

Chapter 8: How do organisms reproduce?**B08****1. Why do organisms reproduce?**

Reproduction is necessary for living things because it enables them to create offspring and continue their population.

2. What is the most basic function of reproduction?

Reproduction at its most basic level will involve making copies of the blueprints of body design. A basic event in reproduction is the creation of a DNA copy.

3. Why is DNA copying an essential part of the process of reproduction?

Chromosome in the nucleus of a cell contain information for inheritance of features from parent to next generation in the form of DNA. The DNA in the cell nucleus is the information source of making proteins. Therefore, a basic event in reproduction is creation of DNA copy for the next generation.

4. What is asexual reproduction?

The type of reproduction that allows new generations to be created from a single individual is known as asexual reproduction.

5. Write down the different methods of asexual reproduction.

The different methods of asexual reproduction are (i) Fission(ii) Budding.(iii) Spore formation.(iv) Regeneration.(v) Fragmentation.(vi) Vegetative propagation.

6. Are the two cells formed by cell division absolutely identical?

The process of copying the DNA will have some variations each time. As a result, the DNA copies generated will be similar, but may not be identical to the original.

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

The importance of DNA copying during reproduction is that:

- (i) It is responsible for the transmission of parental characteristic to its offsprings.
- (ii) It also leads to certain genetic variation.

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

Variations allow organisms to exist in diverse habitats. In the absence of variations, a species may be restricted to particular area. If this area gets drastically altered, due to various natural or man-made causes, the species may be wiped out. If some variations were present in a few individuals, these colonize other habitats and could survive. But if variations are present in a single organism there would be very little for it to survive.

9. (Activity 8.1) Dissolve about 10 gm of sugar in 100 mL of water. Take 20 mL of this solution in a test tube and add a pinch of yeast granules to it. Put a cotton plug on the mouth of the test tube and keep it in a warm place. After 1 or 2 hours, put a small drop of yeast culture from the test tube on a slide and cover it with a coverslip. Observe the slide under a microscope.

Formation of yeast cells can be seen. Some of them, may show chain budding

10. **(Activity 8.2) Wet a slice of bread, and keep it in a cool, moist and dark place. Observe the surface of the slice with a magnifying glass. Record your observations for a week.**

During the week, on observing the surface of the slice with a magnifying glass, a layer of white cotton like mass is seen covering the surface of slice. Area of white mass coverage found to be increasing on subsequent days. After a week, layer of white cotton like mass turns black showing formation of sporangia or spores.

11. **How do organisms reproduce by fission?**

Fission is a form of asexual reproduction in which an organism divides into two or more parts.

12. **How is the fission method of reproduction different in different organisms?**

In unicellular organisms fission, leads to the creation of new individuals. Many bacteria and protozoa simply split into two equal halves during cell division. In organisms such as Amoeba, the splitting of the two cells during division can take place in any plane. In Leishmania fission occurs in a definite orientation.

13. **(Activity 8.3) Observe a permanent slide of Amoeba under a microscope. Similarly observe another permanent slide of Amoeba showing binary fission. Compare the observations of both the slides.**

In the permanent slide of amoeba, an amoeba cell is seen containing normal cytoplasm and nucleus. In permanent slide showing binary fission, nucleus seen to be dividing and the constriction is also seen in cytoplasm, suggesting formation of two daughter nuclei.

14. **What is binary fission?**

The process by which an organism reproduces asexually by dividing into two cells from a single cell is called binary fission.

15. **How does binary fission take place in Leishmania?**

In Leishmania, binary fission occurs in a definite orientation.

16. **Differentiate between binary fission of amoeba and Leishmania.**

In amoeba, the splitting of the two cells during division can take place in any plane where as in Leishmania, binary fission occurs in a definite orientation.

17. **What is multiple fission?**

The process by which an organism reproduces asexually by dividing into many daughter cells simultaneously is called multiple fission.

18. **How does binary fission differ from multiple fission?**

| Binary fission | Multiple fission |
|--|--|
| In binary fission, the parent organism splits to form two new organisms. | In multiple fission, the parents organism splits to form many new organisms at the same time |
| It takes place during favourable environmental conditions. | It takes place during unfavourable environmental conditions |
| It takes place in organisms like Amoeba, Paramecium, etc. | It takes place in organisms like Plasmodium. |

19. How do yeast reproduce?

Yeast puts out small buds that separate and grow further into a new individual.

20. (Activity 8.4) Collect water from a lake or pond that appears dark green and contains filamentous structures. Put one or two filaments on a slide. Put a drop of glycerine on these filaments and cover it with a coverslip. Observe the slide under a microscope. Can you identify different tissues in the Spirogyra filaments?

Spirogyra filament consists of many cells. These cells are attached in linear fashion to form a filament.

21. What is fragmentation?

Fragmentation is a form of asexual reproduction in which an organism is split into fragments. Each of these fragments develop into mature, fully grown individuals.

22. How do spirogyra reproduce?

Spirogyra simply breaks up into smaller pieces upon maturation. These pieces or fragments grow into new individuals.

23. Why multicellular organisms cannot reproduce by simple cell division?

Multi-cellular organisms cannot simply divide cell-by-cell as multicellular organisms are not simply a random collection of cells. Specialised cells are organised as tissues, and tissues are organised into organs, which then have to be placed at definite positions in the body.

24. How is reproduction to be achieved from a single cell type, if the organism itself consists of many cell types?

There must be a single cell type in the organism that is capable of growing, producing rapidly and making other cell types under the right circumstances

25. What is regeneration?

Regeneration is a process in which an individual which has got cut or broken up into many pieces grow into separate individuals.

For example: Simple animals like Hydra and Planaria.

26. Briefly explain the process of regeneration.

Regeneration is carried out by specialised cells. These cells produce rapidly and make large numbers of cells. From this mass of cells, different cells undergo changes to become various cell types and tissues. These changes take place in an organised sequence referred to as development.

27. Give reason: Regeneration is not a form of reproduction.

Regeneration is not the same as reproduction, since most organisms would not normally depend on being cut up to be able to reproduce.

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

Multicellular organisms cannot reproduce by cell because they are not simple random collection of cells.

Simple multicellular organisms possess special type of tissues which have the potential to grow into a new organism but complex multicellular organisms have no such specialised cells.

29. Differentiate between reproduction and regeneration.

| Reproduction | Regeneration |
|--|---|
| It is the process in which individual organism gives rise to new one either by sexual or asexual method. | It is the process by which new organism develop from the body parts of parent organism. |

30. What is budding?

The type of asexual reproduction in which a bud is formed which develops into tiny individual. It detaches from parent body upon maturation and develops into new individual. Ex: Hydra

31. Explain budding in hydra.

In Hydra, a bud develops as an outgrowth due to repeated cell division at one specific site. These buds develop into tiny individuals and when fully mature, detach from the parent body and become new independent individuals.

32. What is vegetative propagation?

Vegetative propagation is any form of asexual reproduction occurring in plants in which a new plant grows from a fragment of the parent plant or grows from a specialized reproductive structure.

33. Name some methods which use vegetative propagation.

The property of vegetative propagation is used in methods such as layering or grafting to grow many plants like sugarcane, roses, or grapes for agricultural purposes.

34. Write the advantages of vegetative propagation.

- Plants raised by vegetative propagation can bear flowers and fruits earlier than those produced from seeds.
- It makes possible the propagation of plants such as banana, orange, rose and jasmine that have lost the capacity to produce seeds.
- All plants produced are genetically similar enough to the parent plant to have all its characteristics.

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

Vegetative propagation method is used for growing certain plants which do not produce seeds. It is also used for growing of plants genetically identical plants. It is also used for growing plants which require longer time to grow and become mature. Plant which require lot of care during early stages of development are also grown by this method.

36. (Activity 8.5) Take a potato and observe its surface. Can notches be seen? Cut the potato into small pieces such that some pieces contain a notch or bud and some do not. Spread some cotton on a tray and wet it. Place the potato pieces on this cotton. Note where the pieces with the buds are placed. Observe changes taking place in these potato pieces over the next few days. Make sure that the cotton is kept moistened.

Which are the potato pieces that give rise to fresh green shoots and roots?

Potato with notches or buds show the growth of a new plants whereas the other pieces of potato do not show growth.

- 37. (Activity 8.6) Select a money-plant. Cut some pieces such that they contain at least one leaf. Cut out some other portions between two leaves. Dip one end of all the pieces in water and observe over the next few days. Which ones grow and give rise to fresh leaves? What can you conclude from your observations?**

The piece which has at least one leaf develops fresh leaves and branch because money plant leaf has axillary bud between leaves and stem which develop into new plants.

- 38. How do bryophyllum reproduce?**

Buds produced in the notches along the leaf margin of Bryophyllum fall on the soil and develop into new plants.

- 39. Explain how, new Bryophyllum plants can be produced from the leaves of the old plant?**

Bryophyllum can be reproduced by vegetative propagation by using either a piece of its stem or leaves. The leaves of a Bryophyllum plant have special buds in their margins which may get detached from the leaves, fall to the ground and then grow to produce a new plant.

- 40. How can you grow money plant by vegetative propagation?**

Money plant can be grown by vegetative propagation by using a piece of its stem which has at least one leaf on it. One end of the stem is dipped in water and after a few days new roots appear at the point where the leaf was attached. This piece of stem grows gradually into a new money plant.

- 41. What is tissue culture?**

A tissue culture is the cultivation of a plant through the use of a cutting or other plant tissue.

- 42. Explain tissue culture.**

New plants are grown by removing tissue or separating cells from the growing tip of a plant. The cells are then placed in an artificial medium where they divide rapidly to form a small group of cells or callus. The callus is transferred to another medium containing hormones for growth and differentiation. The plantlets are then placed in the soil so that they can grow into mature plants.

- 43. What is the advantage of tissue culture?**

Using tissue culture, many plants can be grown from one parent in disease-free conditions.

- 44. What are sporangia?**

The tiny blob-on-a-stick structures that are involved in reproduction are called sporangia. They contain cells or spores that can develop into new Rhizopus individuals.

- 45. How will an organism be benefited if it reproduces through spores?**

Spores are tiny, spherical, asexual reproductive bodies which under favourable conditions, like damp and warm conditions, germinate to produce new plants. They are covered by the hard protective wall, which enables the plant to survive unfavourable conditions.

46. Identify the following methods and give one example of each:
- Process in which reproduction takes place by breaking up of parent into fragments.
Fragmentation, Spirogyra
 - Process of dividing of organisms into many cells simultaneously.
Multiple fission, plasmodium
 - Process of reproduction by formation of bud on parent body.
Budding, Hydra
 - Process of reproduction by formation of spores.
Spore formation, Rhizopus
 - Process used by multicellular organisms to reproduce by cutting into many pieces each piece forms a new individual.
Regeneration, Planaria

47. Name the type of asexual reproduction demonstrated by the following organisms.

- Amoeba – Binary fission
- Rhizopus – Spore formation
- Planaria - Regeneration
- Plasmodium – Multiple fission
- Spirogyra - Fragmentation
- Bryophyllum – Vegetative propagation through leaf buds.

48. Differentiate between fission and fragmentation.

| Fission | Fragmentation |
|---|--|
| It takes place in unicellular organisms like amoeba etc. | It takes place in multicellular organisms like spirogyra etc. |
| The cell divides into two (binary fission) or many cells (multiple fission) | The body of the organism divides into two or more parts which grow independently as new organisms. |

49. What is sexual reproduction?

The type of reproduction that depends on the involvement of two individuals before a new generation can be created is called sexual reproduction.

50. What is the significance of sexual mode of reproduction?

In asexual reproduction there are very little variations between parent and offspring. This reduces the chance of survival and evolution of species. But in sexual reproduction these variations are more because of combining of variations from two individuals. Therefore, chances of survival and evolution of species are more in organisms produced by sexual reproduction.

51. Are there any limitations of the asexual mode of reproduction?

In asexual reproduction there are very little variations between parent and offspring. This reduces the chance of survival and evolution of species. But in sexual reproduction these variations are more because of combining of variations from two individuals. The chances of survival and evolution of species are more in organisms produced by sexual reproduction.

52. What is the advantage of variations in organisms?

Variations are useful for ensuring the survival of the species.

53. How does DNA copying mechanism allow variations?

As DNA copying is not absolutely accurate. Each new variation is made in a DNA copy that already has variations accumulated from previous generations. The two different individuals in a population would have quite different patterns of accumulated variations. Combining variations from two or more individuals would create new combinations of variants.

54. How does sexual reproduction ensure variation in organisms?

The sexual mode of reproduction incorporates a process of combining DNA from two different individuals during reproduction to create new combinations of variants.

55. What possible functions could the petals and sepals serve?

Sepals serve the purpose of protection at the time of bud stage from infection or any other harm to the flower from any external agent and also serves the purpose of providing starch to the flower by the process of photosynthesis.

Petals are sometimes very colourful and also scented so as to attract insects or any other creatures towards them so that these creatures become the medium for the transfer of pollen grains from anther to stigma which will result in fertilization.

56. Give examples of unisexual flowers.

Papaya, watermelon

57. Name the parts present in a unisexual flower.

Stamens or carpels

58. Give examples of bisexual flower.

Hibiscus, mustard

59. Differentiate between unisexual flower and bisexual flower.

| Unisexual flower | Bisexual flower |
|---|---|
| The flower contain only one type of reproductive organ. | They contain both type of reproductive organs. |
| They contain either stamens or carpel | They contain both stamens and carpels in the same flower. |
| Example: Papaya, watermelon | Example: Hibiscus, mustard |

60. What is stamen?

Stamen is the male reproductive part which produces pollen grains that are yellowish in colour.

61. What is carpel?

Carpel is the female reproductive part present in the centre of a flower. It is made of three parts, ovary, style and stigma.

62. What is meant by pollination?

Transfer of pollen grains from the anther to the stigma is called pollination.

63. What is meant by self-pollination?

The pollination of a flower by pollen from the same flower or from another flower on the same plant is called self-pollination.

64. What is meant by cross-pollination?

The transfer of pollen grains of a flower to the stigma of another flower of a different plant of the same species is called cross pollination.

65. Mention the agents of pollination.

The agents of pollination are wind, water or animals.

66. What is meant by fertilisation?

The fusion of a male gamete with egg is known as fertilization.

67. What is germination?

The process in which seed (containing the future plant or embryo) develops into a seedling under appropriate conditions is called germination.

68. What are the post fertilization changes that occur in the flower?

The ovules develop a tough coat and converts into seeds. The ovary grows rapidly and ripens to form a fruit.

69. (Activity 8.7) Soak a few seeds of Bengal gram (chana) and keep them overnight. Drain the excess water and cover the seeds with a wet cloth and leave them for a day. Make sure that the seeds do not become dry. Cut open the seeds carefully and observe the different parts.

The parts of the seed are cotyledons containing plumule (future shoot) and radicle (future root).

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

71. Draw a neat labelled diagram of the germination of pollen on stigma.

72. Define sexual reproduction.

The type of reproduction that involves both the sexes of the species is known as sexual reproduction. This kind of reproduction requires the fertilization of the gametes of both the sexes.

73. What are the changes that are noticed in boys in early teenage/puberty?

- a) Thick hair growing in armpits and the genital area between the thighs.
- b) The area between the thighs also become darker in colour.
- c) Thinner hair can also appear on legs and arms.
- d) Thick hair growth on the face.
- e) The skin frequently becomes oily and we might begin to develop pimples.
- f) Their voices begin to crack.
- g) The penis occasionally begins to become enlarged and erect, either in day dreams or at night.

74. What are the changes that are noticed in girls in early teenage/puberty?

- a) Thick hair growing in armpits and the genital area between the thighs.
- b) The area between the thighs also become darker in colour.
- c) Thinner hair can also appear on legs and arms.
- d) The skin frequently becomes oily and might begin to develop pimples.
- e) The breast size begins to increase.
- f) They begin to menstruate at around this time.

75. What are the common changes notice in boys and girls in early teenage?

- a) Thick hair growing in armpits and the genital area between the thighs.
- b) The area between the thighs also become darker in colour.
- c) Thinner hair can also appear on legs and arms.
- d) The skin frequently becomes oily and we might begin to develop pimples.

76. Why does the body show sexual maturation at teenage?

Human beings develop special tissues for the purpose of reproduction. While the body of the individual organism is growing to its adult size, the resources of the body are mainly directed at achieving this growth. The maturation of the reproductive tissue is not likely to be a major priority. As the rate of general body growth begins to slow down, reproductive tissues begin to mature.

77. What is meant by puberty?

The period during adolescence which marks the attainment of sexual maturity is called puberty.

78. Who attains puberty at an earlier age in human beings boy or girl?

Girls attain puberty at an age of 10-12 years.

79. What does the male reproductive system consist of?

The male reproductive system consists of

- a) Structure which produce the germ-cells
- b) Structure that deliver the germ-cells to the site of fertilization.

80. What are the germ-cell of male called?

The germ-cells of male are called sperms.

81. What are sperms?

The sperms are tiny bodies that consist of mainly genetic material and a long tail that helps them to move towards the female germ-cell.

82. Where are the germ-cells or sperms produced?

The formation of germ-cells or sperms takes place in the testes.

83. What are testes?

Testes are the male reproductive structures that form the germ-cells of sperms.

84. What are the functions performed by the testes in human beings?

Functions of testes is:

- (i) Produce male sex cells-sperms.
- (ii) Produce male sex hormone testosterone.

85. Why are the testes located outside the abdominal cavity?

Testes are located outside the abdominal cavity in scrotum because sperm formation requires a lower temperature than the normal body temperature.

86. What is the function of testosterone?

- a) Testosterone helps in regulating the formation of sperms.
- b) Testosterone brings about changes in appearance seen in boys at the time of puberty.

87. What is scrotum?

The testes lie in a skin pouch called scrotum.

88. How are the sperms delivered to outside the body?

The sperms formed in the testes are delivered through the vas deferens which unites with a tube coming from the urinary bladder.

89. What is Vas deferens?

Vas deferens is the tube which carries sperms to the seminal vesicle.

90. What is seminal vesicle?

Seminal vesicles is the place where sperms are stored.

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

Secretions from seminal vesicles and prostate gland provide nutrition to the sperms and make their transport easier by providing them a fluid medium.

92. What is penis?

It is an organ which passes the sperms from the man's body into the vagina in the women's body during sexual intercourse.

93. Give reason: The seminal vesicles and prostate add secretions to the sperms.

The secretions of seminal vesicle and prostate help the sperms form a fluid which makes their transport easier and this fluid also provides nutrition.

94. Draw a neat diagram of the human-male reproductive system.**95. Give the function of the following parts of the male reproductive system.****a) Scrotum**

It maintains the temperature 2- 2.5°C less than the body temperature which is essential for the formation of sperms.

b) Prostate gland

It provides nutrition and helps in the transport of sperms.

c) Testis

Produces sperms.

96. What are the female germ-cells called?

Female germ-cells are called eggs.

97. Where are the female germ-cells or eggs produced?

Female germ-cells or eggs are produced in the ovaries.

98. What does the female reproductive system consists?

- a) A pair of ovaries.
- b) A pair of oviducts or fallopian tubes.
- c) A uterus.
- d) A vagina

99. What is oviduct or fallopian tube?

Oviduct or Fallopian tube is a tube which receives the egg produced by the ovary and transfer it to the uterus.

100. What is uterus?

Uterus is a bag-like structure where the two oviducts unite and development of the baby takes place.

101. What is vagina?

Vagina is a muscular tube starting from the lower end of the uterus upto the outside. It receives the male penis during sexual intercourse.

102. What is Cervix?

The Uterus is connected to the vagina through a narrow opening called cervix.

103. Draw a neat diagram of the human – female reproductive system.**104. Define fertilization.**

The process of fusion of the male gamete (sperm) with the female gamete (ovum) of the same species is known as fertilization.

105. Where does fertilization take place in human females?

Fertilization in the case of humans is internal. The process of fertilization takes place inside the fallopian tube of females.

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

The embryo gets nutrition from the mother's blood with the help of special tissue called placenta. This is a disc-like tissue which develops between the uterine wall and embryo. It has villi on embryo side of the tissue. On the mother's side are blood spaces which the villi. This gives a large surface area for oxygen and glucose to pass from the mother to the embryo.

107. How does the embryo get nutrition from the mother?

The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta.

108. What is placenta?

Placenta is a special tissue that develops in the uterus during pregnancy. It provides oxygen and nutrients to the growing baby and removes waste products from the baby's blood.

109. Which part/organ of the human reproductive system performs the following functions?**a) Production of fluids to provide a medium for transport of sperms.**

Seminal vesicles

b) Provides nutrition from mother's blood to embryo.

Placenta

c) Production of egg.

Ovary

d) Site of fertilisation.

Fallopian tube or oviduct

110. What happens when the egg is not fertilized?

If the egg is not fertilized, it lives for about one day. The lining of the uterus slowly breaks and comes out through the vagina as blood and mucus.

111. What is menstruation?

Menstruation is the regular discharge of blood and mucosal tissue from the inner lining of the uterus.

112. What is menstrual cycle?

The cycle of events taking place in the ovaries and the uterus every 28 days and marked by the menstrual flow is known as the menstrual cycle.

113. Why does menstruation occur?

Since the ovary of female release one egg every month, therefore, the uterus also prepares every month to receive a fertilized egg. The inner lining of the uterus becomes soft and thick with lots of blood capillaries in it. This preparation is necessary as in case the egg is fertilized by the sperm, it helps to keep the egg and nourish it. If however, the egg is not fertilized, then the thick lining of the uterus is not required and the uterus lining breaks down and comes out through the vagina in the form of blood and mucus.

114. What are sexually transmitted diseases?

The diseases which are spread by sexual contact with an infected person are called Sexually Transmitted Diseases. Example: Aids, Syphilis.

115. Name some diseases which are sexually transmitted.

- a) Bacterial infections such as gonorrhoea and syphilis.
- b) Viral infections such as warts and HIV-AIDS.

116. Is it possible to prevent the transmission of sexually transmitted diseases during the sexual act?

Using a covering, called a condom, for the penis during sex helps to prevent transmission of many of sexually transmitted diseases.

117. What is meant by contraception?

The prevention of pregnancy in women (by preventing fertilisation) is called contraception.

118. What are the three types of methods used for birth control (or regulating child birth) ? Give one example of each type.

- (a) Barrier method – Condom.
- (b) Chemical method – Oral pills.
- (c) Surgical method – Vasectomy.

119. Explain the barrier method of contraception.

In the barrier method of contraception, a mechanical barrier like condom is worn on the penis by men to prevent the sperm from reaching the vagina. Similar covering can also be worn in the vagina by women to prevent the entry of sperms into the uterus.

120. Explain the chemical method of contraception.

The chemical method of contraceptives is in the form of oral pills. The oral pills contain hormones which change the hormonal balance of the body so that eggs are not released and fertilization cannot occur.

121. What is the disadvantage of chemical method of contraceptives?

Since the oral pills change hormonal balance, they can cause side-effects.

122. Explain the contraceptive devices used to prevent pregnancy.

Other contraceptive devices such as the loop or the copper-T are placed in the uterus to prevent pregnancy.

123. Describe the surgical methods of birth control (a) for men, and (b) for women.

- a) In men, the vas deferens in the male is blocked, sperm transfer will be prevented.
- b) In women, the fallopian tube in the female is blocked, the egg will not be able to reach the uterus.

In both cases fertilization will not take place.

124. What could be the reasons for adopting contraceptive methods?

The reasons for adopting contraceptive methods are:

- (i) To avoid frequent pregnancies, which in turn helps in population control
- (ii) To prevent the spread of sexually transmitted diseases.

125. How is the process of pollination different from fertilisation?

| Pollination | Fertilization |
|--|--|
| The transfer of pollen grains from anther to the stigma of a flower is called pollination. | The fusion of male and female gamete to form zygote is called fertilization. |
| It involves only the male gamete (pollen grain). | It involves both male and female gametes. |

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

No, copper-T does not prevent the transmission of sexually transmitted diseases. Copper-T only prevents implantation. The only safe method used to prevent the transmission of sexually transmitted diseases is the use of condoms.

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

There are a number of advantages of sexual reproduction over asexual one. These include (i) Sexual reproduction created variations which are useful for ensuring survival of species and species formation.

(ii) Two different individuals in a population would have quite different patterns of accumulated variations.

(iii) The desired phenotype can be promoted by sexual reproduction.

These advantages are not available with asexual reproduction.

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

Unicellular organisms are made up of only single cell, in which all the functions are performed by the single cell. So, reproduction is done by simple, asexual methods but in multicellular organisms various cells perform different functions. So, production of all these specialised cells/tissues is required and simple methods for reproduction are insignificant.

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

Reproduction leads to certain variations in the characteristics of the offspring. This may allow organism to exist in diverse habitats and niches. Certain variations present in the individuals of certain population may enable the individuals to survive those unfavourable conditions. Organism with such favourable traits transmit the characters to their offsprings, thereby providing stability to the population of a species.

130. Which structures in human female are equivalent to the following structures in the male? (a) Testes (b) vas deferens (c) penis.

In each case say in what respect the structures are equivalent?

(a) Ovaries in female; both make gametes.

(b) Oviducts in females; both transport gametes.

(c) Vagina in female; both are copulatory organs.

131. Write the difference between asexual and sexual reproduction.

| Asexual Reproduction | Sexual reproduction |
|---|--|
| The offspring arises from a single parent. | The offspring arises from two parents of different sexes. |
| The production of new organism does not involve gametes | The production of new organisms involves the use of gametes. |
| Example: Amoeba, Yeast. | Example: Fish, Frogs, etc. |

132. Differentiate between vas deferens and fallopian tube.

| Vas Deferens | Fallopian tube |
|---|---|
| It is a part of the male reproductive system. | It is a part of the female reproductive system. |
| Two vas deferens from two testes transport sperms to penis in male. | Two fallopian tubes join to the uterus in females. Ovum released by ovary enters the fallopian tube where fertilization occurs. |

133. Differentiate between sperm and ovum.

| Sperm | Ovum |
|--|---|
| It is produced in testis. | It is produced in ovary. |
| Lakhs of sperms are formed continuously. | Only one ovum (egg) is formed in a menstrual cycle. |
| Capable of movement, has tail | Incapable of movement, does not have tail. |

134. What is the name of the reproductive process (a) which involves two parents? (b) Which involves only one parent?

- (a) Sexual reproduction.
(b) Asexual reproduction.

135. Which type of reproduction (a) involves gametes? (b) Does not involve gametes?

- (a) Sexual reproduction.
(b) Asexual reproduction.

136. State whether human beings reproduce by sexual method or asexual method.

Sexual method.

137. Name two animals which reproduce a) sexually b) asexually.

- (a) Dogs and cows.
(b) Amoeba and Hydra.

138. Name one organism which reproduces by spore formation.

Bread mould (Rhizopus fungus).

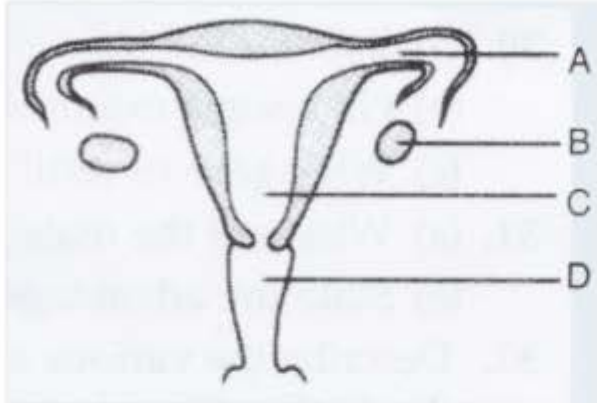
139. Name two plants (a) which can be grown from their broken stems. (b) Which can be grown from their leaves.

- (a) Bryophyllum and money plant.
 (b) Bryophyllum and Begonia

140. Name two animals which can regenerate fully from their cut body parts.

Planaria and Hydra.

141. The diagram shows female reproductive system.



Name the parts labelled A to D.

A – Oviduct (Fallopian tube); B – Ovary; C – Uterus (Womb); D – Vagina

(a) In which part do the sperms enter?

Part D – (Vagina).

(b) Which part releases the egg?

Part B – (Ovary)

(c) In which part does fertilisation take place?

Part A – Oviduct

(d) In which part does the foetus develop?

Part C – Uterus.

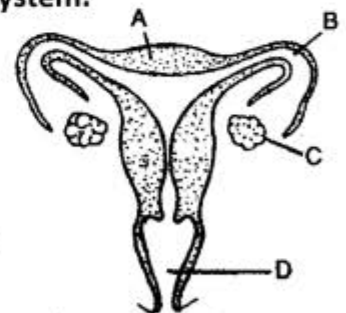
142. The diagram given below represents the female reproductive system.

a) Name the parts labelled A – D.

A- Uterus, B- Oviduct or fallopian tube, C-Ovary, D- Vagina

b) What will happen if the part B on both sides gets blocked?

When the oviduct or fallopian tube on both sides is blocked, the egg will not be able to reach the uterus and fertilization will not take place.



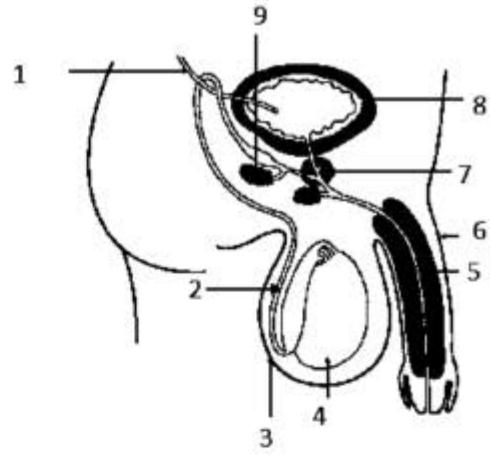
143. Given below is the schematic diagram of the sectional view of the human male reproductive system.

a) Name the parts numbered 1 to 9

1 – Ureter; 2- Vas deferens; 3 – Scrotum;
 4 – Testis; 5 – urethra; 6 – penis; 7 – prostate gland;
 8 – Bladder; 9 - seminal vesicle

b) State the function of the parts numbered 2, 4, 7, 9

- 2 – Vas deferens transports sperms into the urethra.
- 4 – Testis produce sperms.
- 7 – Prostate gland pours secretions into the urethra.
- 9 - Seminal vesicle pours secretions into the urethra.



Fill in the blanks:

- 1) Reproduction involve making copies of the blueprints of body design.
- 2) The DNA in the cell nucleus is the information source for making proteins.
- 3) The basic event in reproduction is the creation of a DNA copy.
- 4) The inbuilt tendency for variation during reproduction is the basis for evolution.
- 5) Variation is useful for the survival of species over time.
- 6) Amoeba reproduces by binary fission.
- 7) Kala-azar is caused by the Leishmania.
- 8) Leishmania reproduces by binary fission.
- 9) Malaria is caused by Plasmodium.
- 10) Plasmodium reproduces by multiple fission.
- 11) The process by which an organism reproduces asexually by dividing into two cells from a single cell is called binary fission.
- 12) The process by which an organism reproduces asexually by dividing into many daughter cells simultaneously is called multiple fission.
- 13) Fragmentation is a form of asexual reproduction in which an organism is split into fragments.
- 14) Spirogyra reproduces by fragmentation.
- 15) The process in which an individual which has got cut or broken up into many pieces grow into separate individuals is called regeneration.
- 16) The type of asexual reproduction in which a bud is formed which develops into tiny individual is called budding.
- 17) Hydra reproduces by budding.
- 18) The cultivation of a plant through the use of a cutting or other plant tissue is called tissue culture.
- 19) The tiny blob-on-a-stick structures that are involved in reproduction are called sporangia.
- 20) The type of reproduction that depends on the involvement of two individuals before a new generation can be created is called sexual reproduction.
- 21) The motile germ cell is called the male gamete and the germ-cell containing the stored food is called the female gamete.
- 22) The reproductive part of angiosperms are located in the flower.

- 23) The reproductive parts of a flower which contain the germ cell are Stamens and carpels.
- 24) An example of a unisexual flower is papaya/Watermelon.
- 25) The part of the flower present in a unisexual flower is stamen/carpel.
- 26) The male reproductive part of the flower that produces pollen grains is stamen.
- 27) The female reproductive part of the flower is carpel.
- 28) The swollen bottom part of the flower is called ovary.
- 29) The terminal part of the flower which may be sticky is stigma.
- 30) If the transfer of pollen occurs in the same flower, it is called self-pollination.
- 31) If the pollen is transferred from one flower to another it is known as cross-pollination.
- 32) The seed contains the future plant.
- 33) The process in which the embryo develops into a seedling is called germination.
- 34) The formation of germ-cells or sperms takes place in the testes.
- 35) The hormone that brings about changes in appearance seen in boys at the time of puberty is testosterone.
- 36) The period during adolescence which marks the attainment of sexual maturity is called puberty.
- 37) The testes lie in a skin pouch called scrotum.
- 38) The female germ-cells or eggs are produced in the ovaries.
- 39) The two oviducts unite into an elastic bag-like structure known as the uterus.
- 40) The uterus opens into the vagina through the cervix.
- 41) The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta.
- 42) The development of the child inside the mother's body takes approximately nine months.

Multiple choice questions

- 1) **Asexual reproduction takes place through budding in**
 (a) amoeba. (b) yeast. (c) plasmodium. (d) leishmania.
- 2) **Which of the following is not a part of the female reproductive system in human beings?**
 (a) Ovary (b) Uterus (c) Vas deferens (d) Fallopian tube
- 3) **The anther contains**
 (a) sepals. (b) ovules. (c) carpel. (d) pollen grains.
- 4) **In the list of organisms given below, those that reproduce by the asexual method are**
 (i) banana (ii) dog (iii) yeast (iv) Amoeba
 (a) (ii) and (iv) (b) (i), (iii) and (iv) (c) (i) and (iv) (d) (ii), (iii) and (iv)
- 5) **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

- 6) 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, fertilisation
- 7) 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)
- 8) Characters transmitted from parents to offspring are present in
- (a) cytoplasm (b) ribosome (c) golgi bodies (d) genes
- 9) 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
- 10) 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
- 11) 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.
- 12) 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
- 13) 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
- 14) 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

- 15) In *Rhizopus*, tubular thread-like structures bearing sporangia at their tips are called
(a) filaments (b) hyphae (c) rhizoids (d) roots
- 16) 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
- 17) 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)
- 18) 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
- 19) 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)
- 20) 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)
- 21) 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)

22) In Figure 8.1, 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

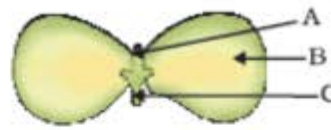


Fig. 8.1

23) 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

24) 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

25) 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

26) 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

27) 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

28) 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)

29) The correct sequence of organs in the male reproductive system for transport of sperms is

- (a) testis → vasdeferens → urethra
- (b) testis → ureter → urethra
- (c) testis → urethra → ureter
- (d) testis → vasdeferens → ureter

30) Which among the following diseases is not sexually transmitted?

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