SOLVED QUESTION BANK CLASS-X (TERM-II)

CHAPTER: HOW DO ORGANISMS REPRODUCE

1. Mention the common mode of reproduction found in (i) Amoeba (ii) Planaria. [2009]

Ans. Amoeba — Binary fission in any plane. Planaria — Transverse binary fission.

2. Name any two types of asexual reproduction. [2009]

Ans. (i) Binary fission (ii) Budding

3. State the methods used for growing rose plants. [2009]

Ans. (i) Stem cutting (ii) Bud grafting

4. State what type of method is used for growing jasmine plant. [2009]

Ans. Layering

5. Name the hormone, secretion of which is responsible for dramatic changes in appearance in girls when they approach 10-12 years of age. [2008]

Ans. Estrogen.

6. What is the effect of DNA copying which is not perfectly accurate on the reproduction process? [2008]

Ans. During the process of DNA copying, some mutations are produced which give rise to useful, harmful or neutral variations in the offspring.

Other Important Questions

1. Define reproduction.

Ans. The process of producing new individuals of the same species by existing organisms, i.e., parents, is known as reproduction.

2. Name two organisms that show asexual reproduction.

Ans. Amoeba and yeast show asexual reproduction.

3. How does Hydra reproduce? Name another organism that reproduces by a similar method.

Ans. Hydra reproduces by budding. Another organism that reproduces through budding is yeast.

4. What is a spore?

Ans. Spores are special cells formed within special structures called sporangia, that disseminate and can form an entire plant under favourable conditions.

5. Name two plants which reproduce through spores.

Ans. Mushroom and fern are reproduced by spores.

6. Why is regeneration considered a method of reproduction?

Ans. Regeneration is considered a method of reproduction as sometimes an entire organism developed from its fragmented body.

7. Which vegetative part is used in the propagation of Bryophyllum and mint?

Ans. For the propagation of Bryophyllum, leaf is used, while for mint the root is used.

8. Name two types of layering.

Ans. The two types of layering are air layering and soil layering.

9. Name some plants where layering is used.

Ans. Layering is used in lemon, guava, Hibiscus, bougainvillia, jasmine and several other ornamental plants.

10. Which technique would you use for propagating improved varieties of mango and rose?

Ans. For mango—grafting, a type of artificial vegetative propagation is used.

For rose—stem cutting, another type of artificial vegetative propagation is used.

11. Name various types of asexual reproduction.

Ans. Fission, budding, fragmentation, spore formation, regeneration, parthenogenesis, tissue culture, etc. are different types of asexual reproduction

12. Mention the reproductive parts of a flower.

Ans. The reproductive parts of a flower are stamens and carpel.

13. Define fertilisation.

Ans. The process of fusion of two haploid gametes, usually a male and a female gamete leading to the formation of diploid zygote is known as fertilisation.

14. What is self-pollination?

Ans. If the transfer of pollen grain occurs in the same flower, or between two flowers of the same plant it is referred to as self-pollination.

15. What is cross pollination?

Ans. If the pollen is transferred from one flower to another flower of different plant of the same species it is known as cross pollination.

16. What are the agents of pollination?

Ans. The agents of pollination are wind, water and animals especially insects.

17. Which process results in formation of zygote?

Ans. The fusion of germ cells during fertilisation results in formation of zygote.

18. What grows to form a fruit?

Ans. The ovary grows rapidly and ripens to form a fruit.

19. What is carpel?

Ans. Carpel is present at the centre of a flower and is the female reproductive part.

20. Which parts of the flower transform into the seed and fruit?

Ans. The fertilised ovule develops into the seed and the fertilised ovary into the fruit.

21. What are gonads?

Ans. The reproductive organs in animals are called gonads.

22. What is puberty?

Ans. Puberty is the age or period, when the reproductive organs of a child start functioning and the child attains sexual maturity.

23. When is ovum released in human female?

Ans. After attaining sexual maturity, ovum is released from the ovary after every 28 days.

24. What is endometrium?

Ans. Uterus lining is called endometrium.

25. What is implantation?

Ans. The process of fixation of zygote on the wall of the uterus is called implantation.

26. What is parturition?

Ans. The birth of the fully developed foetus is called parturition.

27. What is ovulation?

Ans. The release of ovum from the ovary is called ovulation.

28. Where are the ova produced in woman?

Ans. In ovaries.

29. Name two sex hormones.

Ans. Testosterone and estrogen.

30. What is the normal reproductive life in human female?

Ans. The period between menarche and menopause (12 to 50 years) is the normal reproductive life in human female.

31. What are oral contraceptives?

Ans. The oral contraceptives (OCs) are purely hormonal preparations that inhibit the production of gametes by the action on hypothalamus, pituitary and the ovaries.

32. What is epididymis?

Ans. This is a coiled tube like structure which is firmly attached to the testis.

33. What are the functions of urethra?

Ans. Urethra performs two functions :

(i) It acts as a passage for urine.

(ii) It acts as the passage for sperms.

34. What are the secondary sex characters in human male?

Ans. Secondary sex characters in human males are deepening of voice, growth of beard,moustache and pubic hair.

35. Why do testes lie outside the abdominal cavity?

Ans. Testes are present inside a fibrous covering called scrotum or scrotal sac. The scrotum helps in maintaining 1^0 –3°C lower than the body temperature. This is necessary for the development of sperms.

36. When does puberty occur in human male and female?

Ans. In males, puberty is attained at the age of 13-14 years, while in females, it is 10-12 years.

Short Answer Questions - I [2 Marks]

Previous Years' Questions

1. What will happen when :

(a) A mature *Spirogyra* filament attains considerable length?

(b) *Planaria* gets cut into two pieces? [2011 (T-II)]

Ans. (a) When a mature *Spirogyra* filament attains considerable length it breaks up into smaller pieces (fragments). These fragments grow into new individuals.

(b) If *Planaria* gets cut into two pieces, both pieces grow into separate individuals.

2. (a) Give reason : Regeneration is not the same as Reproduction.

(b) State the mode of a asexual reproduction in *Plasmodium* [2011 (T-II)]

Ans. (a) Regeneration is not the same as reproduction because most organisms would not normally depend on being cut up to be able to reproduce.

(b) *Plasmodium* reproduce through multiple fission.

3. Name the type of asexual reproduction in : (a) *Planaria* (b) *Rhizopus* (iii) *Spirogyra* (iv) *Hydra* [2011 (T-II)]

Ans. (a) *Planaria* – Regeneration.

(b) *Rhizopus* – Spore formation.

(c) *Spirogyra* – Fragmentation (d) *Hydra* – Budding

4. (a) Surgical methods can be used to create a block in the reproductive system for contraceptive purposes. Name such parts where blocks are created in : (i) males (ii) females

(b) State any two reasons for using contraceptive devices. [2011 (T-II)]

Ans. (a) (i) In males, the vas deferens is blocked. (ii) In females, the fallopian tube is blocked.

(b) Reasons for using contraceptive devices :

(i) They prevent pregnancies. (ii) They help to prevent transr

5. (a) What is vegetative propagation?

(b) Write any two advantages of practising this method. [2011 (T-II)]

Ans. (a) The formation of a new individual from any vegetative part of the plant body is known as vegetative propagation.

(b) Advantages of practising vegetative reproduction.

(i) It allows quicker and easy propagation. (ii) Better qualities of the plants can be maintained and the quality can even be enhanced as in seedless oranges.

6. How does the process of budding differ from the process of spore formation? [2011 (T-II)]

Ans. In budding a protuberance develops on the mature organism's body, attains full maturity and then detaches. While in spore formation, spores are formed within special structures called sporangia that disseminate and can form the entire plant.

7. (a) Out of the following plants which two plants are reproduced by vegetative propagation? jasmine, wheat, mustard, banana (b) List any one advantage of practising this kind of propagation. [2011 (T-II)]

Ans. (a) Jasmine and banana. (b) It allows quicker and easy propagation.

8. (a) Why do testes located in scrotum outside the abdominal cavity? (b) What will happen to ovary and ovule after fertilization in angiospermic plants.]

Ans. (a) Testes located in scrotum outside the abdominal cavity since the production of spermatozoa is feasible at a temperature of 2°C lower than the body temperature.

(b) After fertilization, the ovary enlarges considerably and becomes the fruit and the ovule develops a tough coat and is gradually converted into seed.

9. The organisms formed by asexual reproduction are considered as clones. Why? State the advantage of sexual reproduction over asexual reproduction. [2011 (T-II)]

Ans. In asexual reproduction, the young ones formed are genetically identical to the parents and are considered as clones.

Sexual reproduction has following advantages :

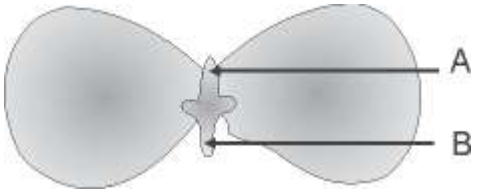
(i) The offsprings produced by sexual reproduction exhibit diversity of characters because fusing gametes come from two different and sexually distinct individuals.

(ii) Sexual reproduction involves meiosis which provides opportunities for new combination of genes.

(iii) It plays a prominent role in the origin of new species and lead to variation required for evolution.

10. In a bisexual flower inspite of the young stamens being removed artificially, the flower produces fruit. Give reasons.

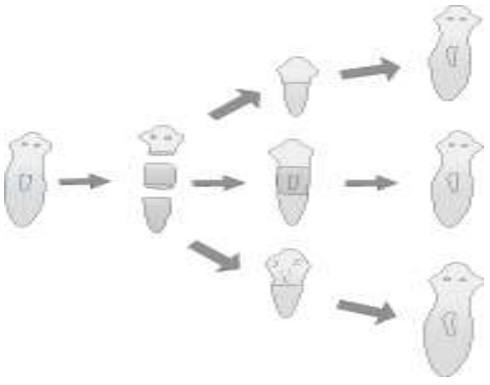
(a) Name the parts of the flower which ripens to form fruit and seed? (b) In the following diagram label A and B.



Ans. A bisexual flower also contains ovary. The ovary enlarges considerable and becomes the fruit.

(a) Ovary ripens to form fruit and ovule develops into seed.

11. With the help of a diagram only show regeneration in *Planaria*. Regeneration is not possible in all types of animals. Why? [2011 (T-II)]



Ans. Regeneration is not possible in all types of animals because all organisms will not depend upon being cut or broken for its reproduction.

12. How does the process of seed germination take place in plants? Describe in brief.

[2011 (T-II)]

Ans. Germination starts with the rapid uptake of water by the seed through its micropyle. The first visible indication of germination is the swelling of the seed with a resultant increase in weight. It is also accompanied by the softening of the seed coat. Absorption of water causes a number of physiological changes in the seed. Germinating seeds exhibit increased respiratory activity. The embryo produces enzymes which convert the food material stored in the cotyledons or endosperm into soluble form usable by the growing embryo. Once the food is made available, cell division activity starts in the growing embryo, i.e., radical and plumule. The growth of the embryonic tissue ruptures the seed coat. The radicle is the first to come out of the seed coat and forms the root system. It soon grows towards the soil. The plumule after coming out of the ruptured seed forms the shoot.

13. Name the sex hormones secreted by male and female sex organs in human beings. State one function of each.

Ans. Testosterone is produced by the testical (male sex organs) and estrogen and progesterone are produced by ovary (female sex organ).

Function of testosterone

 It brings about changes in appearance seen in boys at the time of puberty.

Function of estrogen

 It helps in the development of secondary sex characters like breast development.

14. State the mode of reproduction in following organisms : Earthworm, Frog, *Rhizopus*, *Plasmodium.* [2011 (T-II)]

Ans. Earthworm – Sexual reproduction

Frog – Sexual reproduction *Rhizopus* – Spore formation *Plasmodium* – Multiple fission

15. State in brief any two functions of copper-T used by some women. [2011 (T-II)]

Ans. (a) It prevents pregnancy.

(b) It kills the germs.

16. In what respect is the human male gamete different from the female gamete?[2011 (T-II)]

Ans. Male gametes (sperms) are mobile and smaller in size while female gamete (ovum) is immobile and bigger in size.

17. What is reproduction? What are its two types? Which one of the two confers new characteristics on the offsprings and how? [2009]

Ans. Reproduction is the process of formation of new young individuals of the similar type of mature living being.

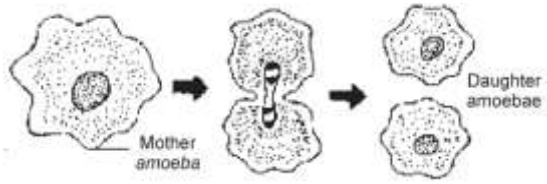
Reproduction is of two types :

(i) Asexual reproduction (ii) Sexual reproduction

Only sexual reproduction confers new characteristics on the offspring because the process of DNA replication occurs in sexual reproduction. Mutations occur during DNA replication which give rise to variation, thus confers new characteristics on the offspring.

18. What is binary fission? Draw a diagram to show binary fission in *Amoeba.* [2009]

Ans. Binary fission is a mode of asexual reproduction in many bacteria and protozoans. In it organism simply splits into two equal halves during cell division.



19. What is regeneration? State a reason why a more complex organism cannot give rise to new individuals through this method. [2009]

Ans. Many organisms like Hydra, Planaria, etc. have the ability to give rise to new organisms from their body parts. This process is called regeneration.

Regeneration does not occur in complex organisms. The ability to degenerate in fully differentiated organism is due to specialised cells. In complex organisms, these specialized cells can form lost tissues and organs but not the complete individual as the highly differentiated tissues and organs do not allow this. In complex organisms, regeneration is under neurohormonal control. Fragments do not have nervous or hormonal stimulus to grow into complete organisms.

20. Name the male and female gametes in animals. What is fertilisation and where does it take place in human females? [2009]

Ans. Male gamete — Sperm Female gamete — Ovum

Fertilisation is the fusion of male and female gametes to form diploid zygote during sexual reproduction.

In human females fertilisation occurs in fallopian tubes.

21. What is 'reproduction'? Mention the importance of DNA copying in reproduction. [2008]

Ans. Reproduction is a process by which the living organisms produce the new organisms of their own kinds.

The process of copying the DNA may have some variations. These variations are the basis for evolution.

22. Mention the information source of making proteins in the cell. What is the basic event in reproduction? [2008]

Ans. Ribosome is the information source of making protein in the cell.

The basic event in reproduction is the creation of a DNA copy.

23. Name one sexually transmitted disease each caused due to bacterial infection and viral infection. How can these be prevented? [2008]

Ans. Sexually transmitted diseases :

(a) Bacterial disease – Gonorrhoea (b) Viral disease – HIV-AIDS

These diseases can be prevented by using a covering by the males called condom.

24. Describe briefly four ways in which individuals with a particular trait may increase in a population. [2008]

Ans. The individuals with a particular trait may increase in a population by :

(A) Simply break up into smaller pieces and grow into new individuals, i.e., fragmentation.

(B) Developing a bud which becomes new individual, i.e., budding.

(C) Giving rise to new individuals from their body parts, i.e., regeneration.

(D) Using some plant parts (stem, root, leaf, etc.) to develop new individuals, i.e., vegetative propagation.

25. Why is it said that "sexual reproduction promotes diversity of characters in the offspring"?

Ans. It is because sexual reproduction results from the fusion of two gametes coming from two different and sexually distinct individuals. This leads to variation which is necessary for evolution.

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

Ans. Pollination is essential for transfer of pollen grain to stigma. In the absence of pollination, there will be no male gamete (pollen grain) for fertilisation. Hence, fertilisation cannot take place in flowers if pollination does not occur

27. Why does bread mould grow profusely on a moist slice of bread rather than on a dry slice of bread? (Imp.)

Ans. Bread mould requires nutrient and moisture for growth. A dry slice of bread has nutrients but it does

not have water. A moist bread slice contains both nutrients and water hence bread mould grows on it.

28. Leaves of Bryophyllum fallen on the ground produce new plants whereas the leaves of Jasmine do not, why? (V. Imp.)

Ans. In Bryophyllum, vegetative propagation occurs through leaves. Buds occur in notches of Bryophyllum leaf. However, when the leaf falls down and comes in contact with the soil, the buds spout and produce plantlets. Leaves of rose do not contain buds and cannot give rise to plantlets.

29. . What is clone? Why do offspring formed by asexual reproduction exhibit remarkable similarity? (Imp.)

Ans. Clone is an exact genetic replica of another individual. In asexual reproduction, offspring are produced by a single parent without fertilisation or fusion of gametes. In asexual reproduction, the younger ones are genetically identical to the parents and another young ones as they posses exact copies of DNA. Hence, offspring formed by asexual reproduction exhibit remarkable similarity

30. Write one disadvantage of asexual reproduction. When and how does multiple fission take place?

Ans. Asexual reproduction produces identical organisms generation after generation. New organisms, therefore, carry the defects of their parents.

Under unfavourable conditions, multiple fission which results in the formation of many new organisms from a single parent takes place. Multiple fission occurs by the formation of a cyst.

Nucleus divides followed by the distribution of cytoplasm around the daughter nuclei. On the return of favourable conditions, daughter cells are released by breaking the cell wall.

Short Answer Questions - II [3 Marks]

1. State in brief the function of the following organs in the human female reproductive system. (a) Ovary (b) Fallopian tube (c) Uterus [2011 (T-II)]

Ans. (a) Ovary — Ovary produces ova or eggs. Ovary also secrete a hormone estrogen which helps in the development of secondary sexual characters like breast development.

(b) Fallopian tube — Fallopian tube conveys the egg from the ovary to the uterus and provides the appropriate environment for its fertilisation.

(c) Uterus — After fertilisation, the embryo develops in uterus.

2. (a) Identify the asexual method of reproduction in each of the following organisms : (i) rose (ii) yeast (iii) *planaria*

(b) What is fragmentation? Name a multicellular organism which reproduces by this method.

Ans. (a) (i) Rose — Propagates through stem (ii) Yeast — Budding (iii) *Planaria* — Regeneration

(b) Fragmentation — Some multicellular organisms with relatively simple body organisation reproduce by breaking their bodies into small pieces. Each of these pieces is called a fragment. These fragments grow into new individuals and the mode of reproduction is called fragmentation. *Spirogyra* reproduces by fragmentation.

3. Differentiate between :

(a) Asexual and sexual reproduction. (b) Plumule and Radicle (c) Pollination and Fertilisation

Answer:

Asexual Reproduction	Sexual Reproduction
(i) New individual is produced from a single parent.	(i) New individual is produced from two parents.
(ii) It involves the union of gametes.	(ii) It does not involve the union of gametes.
(iii) The young ones are genetically identical to the parents.	(iii) The young ones are not genetically identical to the parents.
(b) Plumule	Radicle
(i) Plumule is future shoot.	(i) Radicle is future root.

(ii) It grow towards the sun.	(ii) It grows inside the soil or water
(c) Pollination	Fertilisation
(i) It is the transfer of pollen grains from anther to the stigma of a gametes.	(i) It is the fusion of male and female flower.
(ii) It is a physical process.	(ii) It is a physio-chemical (biological) process.
(iii) It occurs only in seed plants.	(iii) It occurs in plants and animals of various types.
(iv) It carries the male gamete to the	(iv) It actually brings about fusion of gametes.
(v) It precedes fertilisation.	(v) Fertilisation occurs only after pollination when the pollen grain has germinated and sent the male gametes to the ovule.

4. Why is vegetative propagation practised for growing some types of plants? (b) Name the different parts of a flower that has germ cells. (c) List any two agents of pollination. [2011 (T-II)]

Ans. (a) Some plants like banana, seedless grapes, rose, which cannot produce viable seeds, can be easily grown by vegetative propagation. To get genetically identical copies and to maintain and preserve a stock of selected varieties, vegetative propagation is the only means. It is an easier less expensive and rapid method of propagation.

(b) Style and ovule both have germ cells. (c) Wind and water.

5. What happens to the pollen which falls on a suitable stigma? Explain. [2011 (T-II)]

Ans: After the pollen grains are deposited on the suitable stigma, the pollen grains absorb water and sugar from the surface of stigma and swell up. A tube grows out of the pollen grain and travel through the style to reach the ovary. The pollen tube carrying two male gametes which liberated inside the embryo sac. One male gamete fuses with the egg to form zygote. The other male gamete fuses with the secondary nucleus to form the endosperm, which provides nourishment to the growing embryo.

6. (a) How do the oral pills function as contraceptives? (b) The use of these pills may be harmful. Why? [2011 (T-II)]

Ans. (a) Oral pills acts by changing the hormonal balance of the body so that eggs are not released and fertilisation cannot occur.

(b) Since oral pills change hormonal balances, they can cause side effect too.

7. List and describe in brief any three ways devised to avoid pregnancy. [2011 (T-II)]

Ans. Foam tablets, jellies, creams and spermicides are common chemicals used by females.

These are placed in vagina.

 Ovulation and fertilisation can be prevented by changing hormonal balance of the body. It can be done by taking oral pills.

 Intrauterine Contraceptive Device (IUCD) such as the loop or the copper-T are placed in the uterus to prevent pregnancy. The drawbacks with these devices are bleeding and discomfort.

8. What are sexually transmitted diseases? Name four such diseases. Which one of them damages the immune system of human body? [2009]

Ans. The diseases which are spread by sexual contact from an infected person to a healthy person, are called sexually transmitted diseases or STDs.

(i) AIDS (Acquired Immuno Deficiency Syndrome)

(ii) Gonorrhoea (iii) Syphilis (iv) Genital herpes

'AIDS' — damages the immune system of human body.

9. (a) Explain the terms : (i) implantation (ii) placenta

(b) What is the average duration of human pregnancy? [2009]

Ans. (a) (i) Implantation : The embedding of a fertilised mammalian egg into the wall of the uterus (womb) where it will continue developing, is called implantation.

(ii) Placenta : After implantation, a disc like special tissue develops between uterus wall and the embryo called placenta. The placenta is responsible for exchange of nutrients, oxygen and waste products between the embryo and mother.

(b) The average duration of human pregnancy is 280 days or 40 weeks.

10. Define grafting. Suggest any two advantages and disadvantages of grafting. (V.Imp.)

Ans. Grafting is a process in which the two parts of different plants are joined by bandaging them tightly.

Advantages :

(i) A young scion can be made to flower when it is grafted on a mature tree.

(ii) Different varieties can be grafted on the same stock.

Disadvantages :

(i) Sexual reproduction is a necessity for evolution. (ii) Plants produce very few seeds.

11. Name any two mechanical barriers of pregnancy. What are the benefits of using mechanical barriers during sexual act? (Imp.)

Ans. Mechanical barriers of pregnancy : (i) Condoms (ii) Diaphragms

Benefits of using mechanical barriers

(i) Prevention of pregnancy — Mechanical barriers prevent the passage of sperms into the genital tract of the female. Consequently, pregnancy does not occur.

(ii) No transmission of infections — Mechanical barriers also prevent the transmission of Sexually Transmitted Diseases (STDs) from infected partner to the non-infected partner.

12. State in brief the functions of the following parts of the human male reproductive system : (i) Scrotum (ii) Testes (iii) Vas deferens

Ans : (i) Scrotum : It contains and supports the testes. It is situated outside the body cavity and allow sperm to develop at the optimum temperature, which is slightly lower than body temperature.

(ii) Testes : The formation of male germ cells or sperms take place in it. Leydig cells of testes secrete hormone testosterone which brings about changes in appearance seen in boys at the time of puberty.

(iii) Vas deferens : It ascends into the abdomen, passes over the urinary bladder and receives duct from the seminal vesicles behind the urinary bladder to form the ejaculatory duct.

13. State the role of ovary and fallopian tube in human body.

Ans: Ovary produces ova (female gamete) and also produce a hormone estrogen.

Fallopian tube conveys the egg from the ovary to the uterus and also provides the appropriate environment for its fertilisation.

14. What could be the possible reason for declining female to male sex ratio in our country. Suggest two measures to achieve 1:1 ratio.

Ans: Because of reckless female foeticides, child sex ratio is declining at an alarming rate in our country.

Measures to achieve 1:1 ratio

(i) Prenatal sex determination has been prohibited by law. It should be followed strictly. (ii) Peoples should be literate to understand the importance of girl child.

15. What is the advantage of reproducing through spores?

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

16. How does variation lead to the survival of species overtime?

Ans: 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 temperate water 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.