

Chapter – 8 How do Organisms Reproduce

Multiple Choice Question

Q1. In this list of organisms given below, those that reproduce by the asexual method are

- i) Banana**
 - ii) Dog**
 - iii) Yeast**
 - iv) Amoeba**
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- a) ii) and iv)**
 - b) i), iii) and iv)**
 - c) i) and iv)**
 - d) ii), iii) and iv)**

Answer: Option b)

Amoeba reproduce by binary fission, yeast by budding and banana reproduce by vegetative propagation.

Q2. 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: Option c)

In a flower, that produce male and female gametes are anther and ovary respectively. Stamen is the male reproductive unit of flower. Pistil is the female reproductive part of flower. It consists of ovary, stigma and style.

Q3. Which of the following is the correct sequence of events of sexual reproduction in a flower?

- a) Pollination, fertilisation, seeding, embryo**
- b) Seedling, embryo, fertilisation, pollination**
- c) Pollination, fertilisation, embryo, seedling**
- d) Embryo, seedling, pollination, fertilisation**

Answer: Option c)

The sequence of events are–

- i) Pollination – transfer of germ from stamen to stigma
- ii) Fertilisation – fusion of germ cells to form zygote
- iii) Embryo formation – zygote divides several times to form an embryo within the ovule
- iv) Seedling – ovule develops a tough coat and converts into a seed

Q4. Offspring formed by asexual method of reproduction have greater similarity among themselves because

- i) **Asexual reproduction involves only one parent**
- ii) **Asexual reproduction does not involve gametes**
- iii) **Asexual reproduction occurs before sexual reproduction**
- iv) **Asexual reproduction occurs after sexual reproduction**

- a) i) and ii)
- b) i) and iii)
- c) ii) and iv)
- d) iii) and iv)

Answer: Option a)

Offspring are similar to one parent in asexual reproduction hence no gametes are formed. The basis of asexual reproduction is mitosis. Each daughter nucleus has same genetic make-up because of replication of parental DNA.

Q5. Characters transmitted from parents to offspring are present in

- a) cytoplasm
- b) ribosome
- c) Golgi bodies
- d) genes

Answer: Option d)

Genes are hereditary units of living organisms as Chromosomes in cell nucleus contain information for the inheritance from parents in the form of DNA which contains genes.

Q6. 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: Option c)

In sexual reproduction, the offspring are not identical to the parent as the offspring receive genes from mother as well as father.

Since the mixing of genes on re-establishment of number of chromosomes in various different combinations, the offspring show both similarities and variations with characters of parents.

Q7. 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: Option a)

Amoeba and yeast are unicellular whereas Spirogyra is multicellular. All three are reproduced asexually.

Q8. 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: Option a)

Asexual reproduction takes place by fragmentation, that is, organisms simply break up into smaller pieces upon maturation. Each piece grows into new individuals without forming any gametes.

Q9. 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: Option d)

Multiple fission – the organisms divide into many daughter cells simultaneously, for example, Plasmodium.

Q10. 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: Option a)

Sequence of reproduction in flowering plants is as follows:

Formation of gametes → Fusion of gametes to form zygote → develops into embryo in the ovary → ovule converts into a seed.

Q11. The number of chromosomes in parents and offspring of a particular species remains constant due to

- a) doubling of chromosome 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: Option b)

The number of chromosomes in parents and offspring of a species remain constant because of there are having chromosome during gamete formation.

The gametes are special types of cell, they only contain only half amount of DNA when compared to normal cells of an organisms. Hence, when male gamete combines with a female gamete during sexual reproduction, the new cell 'zygote' will have normal DNA.

Q12. In Rhizopus, tubular like structure bearing sporangia at their tip are called

- a) filaments
- b) hyphae
- c) rhizoids
- d) roots

Answer: Option b)

The thread like structures of the bread mould, Rhizopus are called hyphae. The spores which get develop into new Rhizopus individuals.

Q13. 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: Option b)

Vegetative parts of a plant like stem, root, stem, leaf can produce new plants. Vegetative reproduction is in orchids, ornamental plants, banana, grasses, rose, jasmine etc.

Q14. Factors responsible for the rapid spread of bread mould on slices of bread are

- i) large number of spores
- ii) availability of moisture and nutrients in bread
- iii) presence of tubular branched hyphae
- iv) formation of round shaped sporangia

- a) i) and iii)
- b) ii) and iv)
- c) i) and ii)
- d) iii) and iv)

Answer: Option c)

If the conditions are favourable, then air-borne spores land on food, germinate and produce new plants. These spores spread into air when spores case of plant containing hundreds of spores' bursts.

Q15. 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: Option b)

pollen tube length depends on the distance between pollen grain and ovule.

Q16. Which of the following statements are true for flowers?

- i) Flowers are always bisexual**
- ii) They are the sexual reproductive organs**
- iii) They are produced in all groups of plants**
- iv) After fertilisation they give rise to fruits**

- a) i) and iv)**
- b) ii) and iii)**
- c) i) and iii)**
- d) ii) and iv)**

Answer: Option d)

Flowers are the sexual reproductive organs of a plant. They produced in angiosperm. Majority of flowers are bisexual. After fertilisation, they give rise to fruits.

Q17. Which among the following statements are true for unisexual flowers?

- i) They possess both stamen and pistil.**
- ii) They possess either stamen or pistil**
- iii) They exhibit cross pollination**
- iv) 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: Option b)

The flower are unisexual has either stamens or carpels, as one reproductive organ is present in them, and undergoes cross pollination to form zygote.

Q18. Which among the following statements are true for sexual reproduction in flowering plants?

- i) It requires two types of gametes.**
- ii) Fertilisation is a compulsory event.**
- iii) It always results in formation of zygote.**
- iv) Offspring formed are clones.**

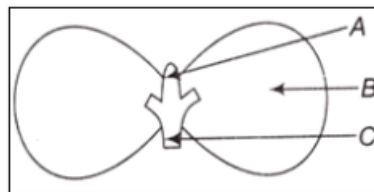
- a) i) and iv)**

- b) i), ii) and iv)
- c) i), ii) and iii)
- d) i), ii) and iv)

Answer: Option c)

Sexual reproduction creates variation in organisms. Hence, clones cannot be produced through it. Sexual reproduction needs 2 types of gametes, that is, male and female to form zygote after fertilisation.

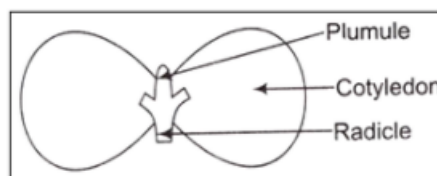
Q19. In figure the parts A, B and C are sequentially



- a) cotyledon, plumule and radicle
- b) plumule, radicle and cotyledon
- c) plumule, cotyledon and radicle
- d) radicle, cotyledon and plumule

Answer: Option c)

Plumule 'A' grows into shoots 'B' stores food and radicle 'C' grows into roots.



Q20. 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: Option b)

Sexual reproduction occurs between parents of the same species and creates new combinations of variants.

Q21. Reproduction is essential for living organisms to order to

- a) keep the individual organism alive
- b) fulfil their energy requirement
- c) maintain growth
- d) continue the species generation after generation

Answer: Option d)

Reproduction is not essential for the survival of an individual, but an important function as it help an organism to continue its own type. Reproduction is a process to preserve the offspring of an organism.

Q22. 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: Option c)

Cracking of voice is second maturation of a boy during adolescence. During teenage changes occurs in boys and girls. In boys, changes includes-growth of hairs on face, cracking of voice etc.

Loss of milk teeth, increase in height and weight gain are common growth in both boys and girls.

Q23. 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: Option d)

In teenage girl's breast size increase, with darkening of the skin of nipples at the tip of breasts and girl begin to menstruate at around this time.

Q24. 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 of these

Answer: Option b)

Formation of sperms takes place in the testes and lie in the scrotum as temperature is about 3°C lower than the temperature of the body as sperm formation requires a lower temperature than the normal body temperature.

Q25. Which among the following is not the function of 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)

Answer: Option c)

Development of placenta and secretion of estrogen are in female reproductive system.

Q26. The correct sequence of organs in the male reproductive system for transport of sperm is

- a) *testis* → *vas deferens* → *urethra*
- b) *testis* → *ureter* → *urethra*
- c) *testis* → *urethra* → *ureter*
- d) *testis* → *vas deferens* → *ureter*

Answer: Option a)

Sperms formed in testis goes to vas deferens which joins with tube called urethra coming from the urinary bladder.

Q27. Which among the following disease is not sexually transmitted?

- a) Syphilis
- b) Hepatitis
- c) HIV-AIDS
- d) Gonorrhoea

Answer: Option b)

The disease spread by sexual contact with an infected person are called Sexually Transmitted Disease, example, gonorrhoea, syphilis and AIDS. Hepatitis is a water borne viral disease affecting liver.

Short Answer Type Question

Q28. 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:

A bisexual flower has male and female reproductive organs. If the young stamens, is removed artificially, the flower still has its pistils intact.

Hence, cross pollination can occur. When pollen grains from the anther of one flower are transferred to the stigma of this flower with the help of insects, bees, wind and water, it causes cross-pollination.

When pollen grain falls on stigma, there is fertilisation and formation of fruit and seeds.

Q29. Can you consider cell division as a type of reproduction in unicellular organism? Give one reason.

Answer:

Many different patterns of fission have been observed. Most of the bacteria and protozoa split into two equals during cell division. Each half change into new individual. Hence, cell division is a type of reproduction in unicellular organism like Amoeba.

Q30. What is a clone? Why do offspring formed by asexual reproduction exhibit remarkable similarity?

Answer:

Clones are the offspring produced by one parent asexual reproduction. These are genetically identical to the parent. The clones possess exact copies of the DNA of their parent and hence show remarkable similarity to the parent and to one another.

Q31. Explain how, offspring and parents of organisms reproducing sexually have the same number of chromosomes?

Answer:

In sexual reproduction, the genetic material from a male and female gamete combines to form a zygote, the DNA in zygote does not double as the gametes contain half the amount of DNA than parent cell. when a male gamete combines with a female gamete during sexual reproduction, the zygote have normal amount of DNA.

Q32. Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.

Answer:

When yeast is in water, it does not get the nutrition but Sugar solution provides nutrition. As the yeast gets nutrition and the energy, it grows and begin to produce buds.

Q33. Why does bread mould grow profusely on a moist slice of bread rather than on a dry slice of bread?

Answer:

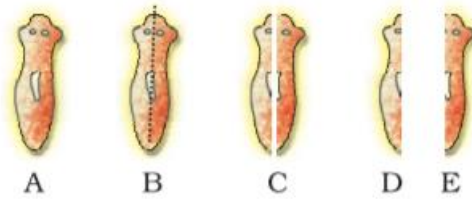
The spores develop into new Rhizopus which are covered by thick walls to protect them till they come in contact with moist surface and grow. Moistened bread slice gives both moisture and nutrients to the bread mould, hence it grows fast. Dry slice of bread gives nutrients but not moisture so hyphae do not grow.

Q34. Give two reason for the appearance of variations among the progeny formed by sexual reproduction.

Answer:

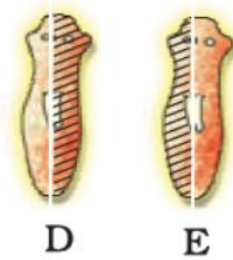
- i) Sexual reproduction is new combinations of gene that are together in formation of gametes. The reshuffling of genes in the gametes increase the chance of variation in offspring.
- ii) The combination of two sets of chromosomes, one set from each parent leads to change in a species.

Q35. Would a Planaria cut vertically into two halves regenerate into two individuals? Complete the given figure D and E by indicating the regenerated regions.



Answer:

Planaria has power of regeneration. So, if the body is cut into two vertical halves, each piece grows into an individual.



Q36. 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.

- Do larger organisms have more number of chromosomes/cells?
- Can organism with fewer chromosomes reproduce more easily than organisms with more number of chromosomes?
- More the number of chromosomes/cells greater is the DNA content. Justify.

Answer:

Number of chromosomes in somatic cells of some animals and plants

Animals	Number of Chromosomes
Cat	38
Lion	38
Dog	78
Elephant	58
Kingfisher	132

Plants	Number of Chromosomes
Potato	48
Oats	42
Wheat	42
Mango	40

- a) No, there is no relation between size of organism and number of chromosomes. A smaller organism has more chromosomes than a larger organism.
- b) No, process of reproduction has pattern and do not depend on the chromosome number.
- c) the major component of chromosome is DNA, if there are more chromosomes in a cell, the quantity of DNA is more.

Q37. In tobacco plant, the male gametes have twenty-four chromosomes. What is the number of chromosomes in the female gametes? What is the number of chromosomes in the zygote?

Answer:

The number of chromosomes in the female gamete would be same as that in the male gamete, that is, it will have 24 chromosomes.

The number of chromosomes in a zygote is double the number present in the gamete and hence, it is 48.

Q38. Why cannot fertilisation, take place in flowers if pollination does not occur?

Answer:

In a flower, fertilisation requires both male and female gametes. Hence, it is necessary that the male gamete reaches the female gamete. This happens when the pollen grain are transferred to the stigma through any means of pollination. So, fertilisation cannot take place in flowers if pollination does not occur due to absence of pollen.

Q39 is the chromosome number of zygotes, 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 zygotes, embryonal cell and adult of a particular organism is always constant. This constancy is maintained as the cells in the three structure undergoes only mitotic division.

Q40. Where is the zygote located in the flower after fertilisation?

Answer:

Fertilisation in flowers occurs when male gamete in pollen grain fall on the stigma of the carpel, bursts open and grows a pollen tube downwards through the style to female gamete in ovary. When it reaches the ovule, the male gamete comes out of pollen tube and combines with the nucleus of egg in ovule to form a zygote. Hence, the zygote is located inside the ovule which is present in the ovary.

Q41. Reproduction is linked to stability of population of species. Justify the statement.

Answer:

In reproduction, DNA passes from one generation to next. Copying of DNA takes place and consistency of DNA copying during reproduction help in maintenance of body design. Reproduction helps in the stability of population of a species.

Q42. How are general growth and sexual maturation different from each other?

Answer:

General growth is the different types of development process in the body like increase in height, weight, gain, changes in shape and size of the body. During sexual maturation, the changes prepare body for sexual reproduction. These are changes at puberty like cracking of voice, new hair patterns, development of breast in female etc.

Q43. Trace the path of sperm during ejaculation and mention the gland and their functions associated with the male reproductive system.

Answer:

Path of sperm during ejaculation is sperm come out from testis into the vas deferens which unites with urethra coming from the urinary bladder. Along the path of vas deferens, prostate gland and the seminal vesicle add their secretion so that sperms are in fluid medium to make their transport easier.

Glands and their functions with male reproductive system –

- a) Testis – secrete the hormone testosterone
- b) Prostate gland – makes the semen medium alkaline
- c) Cowper's gland – secretion of this gland lubricates the urethra before ejaculation
- d) Seminal vesicle – adds fluid content to semen

Q44. What changes are observed in the uterus if fertilisation does not occur?

Answer:

If the egg is not fertilised, it lives for one day, the ovary releases one egg every month, the uterus also prepares itself to receive a fertilised egg. with lining thick and spongy which help for nourishing the embryo if fertilisation take place. Now, this lining is not needed so it slowly breaks and comes out through the vagina as blood and mucous. This cycle takes place every month and is known as menstruation.

Q45. What changes are observed in the uterus subsequent to implantation of young embryo?

Answer:

The uterus prepares every month to nurture the growing embryo. The lining thickens and is supplied with blood to nourish the growing embryo from the mother's blood with the help of a placenta which is embedded in the uterine wall. It contains villi on the embryo's side of the tissue.

The blood spaces on the mother's side, surround the villi which provides a large surface area for glucose and oxygen to pass from the mother to the embryo.

The developing embryo generate waste substances which can be removed by transfer into the mother's blood through the placenta.

Q46. What are the benefits of using mechanical barriers during sexual act?

Answer:

- i) It is a barrier so that sperm does not reach the egg, and avoids unwanted pregnancy.
- ii) Use of condoms also protect a person from sexually transmitted disease as AIDS.

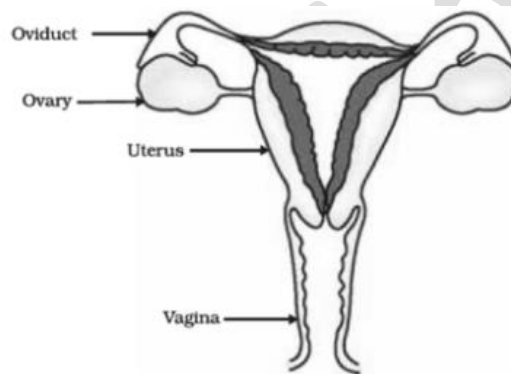
Q47. In the given figure label the parts and mention their functions

- a) Production of egg
- b) Site of fertilisation
- c) Site of implantation
- d) Entry of the sperms



Answer:

- a) Ovary – production of eggs
- b) Oviduct – site of fertilisation
- c) Uterus – site of implementation
- d) Vagina – entry of the sperms



Q48. 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 egg and its zygote is 1:2. An egg is a female gamete with haploid number of chromosomes. During fertilisation, it fuses with male gamete to form a zygote which has diploid number of chromosomes.

Sperms and eggs are different in nature of sex chromosome. The sperm contain either X or Y chromosome whereas an egg always have X-chromosome.

Long Answer Type Question

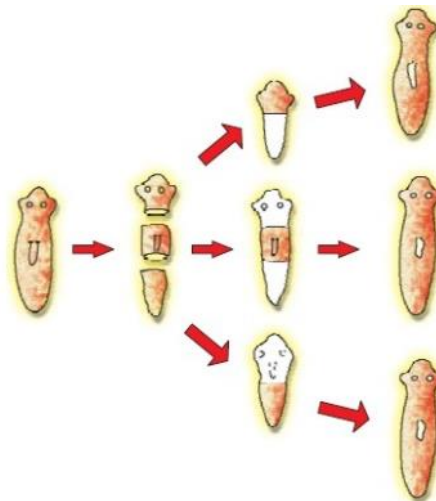
Q49. Why are budding, fragmentation and regeneration all considered as asexual types of reproduction? With neat diagrams explain the process of regeneration in Planaria.

Answer:

Budding, fragmentation and regeneration are asexual types of reproduction because all involve one parent and gametes are not involved in reproduction.

Regeneration in Planaria – it is cut into any number of pieces and each piece grows into a complete organism called as regeneration.

Regeneration is by specialised cells, which make large number of cells. From this mass of cells, different cells undergo changes to become cell types and tissues.



Q50. 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:

Asexual Reproduction	Sexual Reproduction
It involves one parent only.	If often involves two parents.
Gametes are not produced.	Gametes are produced
No fertilisation and zygote formation.	Fertilisation and zygote formation is observed
Meiosis does not occur during reproduction.	Meiosis occurs at the time of gamete formation

The variations observed in offspring formed by sexual reproduction is during sexual reproduction, two types of gametes fuses. However, the gametes have same number of chromosomes, their DNA is not identical.

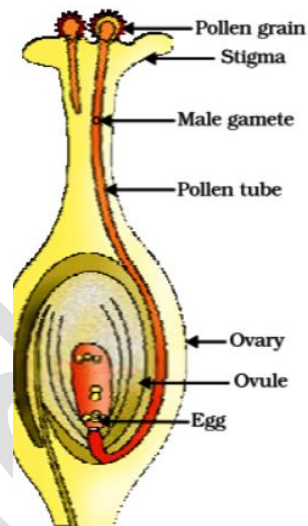
Q51. Distinguish between pollination and fertilisation. Mention the site and product, of fertilisation in a flower. Draw a neat, labelled diagram of a pistil showing pollen tube growth and its entry into the ovule.

Answer:

Pollination	Fertilisation
It is the transfer of pollen grains from anther to the stigma	It is the fusion of male and female gametes
It is a physical process	It is a biological process

The site of fertilisation is ovule in the ovary.

The product of fertilisation is a zygote.



Pistil showing pollen tube growth and its entry into ovule

Q52. Distinguish between a gamete and zygote. Explain their roles in sexual reproduction.

Answer:

Gamete	Zygote
The cell involved in sexual reproduction are called gametes, example, sperm (male) and ova (female).	The fusion of male gamete and female gamete forms zygote during sexual reproduction.
Gametes are unfertilised reproductive cells.	Zygote is fertilised egg or fertilised egg or fertilised ovum.
The fusion of sperm and egg forms a fertilised ovum or zygote.	Zygote undergoes development and forms a newly formed baby.

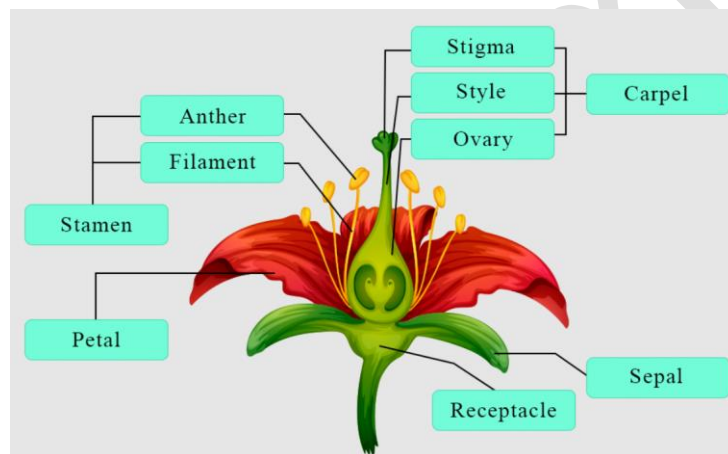
Gametes are requirement for the sexual reproduction. Sperm and ova unit to form a zygote which develops and forms an embryo which becomes a baby.

Q53. Draw the diagram of a flower and label the four whorls. Write the names of gamete producing organs in the flower.

Answer:

The 4 whorls of a flower are –

- i) Calyx consists of sepals.
- ii) Corolla consists of petals.
- iii) Androecium is the male reproductive unit.
- iv) Gynoecium is the female reproductive unit.



The anther is the male gamete producing organ in the flower.

The female is the ovary producing organ in the flower.

Q54. What is placenta? Mention its role during pregnancy.

Answer:

Placenta is a disc-like structure in the uterine wall, which consists of villi on the embryo's side and blood spaces on the mother's side. The embryo is connected to the placenta by a tube called umbilical cord.

Role of placenta during pregnancy – through placenta, all the requirements of the developing foetus are provided.

The villi provide a large surface area to facilitate nutrition and oxygen to embryo from mother through blood.

Waste substances produced by embryo are removed through placenta into mother's blood.

Q55. What are various ways to avoid pregnancy? Elaborate any one method.

Answer:

Ways to avoid pregnancy are called contraceptive methods. The number of ways such as –

- i) Mechanical barrier, e.g., condom (to avoid sperm reaching the egg)
- ii) Drugs/pills – change the hormonal balance so that eggs are not released
- iii) Loop or copper – T prevent pregnancy
- iv) Surgical method permanent contraception.

Mechanical barrier –

Condom – it is a fine rubber worn over the penis during sexual intercourse. Semen is collected in it and not discharged into the vagina. It also prevents the spread of STDs such as AIDS.

Q56. How does fertilisation take place? Fertilisation occurs once in a month. Comment.

Answer:

In humans, the sperms are made in the testis of males that are introduced in the vagina of the women through penis during copulation or mating. The sperms are highly active and mobile so they move through cervix into the uterus. From uterus, sperms pass into the oviducts. The oviducts contain an ovum released by the ovary during ovulation.

Millions of sperms are released in the vagina at one time, but only one sperm fuse with the ovum in the oviduct to form a zygote. This process is called as fertilisation.

Q57. Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.

Answer:

Reproduction is an important function of a living being as it helps in production of a new individual. The continuity of life has been possible through reproduction.

The genes are transferred from one generation to the next by DNA by reproduction. DNA copying takes place with high constancy and variations.

Hence, reproduction is essential to maintain the survival of an organism in the changing environment.

Q58. Describe sexually transmitted disease and mention the ways to prevent them.

Answer:

Sexually Transmitted Disease are infectious disease that are transmitted during sexual intercourse. These include bacterial infections such as gonorrhoea and syphilis and viral infections such as warts and HIV-AIDS. To prevent STDs:

- i) Use a protective covering such as condom, over the penis during sex.
- ii) Avoid multiple sex partners and maintain personal hygiene.

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