

Board –CBSE

Class –10th

Topic – How do Organism Reproduce

1. (i) What is fertilization? Distinguish between external fertilization and internal fertilization.

(ii) What is the site of fertilization in human beings?

Ans.

(i) fertilization is defined as the fusion of a male gamete (sperm) with a female gamete (an ovum or egg) to form a zygote during sexual reproduction.

External Fertilization	Internal Fertilization
(i) The fusion of male gamete (sperm) and female gamete (ovum) occurs outside the body.	(i) The fusion of gametes occurs inside the
(ii) Both individuals discharge their gametes outside the body.	(ii) Only the male discharges sperms into
(iii) Development occurs outside the body.	(iii) Development occurs inside the body.
(iv) Example: Frog	(iv) Examples: humans, Birds, Cattle, etc.

(ii) The site of fertilization in human beings is in the fallopian tube of the female reproduction system.

2. Define the terms unisexual and bisexual giving one example of each.'

Ans. Unisexual is the plant whose flowers contain either stamens or carpels but not both. Example: Papaya, Watermelon. Bisexual is a plant whose flowers contain both stamens & carpels. Ex: Hibiscus, Mustard.

3. Differentiate between 'self-pollination' and 'cross-pollination'. Describe double fertilization in plants.

Ans.

Self-pollination	Cross-pollination
(i) Self-pollination occurs within a flower or between two flowers of the same plant.	(i) Cross-pollination occurs between two flowers borne on the different plants of the same species.

(ii) Flowers do not depend on other agencies for pollination.	(ii) Agents such as insects, wind, and water are required for pollination.
(iii) Pollen grains are produced in small numbers.	(iii) Pollen grains are produced in large numbers.
(iv) No wastage of pollen grains occurs and thus, is economical.	(iv) No wastage of pollen grains occur and thus, not economical
(v) Flowers are neither attractive nor produce nectar.	(v) Flowers attract insects by various means like coloured petals, scent, and nectar.
(vi) The offspring produced are of the same genetic makeup, so the purity of the race is maintained.	(vi) The offspring produced may show variations and differences in the genetic makeup

During fertilization in plants, the following events take place:

One of the male gametes fuses with the female gamete present in the embryo sac.

The other male gamete fuses with the two polar nuclei in the embryo sac.

The first fusion product gives rise to the zygote while the second one forms the endosperm.

The process of two fusions occurring in the embryo sac is called double fertilization.

4. What is 'reproduction'? Mention the importance of DNA copying in reproduction.

Ans. Reproduction is the process of producing new individuals of the same species by existing organisms of a species, i.e. parents. The importance of DNA copying in reproduction is as follows: DNA copying is called DNA replication. In this process, one copy each of replicated DNA will be passed to daughter cells. Variations may be introduced during DNA copying. This inbuilt tendency for variation during reproduction forms the basis of evolution.

5. "Variations that confer an advantage to an individual organism only will survive in a population." Justify.

Ans. It is because the chances of survival depend on the nature of variations and different individuals have different kinds of advantages. For example, a bacterium that can withstand heat will survive better in a heatwave i.e. the organisms that are fit in the competitive environment and with great variations will be survive will be able to survive and adapt. Thus, more offspring and populations with genetic variations will survive.

6. Name one sexually transmitted disease each caused due to bacterial infection and viral infection. How can these be prevented?

Ans. Sexually transmitted disease caused due to Bacterial infection is gonorrhoea, and Viral infection is AIDS (Acquired Immune Deficiency Syndrome). These diseases can be prevented by responsible sexual behavior such as the use of condoms during intercourse, etc.

7. (a) In the human body what is the role of (i) seminal vesicles, and (ii) prostate gland?

(b) List two functions performed by the testis in human beings.

Ans. (a) The role of seminal vesicles and the prostate gland are as follows: Seminal vesicles produce seminal plasma which is in the form of fluid that makes the transport of sperms smooth. The prostate gland secretes prostatic fluid that keeps the sperms alive and helps them to swim vigorously.

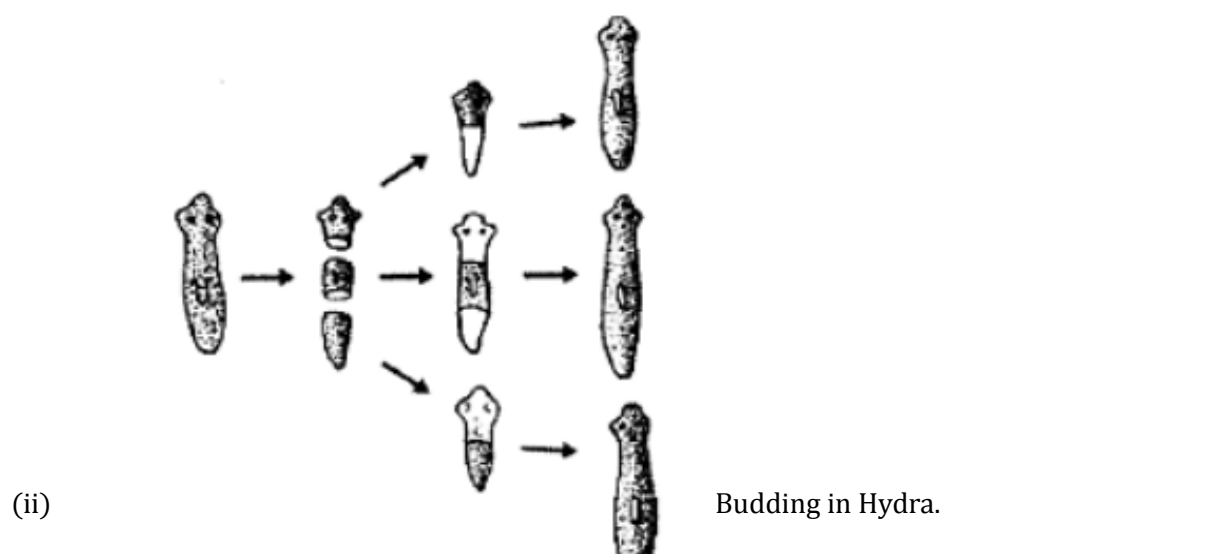
(b) Two functions performed by testis: Formation of sperms takes place in testis. They secrete the hormone testosterone which regulates the formation of sperms and brings changes in the appearance of the body at the time of puberty.

8. Illustrate the following with the help of suitable diagrams:

Regeneration in Planaria.

Budding in Hydra.

Ans. (i) Regeneration in Planaria.

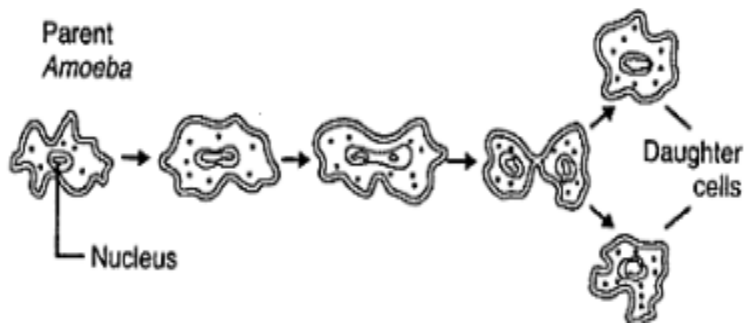


9. Illustrate the following with the help of suitable diagrams:

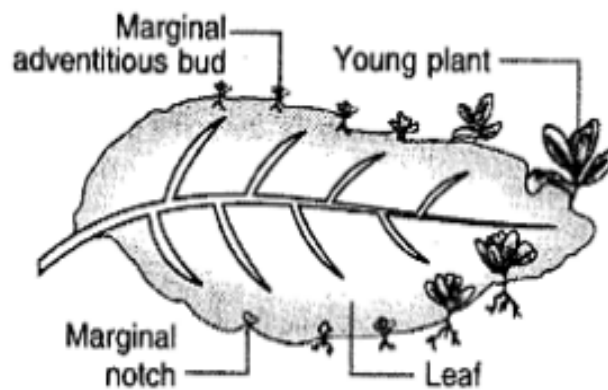
Binary Fission in Amoeba

☑ Leaf of Bryophyllum with buds.

Ans. (i) Binary Fission in Amoeba.



(ii) Leaf of Bryophyllum with buds.



10. (a) Name the parts labeled A, B, C, D, and E.



(b) Where do the following functions occur? (i) Production of an egg (ii) Fertilization (iii) Implantation of the zygote.

(c) What happens to the lining of the uterus?

(i) Before the release of a fertilized egg? (ii) if no fertilization occurs?

Ans. (a)

A – Oviduct or Fallopian tube;

B – Ovary;

C – Uterus;

D – Cervix;

E – Vagina.

(b) (i) Ovaries; (ii) Fallopian tube; (iii) Lining of the uterus.

(c) (i) The lining of the uterus becomes

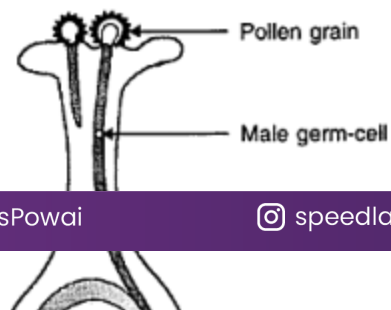
(ii) The lining of the uterus slowly breaks and comes out through the vagina as blood and mucous, if no fertilization occurs.

11. (a) Draw a diagram showing the germination of pollen on the stigma of a flower.

(b) Label pollen grain, male germ- cells, pollen tube, and female germ-cell in the above diagram.

(c) How is zygote formed?

Ans. (a) and (b)



(c) Zygote is formed when male gamete, i.e. Sperm fuses with a female gamete, i.e. ovum.

12. Mention the mode of reproduction used by: (a) Amoeba (b) Planaria.

Ans. (a) The mode of reproduction Amoeba is Binary fission.

(b) The mode of reproduction Planaria is Regeneration.

13. Name the information source for making proteins in the cell. State two basic events in reproduction.

Ans. The DNA in the cell nucleus is the information source of making proteins.

The two basic events in reproduction are:

Creation of a DNA copy,

Additional cellular apparatus by the cell involved in the process.

14. State the method used for growing rose plants and jasmine plants.

Ans. Artificial methods of vegetative propagation like cutting are used to grow rose plants and layering is used for growing jasmine plants.

15. Name the largest cell present in the human body.

Ans. The largest cell present in the human body is the ovum.

16. What is regeneration? State a reason why a more complex organism cannot give rise to new individuals through this method.

Ans. Regeneration is the ability of a fully differentiated organism to give rise to new individual organisms from its body parts. More complex organisms cannot give rise to new individuals through regeneration because:

Their body is highly complicated.

There are specific organs to do specific functions.

There is a labor division in the body of complex organisms.

Regeneration is carried out by specialized cells that are not present in complex organisms.

17. What is reproduction? What are its two types? Which one of the two confers new characteristics on the offspring and how?

Ans. Reproduction is the process of producing new individuals of the same species by existing organisms of a species, i.e. parents. Its two types are Asexual reproduction and Sexual reproduction. Sexual reproduction confers new characteristics on the offspring due to variation in DNA copying.\

18. Write any two differences between binary fission and multiple fission in a tabular form as observed in cells of organisms.

Ans.

Binary fission	Multiple fission
(i) It is the division of the parent into two nearly equal-sized daughter individuals.	(i) It is the division of the parent into many small daughter individuals.
(ii) Two daughter individuals are formed by a simple division or splitting.	(ii) Nucleus of the parent cell divides to form a number of nuclei.

19. What does HIV stand for? Is AIDS an infectious disease? List any four modes of spreading AIDS.

Ans. HIV stands for Human Immunodeficiency Virus. Yes, AIDS is an infectious disease. Four modes of spreading AIDS are as follows:

- By having sexual contact with an infected person.
- By the transfusion of blood from an infected person.
- Through infected needles used for injection.
- Through the placenta from the mother to child during pregnancy.

20. Explain the following methods of contraception giving one example of each:

- (i) Barrier method
- (ii) Hormonal imbalance method
- (iii) Surgical method

Ans.

(i) Barrier Method: In this method, physical devices such as condoms, diaphragm, and cervical caps are used. These devices prevent the entry of sperm into the female genital tract during copulation, thus acting 'as a barrier between them.

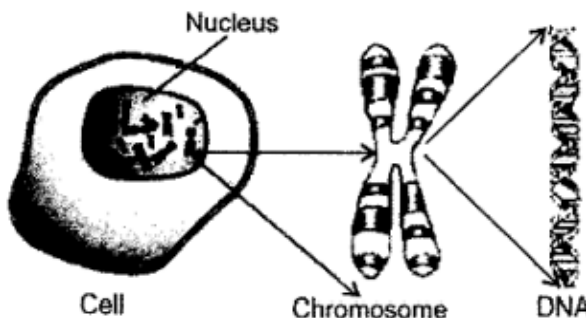
(ii) Hormonal Imbalance Method: In this method, specific drugs are used by females, which are of two types: oral pills and vaginal pills. Oral pills contain hormones that stop the ovaries from releasing the ovum into the fallopian tube. These pills are also called oral contraceptives (OCs) which act by changing the hormonal balance of the body so that eggs are not released and fertilization cannot occur. The use of Intrauterine Contraceptive Devices (IUCDs) prevents implantation in the uterus. This device is Copper-T placed safely inside the uterus by a doctor or nurse.

(iii) Surgical Method: In this method, a small portion of vas deferens in males and the fallopian tube in females is surgically removed or tied. It is called vasectomy in males and tubectomy in females. In this case, if the vas deferens in a male is blocked, sperm transfer will be prevented and if the fallopian tube in the female is blocked, the egg will not be able to reach the uterus, thus fertilization will not take place.

21. Write the full form of DNA. Name the part of the cell where it is located. Explain its role in the process of reproduction of the cell.

Ans. The full form of DNA is deoxyribonucleic acid. It is the genetic material found in the chromosomes, which are present in the nucleus of a cell.

Role of DNA in the process of reproduction of the cell:



DNA plays an important role in the reproduction of a cell. The reproducing cell produces an identical copy of DNA through some cellular mechanism. Since the newly formed copy of DNA lacks an organized cellular structure, the cell gets divided to provide cell cover to the newly formed DNA. Thus, two daughter cells are formed from a single cell as a result of the copying of DNA.

22. What are sexually transmitted diseases? Name four such diseases. Which one of the damages the immune system of the human body?

Ans. Sexually Transmitted Diseases (STDs) are diseases that are spread by sexual contact from an infected person to a healthy person. They are caused by various microorganisms that live in warm and moist environments of the vagina, urethra, anus, and mouth.

The four sexually transmitted diseases are:

- (i) Gonorrhoea
- (ii) Syphilis
- (iii) Trichomoniasis
- (iv) AIDS (Acquired Immune Deficiency Syndrome).

AIDS damages the immune system of the human body.

23. (a) Explain the terms: (i) Implantation (ii) Placenta

(b) What is the average duration of human pregnancy?

Ans. (a) (i) Implantation: The embedding of a fertilized mammalian egg (embryo) into the inner thick wall of the uterus (womb) where it will continue its development is called implantation.

(ii) Placenta: It is a complex double-layered spongy vascular tissue in a human female formed by the joint activity of maternal and foetal tissues in the wall of the uterus that is meant for attachment, nourishment, and waste disposal for the foetus.

(b) The average duration of human pregnancy is 40 weeks or 280 days

