

# How do Organisms Reproduce?

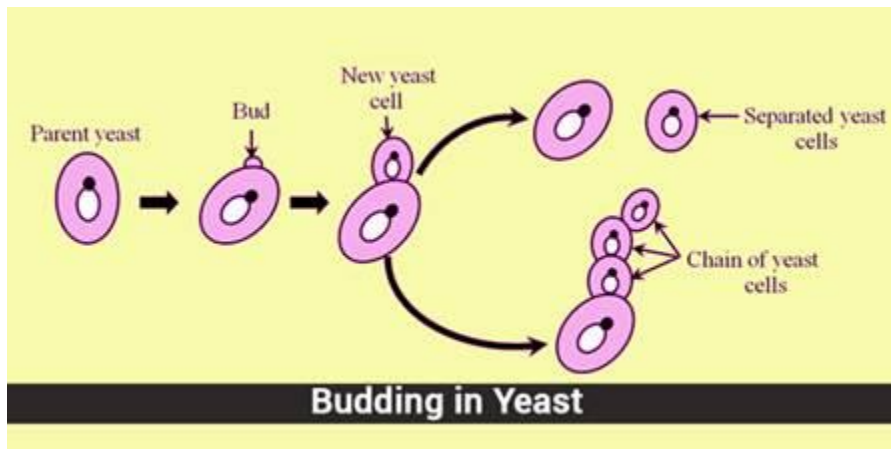
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## Periodic Test

### Q.1. What is meant by budding?

**Answer:** Budding is one of methods of asexual multiplication in which the cell division takes place at one specific site and turns out into an outgrowth. The little knob like projection turning out from the main body is known as a bud. The new life form grows there at the same site and get detached at when fully grown leaving behind the scar tissue. Since the proliferation is asexual, the recently made life form is a clone and is identical to the parent life form.

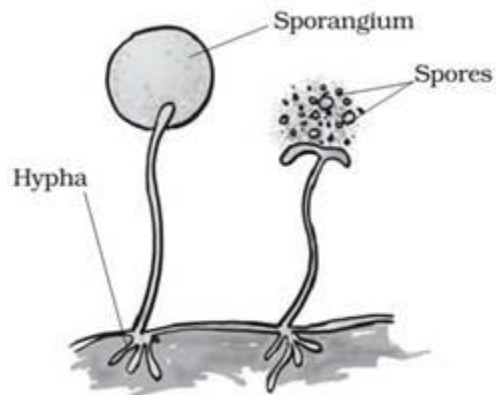
**For example:** budding in yeast



### Q.2. In which organisms spore formation takes place?

**Answer:** The spores are the minute, intense and resistant bodies which are round fit and can develop into another plant under reasonable conditions. The spore formation method of asexual reproduction is used by unicellular as well as multicellular organisms.

**For example:** Rhizopus, Mucor and some non-flowering plants.

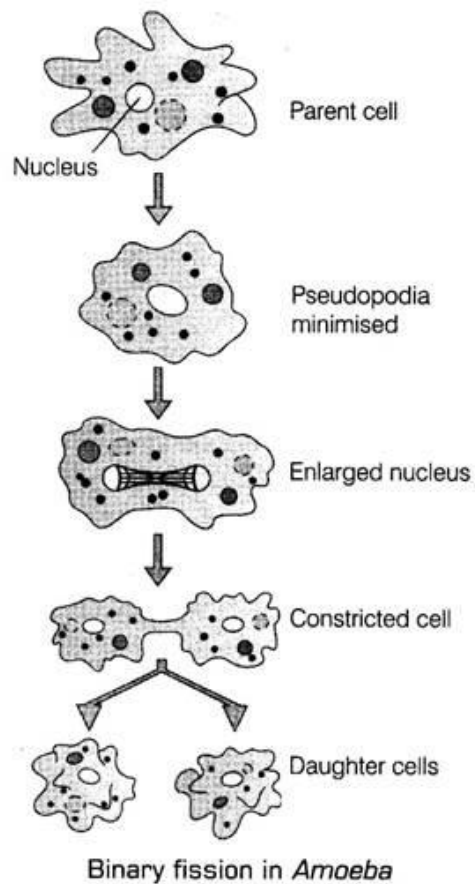


**Fig. 12.7** Reproduction through spore formation in fungus

### Q.3. What is meant by binary fission?

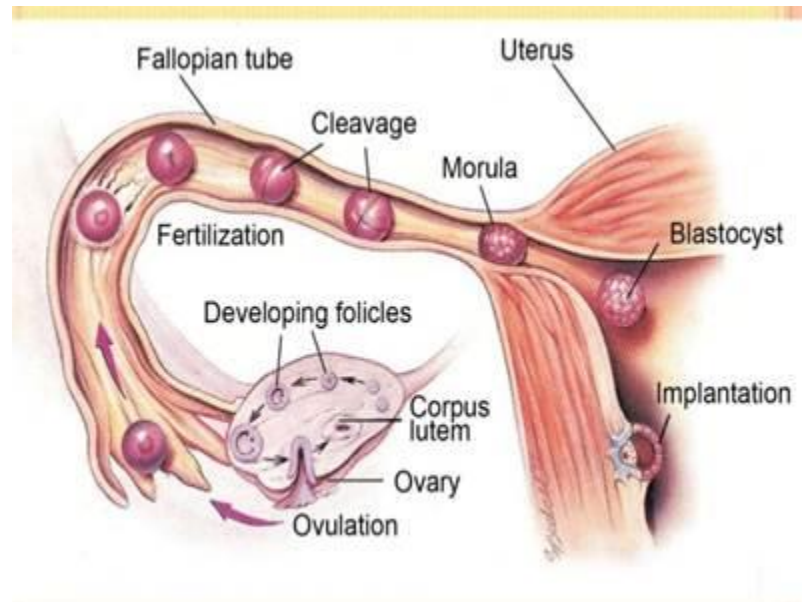
**Answer:** Binary fission is a type of asexual reproduction which involves the splitting of parent organism into two new organisms. In this type of asexual reproduction the parent ceases to exist and two new forms come into existence.

**For example:** Amoeba, Paramecium etc.



### Q.4. What is meant by ovulation?

**Answer:** Ovulation is the arrival of an egg from one of a lady's ovaries. After the egg is discharged, it goes down the fallopian tube, where fusion by a sperm cell may happen.



**Q. 5. What is the role of placenta?**

**Answer:** The role of placenta is to provide all the developing requirements to the developing foetus. These requirements are:

- Nutrition
- Respiration
- Excretion etc.

**Q. 6. What is the function of testes?**

**Answer:** Testes are the primary reproductive structures or organs in males. Its function is

- To make sex cells i.e. male gametes called sperm.
- To make male sex hormone, testosterone.

**Q.7. What is the function of prostate glands and seminal vesicles?**

**Answer:** Prostate gland is a male reproductive organ which secretes prostrate fluid which is a component of semen. The seminal vesicles secrete a significant proportion of the fluid that ultimately becomes semen. The secretions of seminal vesicle and prostrate gland provides nutrition to sperm and also make their further transport easy.

**Q.8. What is the function of ovaries?**

**Answer:** Ovaries are the primary reproductive organs in females. The function of ovaries is:

- To make mature female sex cells i.e. female gametes called ova.
- To make female sex hormones, oestrogen and progesterone.

**Q.9. Why is DNA copying an essential part of the process of reproduction?**

**Answer:** DNA is the carrier of genetic information. It is the blueprint of necessary information. For a parent to produce offspring of its own type, it is essential that the offspring carries same DNA as in parents. Thus, DNA copying or DNA replication is the only way through which a cell makes additional copies of same DNA which can be transmitted to its offspring. Thus, DNA copying is an essential mechanism.

**Q.10. What are bisexual organisms? Give examples.**

**Answer:** The organisms which have both male and female reproductive system within the same organism called bisexual organisms.

**For example:** earthworm, leech, starfish etc.

**Q. 11. Name those parts of the flower which server the same function as the following do in the animals.**

(i) Testis                      (ii) Ovary                      (iii) Eggs                      (iv) Sperms

**Answer: (i) Testis:** Anthers

**(ii) Ovary:** ovary

**(iii) Eggs:** ovules

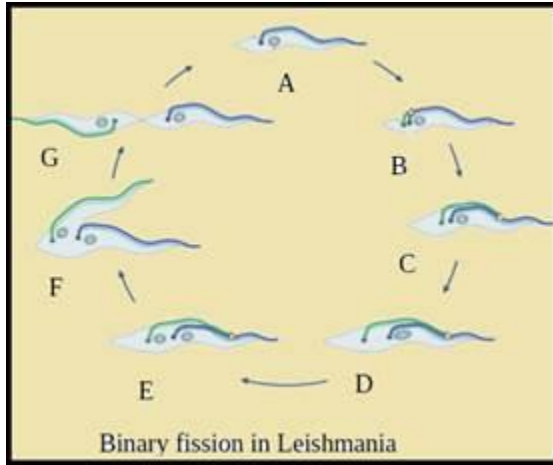
**(iv) Sperms:** pollens

**Q.12. What is the importance of variation for an organism?**

**Answer:** Variation is defined as the slight difference in two organisms or species which distinguishes one from the other. Individual with variation has higher chances of survival since they are better adapted to the environment. Thus, for survival of the fittest and to continue life on earth, variation is an important phenomenon.

**Q.13. What is so peculiar about the binary fission in leishmania?**

**Answer:** Leishmania reproduces by the process of binary fission. It has a greater degree of organisation in its body, having a whip-like structure called flagellum at its one end. In Leishmania, the splitting of parent cell takes place in a definite plane {longitudinally} with respect to flagellum at its end.



**Q.14. What is the importance of:**

**(a) Mitosis (b) Meiosis?**

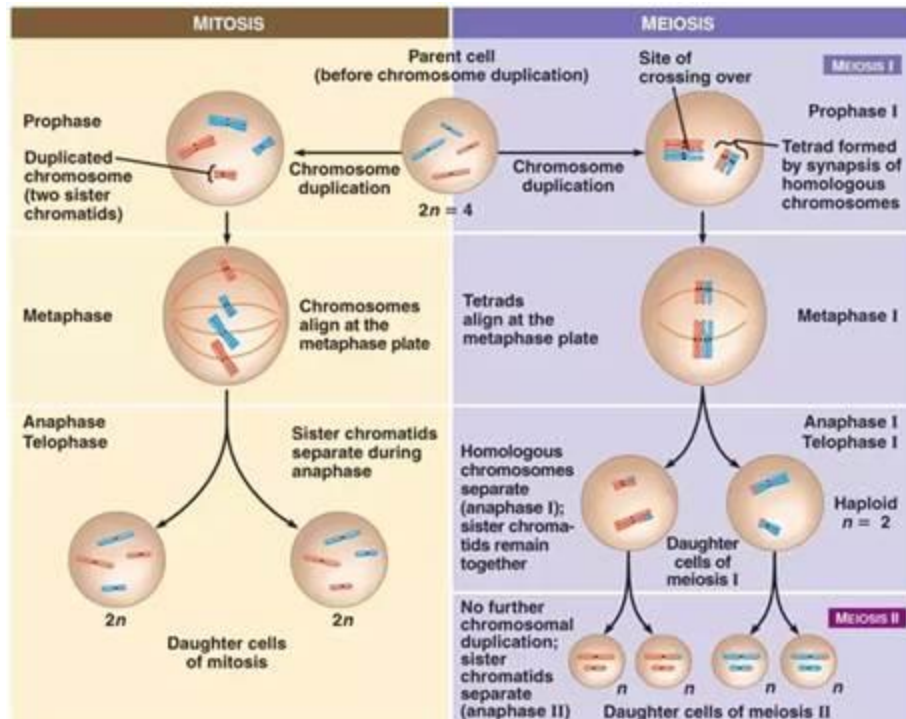
**Answer: (a) Mitosis:**

It is important for:

- Increasing the number of cells in a particular tissue.
- Protection from harmful microorganism in case of a cut or wound.
- Replacing or repairing dead or inefficient cells in a tissue.
- To maintain the ratio of cytoplasm to nucleoplasm as well as surface area to volume.

**(b) Meiosis:**

- It is the most essential process in all sexually reproducing animals.
- Maintain chromosomal number in zygote (diploidy of zygote).
- Meiosis show crossing over, resulting in genetic recombination.
- Meiosis show a number of incidences of mutation (sudden changes in genetic material).



**Q.15. Give the significance of vegetative propagation?**

**Answer:** Significance of vegetative reproduction:

- Plants in which valuable characters of parents must be kept up, are proliferated vegetatively.
- The plants which don't deliver feasible seeds are proliferated by this method.
- Plants with decreased intensity of sexual multiplication, long lethargic time of seed or poor practicality are duplicated effectively through this method.
- Vegetative propagation likewise helps in expelling regular diseases from the parent plant.

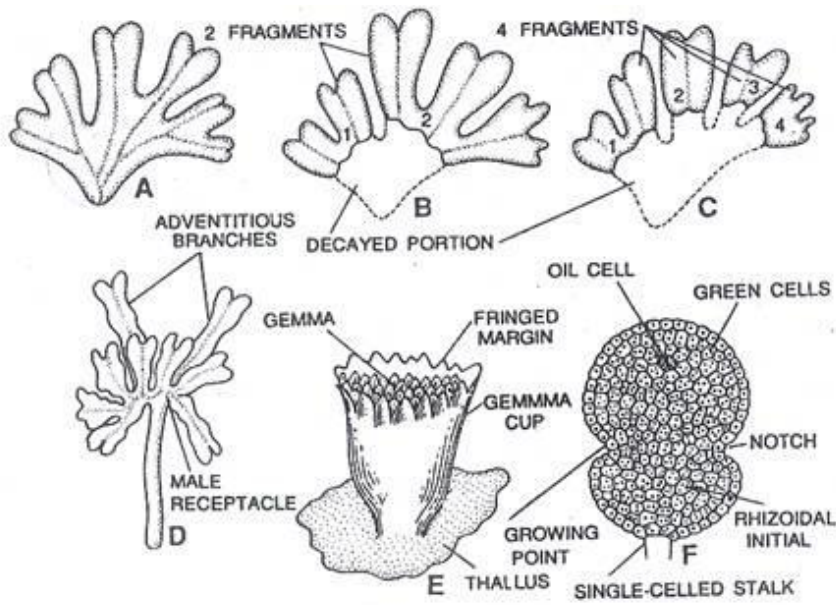


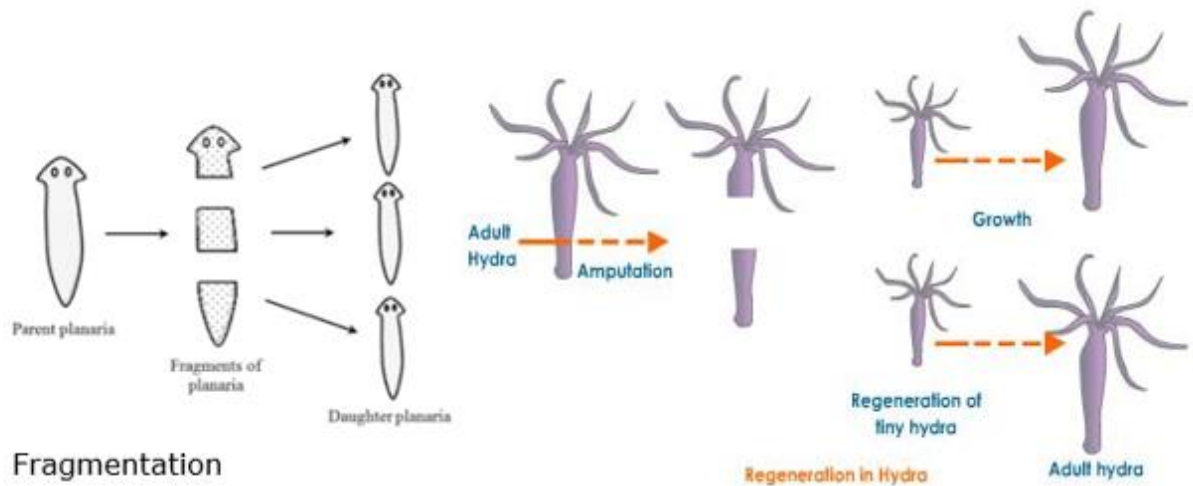
Fig. 24.2. Vegetative reproduction in *Marchantia*. A-C, by death and decay of the older parts of the thallus; E-F, by gemmae.

**Q.16. What is the difference between fragmentation and regeneration?**

**Answer:**

	Fragmentation	Regeneration
1.	It occurs in invertebrates.	It occurs in vertebrate and invertebrates.
2.	It is a method of asexual reproduction.	It can be a reproduction method or formation of lost body parts.
3.	Newly formed parts from the parent form new organism.	If it is not for reproduction then the newly formed parts cannot grow into new organism.
4.	It occurs in organism with simple body organization.	It occurs in organism with complex body organization.
5.	No specific cells are involved.	Specific cell divide to form mass of cells which further differentiate to form different tissues.



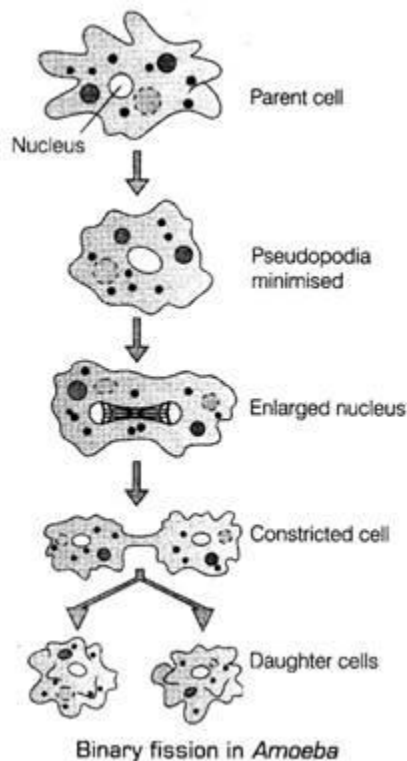
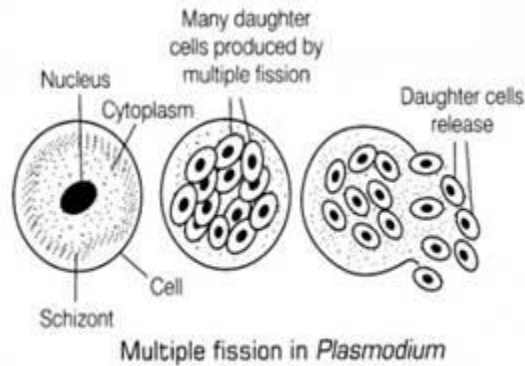


**Q.17. How does binary fission differ from multiple fission?**

**Answer:**

Binary fission	Multiple fission
1) No protective coat or wall or cyst is formed around the cell.	1) A cyst or a protective coat or wall is formed around the cell.
2) A fully mature individual cell divides into two producing two daughter individuals.	2) The cell nucleus divides many times within the cyst to produce many daughter nuclei. Each gathers cytoplasm and forms daughter individuals.
3) No such phenomenon occurs.	3) The parent cell breaks away, releasing many individuals at once.





#### Q.18. Why does menstruation occur?

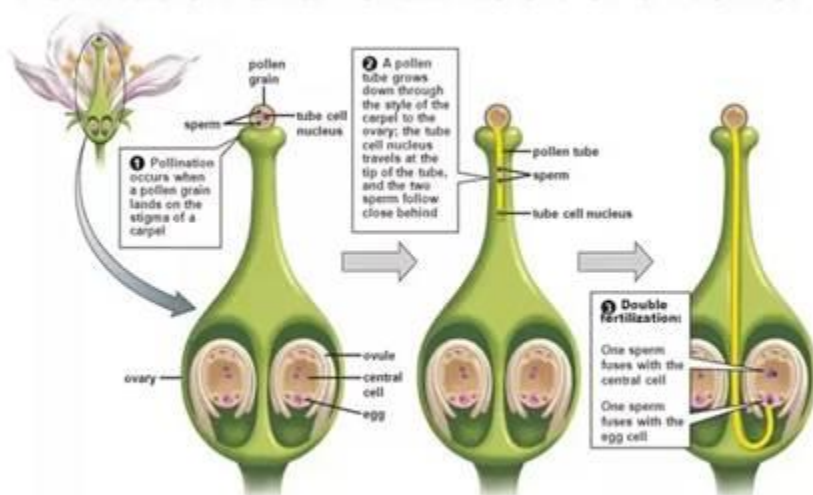
**Answer:** In every ovulation cycle, an egg is discharged from the ovary which is exchanged to the fallopian tube. Also, the uterus sets itself up for a conceivable pregnancy. The lining of uterus thickens. At the point when no conception happens, the covering of the uterus is shed in pieces; alongside the unfertilized egg. These things are discharged out through the vagina through dying; called mensuration. The sole reason for the mensuration to occur is due the change in the levels of female hormones, oestrogen and progesterone.

#### Q.19. Give two differences between pollination and fertilization.

**Answer:**

Pollination	Fertilisation
(i) It is the transfer of pollen grains from anther to the stigma of a flower.	(i) It is the fusion of male and female gametes.
(ii) Pollination precedes fertilisation.	(ii) Fertilisation occurs only after pollination when the pollen grains has germinated and sent the male gametes to ovule.
(iii) Pollination carries the male gamete producing pollen grains to the female sex organ.	(iii) Fertilisation brings about fusion of gametes.

## Pollination and Fertilization of a Flower



**Q.20. How are modes for reproduction different unicellular and multicellular organisms? How does reproduction help in providing stability to population of species?**

**Answer:** Unicellular life forms dependably replicate by asexual reproduction; like binary fission, fragmentation, regeneration, sporulation etc. Multicellular forms, then again, utilize both asexual and sexual strategies for reproduction. While unicellular living beings normally take after the asexual strategies for propagation; the vast majority of the multicellular life forms take after sexual methods for generation.

Each specie needs to continually struggle for its survival. Characteristic predators and fancies of nature continue expelling a huge segment of the number of inhabitants in a

specific animal types. In addition, the normal cycle of life and passing additionally expels a segment of the populace. Reproduction is an approach to recharge the lost segment of populace. In this manner, one might say that reproduction is connected to the soundness of populace of an animal varieties.

**Q.21. What is the vegetative propagation? Where this method of reproduction find its application? List the advantages of vegetative propagation.**

**Answer:** Vegetative propagation is a type of asexual reproduction. In this, new plants are produced by the parts of plants like stem, roots and leaves without the help of any reproductive organ. This technique is widely used in horticultural crop nurseries.

**Advantages of vegetative propagation are:**

- Plants in which valuable characters of parents must be kept up, are proliferated vegetatively.
- The plants which don't deliver feasible seeds are proliferated by this method.
- Plants with decreased intensity of sexual multiplication, long lethargic time of seed or poor practicality are duplicated effectively through this method.
- Vegetative propagation likewise helps in expelling regular diseases from the parent plant.

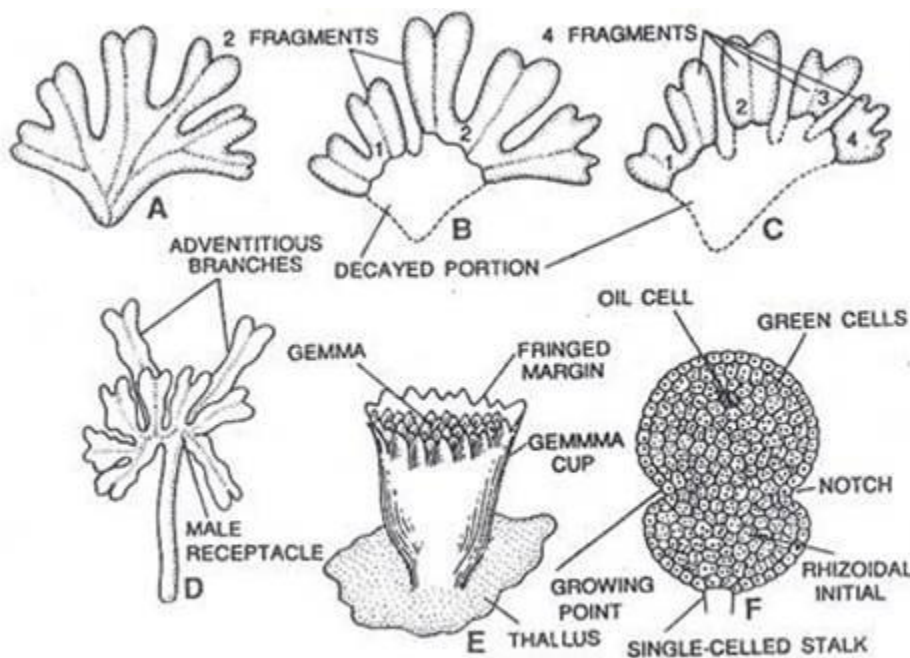
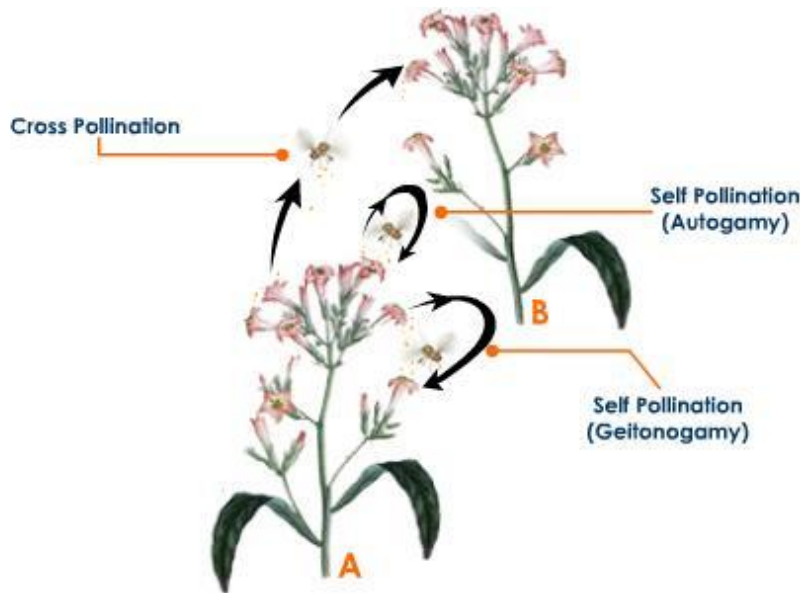


Fig. 24.2. Vegetative reproduction in *Marchantia*. A-C, by death and decay of the older parts of the thallus; E-F, by gemmae.

**Q. 22. What is meant by pollination? What are its two type? What are the agents which help in pollination?**

**Answer:** The transfer of pollen grains from the anther of a stamen to the stigma of a pistil or carpel is called pollination. The pollination is of two types:

- **Self-pollination:** when the pollen grains from the anther of a flower are transferred to the stigma of the same flower or another flower of same plant.
- **Cross-pollination:** when the pollen grains from the anther of a flower are transferred to the stigma of a flower of the other but similar plant.



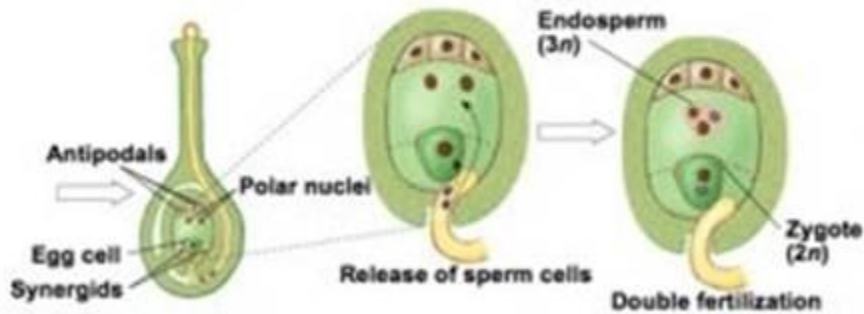
**Agents of pollination:**

- Air
- Water
- Insects
- Bees and moths
- Butterflies and bats

**Q.23. Define the term double fertilization in plants. After fertilization name the part in each case which develops into (i) the fruit (ii) the seed.**

**Answer:** Double fertilization is a type fertilization mechanism of flowering plants. This process involves the fusion of a female gametophyte (mega gametophyte also called the embryo sac) with two male gametes (sperm).

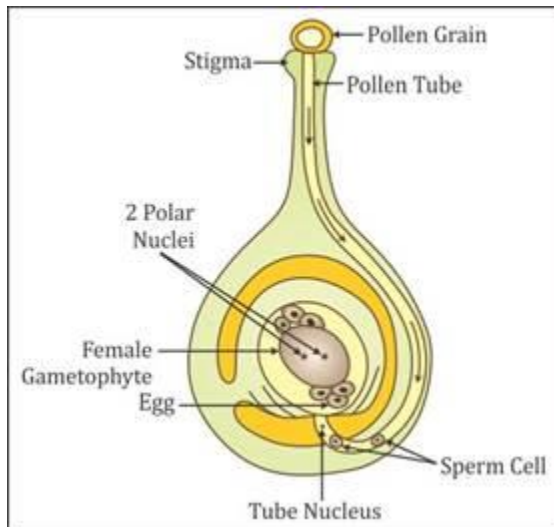
# Double Fertilization



- The ovary of flower develops and becomes a fruit.
- The ovule of flower develops and becomes a seed.

**Q.24. Draw a labelled diagram which shows the process of fertilization in plants. Distinguish between a gamete and zygote.**

**Answer:** The process of fertilization in plants



Difference between a gamete and zygote:

Gamete	Zygote
Haploid	Diploid
Formed by the meiosis of gem cells	Formed by the fusion of gametes
Found in gonads	Found in fallopian tubes

**Q. 25. (a) What is a clone? Why do offspring formed by asexual reproduction exhibit remarkable similarity?**

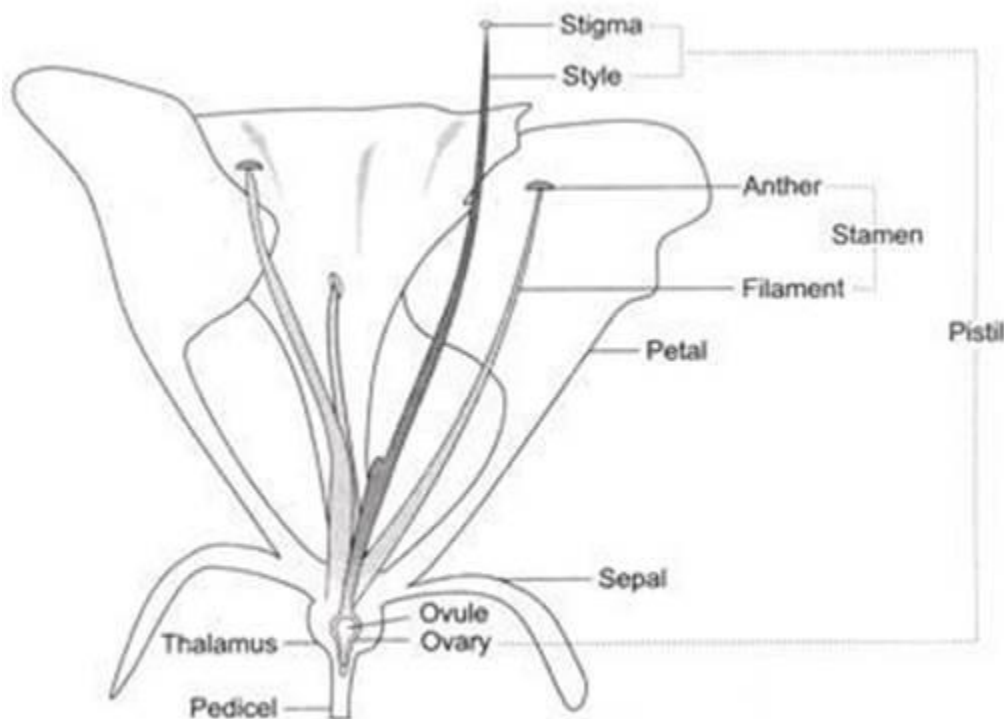
**(b)** What is the basis for evolution? Where is the zygote located in the flower after fertilization?

**Answer: (a)** A copy of something is known as a clone. During sexual multiplication, the characters in a posterity are attributes of their parents. Because of this, posterity framed after sexual multiplication show momentous similarity.

**(b)** The zygote located in the ovary in the flower after fertilization.

**Q.26. Draw a labelled diagram of L.S. of flower. What is the function of anther?**

**Answer:**



**Fig. 6.7** Diagram of the longitudinal section of a flower

The swollen top of the stamen is called anther which makes the pollen grains and stores them.

### **Comprehensive Exercises (MCQ)**

**Q.1.** In human males, the tests life in the scrotum, because it helps in the:

- A. process of mating**
- B. formation of sperm**
- C. easy transfer of gametes**
- D. None of above**

**Answer:** The testes lie in the scrotum, because it helps in the formation of sperms because sperm formation requires lower temperature for sperm production.

**Q.2. Which among the following is not the function of testes at puberty?**

- (i) formation of germ cells**
- (ii) secretion of testosterone**
- (iii) development of placenta**
- (iv) secretion of oestrogen**

- A. (i) and (ii)**
- B. (ii) and (iii)**
- C. (iii) and (iv)**
- D. (i) and (iv)**

**Answer:** Testes are the primary reproductive structures or organs in males. Its function is

- To make sex cells i.e. male gametes called sperm.
- To make male sex hormone, testosterone.

**Q. 3. The correct sequence of organs in the male reproductive system for transport of sperm is:**

- A. testis → vas deferens → urethra**
- B. testis → ureter → urethra**
- C. testis → urethra → ureter**
- D. Testis → vas deferens → ureter**

**Answer:** transport of sperms takes place in the following sequence: testis → vas deferens → urethra

**Q.4. Which among the following diseases is not sexually transmitted?**

- A. Syphilis**
- B. Hepatitis**



**C. HIV-AIDS**

**D. Gonorrhoea**

**Answer:** Hepatitis is an inflammatory condition of liver caused by infection of hepatitis virus.

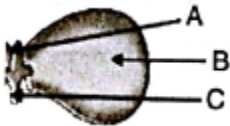
**Q.5. Which among the following statements are true for sexual reproduction in flowering plants?**

- (i) it requires 2 types of gamete
- (ii) fertilization is a compulsory event
- (iii) it always results in formation of zygote
- (iv) offspring formed as clones

- A. (i) and (iv)
- B. (i),(iii) and (iv)
- C. (i), (ii) and (iii)
- D. (i), (ii) and (iv)

**Answer:** Sexual reproduction in flowering plants requires 2 types of gamete, fertilization is a compulsory event and it always results in formation of zygote.

**Q.6. In figure the parts A, B and C are sequentially:**



- A. cotyledon, plumule and radicle
- B. plumule, radicle and cotyledon
- C. plumule, cotyledon and radicle
- D. Radicle, cotyledon and plumule

**Answer:** plumule, cotyledon and radicle

**Q.7. Offspring formed as a result of sexual reproduction exhibits more variations because:**

- A. sexual reproduction is a length process
- B. genetic material comes from two parents of the same species
- C. genetic material comes from two parents of different species

**D. Genetic material comes from many parents**

**Answer:** Since the offspring formed from sexual reproduction has genetic material from two parents thus it exhibits more variations.

**Q. 8. Reproduction is essential for living organisms in order to:**

**A. keep the individual organism alive**

**B. fulfil their energy requirement**

**C. maintain growth**

**D. continue the species generation after generation**

**Answer:** Reproduction is essential for all life forms to continue species generation after generation since for the existence of a race individuals are to be reproduced which is possible only through reproduction.

**Q.9. During adolescence, several changes occur in the human body. Mark one change associated with sexual maturation in boys:**

**A. Loss of milk teeth**

**B. increase in height**

**C. cracking on voice**

**D. Weight gain**

**Answer:** The cracking on voice in boys is due to the growth of voice box or larynx which can be seen as a protruding part of throat called Adam's apple.

**Q.10. In human females, an event that reflects onset of reproductive phase is:**

**A. growth of body**

**B. changes in hair pattern**

**C. change in voice**

**D. Menstruation**

**Answer:** In every ovulation cycle, an egg is discharged from the ovary which is exchanged to the fallopian tube. Also, the uterus sets itself up for a conceivable pregnancy. The lining of uterus thickens. At the point when no conception happens, the covering of the uterus is shed in pieces; alongside the unfertilized egg. These things are discharged out through the vagina through dying; called mensuration.

**Q.11. In Rhizopus, tubular thread-like structures bearing sporangia at their tips are called:**

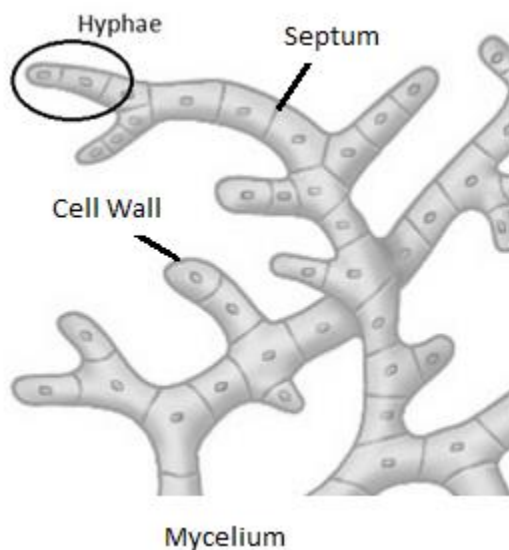
**A. filaments**

**B. hyphae**

**C. Rhizoids**

**D. roots**

**Answer:** Hyphae are the filamentous structures bearing sporangium at their tips which are the main mode of vegetative growth.



**Q.12. Vegetative propagation refers to formation of new plants from:**

**A. stem, roots and flowers**

**B. stem, roots and leaves**

**C. stem, flowers and fruits**

**D. stem, leaves and flowers**

**Answer:** Vegetative propagation is a type of asexual reproduction. In this, new plants are produced by the parts of plants like stem, roots and leaves without the help of any reproductive organ.

**Q.13. Factors responsible for the rapid spread of bread mould on slices of bread are:**

**(i) large number of spores**

**(ii) availability of moisture and nutrients in bread**

**(iii) presence of tubular branched hypae**

**(iv) formation of round shaped sporangia**

**A. (i) and (iii)**

**B. (ii) and (iv)**

**C. (i) and (ii)**

**D. (iii) and (iv)**

**Answer:** Factors responsible for the rapid spread of bread mould on slices of bread are:

**(i)** large number of spores

**(ii)** availability of moisture and nutrients in bread

**Q.14. Length of pollen tube depends on the distance between:**

**A. pollen grain and upper surface of stigma**

**B. pollen grain on upper surface of stigma and ovule**

**C. pollen grain in anther and upper surface of stigma**

**D. Upper surface of stigma and lower part of style**

**Answer:** Length of pollen tube is the distance between pollen grain on upper surface of stigma and lower part of style.

**Q. 15. Which of the following statements are true for flowers?**

**(i) Flowers are always bisexual**

**(ii) They are the sexual reproductive organs**

**(iii) They are produced in all groups of plants**

**(iv) After fertilization they give rise to fruits**

**A. (i) and (iv)**

**B. (ii) and (iii)**

**C. (i) and (iii)**

**D. (ii) and (iv)**

**Answer:** Flowers are the sexual reproductive organs which after fertilization give rise to fruits.

**Q. 16. Which among the following statements are true for unisexual flowers?**

**(i) they possess both stamen and pistil**

**(ii) they possess either stamen or pistil**

**(iii) they exhibit cross-pollination**

**(iv) unisexual flowers possessing only stamens cannot produce fruits**

- A. (i) and (iv)
- B. (ii), (iii) and (iv)
- C. (iii) and (iv)
- D. (i), (iii) and (iv)

**Answer:** unisexual flowers

- (i) Possess either stamen or pistil
- (ii) Exhibit cross-pollination
- (iii) Possessing only stamens cannot produce fruits

**Q.17. Characters transmitted from parents to offspring are present in:**

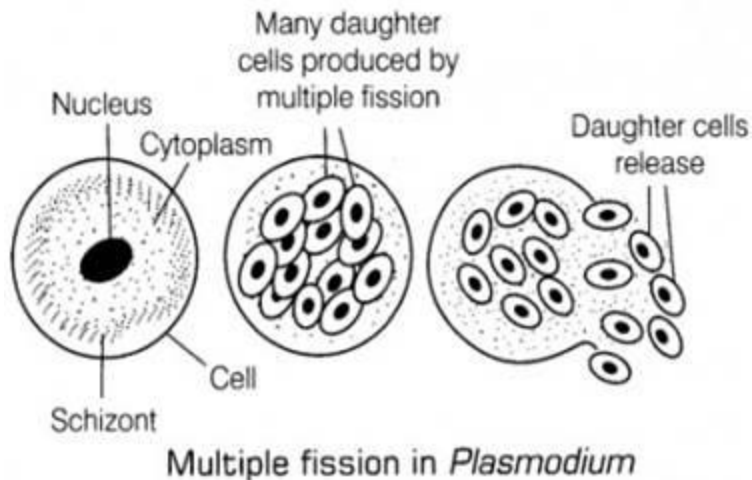
- A. cytoplasm
- B. ribosome
- C. golgi bodies
- D. genes

**Answer:** Characters transmitted from parents to offspring are present in genes. They are the unit of hereditary.

**Q.18. The ability of a cell to divide into several cells during reproduction in Plasmodium is called:**

- A. budding
- B. reduction division
- C. binary fission
- D. multiple fission

**Answer:** The ability of a cell to divide into several cells during reproduction in Plasmodium is called multiple fission.



**Q. 19. The correct sequence of reproductive stages seen in flowering plants is:**

- A. gametes, zygote, embryo, seedling**
- B. zygote, gametes, embryo, seedling**
- C. seedling, embryo, zygote, gametes**
- D. Gametes, embryo, zygote, seedling**

**Answer:** sequence of reproductive stages seen in flowering plants is gametes, zygote, embryo, and seedling.

**Q.20. The number of chromosomes in parents and offsprings of a particular species remains constant due to:**

- A. doubling of chromosomes after zygote formation**
- B. halving of chromosomes during gamete formation**
- C. doubling of chromosomes after gamete formation**
- D. Halving of chromosomes after gamete formation**

**Answer:** The number of chromosomes in parents and off spring's of a particular species remains constant due to halving of chromosomes during gamete formation.

### **Comprehensive Exercises (T/F)**

**Q.1. Write true or false for the following statements:**

**Menstruation lasts for about ten to fifteen days.**

**Answer:** False

Menstruation lasts for about 3 to 7 days.

**Q.2. Write true or false for the following statements:**

**Ovary releases three eggs every month.**

**Answer:** False

Ovary releases a egg every month.

**Q.3. Write true or false for the following statements:**

**The development of the child inside the mother's body takes approximately eleven months.**

**Answer:** False

The development of the child inside the mother's body takes approximately nine months.

**Q.4. Write true or false for the following statements:**

**Along the path of vas deferens, glands like the prostate and the seminal vesicles add their secretions for the nutrition and easier transport of the sperms.**

**Answer:** True

**Q. 5. Write true or false for the following statements:**

**The female germs cells or eggs are made in the uterus.**

**Answer:** False

The female germs cells or eggs are made in the ovary.

**Q.6. Write true or false for the following statements:**

**The fertilization takes place in the ovaries.**

**Answer:** False

The fertilization takes place in the ampullary-isthmus junction.

**Q.7. Write true or false for the following statements:**

**The uterus opens into the vagina through the cervix.**

**Answer:** True

**Q.8. Write true or false for the following statements:**

**The two oviducts unite into an elastic bag-like structure known as the uterus.**

**Answer:** True

**Q. 9. Write true or false for the following statements:**



**If the egg is not fertilized, it lives for about one day.**

**Answer:** True

**Q.10. Write true or false for the following statements:**

**Thick and spongy lining of uterus is required for nourishing the embryo if fertilization had taken place.**

**Answer:** True