

Questions

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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 must for inheriting the traits from the 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.

Questions

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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 few of their lost body parts like skin, blood, muscles, etc. but can't give rise to new individuals.

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

Solution:

Following are the advantages of practicing 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.

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

Solution:

DNA copying is an essential part of the process of reproduction because it carries the genetic information from the parents to offspring. A copy of DNA is produced through some chemical reactions resulting in two copies of DNA. Along with the additional cellular structure, DNA copying also takes place which is then followed by cell division into two cells.

Questions

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

Solution:

Pollination is defined as the process of transfer of pollens from anther to stigma. The process takes place with the help of pollinators like air, water and some insects.

Fertilization is defined as the fusion of male and female gametes. It takes place in the ovule and leads to the formation of zygote.

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

Solution:

Lubrication of sperms and providing of a fluid medium for the easy transportation of sperms takes place with the help of secretions from the seminal vesicles and the prostate gland. These secretions also provide nutrients in the form of fructose, calcium and some enzymes.

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

Solution:

Following are the changes seen in girls at the time of puberty:

- In genital area, hair growth appears.
- Hair growth in other areas like underarms, face, hands and legs.
- The size of uterus and ovary increases.
- The size of the breast increases followed by darkening of the nipple skin that are present at the tip of the breast.
- Beginning of menstrual cycle.
- Appearance of pimples, as the oil secretion is more from the skin.

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

Solution:

The lining of the uterus thickens after fertilization. The blood flow is good so as to nourish the growing embryo. Placenta is a special tissue which is embedded in the uterine wall and helps the embryo get the nourishment from the mother's tissue. Placenta has villi on the embryo side and blood space on the mother's side. This spacing provides a large area between the mother and the embryo and also for the waste removal.

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

Solution:

No, because usage of copper-T cannot stop the contact of body fluids. Hence, it cannot protect her from getting sexually transmitted diseases.

Exercises

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1. Asexual reproduction takes place through budding in

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

Solution:

b) Yeast

Yeast is an example for asexual reproduction taking place through budding. A small protuberance is produced on the parent cell that grows in full size forming a bud. In the parent cell, the daughter nucleus splits and migrates to the daughter cell. By forming a constriction, the bud detaches from the mother's body at the base. This process of budding continues to form a chain of bud cells. The mother cell is smaller than the daughter cell.

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) Vas deferens

Vas deferens is a part of male reproductive system. It is a long, muscular tube travelling from the epididymis into the pelvic cavity. It is behind the bladder. Its function is to transport the mature sperm to the urethra. It also carries urine to the outside of the body.

3. The anther contains

- a) Sepals
- b) Ovules
- c) Pistil
- d) Pollen grains

Solution:

d) Pollen grains.

Pollen grains are the microscopic particles that occurs in the pollen giving rise to male gametophyte of a seed plant.

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

Solution:

Following are the advantages of sexual reproduction:

- The offspring has the characters of both the parent.
- The survival of the species is ensured as there are more variations.
- The offspring can easily adapt to environmental changes.
- It also improves the health of humans.

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

Solution:

Following are the functions performed by the testis in human beings:

- Apart from the production of sperms, it also produces the male hormone known as androgens.
- They also produce hormone called testosterone, which is responsible for secondary sexual characters in boys.

6. Why does menstruation occurs?

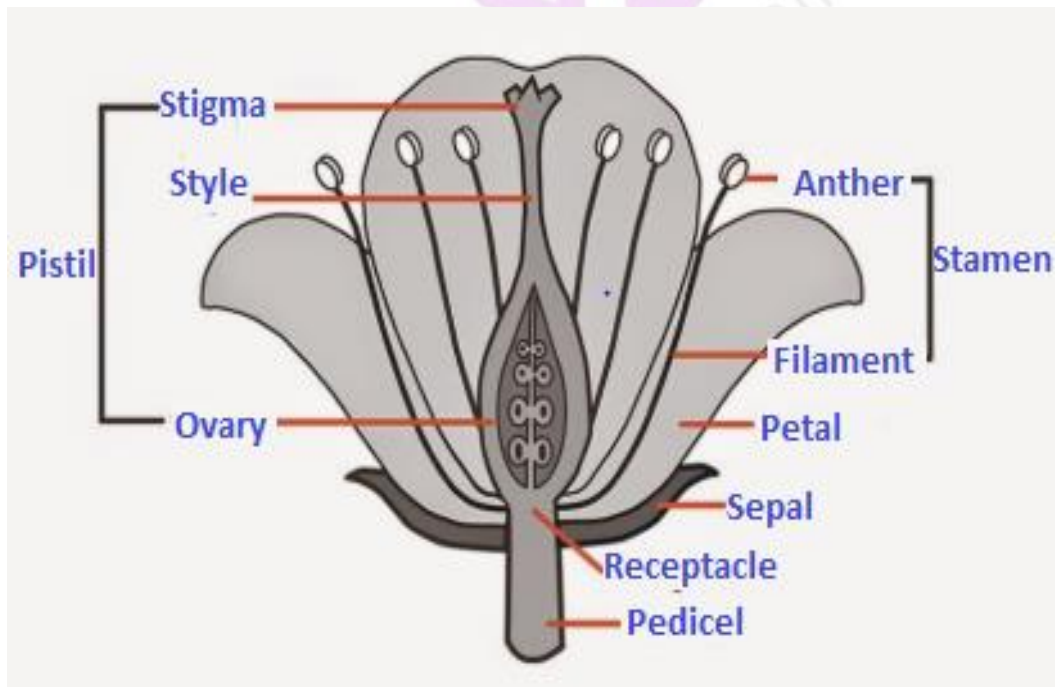
Solution:

Menstruation is the normal bleeding of the vaginal line which starts between puberty and lasts till menopause. During this period, the body prepares itself for the pregnancy.

Every month an egg is released from one of the ovaries at the same time where the uterus prepares itself for fertilized egg. The inner lining of the uterus gets thickened and is supplied with sufficient amount of blood for the embryo. Since there is no interaction between the egg and the sperms, the fertilization of egg doesn't takes place. So when the egg doesn't fertilized, the uterus lining breaks down slowly resulting in menstruation.

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

Solution:



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 the 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 the 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 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.