

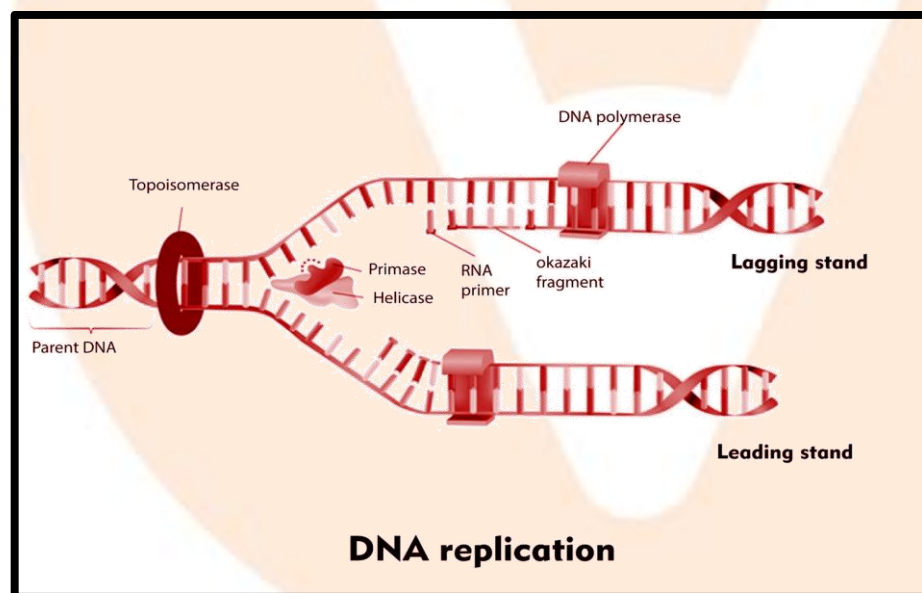
NCERT Solution for Class 10

Biology

Chapter 8 - How do Organisms reproduce?

1. What is the importance of DNA copying in reproduction?

Ans: The genetic material present in the chromosomes is DNA (Deoxyribonucleic acid) which is present in the nucleus of a cell. The genes are carried by DNA which is responsible for all the physiological processes of an individual. Two copies of DNA are inherited by a child, one from the mother and the other from the father. This is the reason why offspring look almost like their parents. So, DNA copying during reproduction is a crucial phenomenon through which characters are passed over generations. During reproduction, the copying of DNA is very accurate. Thus, the copying of DNA is very important during reproduction. In sexually reproducing organisms, copying of DNA also produces variations, hence, a better survival advantage is given from species to species.



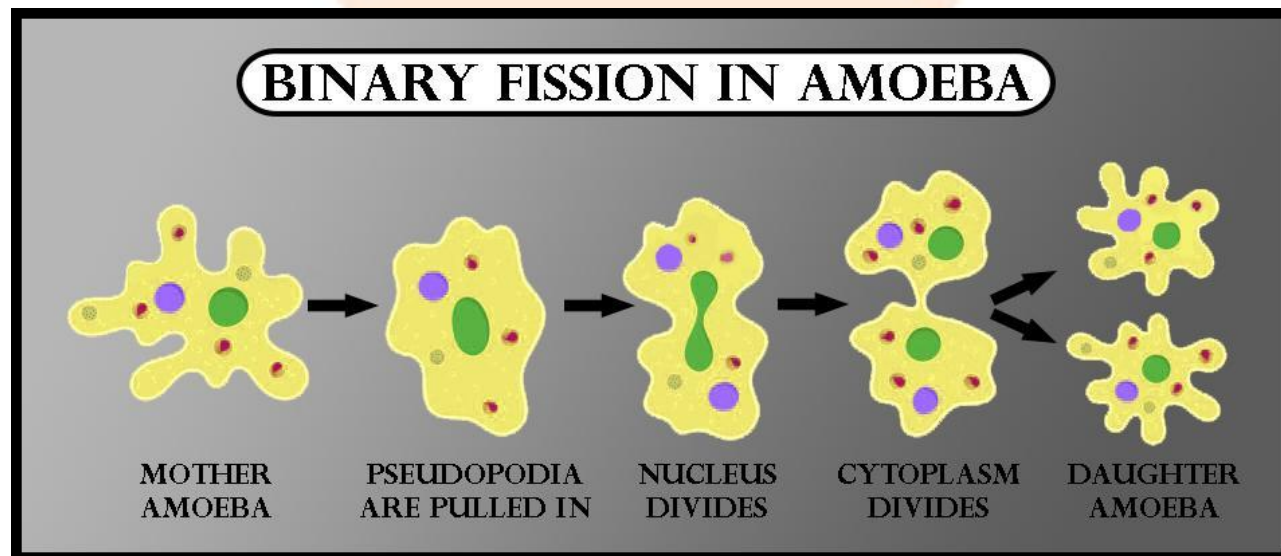
2. Why is variation beneficial to the species but not necessarily for the individual?

Ans: Variations are sometimes beneficial to the species as the environmental conditions change considerably and their survival becomes difficult. For example, Suddenly, if the temperature of the water is increased then most of the bacteria living in that water would die. Only a few would be able to survive and those few variants are resistant to heat. However, the whole population of bacteria would be destroyed in the

absence of these variants. Thus, variants help the survival of the species. However, For individual organisms, all variations are not necessarily beneficial.

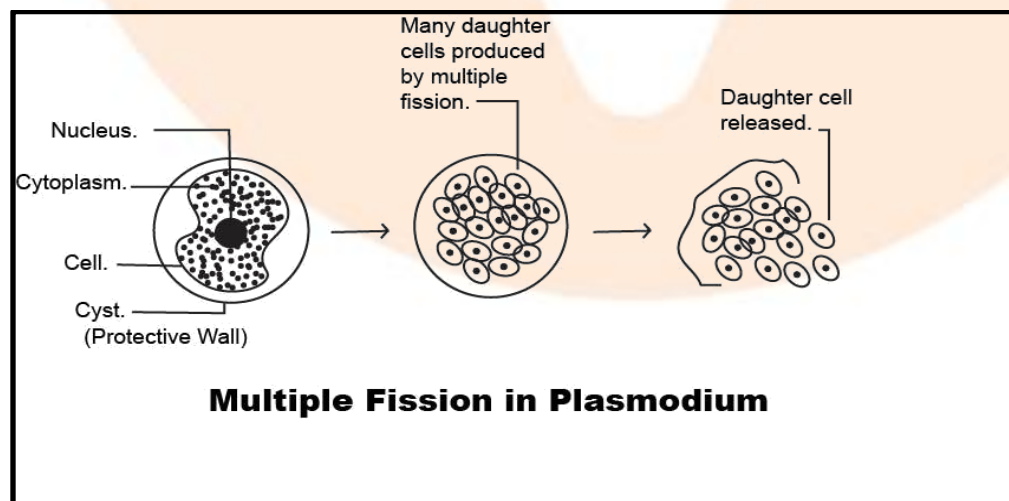
3. How does binary fission differ from multiple fission?

Ans: A single cell divides into two equal cells in binary fission. Amoeba and Bacteria Division by binary fission occurs in Amoeba and bacteria.



Binary fission in Amoeba

The division of one cell into many daughter cells simultaneously takes place in multiple fission. Amoeba and Plasmodium divides by multiple fission.



4. How will an organism be benefited if it reproduces through spores?

Ans: Dormant and hard structures produced by some organisms are spores. They are produced in order to tide over unfavorable conditions. Thus, it becomes easy for the spores to escalate around and promote pollination.

5. Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?

Ans: Simple organisms capable of producing new individuals through the process of regeneration are Hydra and Planaria. The new organisms from its body parts are called regeneration. This can be utilized by some organisms by the method of reproduction as their whole body is made up of fewer and the same kinds of cells in which any part of their body is often formed by growth and development.

However, the Organ-system level of organization is shown by complex organisms. As an interconnected unit work is done by systems of the body of all the organisms. Regeneration can be done by their lost body parts such as skin, muscles, blood, etc. However, It is impossible to give rise to new individuals through regeneration as a complete organ cannot be formed by a specific cell or tissue. Therefore, Complete regeneration of an entire new organism is not possible.

Organisms such as lizards and starfish can regenerate broken parts of the body through the process of regeneration.

6. Why is vegetative propagation practiced for growing some types of plants?

Ans: Asexual reproduction administered by vegetative parts of the plant (leaf, stem, roots) is known as vegetative propagation. This kind of propagation is self-sustaining and occurs without the presence of seeds. It has many advantages such as:

1. Dispersion of plants with no viable seeds like orchids, bananas, etc.
2. Propagation of a specific superior sort of a plant because the plants produced are going to be genetically just like the parent plant.
3. A quicker method of propagation to acquire a large number of plants in a much lesser time.
4. Introduction and propagation of plants in newer areas where seeds might not germinate due to unfavorable environmental or soil conditions.

7. Why is DNA copying an essential part of the process of reproduction?

Ans: Copying of DNA (Deoxyribonucleic acid) is a crucial part of reproduction as genetic information is passed from parents to offspring. The body design of an

individual is determined. A copy of their DNA is produced by the reproducing cells through chemical reactions and thus it results in two copies of DNA. With the creation of additional cellular structures, the copying of DNA takes place. This process is then followed by the division of a cell to make two cells.

8. How is the process of pollination different from fertilization?

Ans:

Pollination	Fertilization
The process of transfer of pollen from another to the stigma of a flower is called pollination.	Fertilization takes place after pollination. It is thus the fusion of the male and female gametes.
Pollination is administered with the assistance of pollinating agents such as air, water, birds, or insects.	Fertilization takes place inside the ovule and results in the formation of a zygote.

9. What is the role of the seminal vesicles and the prostate gland?

Ans: From the seminal vesicles and prostate glands, the secretions lubricate the sperms and for the easy transport of sperms, it provides a fluid medium. They also provide nutrition to the flowing sperm in the form of fructose, calcium, and some enzymes to allow the sperm to survive for a few days until they can fertilize the egg.

10. What are the changes seen in girls at the time of puberty?

Ans: Secondary sexual characteristics in girls:

- Breast size increases and the skin of the nipples present at the tips of the breasts gets darkened.
- The appearance of hair within the genital area.
- Presence of hair in other areas of skin like underarms, face, hands, and legs.
- The size of the uterus and ovary increases.
- The onset of the menstrual cycle.
- There is the appearance of pimples because of more secretion of oil from the skin.
- Widening of the hips

11. How does the embryo get nourishment inside the mother's body?

Ans: The development of the embryo occurs inside the mother's body for about nine months or 280 days. The embryo surrounded by the outer tissue inside the uterus develops finger-like projections called villi. The uterine tissue and maternal blood

surround the villi. A large surface area is provided by them for the exchange of oxygen and nutrients. A special tissue called Placenta is embedded in the uterine wall. Oxygen and other nutrients are provided to the embryo from the mother's blood via the placenta. The embryo also produces waste materials which get removed through the placenta.

12. If a woman is using a copper-T, will it help in protecting her from sexually transmitted diseases?

Ans: No, a copper-T will not provide for sexually transmitted diseases, as it does not prevent the entry of semen. The implantation of the embryo is only prevented in the uterus.

13. Asexual reproduction takes place through budding in

- (a) Amoeba.
- (b) Yeast.
- (c) Plasmodium.
- (d) Leishmania.

Ans: (b) In yeast, asexual reproduction takes place through budding.

14. Which of the following is not a part of the female reproductive system in human beings?

- (a) Ovary
- (b) Uterus
- (c) Vas deferens
- (d) Fallopian tube

Ans: (c) Vas deferens is a part of the male reproductive system not a part of the female reproductive system in human beings.

15. The anther contains

- (a) sepals.
- (b) ovules.
- (c) carpel.
- (d) pollen grains.

Ans: (d) The anther contains pollen grains.

16. What are the advantages of sexual reproduction over asexual reproduction?

Ans: Advantages of sexual reproduction:

- (i) More variations are seen in sexual reproduction. Thus, it ensures the survival of

species. The characteristics of both the parents are seen in the newly formed individuals.

(ii) With comparison to asexual mode, variations are more viable in the sexual mode because in asexual reproduction the function of DNA has to be inside the inherited cellular apparatus.

(iii) In the case of sexual reproduction, progeny produced are less than those produced by asexual reproduction.

17. What are the functions performed by the testis in human beings?

Ans: In man, the reproductive organ called the testes is present outside the abdomen within a loose pouch called the scrotum.

Functions of testes:

(i) Produce sperms

(ii) A hormone called testosterone is secreted which is responsible for secondary sexual characteristics in boys.

18. Why does menstruation occur?

Ans: After puberty is reached in females, it produces a mature egg cell every month during a process called the menstrual cycle.

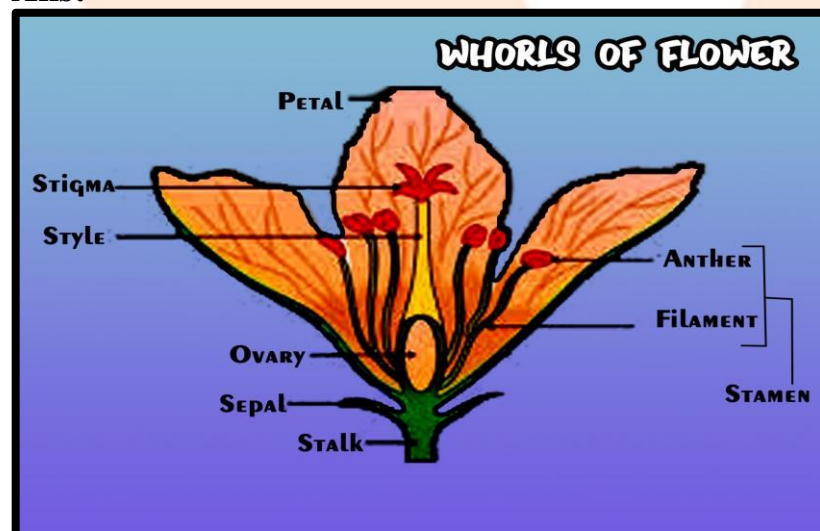
(i) A mature egg is released by an ovary during this period.

(ii) A new menstrual cycle begins if the egg does not get fertilized and the uterine lining is shed.

(iii) In general, a menstrual cycle lasts for 28 days.

19. Draw a labeled diagram of the longitudinal section of a flower.

Ans:



20. What are the different methods of contraception?

Ans: A method to prevent pregnancy is called Contraception. The contraceptive means are often broadly divided into the subsequent types:

(i) Natural method → The chances of meeting sperm and ovum are avoided in this method. The sexual act is avoided in this method from day 10th to 17th of the menstrual cycle as, during this period, ovulation can take place, and therefore, the possibility of fertilization is very high.

(ii) Barrier method → In this method, the fertilized ovum and sperm are prevented with the assistance of barriers. For both males and females, barriers are available. Condoms are barriers made from thin rubber that are used to cover the vagina in females and the penis in males

(ii) Oral contraceptives → This method involves tablets or drugs which have to be taken orally. These contain small doses of hormones that prevent the discharge of eggs and thus fertilization cannot occur.

(iv) Implants and surgical methods → Contraceptive devices such as loop or Copper-T are placed within the uterus to prevent pregnancy. Several surgical methods can be adapted to inhibit the transfer of gametes. In order to prevent the transfer of sperms, the blocking of vas deferens is required which is known as vasectomy. Similarly, the egg will not reach the uterus by blocking the fallopian tubes of the females known as Tubectomy.

21. How are the modes for reproduction different in unicellular and multicellular organisms?

Ans: Reproduction in unicellular organisms occurs by the division of the whole cell. In unicellular organisms, the modes of reproduction are often fission, budding, etc. whereas specialized reproductive organs are present in multicellular organisms. Therefore, reproduction can take place by complex reproductive methods like vegetative propagation, spore formation, etc. The mode of the reproduction will be sexual reproduction in more complex multicellular organisms like human beings and plants.

22. How does reproduction help in providing stability to populations of species?

Ans: Living organisms reproduce for the continuation of a specific species. Stability is being provided to the population of species by producing a new individual that resembles the parents. Therefore, stability is provided by reproduction to populations

of species. In addition, due to the presence of variants, the species is also better equipped to handle environmental changes and at the end of the day.

23. What could be the reasons for adopting contraceptive methods?

Ans: Contraceptive methods are adopted due to the subsequent reasons:

- (i) For the prevention of unwanted pregnancies.
- (ii) To manage population, rise or birth rate.
- (iii) For the prevention of the transfer of sexually transmitted diseases.