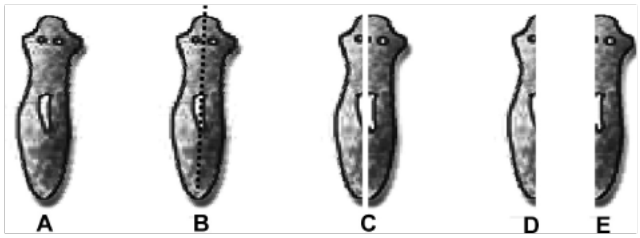
Date: 24/9/2021

Q1. Would a *Planaria* cut vertically into two halves regenerate into two individuals? Complete figure, D and E by indicating the regenerated regions.



Q2. Give two reasons for the appearance of variations among the progeny formed by sexual reproduction.

Q3. Why does bread would grow profusely on a moist slice of bread rather than on a dry slice of bread?

Q4. Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.

Q5. Explain how, offspring and parents of organisms reproducing sexually have the same number of chromosomes?

Q6. What is a clone? Why do offsprings formed by asexual reproduction exhibit remarkable similarity?

Q7. In a bisexual flower inspite of the young stamens being removed artificially, the flower produces fruit. Provide a suitable explanation for the above situation.

Q8. Can you consider cell division as a type of reproduction in unicellular organism? Give one reason.

Q9. From the internet, gather information about the chromosome numbers of five animals and five plants. Correlate the number with the size of organism and answer the following questions.

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

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

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

Q10. In tobacco plant, the male gametes have twenty four chromosomes. What is the number of chromosomes in the female gamete? What is the number of chromosomes in the zygote?

Q11. Why cannot fertilisation take place in flowers if pollination does not occur?

Q12. Is the chromosome number of zygote, embryonal cells and adult of a particular organism always constant? How is the constancy maintained in these three stages?

Q13. Where is the zygote located in the flower after fertilization?

Q14. Reproduction is linked to stability of population of a species. Justify the statement.

Q15. How are general growth and sexual maturation different from each other?

Q16. Trace the path of sperm during ejaculation and mention the gland and their functions associated with the male reproductive system.

Q17. What changes are observed in the uterus if fertilisation does not occur?

Q18. What changes are observed in the uterus subsequent to implantation of young embryo?

Q19. What are the benefits of using mechanical barriers during sexual act?

Q20. 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 seprms

Q21. What would be the ratio of chromosome number between an egg and its zygote? How is the sperm genetically different from the egg?

Q22. Why are budding, fragmentation and regeneration all considered as asexual types of reproduction? With neat diagrams explain the process of regeneration in *Planaria*.

Q23. Write two points of difference between asexual and sexual types of reproduction. Describe why variations are observed in the offspring formed by sexual reproduction.

Q24. 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.

Q25. Distinguish between a gamete and zygote. Explain their roles in sexual reproduction.

Q26. Draw the diagram of a flower and label the four whorls. Write the names of gamete producing organs in the flower.

Q27. What is placenta? Mention its role during pregnancy?

Q28. What are various ways to avoid pregnancy? Elaborate any one method.

Q29. How does fertilisation take place? Fertilisation occurs once in a month. Comment.

Q30. Reproduction is essentially a phenomenon that is not for survival of an individual but for the stability of a species. Justify.

Q31. Describe sexually transmitted diseases and mention the ways to prevent them.

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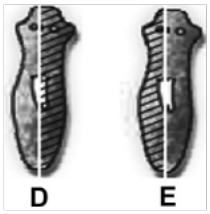
S1. Yes, shaded part in figures D and E represent the regenerated halves.



S2. (a) Sexual reproduction involves two parents with different sets of characters.
(b) The gene combinations are different in gametes.

S3. Moisture is an important factor for the growth of hyphae. Moistened bread slice offers both moisture and nutrients to the bread mould, hence it grows profusely. Dry slice of bread offers nutrients but not moisture hence hyphae fail to grow.

S4. Sugar provides energy for sustaining all life activities in yeasts. In water, it fails to reproduce because of inadequate energy in its cells.

S5. Reduction division (meiosis) during gamete formation halves the chromosome number in both male and female gametes. Since these two gametes fuse during fertilisation, the original number of chromosomes (as in the parent) is restored in the offspring.

S6. Clone refers to offspring of an organism formed by asexual method of reproduction. Since they possess exact copies of the DNA of their parent, clones exhibit remarkable similarity.

S7. The pistil is intact. Cross pollination has occurred leading to fertilisation and formation of fruit.

S8. Yes, because it results in the formation of two daugher cells, that is, it results in the production of more individuals of the organism.

S9. (a) No, there is no relationship between size of organism and its chromosome number.
(b) No, process of reproduction follows a common pattern and is not dependent on the number of chromosomes.
(c) Yes, since the major component of chromosome is DNA, if there are more chromosomes in a cell, the quantity of DNA will also be more.

S10. Number of chromosomes in female gamete is 24.
Number of chromosomes in zygote is 48

S11. In a flower fertilisation requires both male and female gametes.
If pollination does not ocur, male gamete is not available hence fertilisation cannot take place.

S12. Yes, the constancy is maintained because cells in all these three structures undergo only mitotic divisions.

S13. Zygote is located inside the ovule which is present in the ovary.

S14. In reproduction, DNA passes from one generation to the next. Copying of a DNA takes place with consistency but with minor variations. This consistency leads to stability of species.

S15. General growth refers to different types of developmental process in the body like increase in height, weight gain, changes in shape and size of the body but sexual maturation is specific to changes reflected at puberty like cracking of voice, new hair patterns, development of breast in female etc.

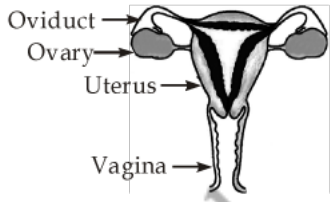
S16. Sperm comes out from testis into the vas deferens and then passes through urethra before ejaculation. The secretions of seminal vesicle and prostrate glands provide nutrition to the sperms and also facilitate their transport.

S17. The thick and spongy lining of the uterus slowly breaks and comes out through the vagina as blood and mucus.

S18. The uterine wall thickens that is richly supplied with blood. A special tissue called placenta develops which connects embryo to the uterine wall that provides nutrients and oxygen to it.

S19. Mechanical barriers like condom prevents the sperms from reaching the egg. Thus it is an effective method to avoid pregnancy. It also prevents transmission of infections during sexual act.

S20. (a) Ovary (production of egg)
(b) Oviduct (site of fertilisation)
(c) Uterus (site of implantation)
(d) Vagina (entry of the sperms)



S21. The ratio is 1 : 2. Sperms contain either *X* or *Y* chromosome whereas an egg will always have an *X* chromosome.

S22. Budding, fragmentation and regeneration are considered as asexual types of reproduction because all of them involve only one parent and gametes are not involved in reproduction.

Regeneration in planaria

S23.

Asexual reproduction	Sexual reproduction
(a) Involves only one parent.	(a) Often involves two parents.
(b) Gametes are not produced.	(b) Gametes are produced.
(c) No fertilisation and zygote formation	(c) Fertilisation and zygote formation is observed.
(d) Meiosis does not occur at any time during reproduction.	(d) Meiosis occurs at the time of gamete formation.

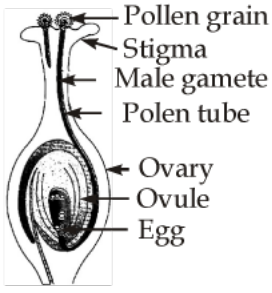
During sexual reproduction two types of gametes fuse. Although the gametes contain the same number of chromosomes, their DNA is not identical. This situation generates variations among the offsprings.

S24. The process or mechanism of transfer of pollen grains from the anther to the stigma is termed pollination.

The fusion of male and female gaemtes giving rise to zygote is termed fertilisation

The site of fertilisation is ovule.

The product of fertilisation is zygote.



S25. Gamete represents the sex cell or germ cell in sexual reproduction. There are two types of gametes, male and female.

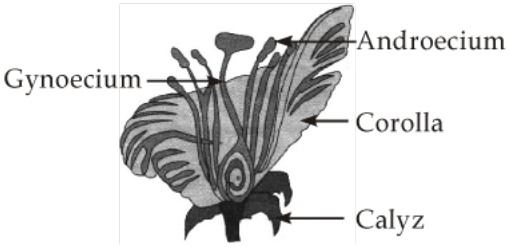
Zygote is the product of fertilisation in which a male and a female gamete fuse with each other.

The two fusing gametes possess characters of their parents in their DNA. Fertilisation brings characters of both parents into one zygote cell.

Zygote is the first cell of the next generation. It divides to form an embryo which subsequently grows into a new individual.

S26. Male gamete forming part – anther/stamen

Female gamete forming part– pistil/ovary/ovule



S27. Hints: (a) Special tissue connection between embryo and uterine wall.

(b) Possesses villi that increases the surface area.

(c) Facilitate passage of nutrition and oxygen to embryo from mother through blood.

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

S28. Hints: (a) Contraceptive methods are used such as (i) mechanical (ii) drugs (as pills) (iii) loop or copper T and (iv) surgical method.

(b) Pills change the hormonal balance and thus prevent the release of egg, hence fertilisation is prevented.

S29. Hints: (a) Sperm enters through the vaginal passage during sexual intercourse and moves upwards.

(b) Egg released from the ovary reaches the oviduct.

(c) Sperm encounters egg in the oviduct and fertilization takes place.

(d) Egg is released once every month by ovary.

S30. Hints: (a) Organisms need energy for survival which they obtain from life processes such as nutrition and respiration.

(b) Reproduction needs a lot of energy.

(c) Genetic material is transferred from one generation to the next as a result of reproduction through DNA copying.

(d) DNA copying takes place with high constancy and considerable variations, that is, advantages to the species for stability in the changing environment.

S31. Hints: (a) These are infectious diseases transmitted during sexual contact.

(b) They may be bacterial like of viral like.

(c) Use of mechanical barrier like condom prevents transmission of infection.