How Do Organisms Reproduce?

Multiple Choice Questions

Question 1.
In the list of organisms given below, those that reproduce by the asexual method are

1. Banana

2. Dog

3. Yeast

4. Amoeba
A. (ii) and (iv)

B. (i), (iii) and (iv)

C. (i) and (iv)

D. (ii), (iii) and (iv)

Answer:
Banana, yeast and amoeba reproduce by asexually. Banana reproduce by vegetative propagation; yeast reproduces by budding and; Amoeba reproduces by binary fission.

Question 2.
In a flower, the parts that produce male and female gametes (germ cells) are
A. Stamen and anther

B. Filament and stigma

C. Anther and ovary

D. Stamen and style

Answer:
In a flower, anther produces male gametes and ovary produces female gametes.

Question 3.
Which of the following is the correct sequence of events of sexual reproduction in a flower?
A. Pollination, fertilisation, seedling, embryo

B. Seedling, embryo, fertilisation, pollination

C. Pollination, fertilisation, embryo, seedling

D. Embryo, seedling, pollination, fertilization

Answer:
In flowering plants, the male and female gametes fuse and form zygote. This is called fertilisation. The zygote rapidly grows and develops into embryo and then seed.

Question 4.
Offspring formed by asexual method of reproduction have greater similarity among themselves because

1. Asexual reproduction involves only one parent

2. Asexual reproduction does not involve gametes

3. Asexual reproduction occurs before sexual reproduction

4. Asexual reproduction occurs after sexual reproduction
A. (i) and (ii)

B. (i) and (iii)

C. (ii) and (iv)

D. (iii) and (iv)

Answer:
The off springs formed by asexual reproduction method have greater similarity among themselves because in asexual reproduction, only one parent is involved without forming gametes.

Question 5.

Characters transmitted from parents to offspring are present in
A. Cytoplasm

B. Ribosome

C. Golgi bodies

D. Genes

Answer:
The characteristics that are transmitted from parents to offspring are present in genes. Genes are present on chromosomes.

Question 6.
Characters that are transmitted from parents to offspring during reproduction show
A. Only similarities with parents

B. Only variations with parents

C. Both similarities and variations with parents

D. Neither similarities nor variations

Answer:
Characters that are transmitted from parents to offspring during sexual reproduction show both similarities and variations with parents.

Question 7.
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:
Amoeba, yeast and Spirogyra reproduce by asexually. Amoeba reproduce by binary fission, yeast reproduces by budding and Spirogyra reproduces by fragmentation.

Question 8.
In Spirogyra, asexual reproduction takes place by
A. Breaking up of filaments into smaller bits

B. Division of a cell into two cells

C. Division of a cell into many cells

D. Formation of young cells from older cells

Answer:
In spirogyra algae, the plant body breaks up into smaller fragments. Each fragment grows into a new individual.

Question 9.
The ability of a cell to divide into several cells during reproduction in Plasmodium is called
A. Budding

B. Reduction division

C. Binary fission

D. Multiple fission

Answer:
The ability of a cell to divide into several cells during reproduction in Plasmodium is called multiple fission.

Question 10.
The correct sequence of reproductive stages seen in flowering plants is
A. Gametes, zygote, embryo, seedling

B. Zygote, gametes, embryo, seedling

C. Seedling, embryo, zygote, gametes

D. Gametes, embryo, zygote, seedling

Answer:

In flowering plants, the male and female gametes fuse to form zygote. The zygote rapidly grows and develops into embryo and then seed.

Question 11.
The number of chromosomes in parents and offsprings of a particular species remains constant due to
A. Doubling of chromosomes after zygote formation

B. Halving of chromosomes during gamete formation

C. Doubling of chromosomes after gamete formation

D. Halving of chromosomes after gamete formation

Answer:
The gametes have half number of chromosomes as compared to that normal body cells. Reduction division (meiosis) takes place during gamete formation which halves the number of chromosomes in both male and female gametes. The original chromosome number (as in parent) is restored after fertilisation in sexual reproduction.

Question 12.
In Rhizopus, tubular thread-like structures bearing sporangia at their tips are called
A. Filaments

B. Hyphae

C. Rhizoids

D. Roots

Answer:
In Rhizopus fungus, the fine thread-like structures spread on the whole surface of slice of bread are called hyphae.

Question 13.
Vegetative propagation refers to formation of new plants from
A. Stem, roots and flowers

B. Stem, roots and leaves

C. Stem, flowers and fruits

D. Stem, leaves and flowers

Answer:
Vegetative propagation is the method of asexual reproduction in which new plants are produced from the vegetative parts of the plant like stems, roots and leaves.

Question 14.
Factors responsible for the rapid spread of bread mould on slices of bread are

1. Large number of spores

2. Availability of moisture and nutrients in bread

3. Presence of tubular branched hyphae

4. Formation of round shaped sporangia
A. (i) and (iii)

B. (ii) and (iv)

C. (i) and (ii)

D. (iii) and (iv)

Answer:
The factors responsible for the rapid growth of bread mould on slices of bread are presence of large number of spores in air as well as presence of moisture and nutrients on the slice of bread.

Question 15.
Length of pollen tube depends on the distance between
A. Pollen grain and upper surface of stigma

B. Pollen grain on upper surface of stigma and ovule

C. Pollen grain in anther and upper surface of stigma

D. Upper surface of stigma and lower part of style

Answer:
The length of pollen tube depends on the distance between pollen grain on upper surface of stigma and ovule.

Question 16.
Which of the following statements are true for flowers?

1. Flowers are always bisexual

2. They are the sexual reproductive organs

3. They are produced in all groups of plants

4. After fertilisation they give rise to fruits
A. (i) and (iv)

B. (ii) and (iii)

C. (i) and (iii)

D. (ii) and (iv)

Answer:
Flowers are reproductive part of the plants because they contain sexual reproductive organs. These organs produce gametes which take part in the process of fertilisation and form zygote which give rise to fruits.

Question 17.
Which among the following statements are true for unisexual flowers?

1. They possess both stamen and pistil

2. They possess either stamen or pistil

3. They exhibit cross pollination

4. Unisexual flowers possessing only stamens cannot produce fruits
A. (i) and (iv)

B. (ii), (iii) and (iv)

C. (iii) and (iv)

D. (i), (iii) and (iv)

Answer:
Unisexual flowers have either stamen or pistil. They exhibit cross-pollination. Unisexual flowers which have only stamens cannot produce fruits.

Question 18.
Which among the following statements are true for sexual reproduction in flowering plants?

1. It requires two types of gametes

2. Fertilisation is a compulsory event

3. It always results in formation of zygote

4. Offspring formed are clones
A. (i) and (iv)

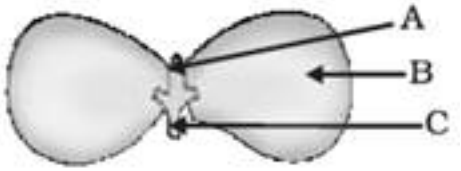
B. (i), (ii) and (iv)

C. (i), (ii) and (iii)

D. (ii), (iii) and (iv)

Answer:
During the sexual reproduction in flowering plants, male and female gametes fuse to form zygote. This process is known as fertilisation.

Question 19.
In the given figure, the 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

Answer:
In the given picture, A represents the plumula, B represents the cotyledon and C represents the radicle.

Question 20.
Offspring formed as a result of sexual reproduction exhibit more variations because
A. Sexual reproduction is a lengthy process

B. Genetic material comes from two parents of the same species

C. Genetic material comes from two parents of different species

D. Genetic material comes from many parents

Answer:
In sexual reproduction, offspring has lot of variation because DNA of both individuals (male and female) get combine. Due to lot of variations, sexual reproduction allows species to change to more advanced forms from one generation to the next and speed up evolution.

Question 21.
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

Answer:
Reproduction is one of the important characteristics of living things. The ability of organism to produce young ones of its own kind is called reproduction. It is essential for the continuity of species.

Question 22.

During adolescence, several changes occur in the human body. Mark one change associated with sexual maturation in boys
A. Loss of milk teeth

B. Increase in height

C. Cracking of voice

D. Weight gain

Answer:
The human body undergoes several changes during adolescence. These changes mark the onset of puberty. The change which is associated with sexual maturation in boys is cracking of voice.

Question 23.
In human females, an event that reflects onset of reproductive phase is
A. Growth of body

B. Changes in hair pattern

C. Change in voice

D. Menstruation

Answer:
In human females, menstruation indicates the onset of reproductive phase.

Question 24.
In human males, the testes lie in the scrotum, because it helps in the
A. Process of mating

B. Formation of sperm

C. Easy transfer of gametes

D. All the above

Answer:

The testes are located outside the abdominal cavity in the scrotum because the temperature of scrotum is less than the normal body temperature which is requires for sperm formation.

Question 25.
Which among the following is not the function of testes at puberty?

1. Formation of germ cells

2. Secretion of testosterone

3. Development of placenta

4. Secretion of estrogen
A. (i) and (ii)

B. (ii) and (iii)

C. (iii) and (iv)

D. (i) and (iv)

Answer:
The function of testes at the stage of puberty are:

(a) To produce germ cells (sperms)

(b) To produce male sex hormone, testosterone.

Question 26.
The correct sequence of organs in the male reproductive system for transport of sperms is
A. Testis → vas deferens → urethra

B. Testis → ureter → urethra

C. Testis → urethra → ureter

D. Testis → vas deferens → ureter

Answer:

Testes produces sperms or germ cells. The sperms transfer into epididymis from where vas deferens carries the sperms to another tube called urethra.

Question 27.
Which among the following diseases is not sexually transmitted?
A. Syphillis

B. Hepatitis

C. HIV – AIDS

D. Gonorrhoea

Answer:
AIDS, Syphilis and gonorrhea are examples of sexually transmitted diseases. Hepatitis is not sexually transmitted disease.

Short Answer Questions

Question 1.
In a bisexual flower inspite of the young stamens being removed artificially, the flower produces fruit. Provide a suitable explanation for the above situation.

Answer:
Bisexual flower consists both stamens (male reproductive part) and carpel (female reproductive part). If in a bisexual flower stamens are removed artificially and carpel remains intact in the flower then, cross-pollination may occur in this flower which may lead to the formation of fruit.

Question 2.
Can you consider cell division as a type of reproduction in unicellular organism? Give one reason.

Answer:
We consider cell division as a type of reproduction in unicellular organism because it leads to the formation new cells.

Question 3.
What is a clone? Why do offsprings formed by asexual reproduction exhibit remarkable similarity?

Answer:
The organisms which are produced asexually are genetically identical to the parent and are called clones. The basic event in the reproduction is the creation of DNA copy. The replication of DNA occurs by certain biochemical reactions which synthesize more of genetic material. When the DNA already present in the nucleus of the parent cell is replicated by making more DNA at the time of asexual reproduction then slight variations come in the two copies formed. Due to this the two DNA molecules formed will be similar but not identical.

Question 4.
Explain how, offspring and parents of organisms reproducing sexually have the same number of chromosomes?

Answer:
Gamete formation is the first step in sexual reproduction. The gametes have half number of chromosomes as compared to that normal body cells. Reduction division (meiosis) takes place during gamete formation which halves the number of chromosomes in both male and female gametes. The original chromosome number (as in parent) is restored after fertilisation in sexual reproduction. This explains how, offspring and parents of organisms reproducing sexually have the same number of chromosomes.

Question 5.
Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.

Answer:
Yeast cells fail to multiply in water because water does not provide any nutrition to yeast cells. Whereas in sugar solution, they multiply rapidly because sugar provides nutrition to carry out reproduction.

Question 6.
Why does bread mould grow profusely on a moist slice of bread rather than on a dry slice of bread?

Answer:

Moisture is necessary for the growth of bread mould. The bread mould grows profusely on moist slice of bread because it provides both moisture and nutrients for growth. The dry slice of bread provides nutrients but no moisture. So, bread mould does not grow on the dry slice of bread.

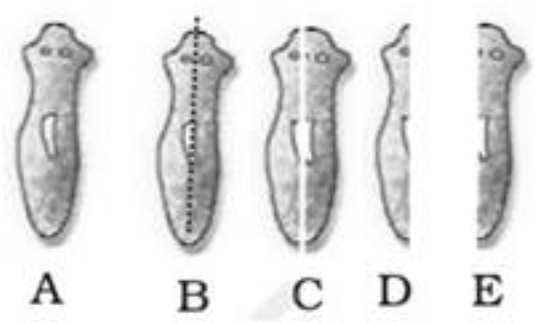
Question 7.
Give two reasons for the appearance of variations among the progeny formed by sexual reproduction.

Answer:
Two reasons for the appearance of variations among the progeny formed by sexual reproduction are mentioned below-

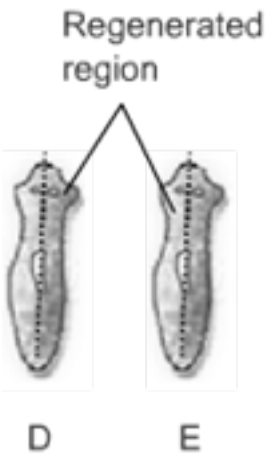
(i) The progeny formed from sexual reproduction involves two parents with different sets of characters.

(ii) The genetic material is exchanged between chromosomes before forming of zygote. Deoxyribonucleic acid (DNA) exchange in the chromosome. This results in forming of variation in the progeny.

Question 8.
Would a *Planaria* cut vertically into two halves regenerate into two individuals? Complete Figure 'D' and 'E' by indicating the regenerated regions.



Answer:
Simple organisms like hydra and planaria are capable of producing new individual through the process of regeneration.



Question 9.
From the internet, gather information about the chromosome numbers of five animals and five plants. Correlate the number with the size of organism and answer the following questions.

(a) Do larger organisms have more number of chromosomes/cells?

(b) Can organism with fewer chromosomes reproduce more easily than organisms with more number of chromosomes?

(c) More the of chromosomes/cells greater is the DNA content. Justify.

Answer:
Number of chromosomes in somatic cells of some organisms:

Organism	No. of Chromosomes
Human	46 number
Hare	48
Elephant	48
Cow	60
Dog	70
Kingfisher	132

(a) Number of chromosomes is not related to the size of an organisms. In the given table, we can see that even though Kingfisher is smaller in size than a dog, the number of chromosomes is more in Kingfisher.

(b) Ease of reproduction is not dependent on the number of chromosomes present. It depends on other factors like availability of water, nutrients, suitable mate and favorable environment.

(c) Chromosomes are made up of DNA. If chromosomes are more, this implies DNA will be more.

Question 10.
In tobacco plant, the male gametes have twenty four chromosomes. What is the number of chromosomes in the female gamete? What is the number of chromosomes in the zygote?

Answer:
In tobacco plant, the female gamete have 24 chromosomes. The number of chromosome in the zygote is 48.

Question 11.
Why cannot fertilisation take place in flowers if pollination does not occur?

Answer:
The transfer of pollen grains from the anther of a flower to the stigma of the same or another flower is known as pollination. It is done by insects, birds, wind and water. For the process of fertilization, it is necessary that the male gamete reaches the female gamete. It can possible through the process of pollination. Hence, fertilisation cannot take place if pollination does not occur.

Question 12.
Is the chromosome number of zygote, embryonal cells and adult of a particular organism always constant? How is the constancy maintained in these three stages?

Answer:
Yes, the chromosome number of zygote, embryonal cells and adult of a particular organism is always constant.

The gametes have half number of chromosomes as compared to that normal body cells. Reduction division (meiosis) takes place during gamete formation which halves the number of chromosomes in both male and female gametes. The original chromosome number (as in parent) is restored after fertilisation in sexual

reproduction. This process maintains the chromosome number and the amount of DNA in each generation.

Question 13.
Where is the zygote located in the flower after fertilization?

Answer:
After fertilization, zygote is located in the ovary.

Question 14.
Reproduction is linked to stability of population of a species. Justify the statement.

Answer:
Individual organisms of a species get some variations by the process of reproduction which makes them survive adverse environmental conditions (heat, cold etc.). Thus, variations during reproduction gives stability to a species.

Question 15.
How are general growth and sexual maturation different from each other?

Answer:
General growth and sexual maturation are different from each other. During general growth, one attains physical maturity to become an adult. On the other hand, sexual maturity starts after physical maturity is achieved. During sexual maturity, the body is prepared for physical and psychological responsibilities related to reproduction.

Question 16.
Trace the path of sperm during ejaculation and mention the gland and their functions associated with the male reproductive system.

Answer:
The path of sperm during ejaculation is as follows:

Vas deferens → Seminal Vesicle → Urethra

Glands associated with the male reproductive system and their functions are as follows:

Seminal Vesicles: The secretion of seminal vesicle provides a fluid medium for the movement of sperms.

Prostate glands: The secretion of prostate gland produces a fluid which keeps sperms floating in it and provides nourishment.

Question 17.
What changes are observed in the uterus if fertilisation does not occur?

Answer:
In female, ovary produces one egg every month. The uterus also prepares itself to receive a fertilised egg. So, the wall of uterus becomes thick and soft containing lots of blood capillaries. If egg gets fertilised with sperm, then fertilised egg gets attached with uterus wall and gets nourishment from it. In case, egg is not fertilised, then the inner lining of uterus breaks down and comes out in the form of blood and mucus through the vagina. This cycle occurs every month and is called menstruation.

Question 18.
What changes are observed in the uterus subsequent to implantation of young embryo?

Answer:
Once the zygote is implanted in the uterine wall, several changes take place in the uterus. Uterus prepares itself to receive and nurture the growing embryo. The uterine lining thickens and is richly supplied with blood to give support and nourishment to the growing embryo.

Question 19.
What are the benefits of using mechanical barriers during sexual act?

Answer:
The benefits of using mechanical barriers during sexual act are as follows-

(i) Avoidance of unwanted pregnancy.

(ii) Prevention of sexually transmitted diseases.

Question 20.
In the given figure, label the parts and mention their functions

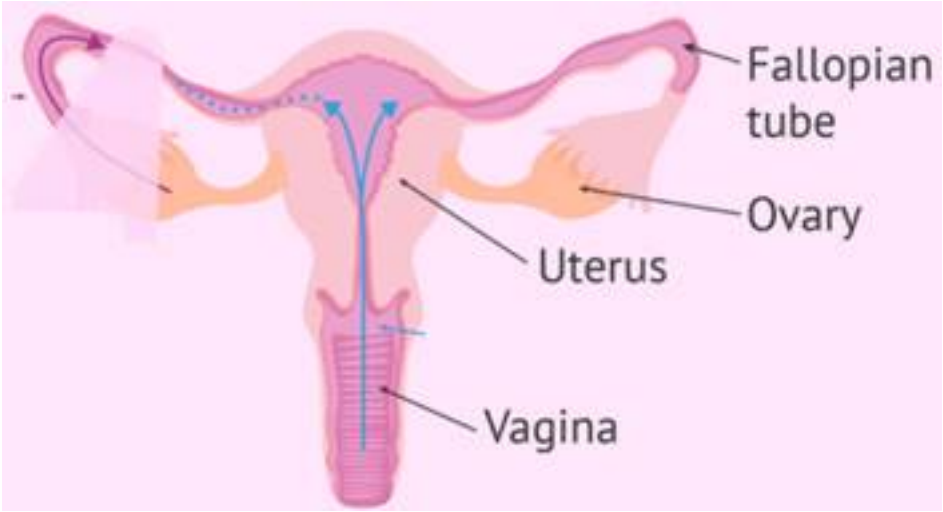
1. Production of egg

2. Site of fertilization

3. Site of implantation

4. Entry of the sperms

Answer:



1. Fallopian tube- Site of fertilisation.

2. Ovary- Production of eggs

3. Uterus – Site of implantation

4. Vagina – Entry of sperms

Question 21.
What would be the ratio of chromosome number between an egg and its zygote? How is the sperm genetically different from the egg?

Answer:
The ratio of chromosome number between and egg and its zygote is 1 : 2. Both sperm and egg contain half number of chromosome i.e., 23 chromosomes. Sperm is genetically different from the egg in the way that it contains either X or Y chromosome whereas an egg always contains an X chromosome.

Long Answer Questions

Question 1.
Why are budding, fragmentation and regeneration all considered as asexual types of reproduction? With neat diagrams explain the process of regeneration in Planaria.

Answer:
Budding, fragmentation and regeneration are considered as asexual types of reproduction because in all these methods, only single parent takes part and forms new offspring without using gametes

The following figure shows regeneration in planaria:

The process of getting back a full organism from its body parts is called regeneration. Planaria and hydra are two organisms which can be regenerated fully from their body parts.

When the body of planaria is cut off into several parts, each part regenerates its complementary part to develop into a new individual.

Question 2.
Write two points of difference between asexual and sexual types of reproduction. Describe why variations are observed in the offspring formed by sexual reproduction.

Answer:
Differences between asexual and sexual reproduction are:

Asexual reproduction	Sexual reproduction
In this type of reproduction, the offspring arises from a single parent.	The offspring arises from two parents of different sexes.
Gametes formation does not take place.	Gametes formation take place.
No variation occurs.	Many variations occur during sexual reproduction.

In sexual reproduction, offspring has lot of variation because DNA of both individuals (male and female) get combine. Due to lot of variations, sexual reproduction allows species to change to more advanced forms from one generation to the next and speed up evolution.

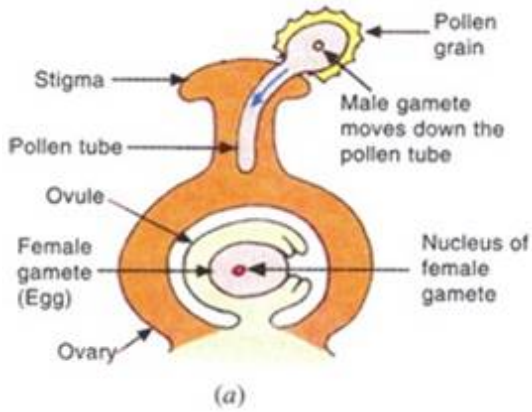
Question 3.
Distinguish between pollination and fertilisation. Mention the site and product of fertilisation in a flower. Draw a neat, labelled diagram of a pistil showing pollen tube growth and its entry into the ovule.

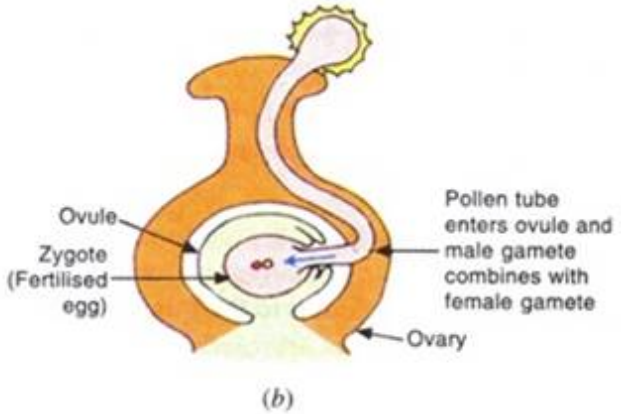
Answer:
Difference between pollination and fertilization:

Pollination	Fertilization
The transfer of pollen grains from the anther of a flower to the stigma of the same or another flower is known as pollination.	The fusion of male and female gametes to form zygote is known as fertilisation.
It is a physical process; no new substance is formed.	It is a biological process in which a new structure called zygote is formed.
It is two types- self-pollination and cross-pollination.	The modes of fertilisation in nature are internal fertilisation and external fertilisation.

Ovary is the site of fertilization and embryo is the product of fertilization.

The following figure shows fertilization in plant:





Question 4.
Distinguish between a gamete and zygote. Explain their roles in sexual reproduction.

Answer:

Gamete	Zygote
It is sex cell or germ cell that takes part in fertilisation.	It is a product of fertilisation.
It is two types: Male gamete and female gamete	It is one type
It carries characteristics of only one parent.	It carries characteristics of both the parents.

Role of gamete in sexual reproduction: Gamete formation results in halving of number of chromosomes which is necessary to maintain the number of chromosomes in an organism which reproduces sexually.

Role of zygote in sexual reproduction: Zygote formation makes the number of chromosome equal to the normal body cells. After fertilization, zygote divides several times to form an embryo and subsequently a new individual.

Question 5.
Draw the diagram of a flower and label the four whorls. Write the names of gamete producing organs in the flower.

Answer:
The gamete producing organs in the flower are: anther and ovary.

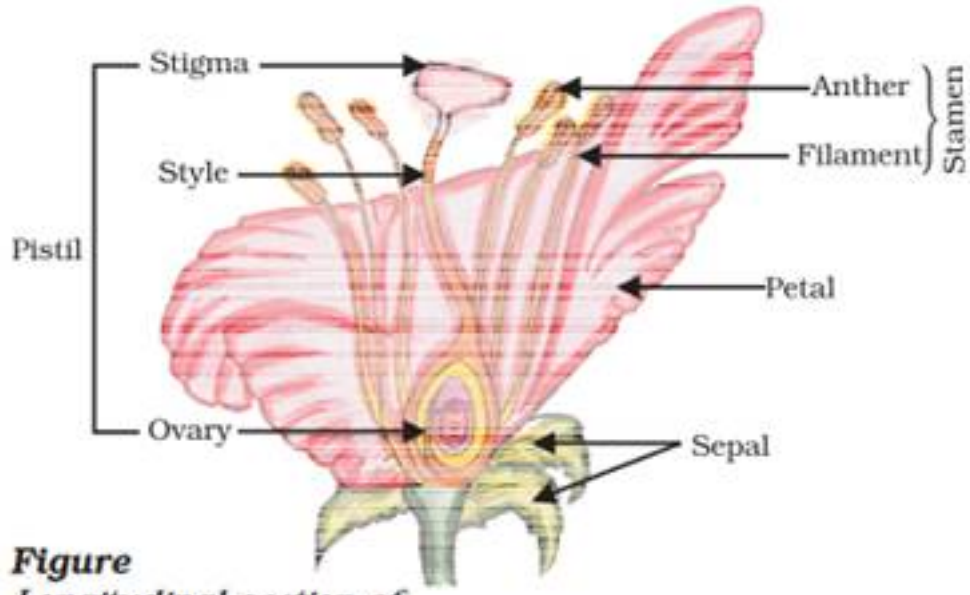


***Figure** Longitudinal section of flower*

Question 6.
What is placenta? Mention its role during pregnancy?

Answer:
Placenta is a special tissue between developing foetus and uterine wall through which the foetus gets all the requirements from the mother's body. It is a disc-like structure which is embedded in the uterine wall. It contains villi on the embryo's side of the tissue and blood spaces on the mother's side. The blood spaces 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 7.
What are various ways to avoid pregnancy? Elaborate any one method.

Answer:
Contraception is the prevention of pregnancy by interfering with the normal process of ovulation, fertilisation and implantation.

There are 3 methods of contraception: (i) Barrier method (ii) Chemical method (iii) Surgical method.

1. Barrier method: In the barrier methods of preventing preganancy, the physical devices such as diaphragm (or cap) and condoms are used. Diaphragm (or Cap) is used by human females which is put over the cervix. Condoms are used by males.

2. Chemical method: In the chemical methods of preventing pregnancy, the females use two types of pills- oral pills and vaginal pills. The oral pills contain hormones which stop the ovaries from releasing ovum into the oviduct. The vaginal pills contain the chemical called spermicides which kill the sperms.

3. Surgical method: Vasectomy and tubectomy

(i) Vasectomy: It is a surgical method to block the gamete transfer. It is done in males. In this method, a small portion of the Vas deferens is removed by surgical operation and both the cut ends are ligated properly. This prevents the sperms from coming out.

(ii) Tubectomy – It is also a surgical method to block gamete transfer in females. In this method, a small portion of the fallopian tube is removed and the cut ends are ligated. This prevents the entry of ovum into the oviducts.

Question 8.
How does fertilisation take place? Fertilisation occurs once in a month. Comment.

Answer:
The fusion of male gamete (sperm) with the female gamete (ova) is known as fertilisation. The process of fertilisation takes place in the fallopian tube. As sperm enter into the vagina through the process of copulation; it moves upwards and enter into the oviduct. In the oviduct, ovum fuse with the sperm to form zygote. Numerous sperms reach the fallopian tube but only one sperm is required for fertilization.

The zygote (fertilised egg) get implanted in the inner lining of uterus and undergoes repeated division forming an embryo.

This process occurs once in a month in humans because ovary releases egg (ovulation) once every month.

Question 9.
Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.

Answer:
Each species face many forces that reduce the number of individuals constantly. Some of them are namely struggle for survival, competition

For natural rescores, prediction, natural cycle of ageing and death, any natural calamity etc. All these natural forces reduce the number of

Individuals per species.

Reproduction is the process of production of own kind. It includes production of offspring having both similarity and variations among themselves and from presents. Further, the process of DNA replication and its inheritance to offspring ensure production of own kind only.

Therefore, reproduction not only restore the number of individuals removed from the species by above mentioned natural forces but also maintain heredity of genetic character and introduction of variations, as needed for continuity and stability of species. Without it all of the exciting species will diminish soon life will come to an end.

Question 10.
Describe sexually transmitted diseases and mention the ways to prevent them.

Answer:
The diseases which are transmitted from infected person to another person by sexual contact are called Sexually Transmitted Diseases.

Examples: AIDS, Syphilis.

Some of the ways to prevent Sexually transmitted diseases are as follows:

Using condom during sexual intercourse.

Avoiding sexual contact with unknown person.

Maintaining personal hygiene.