Chapter-7

How do Organisms Reproduce?

2 MARKS QUESTIONS

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

Solution :

The spores are covered by thick walls that protect them until they come into contact with suitable moist surface and can begin to grow.

2.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.

3. 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.

4. 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.

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

Solution :

Copper-T cannot protect the woman from acquiring sexually transmitted disease. It will protect her from only unwanted pregnancy.

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

Solution :

Sexual reproduction leads to variation due to recombination of genetic material DNA. These variations are essential for survival of species. On the contrary, asexual reproduction does not bring about variations.

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

Solution :

In human beings, testes perform dual function:

(i) Production of sperms

(ii) Secretion of male hormone testosterone.

8. How are the modes of reproduction different in unicellular and multicellular organism?

Solution :

In unicellular organisms, cell division, or fusion leads to the creation of new individuals. In multicellular organisms with simple body organization budding, fragmentation may work but in complex multicellular organisms only sexual reproduction takes place.

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

Solution :

The consistency of DNA copying during reproduction is important for the maintenance of body design features that allow the organism to use the particular niche. Reproduction is, therefore, linked to the stability to populations of species.

4 MARKS QUESTIONS

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

Solution :

DNA (Deoxyribonucleic acid) is the genetic material found in the chromosomes, which are present in the nucleus of a cell. The DNA is the information site for making proteins and each specific type of protein leads to a specific type of body design.
Thus, it is the DNA molecule that determines the body design of an individual. Therefore, it can be concluded that it is the DNA that gets transferred from parents to offsprings and makes them look similar.

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

Solution :

Variations are useful for the survival of species in changed environment situations. If a population of reproducing organism were suited to a particular niche and if the niche is drastically altered the population could be wiped out. However, some variations are present some species will survive. Thus, variation is useful to species but not the individual.

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

Solution :

(i) Plants raised by vegetative propagation can bear flower and fruits earlier than those produced from seeds.

(ii) Such methods also make possible the propagation of plants such as banana, orange, rose and jasmine that have lost the capacity to produce seeds.

(iii) All plants produced by this method are genetically similar enough to the parent plant to have its all characteristics.

4. 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.

5. 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 rather 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, 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.

6. 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.

7. 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.

8. 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.

9.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.

10. 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.

11. 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.

7 MARKS QUESTIONS

1. 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:

- Hair growth appears in genital area.
- 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 is present at the tip of the breast.
- Beginning of menstrual cycle.
- Appearance of pimples, as there is more oil secretion from the skin.

2. 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 waste removal.

3. Why does menstruation occur?

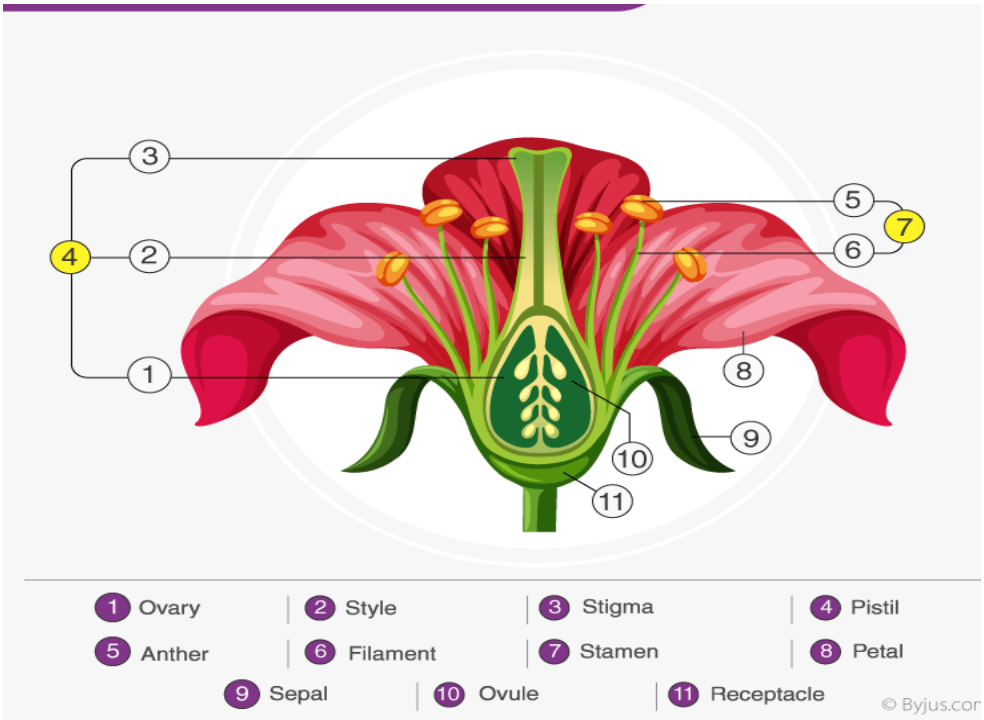
Solution:

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

Every month an egg is released from one of the ovaries at the same time when the uterus prepares itself for the fertilized egg. The inner lining of the uterus gets thickened and is supplied with a 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 get fertilized, the uterus lining breaks down slowly resulting in menstruation.

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

Solution:



5. 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 10^{th} to 17^{th} 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 the flow of eggs and vas deference is blocked in men to stop the flow of sperms.

6. 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, reproduction is through sexual reproduction.

MULTIPLE CHOICE QUESTIONS

1) Fruits are formed from the

a) Stamen

b) Stigma

c) Ovary

d) Ovule

Correct Answer: Option (c)

2) Reproduction is essential for living organisms in order to ……

a) Keep the individual organism alive

b) Fulfill their energy requirement

c) Maintain growth

d) Continue the species generation after generation

Correct Answer: Option (d)

3) The male reproductive parts of a flower, the stamens, are collectively known as

a) Androecium

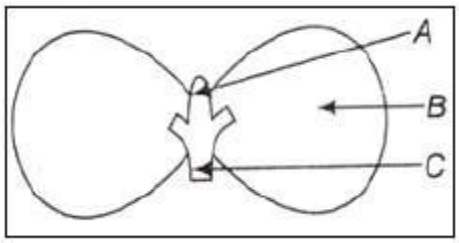
b) Filament

c) Anther

d) Gynoecium

Correct Answer: Option (a)

4) In the below figure, parts A, B and C are, sequentially,



a) Cotyledon, plumule and radicle

b) Plumule, radicle and cotyledon

c) Plumule, cotyledon and radicle

d) Radicle, cotyledon and plumule

Correct Answer: Option (c)

5) Which of the following diseases is transmitted sexually?

a) Kala Azar

b) Jaundice

c) Cholera

d) Syphilis

Correct Answer: Option (d)

6) IUCD is for

a) Vegetative propagation

b) Contraception

c) Increasing fertility

d) Avoiding miscarriage

Correct Answer: Option (b)

7) Which among the following is not the function of the testes at puberty?

(i) Formation of germ cells

(ii) Secretion of testosterone

(iii) Development of placenta

(iv) Secretion of estrogen

a) (i) and(ii)

b) (ii) and(iii)

c) (iii) and(iv)

d) (i) and(iv)

Correct Answer: Option (c)

8) Which of the following is a contraceptive?

a) Copper T

b) Condom

c) Diaphragm

d) All of these

Correct Answer: Option (d)

9) The correct sequence of organs in the male reproductive system for the transport of sperm is

a) Testis → vas deferens → urethra

b) Testis → ureter → urethra

c) Testis → urethra → ureter

d) Testis → vas deferens → ureter

Correct Answer: Option (a)

10) During adolescence, several changes occur in the human body. Mark one change from the following associated with sexual maturation in boys

a) Increase in height

b) Cracking of voice

c) Weight gain

d) Loss of milk teeth

Correct Answer: Option (b)

FILL IN THE BLANKS

1.The basic unit of reproduction is the _____.

(Answer: cell)

2.A type of reproduction that involves the formation of offspring from a single parent is called _____ reproduction.

(Answer: asexual)

3.In sexual reproduction, the fusion of male and female gametes leads to the formation of a _____.

(Answer: zygote)

4.The male reproductive organ in plants is the _____.

(Answer: stamen)

5.Fertilization in humans typically occurs in the _____.

(Answer: fallopian tube)

6.The process of shedding the uterine lining in females is known as _____.

(Answer: menstruation)

7.A fertilized egg undergoes several divisions to form a hollow ball of cells called a _____.

(Answer: blastula)

8.Binary fission is a common form of asexual reproduction in _____.

(Answer: bacteria)

9.The process of the release of a mature egg from the ovary is known as _____.

(Answer: ovulation)

10.Seed formation in flowering plants follows the process of pollination and _____.

(Answer: fertilization)