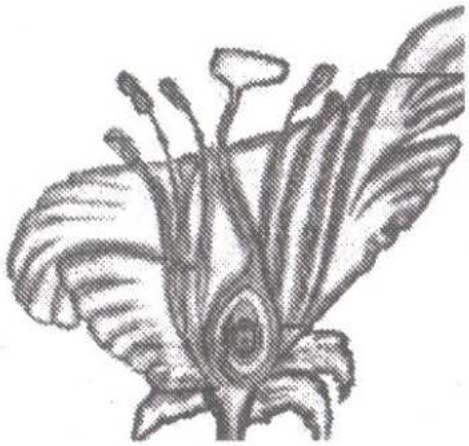
(a) What is this growth called ?

(b) How does the growth take place ? **[NCERT Exemplar]**

(a) It is bread mould, a fungus.

(b) They develop from spores.

6. In the figure of a flower label the parts whose functions are given below and give their names.

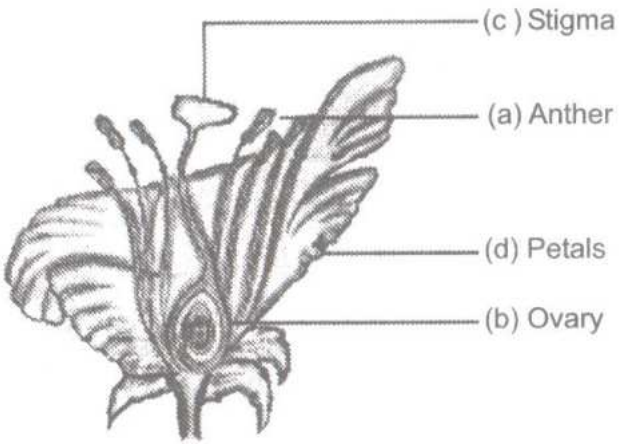


(a) The part which contains pollen grains.

(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. [NCERT Exemplar]



III. Short Answer Type Questions-II

1. What are the various modes of dispersal of fruit and seeds ? Give examples.

Seeds and fruits are dispersed by any of the following means :

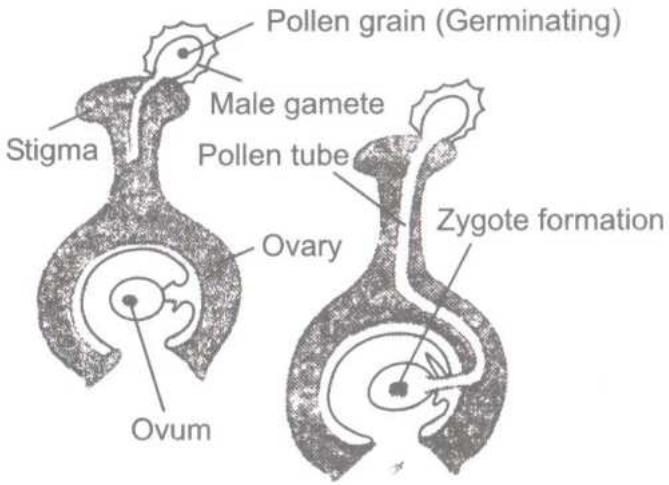
- Wind
- Water
- Animals

- Bursting of fruit with jerk.
- Seed dispersed by wind are light having wings or tuft of hair. e.g., maple, calotropis.
- Seeds dispersed by water have fibrous covering which allows them to float in the water, e.g., coconut.
- Seeds dispersed by animals have hook, with the help of these hooks they get attached to the hair of animals and get dispersed. e.g. xanthium.
- Fruits of Balsam and Castor when dry burst with jerk and help in dispersal of seeds.

2. Describe the events taking place in a flower after pollination till fertilization.

As soon as the pollen grain falls on the stigma, it starts germinating and forms a pollen tube. This pollen tube passes through style and reaches the ovary. The pollen tube contains male gamete which are released and one of them fuse with the egg to form zygote.

3. Draw a diagram of pistil to show pollen grain, pollen tube, ovary and ovule.



4. Describe the various ways in which the seeds are dispersed.

Following are the ways in which the seeds are dispersed :

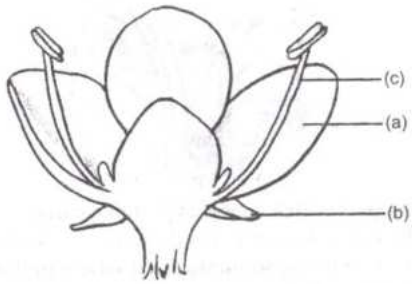
(i) Some light seeds like that of madar, which are hairy, dry and small are carried away by the wind to different places.

(ii) Spiny seeds and fruits like that of xanthium and urena, stick to the clothes of passers by and animals. These seeds are carried away by these agents to different places.

(iii) In some plants having heavy seeds like that of coconut, water acts as the dispersing agents.

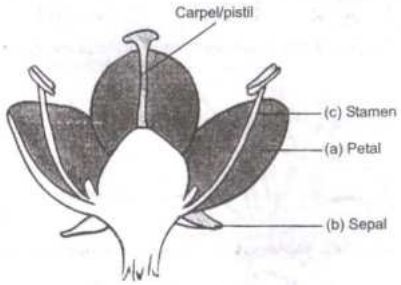
(iv) Some seeds are dispersed with the fruit burst like in case of balsam and castor. (Any three)

5. In the diagram of a bisexual flower, draw the missing part and label the parts marked (a), (b) and (c). Also label the missing part that you draw.

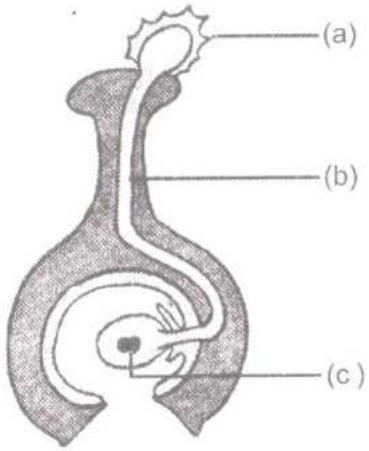


[NCERT Exemplar]

Ans.

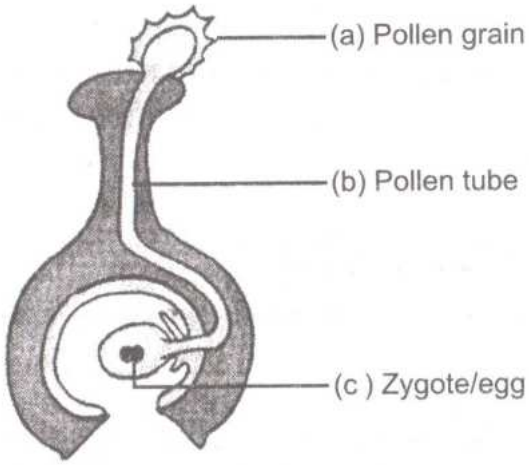


6. In the diagram, label the parts marked (a), (b) and (c).



[NCERT Exemplar]

Ans.



7. **Write how the following seeds are dispersed.**

a. Seeds with wings

b. Small and light seeds.

c. Seeds with spines / hooks. [NCERT Exemplar]

a. Dispersed by wind

b. Dispersed by wind

c. Dispersed by animal

I. Long Answer Type Questions.

1. Name the various agents of pollination and give difference between self and cross-pollination.

Agent of pollination.

i. Wind

ii. Water

iii. Animals i.e., insect, bird etc.

Self-pollination	Cross-pollination
Transfer of pollen grain to stigma of same flower or any other flower growing on same plant.	Transfer of pollen grain from one flower to another flower of same species growing on another plants.

2. a. What is the asexual reproduction? Name any two method of asexual reproduction with one example each.

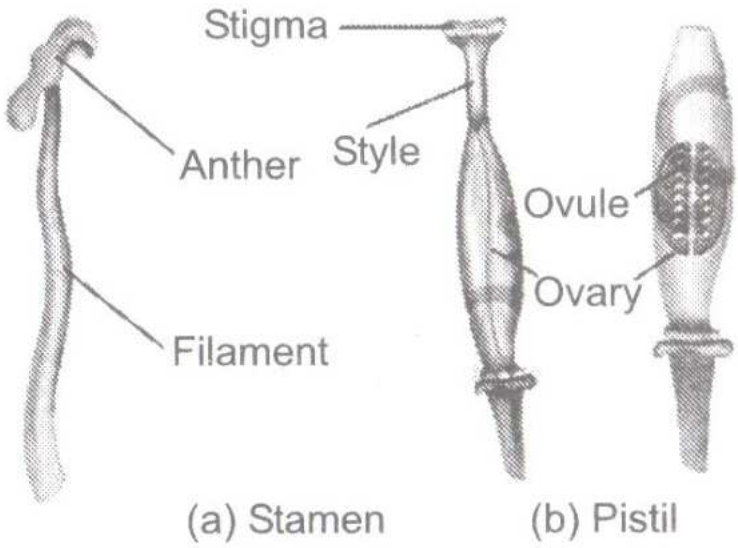
b. Sketch the reproductive parts of a flower.

a. Asexual reproduction is a type of reproduction in plants in which new plants are obtained from old one without the production of seeds.

Two methods of asexual reproduction.

Vegetative production, Spore Formation, Budding, Fragmentation (any two).

b. Reproductive parts of flower.



II. Long Answer Type Questions.

1. Describe the structure of a typical flower.

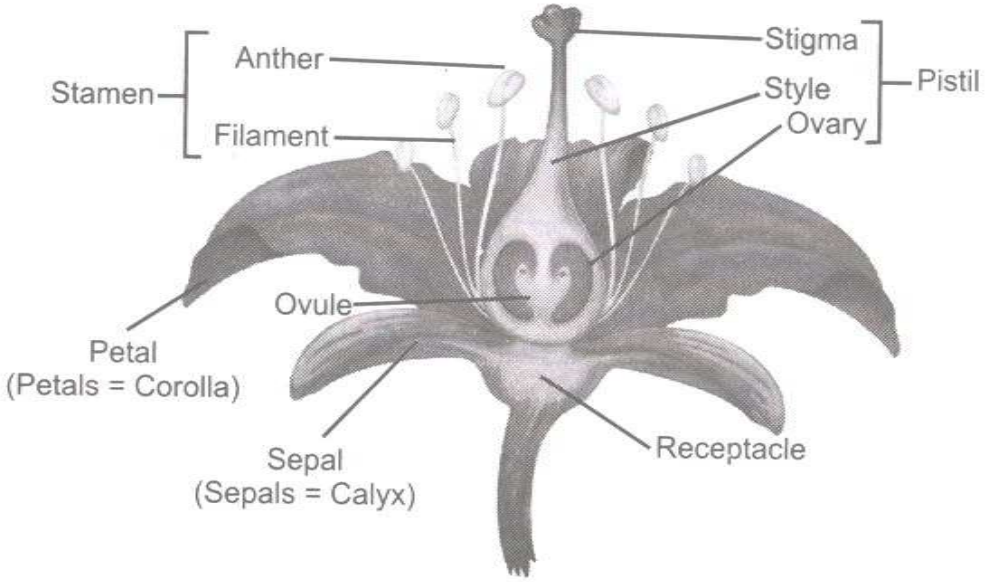
Flowers are the reproductive parts of the plant. A typical flower consists of the following parts.

i. Sepals : These are green leaf like structures which help in the preparation of food.

ii. Petals : These are coloured big leaf like structures in the flower which help in the pollination.

iii. Stamens : Stamens are the male reproductive parts of the flowers. There are two parts of stamen – (i) anther and (ii) filament. Anther contains pollen grains which have male gametes.

iv. Pistil : Pistil is the female reproductive part of the flowers. There are three main parts of a pistil – (i) stigma (ii) style and (iii) ovary. The ovary contains one on more ovules. The female gametes or the eggs are formed in an ovule.

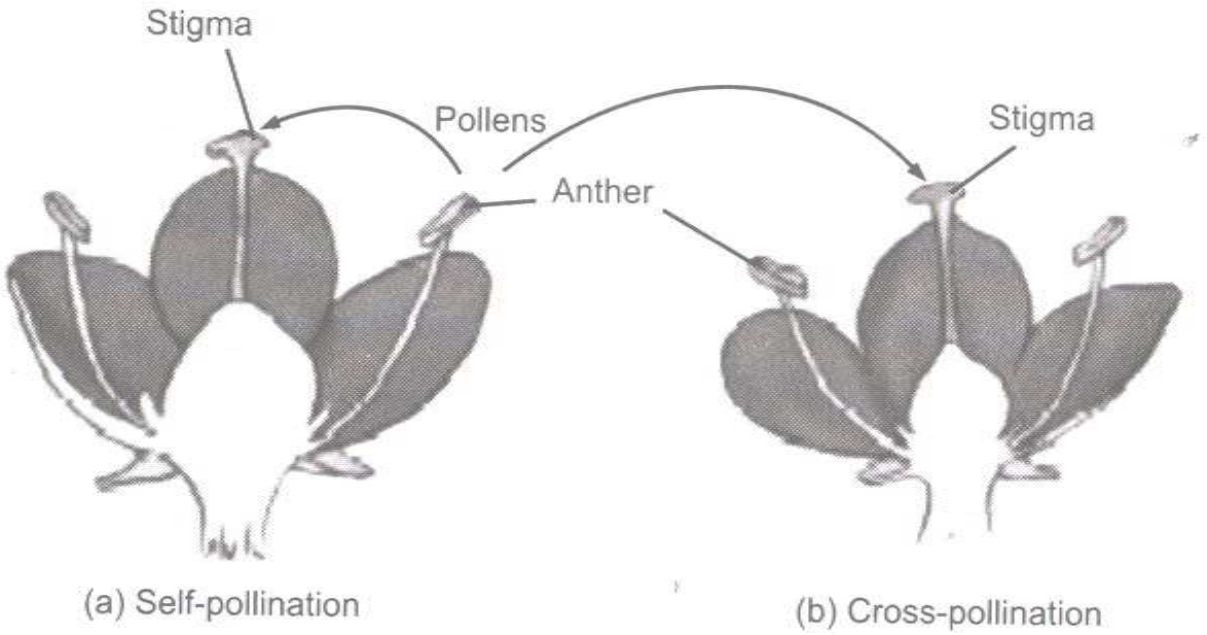


2. What is pollination? Explain various types of pollination.

The transfer of the pollen grains from the anther to the stigma of a flower is called pollination. There are following two types of the pollination.

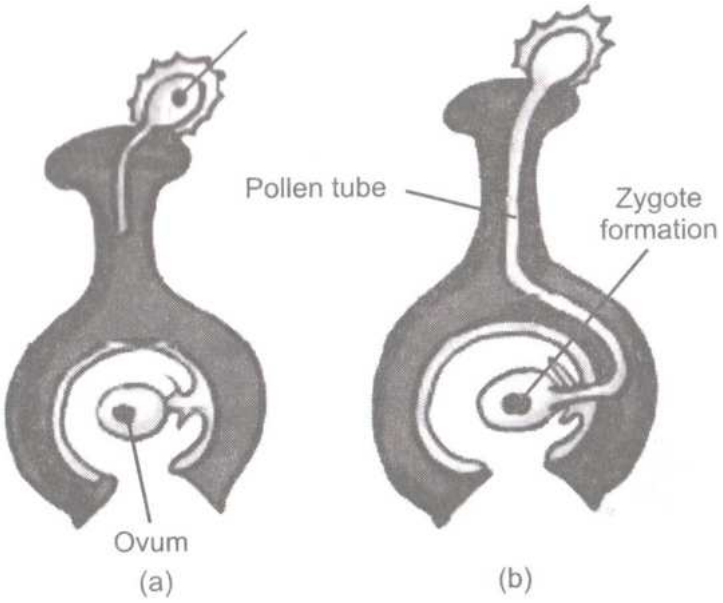
i. Self-pollination : If the pollen grains land on the stigma of same flower, then it is called self-pollination.

ii. Cross-pollination : When the pollen grains of a flower land on the stigma of another flower of the same plant or that of a different plant of the same kind, then it is called cross-pollination.



3. Explain various steps involved in the formation of a plant seed starting from pollination.

The transfer of pollen grains from anther to the stigma of a flower is called pollination. Now the male gamete enters into the ovary where fusion of male and female gametes takes place.



This process is called fertilisation. After fertilisation of ovules various changes take place. The petals, sepals and stamens are dried and destroyed. Only ovary remains. The ovary contains fertilised ovule. After fertilisation ovary containing a number of fertilised ovules is called fruit. The fertilised and developed ovule is called seed.

4. What are the benefits of seed dispersal and how the seeds are dispersed?

The benefits of seed dispersal are:

i. It enables the plants to invade new habitats for wider distribution.

ii. It prevents such competition between the plant and its own seedlings for sunlight, water and minerals.

iii. It also prevents such competition between the seedlings.

Methods of dispersal of seeds: The seeds dispersed by various ways: The seeds are dispersed by various ways.

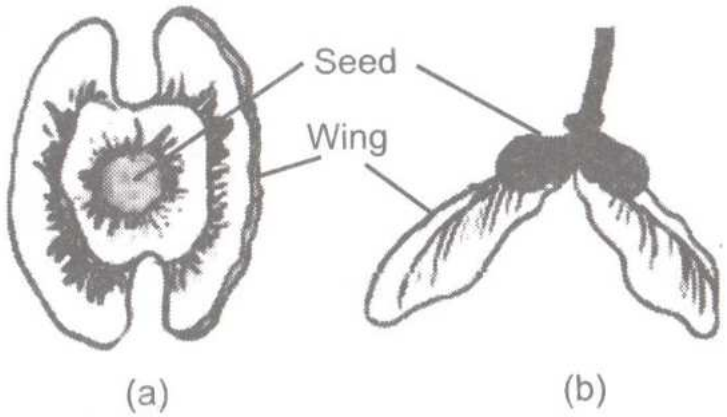
i. By winds : The light and hairy seeds of some plants are dispersed by winds. For example: grasses, seed of aak (madar) and sunflower.

ii. By water : Some seeds are dispersed by water. These seeds and fruits have floating ability in the form of spongy or fibrous outer coat as in coconut.

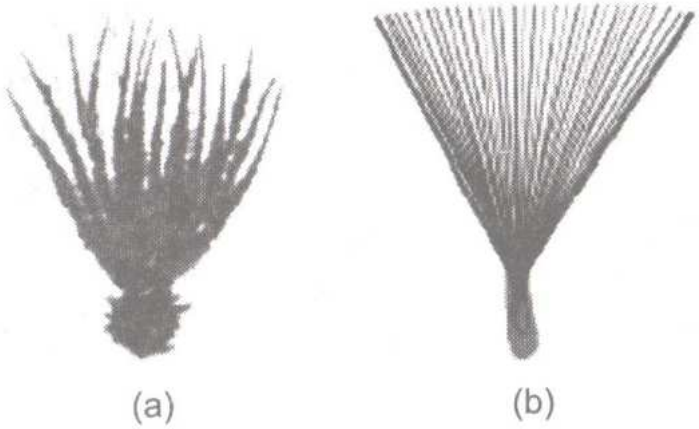
iii. By animals: Some seeds are dispersed by animals. Specially spiny seeds with hooks which get attached to the body of animals and are carried to distant places. For example: xanthium and urena.

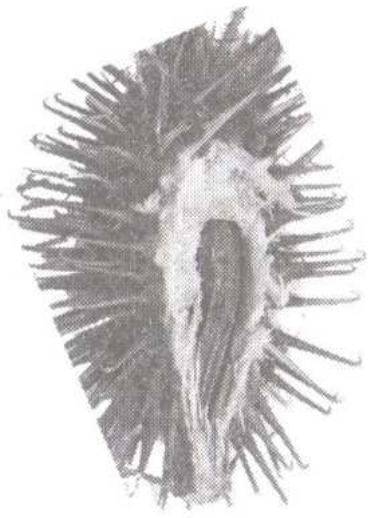
iv. By human : Human begins also help in the dispersal of seeds. They carry fruits to the long distances and throw their seeds there.

v. Some seeds are dispersed when the fruits burst with sudden jerks. The seeds are scattered far from parental plant. For example: balsam and castor.

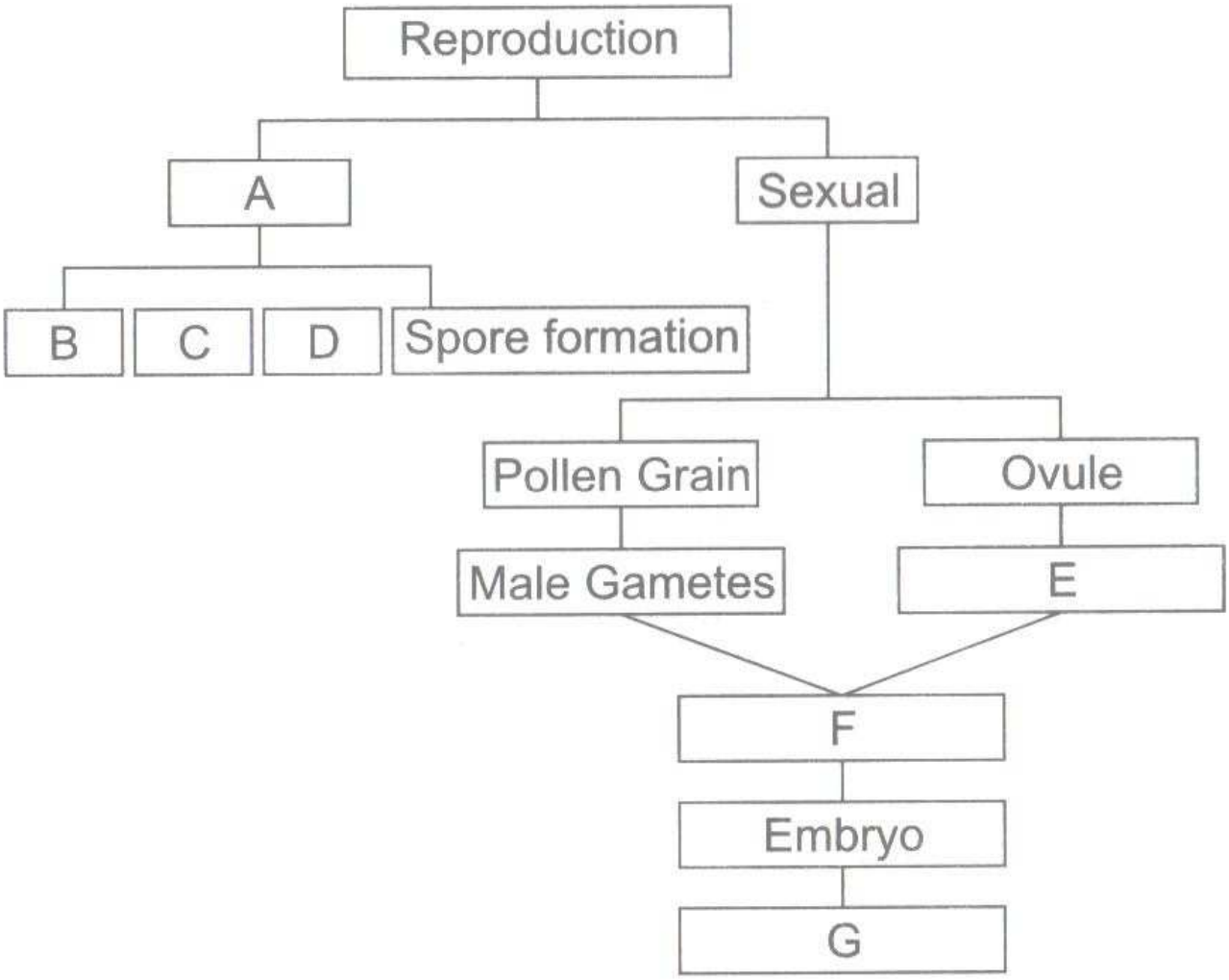


Ans:-





5. Complete the following flow chart by replacing letters by suitable words.



A : Asexual

B : Vegetative Propagation

C : Budding

D : Fragmentation

E : Female gamete

F : Zygote

G : New plant

III. Long Answer Type Questions.

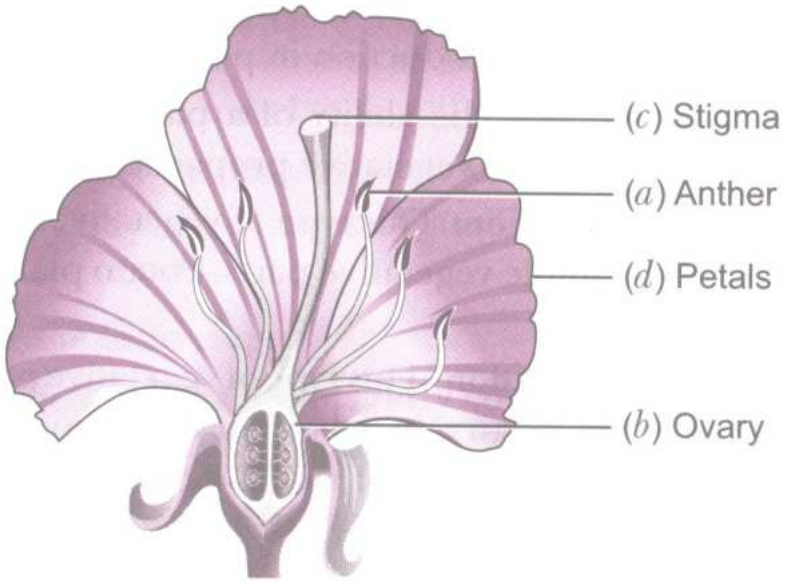
1. In the figure of a flower label the parts whose functions are given below and give their names.

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. [NCERT Exemplar]



3. Write how the following seeds are dispersed.

a. Seeds with wings.

b. Small and light sees.

c. Seeds with spines / hooks. **[NCERT Exemplar]**

a. Dispersed by wind

b. Dispersed by wind.

c. Dispersed by animal.

4. Describe the different methods of asexual reproduction. Give examples. [NCERT]

The various modes of asexual reproduction in plants are as following.

a. Vegetative propagation : It is the ability of a plant to produce new plants from roots, stems, leaves, and buds. Vegetative propagation is divided into two types.

Natural vegetative propagation: This type of vegetative propagation occurs easily in nature and involves simple vegetative parts. Potato plant sprouting from an eye is a common example.

Artificial vegetative propagation: This types of vegetative propagation is performed manually and generally occurs in laboratory conditions. The formation of complete plant from a stem cutting of rose is a common example of this method.

b. Budding : It involves the formation of a new individual from a bulb-like projection called a bud. The bud grows and gets detached from the parent to form a new individual. It is commonly observed in yeast.

c. Fragmentation : It is a form of asexual reproduction where a new organisms is formed from the fragments of the parts body. It is the only mode of asexual reproduction in Spirogyra.

d. Spore formation : Many non-flowering plants reproduce spore formation. spores are tiny cells protected by a thick wall. Fungi such as bread moulds reproduce asexually using this method.

5. Distinguish between the following.

a. Stamen and Pistil.

b. Unisexual flower and Bisexual flower.

a.

S. No.	Stamen	Pistil
i	It is the male reproductive organ of the flower.	It is the female reproductive organ of the flower.
ii	It consists of anther and filament.	It consists of stigma, style and ovary.

b.

S. No.	unisexual flower	bisexual flower
i	These are flowers having either male or female reproductive organs.	These are flowers having both male and female reproductive organ.
ii	For example, papaya, corn, etc	For example, rose, brinjal, etc.

6. Give reasons for the following.

a. Insect pollinated flowers are brightly coloured and sweet smelling.

b. Spores are covered by a hard covering.

c. Wind pollinated flowers produce large number of pollen grains.

d. Hooks and spines are present in seeds or fruits dispersed by animals.

a. Insect pollinated flowers are brightly coloured and sweet smelling to attract insects to itself.

b. Spores are covered by a hard covering to provide protection from harsh conditions.

c. During wind pollination many pollen grains are lost. So to ensure that at least some pollens reach the stigma, a large number of pollen grains are produced.

d. Hooks and spines help seeds and fruits to stick to the bodies of animals and be safely dispersed or transported to far off places.

e. To avoid growing of the plants at one place leading to scarcity of nutrients and ensure survival of the plants, seeds are dispersed.

7. What are the advantages and disadvantages of vegetative reproduction?

Advantages of vegetative reproduction

- Some of the plants such as bananas do not reproduce from seeds at all. They multiply only vegetatively.
- Vegetative reproduction is faster.
- Sometimes the seeds produced are not viable or fit that means they cannot form new plants.
- It is the embryo of the seeds that forms the new plants. If the embryo is not there or is destroyed, the new plants cannot be formed.
- The new plants formed through vegetative reproduction are exactly like the parent plants.

Disadvantage of vegetative reproduction

- Since vegetative reproduction produces an exact copy of the parent, some undesired qualities of the parent plant also pass on to the plants of new generation.

I. High Order Thinking Skills (HOTS) Question

1. What would happen if seeds are not able to disperse?

If seeds are not able to disperse, they will clutter on one place and would not be able to grow properly because of lack of nutrients.

II. High Order Thinking Skills (HOTS) Question

1. Why do farmers leave space between the seeds while sowing them?

This is done to avoid overcrowding and to avoid scarcity of nutrients, light , air and space for the seeds.

Value Based Question

1. While cooking food Mrs. Goenka needed help of her daughter Simmi, to chop vegetables. Surprisingly, Simmi, a student of VIIth standard observed that some of the potatoes started to sprout from their notched areas. Obviously a few questions arose in her mind.

i. How does the new potato plant sprout from 'potato' itself without seed formation? Also name the method.

ii. Are there any other plants which reproduce in the same way?

iii. Is there any advantage of this process?

iv. Which value is shown by Simmi?

i. This is a method known as asexual reproduction in which new plants may appear from older parts like stem, root, leaf etc. without seed formation. This is called as vegetative propagation.

ii. Ginger, garlic, bryophyllum, banana etc.

iii. (a) It takes less time to grow and bear flowers and fruits.

(b) New plants are exact copy of the parent plant.

iv. Helping attitude towards her mother, curiosity to know scientific fact.

Skill – Based Questions

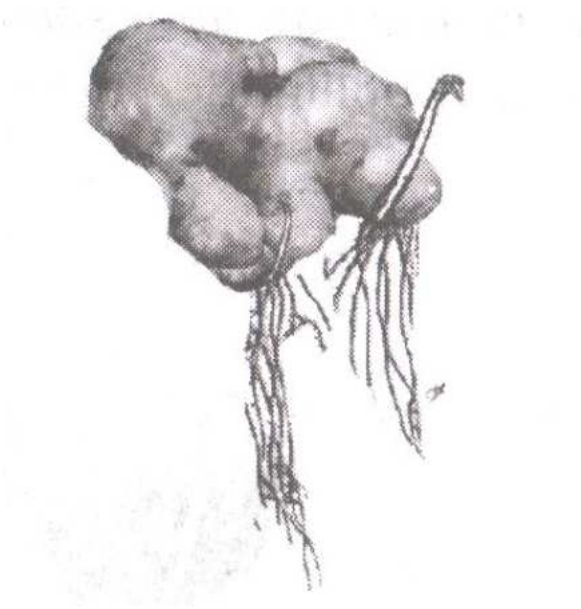
1. a) Draw a diagram to show germination in ginger.

b) What is the type of reproduction in ginger –asexual or sexual?

c) If it is asexual reproduction then write the type of asexual reproduction

d) Is ginger a root or stem?

a)



b) In ginger asexual reproduction takes place.

c) It is a vegetative reproduction

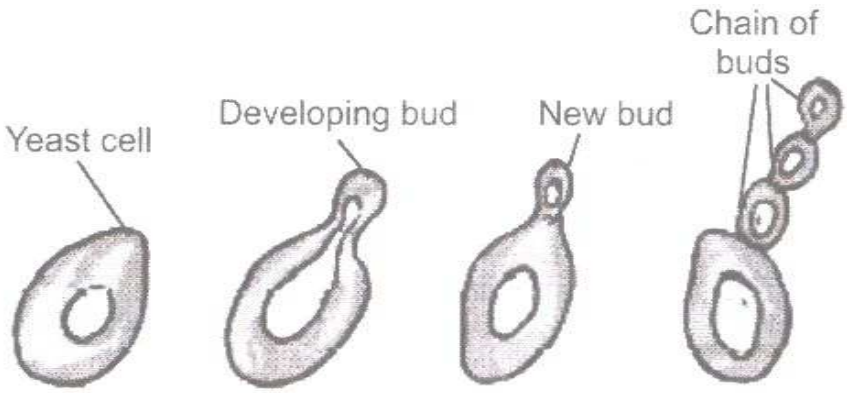
d) Ginger is a stem.

2. a) Draw a diagram to show reproduction in yeast.

b) Label yeast cell, developing bud, new bud and chain of buds.

c) Which type of reproduction takes place in yeast?

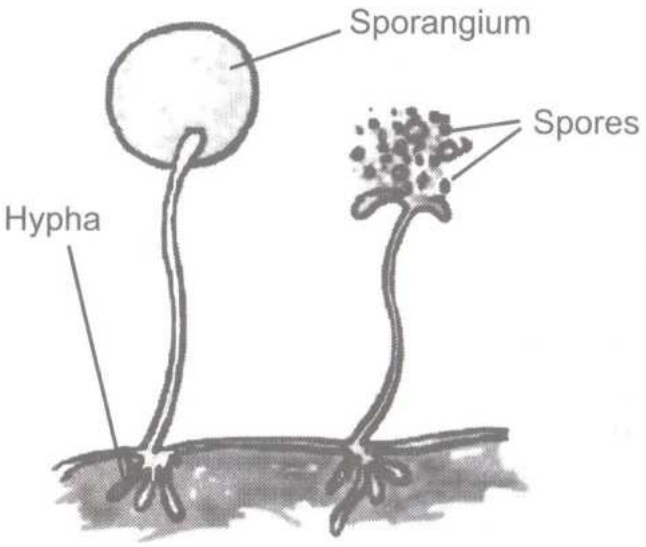
a) & b)



c) The asexual reproduction takes place by budding in yeast

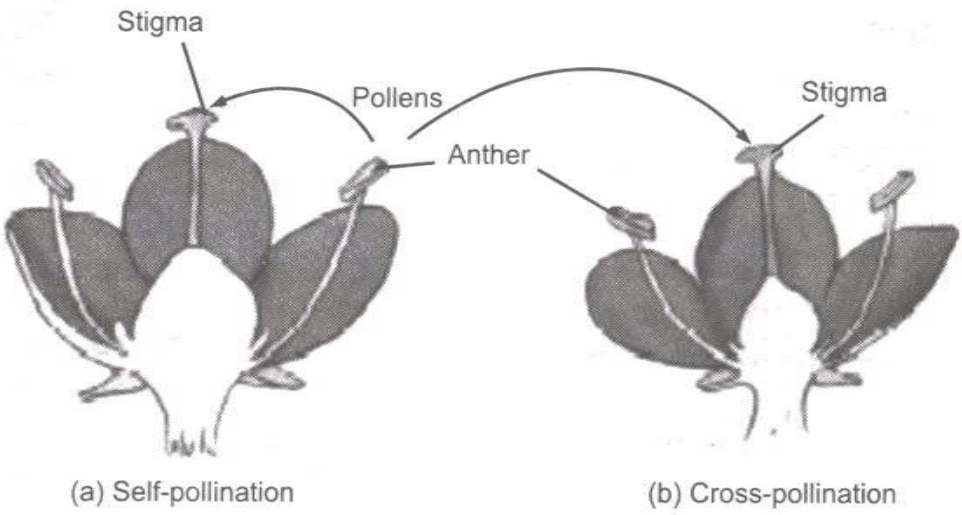
3. Draw a diagram to show reproduction in fungus by spore formation. Label the following parts:

i) Hypha ii) Sporangium c) Spore

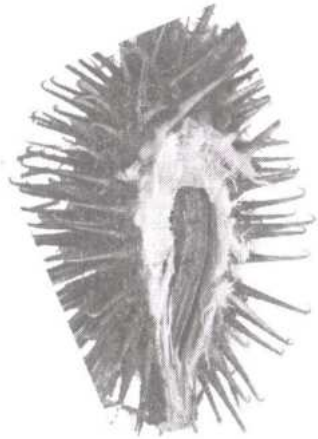


4. **Draw a diagram to show**

a) Self – pollination **b) Cross- pollination**

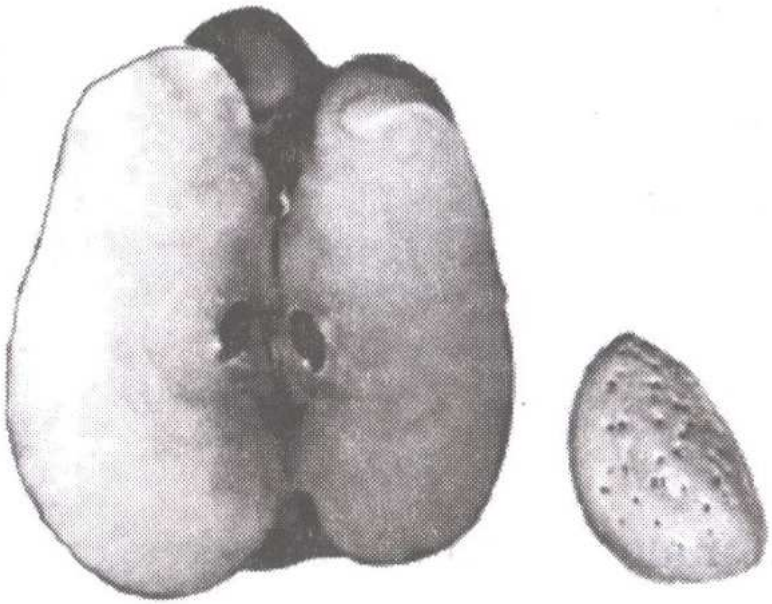


5. Observe the following figure. Identify it and write how the dispersal of seeds in it take place.



It is xanthium. Its seeds are spiny with hooks which get attached to the bodies of animals and are carried to distant places.

6. Draw a diagram to show a fleshy and a dry fruit



(a) (b)