NCERT CBSE Solutions for Class 10 Science Chapter 8

How do Organisms Reproduce

Back of Chapter questions

1. Asexual reproduction takes place through budding in

(A) amoeba.

(B) yeast.

(C) plasmodium.

(D) leishmania.

Solution: (B)

Yeast is a unicellular organism which performs asexual reproduction by the process of budding. A bud is a small protrusion which is formed over the parent yeast body it grows and develops on the parent yeast. When the bud is fully developed it detaches from the parent's body and becomes an organism.

2. 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

Solution: (C)

Ovary, uterus and fallopian tubes are parts of the female reproductive system. Vas deferens is a part of the male reproductive system. It is a sperm carrying duct in human males.

3. The anther contains

(A) Sepals.

(B) Ovules.

(C) Pistil.

(D) Pollen grains.

Solution: (D)

The anther is a sac-like structure present in the stamen of a flower. The anther contains pollen grains which produce the male gametes.

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

Solution:

The advantages of sexual reproduction over asexual reproduction are as follows-

- Sexual reproduction produces genetic variations in the offspring. Asexual reproduction does not produce variation as the offspring is genetically identical to the parent.
- Sexual reproduction causes accumulation of variation in a population which often benefit the individuals and form the basis of evolution.
- Sexual reproduction involves the intermixing of characters. It is thus beneficial to produce. Offspring with desirable characters (hybrids).

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

Solution:

Testis are male reproductive organs in humans. They have two primary functions as follows:

- They are involved in the formation of sperm which is the male gamete.
- They also secrete testosterone which is the male sex hormone.

6. Why does menstruation occur?

Solution:

When females reach maturity at puberty, their reproductive phase starts, usually at the age of 10-12 years. The eggs begin to mature and one mature egg is released by one of the ovaries every month. The uterus wall thickens to receive the egg if it gets fertilized by a sperm. If the egg is fertilized, it begins to develop in the uterus and results in pregnancy. If the egg is not fertilized, the thick uterus lining is shed off. As a result, bleeding occurs which is called menstruation.

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

Solution:

Diagram of the structure of a flower (longitudinal section)-

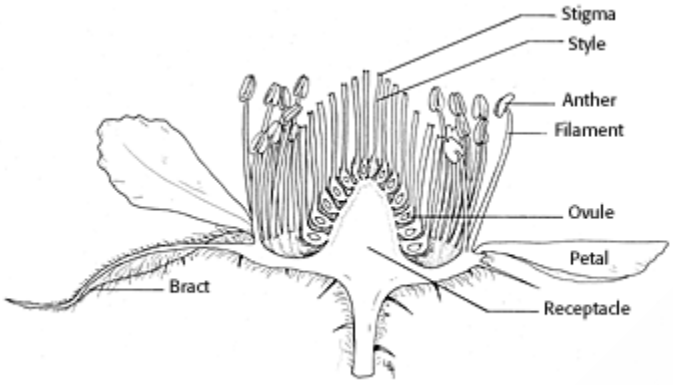

Figure 167. - Longitudinal section of 'Willamett' raspberry flower, x10.

8. What are the different methods of contraception?

Solution:

The following contraceptive methods are used commonly-

Mechanical Barrier Method:

This method of contraception relies on the use of mechanical barriers to prevent the entry of sperm into the female reproductive tract.

Example:

The mechanical barrier used by males is the condom. It is an elastic covering worn over the penis which prevents the sperm flow into the vagina during sexual intercourse. The vaginal condoms are used by women which are worn in the vagina to prevent the entry of sperm.

Hormonal Method:

There are drugs which can alter the release and effects of female hormones.

Example:

Contraceptive pills, which are taken orally, contain drugs which prevent the release of eggs and hence prevent fertilization. These drugs change the hormonal balance and hence can also have side effects.

Chemical Contraception:

Chemical contraception is the use of chemicals to prevent fertilization of the egg.

Example:

A device called copper-T is placed in the uterus for this contraception. It is an intrauterine device ***(IUD)*** as it is inside the uterus. It releases copper, a chemical that kills sperm and hence prevents pregnancy. Substances which kill sperm are

called spermicide such as copper. The ***IUDs*** can also cause irritation of uterus and hence side effects.

Surgical Techniques:

Surgical procedures can be applied to prevent pregnancy. Different procedures are applicable in males and females a s follows-

I. In the male, the vas deferens can be surgically blocked to prevent the transfer and release of sperm. This surgical procedure is called vasectomy.

II. In females, the fallopian tube can be surgically blocked to prevent the release of an egg into the uterus. This surgical procedure is called tubectomy.

Surgery if done correctly is safe in the long run. However, it may lead to infections if not conducted properly.

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

Solution:

Unicellular organisms reproduce asexually while multicellular organisms may reproduce asexually or sexually.

Modes of reproduction in unicellular organisms-:

Some common asexual methods of reproduction in such organisms are as follows-

i. Budding:

Yeast cells commonly divide by formation of an outgrowth (bud) which detaches and forms on maturity.

ii. Binary fission:

It is one of the most common methods of vegetative reproduction in unicellular organisms such as Amoeba and most bacteria. In this method, the organism divides into two and each daughter cell develops into a new individual.

iii. Multiple fission:

In some unicellular organisms such as Plasmodium, a single cell divides into multiple cells and each cell develops into a new Plasmodium.

Modes of reproduction in multicellular organisms:

i. Some of the common modes of asexual reproduction in multicellular organisms are fragmentation (algae, Planaria), budding (Hydra), spore formation (Ferns) and vegetative propagation (in plants).

ii. Sexual reproduction occurs in higher plants and animals. They have complex body structure and hence have well-developed male and female reproductive sex organs which are to carry out sexual reproduction.

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

Solution:

Organisms produce their young ones through reproduction. Thus, reproduction increases the organism population. However, organisms also die once they complete their life span. Thus, reproduction adds new organisms to the population and balance the total number of individuals.

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

Solution:

Adopting the contraceptive methods can be beneficial in several ways as follows-

Pregnancy can have an adverse effect on a woman's health if she is not ready for it. Thus, contraception prevents unwanted pregnancy.

Contraception helps in limiting the population.

Some contraceptive methods such as condoms help in the prevention of sexually transmitted diseases.

♦ ♦ ♦

In between chapter questions

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

Solution:

DNA copying is crucial in production of organisms which look alike their parents. The surviving cells are similar to their parents but slightly differ from each other since **DNA** copying brings about variations every time. This likelihood to bring about variability during reproduction introduces variations between individuals of the same species.

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

Solution:

Niches are the practical location where the population of certain organism lives in, within the ecosystem. The possibility of a population to be completely erased when certain uncontrollable reasons like changes in water level, temperature etc., takes place and this drastically changes or destroys the unique niches of the organisms, most suited to them. Variations plays a key role in helping individuals survive in their population count, due to adaptability.

Going forward, this helps the individuals to reproduce and increase their population of their species in their current niche. Hence, variation is more beneficial in the level of species rather than individuals.

3. How does binary fission differ from multiple fission?

Solution:

Binary Fission

i. Two daughter nuclei form due to nuclear division

ii. Formation of constriction takes place in the cell post nuclear division.

iii This type of fission produces only two daughter cells.

iv. This type of fission takes place in favorable conditions.

Multiple fission

i. Multiple daughter nuclei are formed from a single nucleus

ii. Cytoplasm division takes place slowly hence many cells are produced at the same time.

iii. Multiple daughter cells are generated.

iv. Multiple fission occurs during adverse situations.

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

Solution:

Organisms produce a thick outer covering around themselves which is able to withstand extreme situations such as high temperature, shortage of food and scarcity of water

Hence, the organisms which reproduce through spore formation can effortlessly survive in these extreme situations.

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

Solution:

Higher complex organisms cannot give rise to new individuals through regeneration because:

i. Higher organisms show a hierarchy of organization such as cell-tissue-organ-organ system, hence exhibiting a very complex body design.

ii. The special cells which can help an organism regenerate its lost part is not present in higher organisms.

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

Solution:

Plants such as banana, rose, Orange etc., have lost their capacity to produce viable seeds, hence the process of vegetative propagation is followed.

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

Solution:

DNA copying is crucial in production of organisms which look alike their parents. The surviving cells are similar to their parents but slightly differ from each other since **DNA** copying brings about variations every time. This likelihood to bring about variability during reproduction introduces variations between individuals of the same species.

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

Solution:

Pollination:

i. The transfer of pollen grains from the anther to the stigma of the flower is Pollination.

ii. The pollen grains constituting of male nucleus reaches the tip of stigma through this process.

Fertilization:

i. The male and female nucleus are fused together.

ii. A diploid zygote, which later develops into seed is formed in this process.

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

Solution:

The prostate gland and seminal vesicles produce secretions which provides nutrition and motility to the sperm, which also helps in the conduction of sperms.

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

Solution:

Following are the changes seen in girls during puberty:

i. There is an increase in the size of breasts.

ii. There is growth of hair under armpit and pubic hair.

iii. Commencement of menstruation takes place.

iv. Oily skin is observed.

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

Solution:

Placenta is a nutritive connection through which the embryo in the mother's womb gets nutrition from the mother.

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

Solution:

No, copper -T does not prevent the contact of the body with the other body fluids. Hence, it doesn't provide any protection to a woman using the copper -T against sexually transmitted diseases.

♦ ♦ ♦