

Chapter 8

How Do Organisms Reproduce

Intext Questions

On Page 128

Question 1: What is the importance of DNA copying in reproduction?

Solution: The creation of DNA copy is essential in order to produce the organisms which are similar to their parents in their genetic set up. The DNA copy ensures that offsprings are having same number of chromosomes that of the parents.

N (mature organism) \rightarrow DNA replicates before reproduction $= 2N$ (Parent/parents) $\rightarrow N + N$ (Two daughter cells or offsprings)

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

Solution: Niches are basically well defined places in an ecosystem where a population of different or same organisms live and reproduce. The population of a particular niche is well adapted to the environment of that niche. If may be due to ecological reason like drastic temperature change, meteorite hits, population may get wiped out. However, if some variations are present in some individuals of that population, there will be still some chances for their survival. The surviving individual can further reproduce and develop a population as per the changed niche.

Thus, variation is beneficial to a species but not necessarily for the individual.

On Page 133

Question 1: How does binary fission differ from multiple fission?

Solution:

Binary Fission	Multiple Fission
The parent organism splits to form two new organisms. Firstly, the nucleus divides into two daughter nuclei and then the constriction develops which leads to the division of the cytoplasm. Example: Amoeba	The parent organism splits to form many new organisms at the same time. A cyst or a protective wall is formed around the single celled organism. Inside the cyst, nucleus of the cell splits several times to produce smaller nuclei. Division of the cytoplasm occurs quite late. Example: Plasmodium
It takes place under favorable conditions.	It takes place particularly during unfavorable conditions.

Question 2: How will an organism be benefitted if it reproduces through spores?

Solution: Spores have an outer hard protective covering called cyst which can withstand adverse conditions like high temperature, acidity, alkalinity and shortage of food and water. Reproduction through spores ensures that the organism can survive these adverse conditions and will not die. On the onset of favorable conditions, the cyst breaks and releases the daughter cells each forming a new organism.

Spores can remain dormant till the favorable conditions become available. Thus,

Spores help an organism to tide over adverse environment.

Spores help in extending the niche of the organism as they are dispersed through water, air and other agencies.

Question 3: Can you think of reasons why more complex organisms cannot give rise to new individuals through regeneration?

Solution: In complex multi cellular organisms, specialized cells make up tissues; tissues make up organs; organs make up organ systems; and finally organ systems make up organisms. These organisms have a very high degree of organization and thus cannot be reproduced from their cut body parts by the process of regeneration.

Question 4: Why is vegetative propagation practiced for growing some types of plants?

Solution: Vegetative propagation has some inherent advantages –

It takes less time to grow a plant vegetatively.

Different traits of species can be grown in the same plant.

Vegetative propagation is also used to grow some plants such as banana, orange, rose etc because these plants have lost the capacity to produce viable seeds.

Question 5: Why is DNA copying an essential part of the process of reproduction?

Solution: The creation of DNA copy is essential to produce organisms which are similar to their parents. As copying brings some variations each time, the surviving cells are similar but subtly different from each other. This tendency for variation during reproduction brings variations among the individuals of the same species.

On page 140

Question 1: How is the process of pollination different from fertilization?

Solution:

Pollination	Fertilization
The transfer of pollen grains from the anther of a stamen to the stigma of the carpel is called pollination.	Fertilization occurs when the male gamete present in the pollen grain joins the female gamete or egg present in the ovule in order to form a diploid zygote.
Pollination is done through various agencies like wind, water, birds and insects.	Fertilization is a biological process.

Question 2: What is the role of seminal vesicles and the prostate gland?

Solution: The secretions of seminal vesicles and prostate glands provide nutrition to the sperms and also make their transport easier by providing them motility.

Question 3: What are the changes seen in girls at the time of puberty?

Solution: Following changes occur in girls at the time of puberty:

Increase in the breast size.

Growth of pubic hair and hairs under arm pits.

Menstruation cycle commence

Skin becomes oily.

Question 4: How does the embryo get nourishment inside the mother's body?

Solution: All the requirements of the developing foetus like nutrition, respiration and excretion etc are met through placenta.

After implantation, a special disc like tissue develops between uterus wall and the embryo. In placenta, the embryo's blood vessels are close to mother's blood vessels but they are not joined. Because of the two sets of blood vessels are close to each other, exchange of substances takes place.

Question 5: If a woman is using a copper T, will it help in protecting her from sexually transmitted diseases?

Solution: No, because copper T will not prevent the contact of body fluids. It only prevents the implantation of the fetus into the uterus. Thus, it will not protect her from sexually transmitted diseases.

Exercise

Question 1: Asexual reproduction takes place through budding in

- a. amoeba
- b. yeast
- c. plasmodium
- d. leishmania

Solution: (b) Yeast.

Question 2: Which of the following is not a part of female reproductive system in human beings?

- a. Ovary
- b. Uterus
- c. vas deferens
- Fallopian tubes

Solution: c (Vas Deferens). These are the sperm ducts and hence are the part of male reproductive system in humans.

Question 3: The anther contains

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

Solution: (d) Pollen grains

Question 4: What are the advantages of sexual reproduction over asexual reproduction?

Solution: Following are the advantages of sexual reproduction over asexual reproduction:

In sexual reproduction, cells with different genetic material fuse. This leads to mixing of different characters and new characters emerge.

Accumulation of variations leads to formation of new species.

Sexual reproduction has speeded up the process of evolution.

Question 5: What are the functions performed by the testis in human beings?

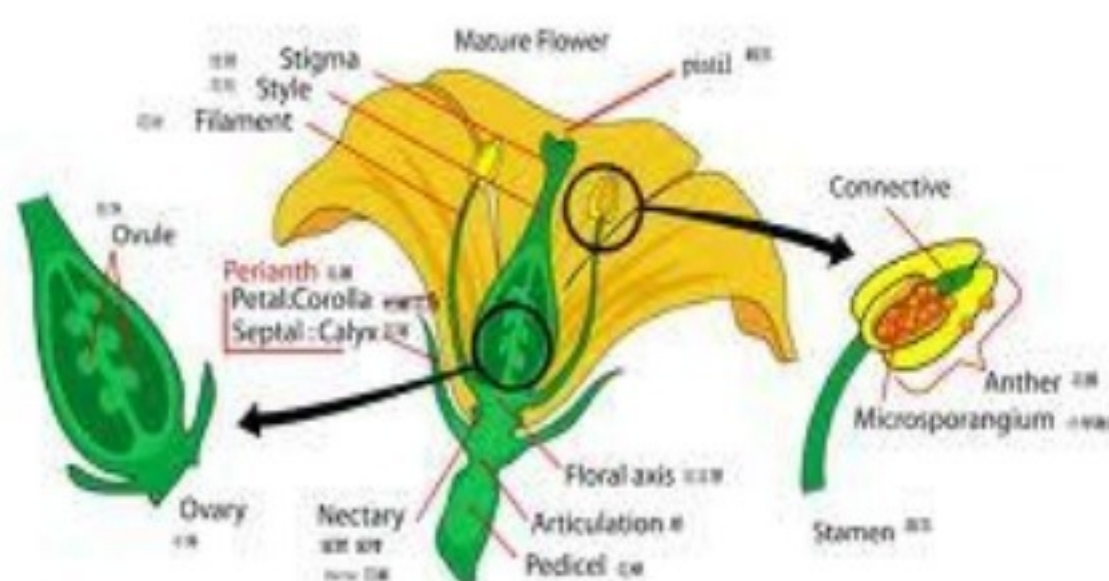
Solution: Testes are the primary reproductive organs in males. The function of testes is to make male gametes called sperms and also to make male sex hormone testosterone which is responsible for the secondary male characters.

Question 6: Why does menstruation occur?

Solution: The removal of the inner, thick and soft lining of the uterus along with its blood vessels in the form of vaginal bleeding is called menstruation. In humans, once a girl attains puberty, ovaries start producing ovum every month. Before every ovulation, inner lining of the uterus becomes thick and soft with lot of blood capillaries in it. If however, for any reason the released ovum doesn't get fertilized; unfertilized ovum dies within a day. Since there would be no embryo, the thick uterus lining starts degeneration in the form of vaginal bleeding called menstruation.

Question 7: Draw a labeled diagram of the longitudinal section of a flower.

Solution:



Question 8: What are the different methods of contraception?

Solution: The different methods for controlling the child birth are:

Hormonal or chemical methods: Various kinds of pills containing hormones which prevent the release of egg from the ovary, without interfering with the other phases of menstruation are taken orally. E.g. Mala D, Saheli

Barrier Methods: These are the physical devices which prevent the meeting of sperms and the egg. E.g. condoms, diaphragms and cervical caps.

Intra Uterine Devices: These are commonly called IUD's. These devices are made up of plastics and come in various shapes. The most common among these is copper T. It is placed inside the uterine cavity and is permanently kept there. It prevents the implantation of the embryo in the uterus.

Surgical Methods: The surgical methods are safe and permanent. Surgical methods are available for both males and females.

Vasectomy: In males, small portion of sperm duct or vas deferens is removed by surgical operation and both the cut ends are ligated properly.

Tubectomy: In females, small portion of the oviducts is removed by surgical operation and cut ends are ligated. This prevents the ovum from entering into the oviducts.

Question 9: How are the modes for reproduction different in unicellular and multicellular organism?

Solution: Unicellular organisms are single celled so they reproduce asexually. Budding, Fission, Fragmentation are some of the asexual methods. On the other hand, multi cellular organisms are composed of complex body systems (organ systems). They have specialized organs called gonads which produce respective haploid gametes. These gametes fuse to form a diploid zygote. Therefore, higher multicellular organisms like animals, plants and humans reproduce sexually.

Question 10: How does reproduction help in providing stability to populations of species?

Solution: Reproduction is the process through which an organism produces new organism of its own kind.

In general, in any population organisms die due to either old age, disease or any natural calamity. This results in the decrease in the number of organisms or decrease in the number of population. Thus, reproduction is the only method that keeps the overall number of organisms in a population constant and provides stability to it.

Question 11: What could be the reasons for adopting contraceptive methods?

Solution: Following are some reasons for adopting contraceptive methods –

Population control

Prevention against sexually transmitted diseases.

Freedom from unwanted pregnancies.