Chapter 8
How do Organisms Reproduce?

Intext Questions Page No. 128

Question 1.

What is the importance of DNA copying in reproduction?

Answer:

The chromosomes in the nucleus of a cell contain information for inheritance of features from parents to next generation in the form of DNA (Deoxyribo Nucleic Acid) molecules. The DNA in the cell nucleus is the information source for making proteins. Hence DNA copying is important in reproduction.

Question 2.

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

Answer:

If a population of reproducing organisms were suited to particular niche and if the niche were drastically altered, the population could be wiped out. However, if some variations were to be present in a few individuals in these populations, there would be some chance for them to survive.
Thus, if there were a population of bacteria living in temperature waters and if the water temperature were to be increased by global warming, most of these bacteria would die, but the few variants resistant to heat would survive and grow further. Variation is thus useful for the survival of species over time. Variation is not useful for all organisms.

Intext Questions Page No. 133

Question 1.

How does binary fission differ from multiple fission?

Answer:

Binary fission: It is a simple kind of division which formate new individual. In binary fission, a single cell divides into two equal halves but it is possible only with very simple single cell kind. Amoeba and Bacteria divide by binary fission.

Multiple fission: Another type of simple division is multiple fission, in this, a single cell divides into many daughter, cells, e.g., Plasmodium divide by multiple fission.

Binary fission	Multiple fission
In this fission, one cell split into two equal halves during cell division.Eg: Bacteria.	Here one organism divide into many daughter cells simultaneously.Eg: yeast.

Question 2.

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

Answer:

The spores are covered by thick walls that protect them until they come into contact with another moist surface and can begin to grow. Thus organism be benefited if it reproduces through spores.

Question 3.

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

Answer:

Multicellular organisms are not simply a random mass of cells but a carefully organized entity of tissues and organs are placed at definite positions in the body to form organ systems. These systems are well coordinated to perform specific functions. Hence complex organisms cannot reproduce through fragmentation.

Question 4.

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

Answer:

Advantages of vegetative propagation:

- Used in methods such as layering or grafting, to grow many plants like sugarcane, roses or grapes for agricultural purposes.
- Plants raised can bear more flowers and fruits in comparison to plants produced from seeds.
- Plants such as banana, orange, rose and jasmine which have lost the capacity to produce seeds can be propagated.
- All plants produced by vegetative propagation are genetically similar enough to the parent plant.

Question 5.

Why is DN Acopying an essential part of the process of reproduction?

Answer:

The consistency of DNA copying during reproduction is important for the maintenance of body design features that allow the organism to use that particular niche. Because of this DNA copying is an essential part of the process of reproduction.

Intext Questions Page No. 140

Question 1.

How is the process of pollination different from fertilization?

Answer:

Pollination is movement of pollens from one plant to another plant's or its own plant's stigma. It may require certain agents called pollinators such as air, water birds or some insects to perform. Fertilization, is a complex process, it involves the fusion of the male and female gametes. It occurs inside the ovule and leads to the formation of zygote.

Question 2.

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

Answer:

Along the path of the vas deferens, gland like the prostrate and the seminal vesicles add their secretions so that the sperms are now in a fluid which makes their transport easier and this fluid also provides nutrition.

Question 3.

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

Answer:

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

1. Development of secondary sexual characteristics.
2. Growth in breast size and darkening of skin of the nipples.
3. Growth of hair in the genital area and other areas of skin like underarms, face, hands and legs.
4. Growth in the size of uterus and ovary hence, start of menstrual cycle periodically.

Question 4.

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

Answer:

The embryo gets nutrition form the mother's blood with the help of a special tissue called placenta. This is a disc which is embedded in the uterine wall. It contains villi on the embryo's side of the tissue on the mother's side are blood spaces, which surround the villi. This provides a large surface area for glucose and oxygen to pass from the mother to the embryo. The developing embryo will also generate waste substances which can be removed by transferring them into the mother's blood through the placenta.

Question 5.

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

Answer:

Copper-T will helps in protecting her from sexually transmitted diseases by helping to prevent infections of diseases.

NCERT Textbook Exercises

Question 1.

Asexual reproduction takes place through budding in:

(a) amoeba (b) yeast (c) plasmodium (d) leishmania

Answer: (b) yeast

Question 2.

Which of the following is not system in human beings? a part of the female reproductive

(a) ovary (b) uterus (c) vas deferens (d) fallopian tube

Answer: (c) vas deferens

Question 3.

The anther contains:

(a) sepal (b) ovules (c) carpel (d) pollen grains

Answer: (d) pollen grains

Question 4.

What are the advantages of sexual reproduction over asexual reproduction?

Answer:

In case of asexual reproduction, new generations are produced by one organism. But in sexual reproduction, new generations are produced by two organisms (male and female). In case of sexual reproduction germ cells are produced in testes and these secrete a hormone testosterone. In human beings also develop special tissues for this purpose.

Question 5.

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

Answer:

They are the glands where sperm and testosterone are generated and present in male body. The testes are contained in the scrotum and are composed of dense connective tissue. Functions of testes are as follows:

- It produces sperms, which contain haploid set of chromosomes of
- It produces testosterone, which initiate secondary sexual characteristics

Question 6.

Why does menstruation occur?

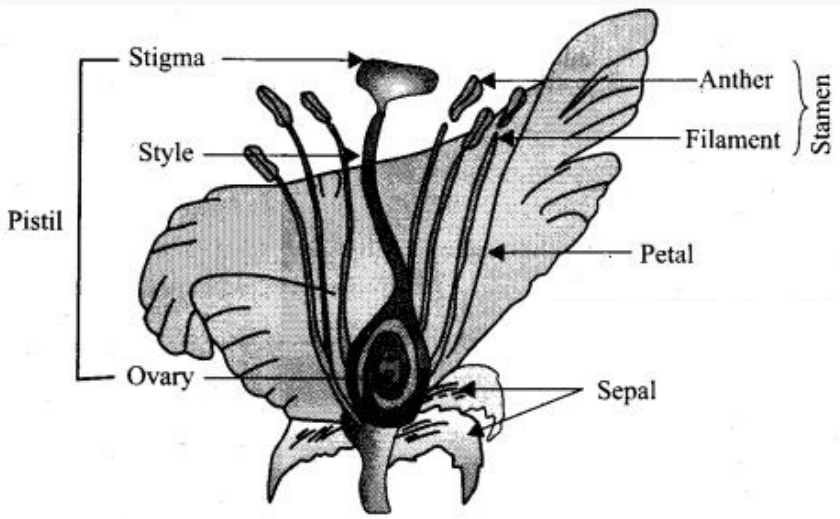
Answer:

Since the ovary releases one egg every month, the uterus also prepares itself every month to receive a fertilised egg. Thus its lining becomes thick and spongy. This would be required for nourishing the embryo if fertilisation had taken place. Now, however, this lining is not needed any longer. So the lining slowly breaks and comes out through the vagina as blood and mucous. This cycle takes place roughly every month and is known a menstruation. It usually lasts for about two to eight days.

Question 7.

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

Answer:



Longitudinal section flower.

Question 8.

What are the different methods of contraception?

Answer:

Many ways have been devised to avoid pregnancy. These contraceptive methods fall in a number of categories. One category is the creation of a mechanical barrier so that sperm does not reach the egg. Condoms on the penis or similar coverings worn in the vagina can serve this purpose. Another category of contraceptives acts by changing the hormonal balance of the body so that eggs are not released and fertilisation cannot occur. These drugs commonly need to be taken orally as pills. However, Since they change hormonal balances, they can cause side effects too. Other contraceptive devices such as the loop or the copper-T are placed in the uterus to prevent pregnancy. Again, they can cause side effects due to irritation of the uterus. Surgery can also be used for removed of unwanted pregnancies.

Question 9.

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

Answer:

In unicellular organisms, reproduction occurs by the division of the entire cell. The modes of reproduction in unicellular organisms can be fission, budding etc. whereas in multi cellular organisms, specialised reproductive organs are present. Therefore, they can be reproduced by complex reproductive methods such as vegetative propagation, spore formation etc. In more complex multicellular organisms such as human beings and plants, the mode of reproduction is sexual reproduction.

Question 10.

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

Answer:

Reproduction is the process of producing new individuals of the same species by existing organisms of a species. So, it helps in providing stability to population of species by giving birth to new individuals as the rate of birth must be at par with the rate of death to provide stability to population of a species.

Question 11.

What could be the reasons for adopting contraceptive methods?

Answer:

Contraceptive methods are mainly adopted because of the following reasons:

- It prevent unwanted pregnancies.
- It control rise in population and birth rate.
- It prevent sexually transmitted diseases.

Additional Important Questions

Multiple Choice Questions

Question 1.
All individuals produced by an organism are:
(a) Genetically similar (b) Non-identical (c) Fission (d) Moneociuos
Answer: (a) Genetically similar

Question 2.
Sexual reproduction is completed by _____ division:
(a) Mitotic (b) Meiotic and mitotic bot (c) Meiosis (d) Mitotic at some stages .
Answer: (c) Meiosis

Question 3.
In yeast cell, division results in:
(a) Offspring (b) Bud (c) Clone (d) Branch
Answer: (b) Bud

Question 4.
Which of the following organisms undergo multiple fission?
(a) Paramecium (b) Plasmodium (c) Amoeba (d) All of the above
Answer: (b) Plasmodium

Question 5.
Hydra reproduces asexually through:
(a) Budding (b) Binary fission (c) Multiple fission (d) Vegetative propagation
Answer: (a) Budding

Question 6.
In which plant, the site of origin of new plants is node?
(a) Potato tuber (b) Onion bulb (c) Rhizome ginger (d) All of the above
Answer: (d) All of the above

Question 7.
In which of the following, asexual reproduction takes place through binary fission?
(a) Amoeba (b) Yeast (c) Plasmodium (d) Leishmania
Answer: (b) Yeast

Question 8.
Which of the following is in human beings?
(a) Ovary (b) Uterus (c) (a) and (b) (d) Fallopian tube
(e) (a), (b) and (d)
Answer: (e) (a), (b) and (d)

Question 9.
The anther, a part of male flower have:
(a) Sepals (b) Ovules (c) Carpel (d) Pollen grains
Answer: (d) Pollen grains

Question 10.
The information for making proteins is provided by:
(a) Rough endoplasmic reticulum (b) DNA (c) Hormones (d) Enzymes
Answer: (b) DNA

Question 11.
Nature of gametes are usually:
(a) Haploid (b) Diploid (c) Both (a) and (b) (d) None of the above
Answer: (a) Haploid

Question 12.
With the help of which tissues embryo gets nutrition from the mother's blood?
(a) Zygote (b) Uterus only (c) Placenta (d) None of these
Answer: (c) Placenta

Question 13.
Which of the following is not a part of the male reproductive system in human beings?
(a) Testes (b) Uterus (c) Vas deferens (d) Urethra
Answer: (b) Uterus

Question 14.
Binary fission in some organisms occurs in definite orientation in relation to the cell structures. One such organisms is:
(a) Leishmania (b) Plasmodium (c) Amoeba (d) Bacteria
Answer: (c) Amoeba

Question 15.
Plants that have lost their capacity to produce seeds, reproduce by:
(a) Spores (b) Vegetative propagation (c) Fission (d) Regeneration
Answer: (a) Spores

Question 16.
A stamen consists of two parts namely:
(a) Anther and style (b) Anther and filament (c) Stigma and style
(d) Filament and style
Answer: (b) Anther and filament

Question 17.
A bisexual flower contains:
(a) Stamens only (b) Carpels only (c) Either stamens or carpels
(d) Both stamens and carpels
Answer: (d) Both stamens and carpels

Question 18.
Germinated seeds do not contains:
(a) Sepals (b) Cotyledon (c) Plumule (d) Radicle
Answer: (a) Sepals

Question 19.
A feature of reproduction that is common to amoeba, spirogyra and yeast is that:
(a) they reproduce asexually (b) they are all unicellular
(c) they reproduce only sexually (d) they are all multicellular
Answer: (a) they reproduce asexually

Question 20.
Which of the part of flower ripens to form a fruit?
(a) Ovule (b) Ovary (c) Carpel (d) Egg cell
Answer: (b) Ovary

Question 21.
The testes perforin the following function/functions:
(a) Produce testosterone (b) Produce sperms
(c) Produce male gametes and hormone (d) Produce sperms and urine
Answer: (b) Produce sperms

Question 22.
Where does fertilisation take place in human beings?
(a) Uterus (b) Vagina (c) Cervix (d) Fallopian Tube
Answer: (d) Fallopian Tube

Question 23.
Condom is a method of control that falls under the following category:
(a) Surgical method (b) Hormonal method (c) Mechanical method
(d) Chemical method
Answer: (c) Mechanical method

Question 24.
The common passage for sperms and urine in the male reproductive system is:
(a) Ureter (b) Seminal vesicle (c) Urethra (d) Vas deferens
Answer (c) Urethra

Question 25.
In sperm, which part dissociates after fertilization?
(a) Acrosome (b) Tail (c) Head (d) Middle piece
Answer: (b) Tail

Very Short Answer Type Questions

Question 1.
Which life process is not essential to maintain the life of an individual organism but important for the survival of species?
Answer: Reproduction.

Question 2.
How a species can get a danger of being extinct?
Answer: If individuals of any species stops reproducing, then that species can get a danger of being extinct.

Question 3.
How an individual is able to make a copy of itself?
Answer: DNA copying is a process at cellular level which enables an individual to make copy of it self.

Question 4.
Write the name of process by which Hydra reproduces.
Answer: Budding only.

Question 5.
Generally, how many individuals are involved in asexual reproduction?
Answer: One.

Question 6.
Write the name of some common method of asexual reproduction.
Answer: Vegetative propagation, budding, fragmentation and spore formation.

Question 7.
Which type of flower is called unisexual flowers?
Answer: A flower which have either male or female reproductive parts is called unisexual flowers.

Question 8.
What is pollination?
Answer:
The transfer of pollen grains from the anther to the stigma of the same or of another flower of the same kind is known as pollination.

Question 9.
What do you understand by term fertilisation?
Answer:
The fusion of male and female gametes is termed as fertilisation.

Question 10.
How seed is dispersed?
Answer:
Seed dispersal takes place by means of wind, water and animals.

Short Answer Type Questions

Question 1.
How does plasmodium undergo fission?
Ans. Plasmodium divides into many daughter cells through multiple fission.

Question 2.
How spirogyra reproduces by fragmentation?
Answer: An individual spirogyra breaks up into many smaller pieces, each fragment grows into new individual.

Question 3.
Which cells are responsible for budding in hydra?
Answer: Regenerative cells.

Question 4.
Name the structure into which following develops: the plumule and radicle?
Answer: Plumule develops to shoot while radicle form root of a plant.

Question 5.
On which plant can you find buds on its leaves?
Answer: Bryophyllum.

Question 6.
Write the scientific name of the bread mould.
Answer: Rhizopus.

Question 7.
Where are the testes located in human beings?
Answer: In abdominal cavity, in scrotum.

Question 8.
For what specific reason have the testes specific location?
Answer: As testes, requires lesser temperature, to produce sperm than of abdominal cavity.

Question 9.
Correlate the rate of general body growth and maturation of reproductive tissue during puberty.
Answer: When reproductive tissues (organs) begin to mature, body growth rate slows down.

Question 10.
Where does the zygote get implanted in human beings?
Answer: In the wall of uterus.

Question 11.
Which two important substances are delivered to developing embryo through placenta?
Answer: Glucose and oxygen.

Question 12.
How change in hormonal balance prevents pregnancy?
Answer: It prevents the release of eggs.

Question 13.
Name the tissue in mother's body that provides nutrition to developing embryo?
Answer: Placenta provides nutrition to developing embryo.

Question 14.
Write one side effect of loop placed in uterus.
Answer: It may cause permanent irritation and excessive and prolong bleeding in uterus.

Question 15.
Which structures need to be blocked in males and females respectively to prevent pregnancy?
Answer: Vas deferens in male (vasectomy), fallopian tube in female (tubectomy).

Question 16.
Why is children sex ratio alarmingly declining in our country.
Answer: Abortions based on sex selections.

Question 17.
Name the chemical methods of preventing pregnancy.
Answer: Morning over oral pills.

Question 18.
Name some of the devices used as mechanical method for preventing pregnancy.
Answer: Loop, copper T, condoms.

Question 19.
Name the only mammal(s) which lays eggs.
Answer: Echidna and duck-billed platypus.

Question 20.
What is parthenogenesis?
Answer: Parthenogenesis is a type of asexual reproduction. In this case, embryo development takes places without fertilisation. A few species of insects, bees, wasps, birds and lizards (e.gKomodo dragon lizard) reproduce this way.

Question 21.
Give an example of an organism which reproduces by:
(a) Fragmentation (b) Spore formation (c) Stems
Answer:
(i) Spirogyra.
(ii) Bacteria, fungi (rhizopus), moss, algae.
(iii) Plants like potato (tuber), onion (bulb) reproduce by vegetative propagation of stems.

Question 22.

Discuss various artificial vegetative propagation techniques.

Answer: Various artificial vegetative propagation techniques are:

1. Cutting
2. Layering
3. Grafting
4. Tissue culture

Question 23.

What is grafting? What are different types of grafting techniques?

Answer: In grafting, one part of a plant is inserted into another plant in a way that both of them will unite and grow together as a single plant. Different methods of grafting are:

- Approach grafting
- Cleft grafting
- Bud grafting
- Tongue grafting

Question 24.

Name some:

1. Plants which are reproduced by vegetative propagation.
2. Plants which have unisexual flowers.
3. Plants which have bisexual flowers.
4. Plants with self-pollination.
5. Plants that do cross-pollination.

Answer:

1. Rose, sweet potatoes, bryophyllum.
2. Coconut, papaya, watermelon.
3. Lily, rose, sunflower.
4. Beans, peas, tomatoes.
5. Grasses, catkins, maple trees.

Question 25.
What is germination?
Answer:
The seed contains the future plant or embryo which develops into a seedling under appropriate conditions. This process is known as germination.

Question 26.
What is cross-pollination?
Answer:
Cross-pollination is the process of transfer of pollen from the anther of a flower to stigma of a flower of another plant of the same species or closely related species.

Question 27.
Explain hormonal pills of contraception.
Answer:
Oral contraceptives: In this method, tablets or drugs are taken orally by females to check pregnancy These contain small doses of hormones in forms of pills that prevent the release of eggs and thus, fortilisation cannot occur.

Long Answer Type Questions

Question 1.

Why simply copying of DNA in a dividing cells not enough to maintain continuity of life?

Answer:

Copying of DNA preserve and pass specific characters of a generation to next generation offsprings. In reproduction, it is very important to create DNA copy. It determines the body design of an individual. But variation in genotype is also important,, because sometimes existing genotype don't find its potential to survive in changing surroundings. So, genotype must have some alterations which are caused by variations only. Hence, simply copying of DNA in a dividing cells is not enough to maintain continuity of life.

Question 2.

Describe in brief the fragmentation mode of asexual reproduction.

Answer:

Fragmentation: Many lower organisms, use fragmentation mode of asexual reproduction for its growth e.g., algae. When water and nutrients are available in sufficient amount algae grow and multiply rapidly by fragmentation. An algae breaks up to multiple fragments. These fragments or pieces grow into new individuals.

Question 3.

Explain budding in yeast.

Answer:

The yeast is a single-celled organism. The small bulb-like projection come out from the yeast cell in favourable time and is called a bud. The bud gradually grows and gets dettached from the parent cell and forms a new yeast cell. The new yeast cell grows, matures and produces more yeast cells.

Question 4.

Describe the process of implantation.

Answer:

A week after the sperm fertilizes the egg, the fertilized egg (zygote) undergo development and become a multicelled blastocyst. The blastocyst fix itself into the lining of the uterus, called the endometrium. The hormone estrogen causes the endometrium to become thick and rich with blood. Progesterone and other hormone released by the ovaries, keeps the endometrium thick with blood so that the blastocyst can absorb nutrients from uterus. This process is called implantation.

Question 5.

Explain the following.

1. Hermaphrodites
2. Unisexual
3. Syngamy

Answer:

1. Hermaphrodites are bisexual organisms which possess both male and female reproductive organs. Examples: earthworm, leech, starfish.
2. Animals which have different male and female individuals as birds, mammals etc.
3. The process of fusion of male gamete with female gamete is called syngamy.

Question 6.
What is contraception? Discuss natural and barrier method of contraception.
Answer:
Contraception or birth control methods include: condoms, the diaphragm, the contraceptive pill, implants, IUDs (intrauterine devices), sterilization and the morning after pill and many more some of best methods are given below:

- **Natural method**: It involves avoiding the chances of meeting of sperms and ovum. In this method, the sexual intercourse is avoided by the couple from day 10th to 17th of the menstrual cycle of female as in this period, ovulation is expected and therefore, the chances of fertilisation are very high.
- **Barrier method:** In this method, the fertilisation of ovum and sperm is checked out with the help of artificially developed barriers. Barriers are developed for both males and females. Most common barrier available in market are condoms.

Question 7.
Describe implants and surgical methods of contraception
Answer:
Contraceptive devices are also developed as the loop or copper-T to prevent pregnancy. Surgical methods are also used to block the gamete transfer. It includes the blocking of vas deferens to prevent the transfer of Sperms known as vasectomy. Similarly, tubectomy in the fallopian tubes of the female can be blocked so that the egg will not reach the uterus.

Question 8.
Discuss fertilization in flowering plants.
Answer:
There are two main procedures of completing fertilization in flowering plants, which are:
(i) Pollination
(ii) Fertilisation

(i) **Pollination**: Pollination is a very important part of the life cycle of a flowering plant which results in seeds that grow into new plants. It is part of the sexual reproduction process of flowering plants. Flowers are the structures of flowering plants that contain all the specialized parts needed for sexual reproduction. Plants have gametes, which contain half the normal number of chromosomes for that plant species. Male gametes are found inside tiny pollen grains on the anthers of flowers. Female gametes are found in the ovules of a flower. Pollination is the process that brings these male and female gametes together. The wind or animals, especially insects and birds, pick up pollen from the male anthers and carry it to the female stigma. Flowers have to encourage animals to pollinate them.

(ii) **Fertilisation**: After pollination, when pollen has landed on the stigma of a suitable flower of the same species, various process occurs in the making of seeds. A pollen grain on the stigma grows a tiny tube, all the way down the style to the ovary. This pollen tube carries a male gamete to meet a female gamete in an ovule. In a process called fertilization, the two gametes join. The fertilised ovule form a seed, which contains a food store and an embryo that grow into a new plant. The ovary develops into a fruit to protect the seed.

Question 9.

Inside womb, how does a child receive food, oxygen and water? Discuss.

Answer:

As a mother eats something the nutrient like glucose, proteins, fats, vitamins, etc. are absorbed into the mother's blood by the small intestine. The nutrients flow to the placenta, and then transferred to the baby's bloodstream through the umbilical cord. The baby's waste products (like CO2) are disposed of in the mother's blood stream as well. In the placenta, the mothers blood flows into a network of blood Vessels and capillaries. Molecules in the mother's blood like glucose, proteins, fats, oxygen etc. flow out of the mother's blood supply and are absorbed into another network of blood vessels and capillaries containing the baby's blood supply. The baby's blood then flows through the umbilical cord back to the baby. It is the complete process of baby's nutrition inside womb.

Question 10.

Discuss the advantages and disadvantage of autogamy or self¬pollination.

Answer:

Advantages of autogamy:

It is a sure method of seed formation. Scent and Nectar are not needed by the flower to attract insects. Parent characteristics are preserved in off spring's. Small quantity of pollen is required for pollination. Flowers need not be large or attractive. Disadvantages of autogamy plants lose their vigor in their future generations due to repeated self-pollination. Since, there is no variation, no genetic improvement occurs in offsprings. Weak characteristics of the plant are inherited by the next generations.