

How do Organisms Reproduce?

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

Solution:

DNA – Deoxyribonucleic acid is the genetic material that is present in the cells of all organisms. DNA carries genetic information from one generation to the other and this helps in producing organisms of its own types. DNA copying is a must for inheriting the traits from parents. Any variations in DNA copying will give rise to origin of new species.

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

Solution:

The reason why the variation is beneficial to the species than individuals is because sometimes the climatic changes have a drastic effect on the species, which makes their survival difficult. For examples, if the temperature of the water body increases, then there might be certain species of microorganisms which might die. This may result in disturbance in the environment. So, variation is beneficial to species and not for the individuals.

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1. How does binary fission differ from multiple fission?

Solution:

When a single cell divides into two equal halves, it is known as binary fission. Bacteria and amoeba are the examples of binary fission.

When a single cell divides into multiple daughter cells at the same time, it is known as multiple fission. Algae and sporozoans are the examples of multiple fission.

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

Solution:

Following are the ways through which an organism will be benefited if it reproduces through spores:

- Number of spores produced in one sporangium would be large.
- In order to avoid competition at one place, spores can be distributed to faraway places with the help of air.

- In order to prevent dehydration under unfavorable conditions, the spores are covered by thick walls.

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

Solution:

Organisms at higher complex levels cannot give rise to new individuals through regeneration because they have organization of their organs system at different levels. All these organ systems are interconnected and work in full coordination. They can regenerate a few of their lost body parts like skin, blood, muscles, etc. but can't give rise to new individuals.

4. Why is vegetative propagation practised for growing some types of plants?

Solution:

Following are the advantages of practising vegetative propagation for growing some types of plants:

- Crops like orange, banana, pineapple do not have viable seeds, so vegetative propagation can be used.
- It is a rapid, cheap and easier method to grow crops.
- It can be used in places where seed germination fails.
- A good quality of variety can be preserved.

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

- **Solution :** DNA contains information for the inheritance of features from parents to next generation. DNA presents in nucleus of cells are the information source for making protein. If information is different, different protein will be made that lead to altered body design.

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8. How is process of pollination different from fertilization?

- **Solution :** Distinction between pollination and fertilisation:

Pollination	Fertilisation
Pollination refers to the process of transfer of pollen grains from anther to stigma of flower.	Fertilisation refers to fusion of male and female gamete to form a zygote.

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- **9. What is the role of the seminal vesicles and the prostate gland?**
- **Solution :** Secretions of seminal vesicles and prostate gland provide fluid medium to sperm to move and also provide nutrition to them.
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- **10. What are the changes seen in girls at the time of puberty?**
- **Solution :** During puberty breast size begins to increase with darkening of the skin of the nipples at the tip of breasts. Also, girls begin to menstruate at around this time.
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- **11. How does the embryo get nourishment inside the mother's body?**
- **Solution :** The embryo develops inside the mother's body for about nine months. Inside the uterus, the outer tissue surrounding the embryo develops finger-like projections called villi. These villi are surrounded by uterine tissue and maternal blood. They provide a large surface area for exchange of oxygen and nutrients. Also, there is a special tissue called placenta, which is embedded in the uterine wall. The embryo receives the oxygen and nutrients from the mother's blood via the placenta. The waste materials produced by the embryo are also 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.

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- **Exercise Questions**
- **1. 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.
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- **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**
- **Ans:** (c) Vas deferens are a part of the male reproductive system not a part of the female reproductive system in human beings.
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- **3. The anther contains**
- **(a) Sepals.**
- **(b) Ovules.**
- **(c) Carpel.**
- **(d) Pollen grains.**
- **Ans:** (d) The anther contains pollen grains.
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- **4. 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.
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- **5. 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.
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- **6. 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.
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- **7. Draw a labeled diagram of the longitudinal section of a flower.**

- Ans:

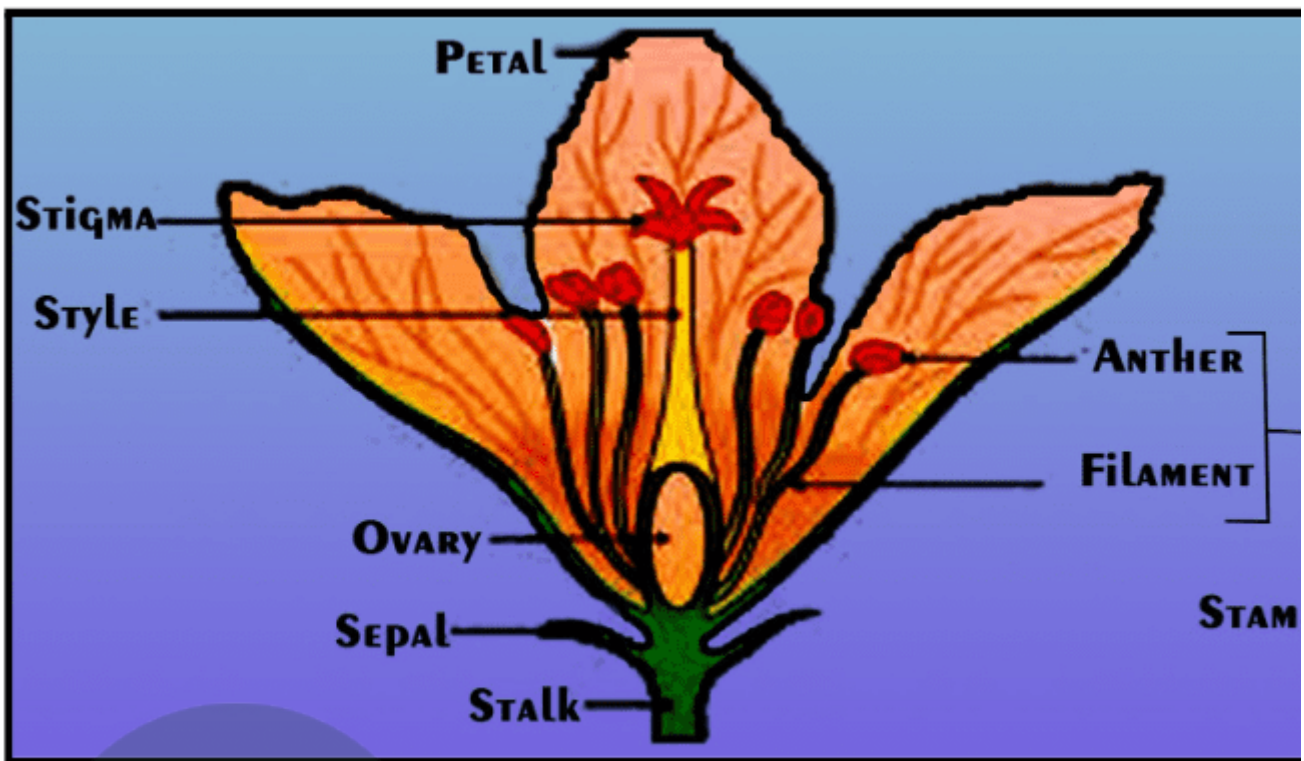


Image: Longitudinal Section of a Flower.

8. What are the different methods of contraception?

Solution:

Following are the different methods of contraception:

- **Natural method:** In this method, the main focus is to avoid the meeting of sperms and ovum. This can be achieved by avoiding the mating from 10th to 17th day of the menstrual cycle. During this period, there are high chances of fertilization as ovulation is expected.
- **Barrier method:** In this method, the meeting of sperms and ovum is avoided by using a barrier. These barriers are available for males as well as for females. Condoms for both male and female, diaphragms for female, cervical cap and contraceptive sponge for females.
- **Oral contraceptives:** In this methods, pills are taken orally. These pills contain small portion of hormones that block the eggs so that fertilization doesn't takes place.
- **Implants and surgical method:** In this method, contraceptive devices like copper-T or a loop can be used to block the meeting of sperms and ovum. In surgical method, the fallopian tubes are blocked in females to

stop flow of eggs and vas deference is blocked in men to stop the flow of sperms.

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

Solution:

The different modes of reproduction in unicellular organisms are fission, budding, etc. Here, the cell divides into two daughter cells and this process of cell division continues.

Whereas, in multicellular organisms there is a different organ system for reproduction. The different modes of reproduction in multicellular organisms are vegetative propagation, spore formation, etc.

In more complex organisms like humans and animals, the reproduction is through sexual reproduction.

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

Solution:

Reproduction is the process of producing the same kind of species by the existing species. This is done so as to maintain the population of that species and also to take forward their species to next generations. Stability is maintained by keep a check of rate of births and rate of deaths.

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

Solution:

Following are the reasons for adopting contraceptive methods:

- To control population
- To avoid unplanned pregnancy
- To avoid transfer of sexually transmitted diseases