Grade X - Science

Lesson 7. Reproduction

Objective Type Questions

(1 Mark each)

I. Multiple choice questions

1. A feature of reproduction that is common to Amoeba, Spirogyra and yeast are that:
   a. they reproduce asexually.
   b. they are all unicellular.
   c. they reproduce only sexually.
   d. they are all multicellular.
2. In spirogyra, asexual reproduction take place by:
   a. Breaking up of filaments into smaller fragments.
   b. division of a cell into two cells.
   c. Division of a cell into many cells.
   d. Formation of young cells from older cells.
3. Factors responsible for the rapid spread in 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)

II. Multiple choice questions

1. The correct sequence of reproductive stages seen in flowering plants is
   a. Gametes , zygote , embryo , seedling
   b. Zygote , gametes , embryo , seedling
   c. Seeding , embryo , zygote ,gametes
   d. Gametes , embryo , zygote, seedling

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

(i) Flower 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)**

3. A student while observing an embryo of a gram seed listed various parts of the embryo as listed below: Testa, Micropyle, Cotyledon, Tegmen, plumule, Radicle.

On examining the list, the teacher commented that only three parts are correct. Select these three correct parts:

a. Cotyledon, Testa, Plumule

b. Cotyledon, plumule, Radicle

c. Cotyledon, Tegmen, Radicle

d. Cotyledon, Micropyle, Plumule.

4. Choose the correct sequence of steps involved in fertilization?

I – Syngamy

II – Triple fusion

III- Entry of pollen tube into ovule and embryo sac

IV - Discharge of male gametes into embryo sac

V - Growth of pollen tube and formation of male gametes

a. I – II – IV – V b. I – III – V- IV – II

c. V – III – IV – I – II d. V – II – III – II – I

III. Multiple choice questions

1. There is a greater possibility for the evolution of a new species in organisms which reproduce by

a. Binary fission b. budding

c. fertilisation d. regeneration

2. Which is the most common method of reproduction in majority of fungi and bacteria?

a. Budding **b. spore formation**

c. Binary fission d. Multiple fission

3. Which of the following is not an artificial method of vegetative propagation?

a. Cutting
b. Layering
c. Budding
d. Grafting

4. Many unicellular organisms reproduce by the process of

a. fission
b. ovulation
c. regeneration
d. non-disjunction

5. The ability of an organisms to develop whole body from a broken piece or fragment is called

a. binary fission
b. budding
c. multiple fission
d. regeneration

6. Pollen grains are produced by

a. ovary
b.ovule
c. anther
d. corolla

7. The fertilisation of human egg by the sperm takes place in

a. vegina
b. uterus
c. ovary
d. oviduct

8. Which of the following is a primary sex organ in a mammal?

a. Ovary
b. Vagina
c. Uterus
d. Mammary glands

9. The ability to reproduce is lost in a female after

a. fertilisation
b. Menstruation
c. gamete formation
d. Menopause

10. When a sperm is deposited into the vegina which route does it travel?

a. vegina → Oviduct → Uterus → Cervix
b. Vegina → Ovary → Uterus → Oviduct
c. Vegina → Cervix → Uterus → Oviduct
d. Vegina → Uterus → Cervix → Oviduct

11. In case the ova does not fertilise, which of the following events will take place?

a. Menstruation
b. Pregnancy
c. Implantation
d. Ovulation

12. When the foetus is growing inside the uterus it needs nutrients. Which part provides these nutrients?

a. Placenta b. Amnilotic sac

c. Oviduct d. Uterus

13. What marks the beginning of the reproductive life of a woman?

a. Menopause **b. Menarche**

c. Fertilisation d. Ovulation

14. Where does fertilisation take place?

a. Uterus b. Vegina

c. Fallopian tube d. Ovulation

15. A pair of duct arising from testis, which carry sperms are

a. fallopian tube **b. vas deferens**

c. oviduct d. urethra

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

(i) banana (ii) dog (iii) yeast (iv) Amoba

a. (ii) and (iv) **b. (i),(ii) and (iv)**

c. (i) and (iv) d.(ii), (iii) and (iv)

17. 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

18. 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**

19. 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 the above

20. 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 estrogens

a. (i) and (ii) b. (ii) and (iii)

c. (iii) and (iv) d. (i) and (iv)

I Assertion & Reason

Directions : In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as.

(A)Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is Not the correct explanation of A.

(C) A is true but R is false.

(D) A is false and R is true.

1. **Assertion (A)** : In human male, testes are extra abdominal organs which are present inside scrotum.

Reason (R) : scrotum has a relatively lower temperature needed for the production and storage of sperms.

Ans. Option (A) is correct.

2. **Assertion (A)** : At puberty, in boys, voice begins to crack and thick hair grows on face.

Reason (R) : At puberty, there is decreased secretion of testosterone in boys.

Ans. Option (C) is correct.

3. **Assertion (A)** : Surgical methods are effective methods of contraception.

Reason (R) : Surgical method blocks gametes transport and hence prevent fertilisation.

4. **Assertion (A)** : Copper T is an intra – uterine device.

Reason (R) : It is placed in uterus and prevents fertilization and implantation.

Ans. Option (A) is correct.

5. **Assertion (A)** : Oviduct is the site of fertilization .

Reason (R) : It secretes female sex hormones like oestrogen and progesterone.

Ans. Option (C) is correct.

II Assertion & Reason

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice s.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is Not the correct explanation of A.

(C) A is true but R is false.

(D) A is false and R is true.

1. **Assertion (A)** : An embryo is formed from fertilized egg.
   Reason (R) : A monocot embryo comprises embryonal axis with two cotyledons.

Ans. Option (C) is correct.

2. **Assertion(A)** : Cucumber, pumpkin and watermelon are example of unisexual flowers.
   Reason (R) : Unisexual flower has both male and female reproductive organs.

Ans. **Option (C) is correct.**

3. **Assertion (A)** : The anthers produce female gametes.
   Reason (R) : A male gamete from a pollen grain fertilise a female gamete in an ovule.

Ans. Option (D) is correct

4. **Assertion (A)** : The outermost whorl which consists of sepals is called calyx.
   Reason (R) : Calyx protects the inner parts when the flower is in bud stage.

Ans. Option (B) is correct.

III Assertion & Reason

Directions : In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice as.

(A) Both assertion (A) and reason (R) are true and assertion (R) is the correct explanation of (A).

(B) Both assertion (A) and reason (R) are true but assertion (R) is NOT the correct explanation of (A).

(C) Assertion (A) is true but reason (R) is false.

(D) Assertion (A) is false and reason (R) is true.

1. **Assertion (A)** : Amoeba reproduces by binary fission .

   Reason (R) : Majority of the unicellular organisms reproduce asexually.

Ans: Option (B) is correct.

2. **Assertion (A)** : Plants are vegetatively propagated even though they bear seeds.

   Reason (R) : Potatoes reproduces through tubers, apples by cutting etc.

Ans : Option (B) is correct.

3. **Assertion (A)** : Characteristics of parental plants can be preserved through Vegetative reproduction.

   Reason (R) : Asexual reproduction involves only mitosis.

Ans : Option (D) is correct.

4. **Assertion (A)** : Plasmodium reproduces by multiple fission.

   Reason (R) : Multiple fission is a type of asexual reproduction.

Ans: Option (A) is correct.

5. **Assertion (A)** : DNA copying is necessary during reproduction.

   Reason (R) : DNA coping leads to the transmission of characters from parents to offspring.

Ans: Option (A) is correct.

IV Assertion & Reason

Directions: In the following questions, a statement of Assertion (A) is followed by a statement of Reason (R). Mark the correct choice s.

(A) Both A and R are true and R is the correct explanation of A.

(B) Both A and R are true but R is Not the correct explanation of A.

(C) A is true but R is false.

(D) A is false and R is true.

1. **Assertion** : Amoeba reproduced by fission

   Reason : All unicellular organisms reproduced by asexual method.

Ans. Optional (A) is correct.

2. **Assertion** : In human beings, the female play a major role in determining the sex of the Offspring.

Reason : Women have two x chromosomes.

Ans. Optional (D) is correct.

3. **Assertion** : In male reproductive system, transport of sperm takes places in a fluid which also provide nutrition.

Reason : Protective glands and seminal vesicles secret in the vas deferens.

Ans. Optional (A) is correct.

4. **Assertion** : Plants raised by vegetative propagation can bear flower and seed earlier than those produced from seeds.

Reason : Plants which lost capacity to bear viable seeds, can propagate through Vegetable propagation

Ans. Optional (B) is correct.

5. Assertion : Ovary releases one egg every month.

Reason : The lining of uterus is always thick and spongy.

Ans. Optional (C) is correct.

6. Assertion : Ovary releases one egg every month.

Reason : The lining of uterus is always thick and spongy.

Ans. Optional (C) is correct.

Fill in the blanks

1. The gestation period in human beings is about _____ days.

Ans. 280.

2. The process of release of an egg from the ovary.

Ans. ovulation.

3. The development of foetus inside the uterus till birth is called _____.

Ans. gestation.

4. The attachment of the embryo to the uterus is called _____.

Ans. implantation.

5. Sterilisation in males is called _____.

Ans. vasectomy.

6. The ability of a cell to divide into several cells during reproduction in _____. Is called _____.

Ans. Plasmodium, multiple fission

7. The disease _____ is caused by microorganism known as _____.

Ans. Kala-azar, leishmania.

8. The organism like _____ can reproduce by the method of _____.

Ans. Spirogyra, fragmentation.

9. In Rhizopus the fine thread like structures spread on the whole surface of slice of bread are called _____.

Ans. Hyphae.

10. A tiny animal having tentacles which reproduces by growing buds on the side of its body is _____

Ans. hydra

True or False

11. The importance of variations in organisms is that is helps the species of various organisms to survive in adverse environment.

Ans. True.

12. Complex multicellular organisms cannot give rise to new organisms through budding.

Ans. True.

13. Gonorrhoea and syphilis are caused by bacteria.

Ans. True

14. Testes are the primary reproductive organs in man.

Ans. True

15. An embryo is formed by the growth and development of an foetus.

Ans. False

16.An important feature of barrier method is that it protects a person from STDs.

Ans. True.

17. The killing of the unborn girl child is called female foeticide.

Ans. True.

18. The surgical procedure carried out in females is called vasectomy.

Ans. False.

19. Copper- T cannot protect from acquiring sexually transmitted diseases.

Ans. True

Match the following

Column I	Column II
(i) Placenta	(A) Binary fission
(ii) Male gametes of plant	(B) Pollen grains
(iii) Budding	(C) Nourishment of embryo
(iv) Amoeba	(D) Yeast
(v)Vegetative propagation by leaves	(E) Bryophyllum

Ans. (i) (C) , (ii) (A), (iii) (D), (iv) (B)

Column I	Column II
(i) Fission	(A) Spirogyra
(ii) Fragmentation	(B) Hydra
(iii) Regeneration	(C) Bryophyllum
(iv) Budding	(D) Amoeba
	(E) Planaria

Ans. (i) (C), (ii) (B), (iii) (D), (iv) (A)

Subjective Type Questions

Very Short Answer Type Questions

1. **How does plasmodium reproduce? Is this method sexual or sexual type of reproduction?**

   Ans: Plasmodium reproduces by a s process known as multiple fission. Multiple fission is a type of asexual reproduction.

2. **Name the method by which spirogyra reproduces under favourable conditions. Is this method sexual or asexual type of reproduction?**

   Ans: Fragmentation , Asexual

3. **When a cell reproduces, what happens to its DNA?**

   Ans. When a cell reproduces, its DNA is copied i.e., replicated and passed on to the offspring or the next generation.

4. **Newly formed DNA copies may not be identical at times. Give one reason.**

   Ans. If there is an error in DNA copying or mutation, then newly formed DNA copies may not be identical at time.

5. **What are those organisms called which bear both the sex organs in the same individual? Give one example of such organism.**

   Ans. Bisexual; Hermaphrodite. For e.g., Hydra/Earthworm/Mustard/Hibiscus

6. **Name the type of reproduction mostly seen in unicellular organisms.**

   Ans. Asexual reproduction.

7. **Name two simple organisms having the ability of regeneration.**

   Ans: Planaria and Hydra.

8. **List two unisexual flower.**

   Ans. Watermelon, Papaya.

9. **Why is fertilisation not possible without pollination?**

   Ans. Pollination allows pollen grains that produce male germ cell to reach the carpel which contain the female germ cell, egg.

   Thus, fertilisation which involves fusion of male and female germ cells can only occur after pollination.

10. **Name the parts of a bisexual flower that are not directly involved in reproduction.**

    Ans. Sepals/calyx

    Petals/corolla

    Thalamus

11. **Give one example of wind pollinated plant.**

    Ans. Grass, Maize.

12. **Name the life process of an organism that helps in the growth of its population.**

    Ans. Reproduction.

13. What are the two types of reproduction?

Ans. Sexual and asexual reproduction.

14. Which is the most basic event in reproduction?

Ans. Creation of a DNA copy.

15. Write the full form of DNA.

Ans. The full form of DNA is deoxyribonucleic acid.

16. What is DNA?

Ans. The full form of DNA is deoxyribonucleic acid. DNA lies in the cell nucleus, which is The information source for making proteins, and different proteins lead to different designs.

17. Where is DNA found in a cell?

Ans. DNA is found in the nucleus.

18. What is DNA copying?

Ans. DNA in the cell nucleus is the information source for making proteins and different proteins lead to different body designs. During reproduction, similar copy of DNA is generated and the process is called DNA copying.

19. What is the effect of DNA copying which is not perfectly accurate on the reproduction process?

Ans. DNA copying is not perfectly accurate and the resultant error are a source of variations in populations of organisms.

20. Mention the mode of reproduction used by

(a) Amoeba **(b) Planaria**

Ans. Mode of reproduction used by

(a) Amoeba is binary fission

(b) Planaria is regeneration

21. Name two organisms which are reproduced by binary fission.

Ans. Amoeba and leishmania are reproduced by binary fission.

22. Name the causative agent of the disease 'Kala-azar" and its mode of asexual reproduction.

Ans. Leishmania causes kala-azar. It reproduces by binary fission.

23. Name the method by which spirogyra reproduces under favourable conditions. Is this method sexual or a sexual?

Ans. Spirogyra reproduces by fragmentation. It is an asexual method of reproduction.

24. Name two simple organisms having the ability of regeneration.

Ans. Hydra and planaria.

25. What is the difference between fission and fragmentation?

Ans. In fission, an unicellular organism breaks up to form to new organisms whereas in case or fragmentation a multicellular organisms breaks up to form two new organisms.

26. Name the method by which Hydra reproduces. Is this method sexual or asexual?

Ans. Hydra reproduces by budding. It is an asexual method.

27. What happens to a slice of bread kept in a moist dark place?

Ans. rhizopus (fungus) will develop.

28. Name the part of Bryophyllum where the buds are produced for vegetative propagation.

Ans. Vegetative part, leaf is used in the propagation of Bryophyllum.

29. Select two plants raised by the method of vegetative propagation from the list given below:

Ans. Banana, jasmine and rose are raised by vegetative method.

30. State what type of method is used for growing jasmine plant.

Ans. Artificial methods of vegetative propagation like layering is used for growing jasmine plant.

31. Do you know which part become a new plant in vegetation propagation like layering is used for growing jasmine plant.

Ans. Root, stem and leaves.

32. What are those organisms called which bear both the sex organs in the same individual. Give one example of such organism.

Ans. Organisms which bear both the sex organs are called hermaphrodite/bisexual.
Example: Earthworm.

33. What is bisexual flower? Give one example.

Ans. A bisexual flower is a flower that contains both stamens and carpel.

Example: Hibiscus.

34. Name the parts of a bisexual flower that are not directly involved in reproduction.

Ans. Parts of a bisexual flower which are not directly involved in reproduction are (i) petal, (ii) sepal and (iii) Thalamus.

35. Write suitable conditions necessary for seed germination.

Ans. Conditions necessary for seed germination are water, temperature and oxygen.

36. Name the floral part of a plant that develop into

(i) Fruit (ii) Seeds.

Ans. (i) Fruit: Ovary (ii) Seed: Ovule

37. What is carpel?

Ans. It is the female reproductive organ of the plant.

38. Name the part of female reproductive system where the egg is fertilized.

Ans. Egg get fertilized in the oviduct .

39. Write the role of testes in male reproductive system.

Ans. Formation of sperms and to secrete hormone called testosterone.

40. Name the organs producing sperms and ova respectively in humans.

Ans. Testes produce sperms and ovary produces ova.

41. Name the hormone responsible for secondary sexual characters in

(i) Girls (ii) Boys.

Ans. (i) Girls: Estrogen and progesterone

(ii) Boys: Testosterone

42. What is Gestation period?

Ans. The time period from the development of the foetus till birth is called gestation period.

43. What are the male and female gonads in human beings?

Ans. Male gonads are testis and female gonads are ovaries in human beings.

44. Define zygote.

Ans. The cell which is formed by the fusion of a male gamete and a female gamete is called zygote, i.e., it is a 'fertilised ovum' or fertilised egg'.

45. What is puberty?

Ans. It is the age at which the sex hormones or gametes begin to be produced and the boy or girl becomes sexually mature.

46. What is adolescence?

Ans. Stage between childhood and adulthood.

47. Name the liquid which contains sperms.

Ans. Semen.

48. Define implantation with respect to human reproductive system.

Ans. It is the close attachment of embryo to the uterine wall.

49. Name the parts of the human female reproductive system where implantation of the fertilised egg occurs.

Ans. Implantation of fertilized egg takes place in the uterus.

50. Which one of the STDs damages the immune system of human body?

Ans. AIDs damages the immune system of human body.

51. Name the contraceptive device which protects a person from acquiring transmitted diseases.

Ans. Condom

52. Name the causative organisms for the following diseases:

(a) AIDS	**(b) Warts**	**(c) Gonorrhoea**	**(d) Syphilis**
Ans. (a) Virus	(b) virus	(c) bacteria	(d) bacteria

52.Name the organs producing sperms and ova respectively in humans.

Ans. Testis: Sperms, Ovary: Ova.

53. List two functions of ovary of human female reproductive system.

Ans. Two functions of ovary:

(i) To produce female gamete / Ovum.

(ii) To secrete female hormones / oestrogen and progesterone.

Short Answer Type Questions - I

(2 marks each)

1. Rajesh observed a patch of greenish black powdery mass on a stale piece of bread.

(a) Name the organism responsible for this and its specific mode of asexual reproduction.

(b) Name its vegetative and reproductive parts.

Ans. (a) The greenish black powdery mass on a stale piece of bread is due to bread mould Rhizopus which reproduces by spore formation.

(b) Hyphae or thread like structures are the vegetative part and tiny blob like structures or sporangia are the reproductive parts.

2. **How is the process of binary fission different in Amoeba and Leishmania?**

Ans. Amoeba reproduces through simple binary fission. Leishmania reproduces asexually through binary fission that occurs along a definite orientation related to the whip like structure at one end of the cell.

3. In a flowering plant, summarise the events that take place after fertilisation.

Ans. Fertilisation results in formation of zygote.

Zygote divides several times to form an embryo. The ovule develops a thick coat and changes into seed. The ovary grows rapidly and ripens to form the fruit.

4. (a) What is the fate of the ovules and the ovary in flower after fertilisation ?

(b) How is the process of pollination different from fertilisation?

Ans. (a) After fertilisation, ovules become seeds and ovary forms the fruit.

(b) Pollination is the transfer of pollen grains from anther to the stigma of a flower.

Fertilisation is the fusion of male and female gametes.

5. Explain why pollination may occur without fertilization but fertilization will not take place without pollination.

Ans. Pollination is landing of pollen grain on suitable stigma. It may not always result in fertilization. However, fertilization requires both male and female gametes. If pollination does not occur, male gamete is not formed. Hence, fertilization cannot take place.

6. Define reproduction. How does it help of producing stability to the population of species?

Ans. Reproduction. It is the process of producing new individuals of the same species by existing organisms of a species, i.e. parents.

Reproduction help in providing stability to the population of species because reproduction is a process by which organisms increase their population. The rate of birth and death in a given population determine its size.

7. Reproduction is one of the most important characteristics of living beings. Give three reasons in support of the statement.

Ans. (a) Reproduction is necessary to maintain the continuity of species.

(b) Reproduction is linked to the stability of populations of species, which occupy well-defined places called niches in the ecosystems.

(c) The variation created during reproduction are responsible for survival of a species in case of an adverse change in the environment and evolution.

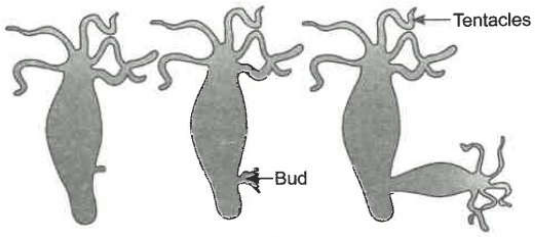
8. What are chromosomes? Explain how in sexually reproducing organisms the number of chromosomes in the progeny is maintained.

Ans. 'Chromosome' are long thread-like structures which contain hereditary information of the individual and are thereby carries of genes. Chromosome are located in the nucleus of a cell. The parents are diploid (2n) as each of them has two sets of chromosomes. They form haploid (1 n) male and female gametes through the process of meiosis. The haploid gametes have one set of the chromosomes. These two gametes fuse during fertilisation and the offspring become diploid (2 n) which is same as parents chromosome number.

9. What is asexual reproduction? Write the process of budding in Hydra.

Ans. Reproduction in Hydra:

- Hydra reproduces by budding using the regenerative cells.
- A bud develops as an outgrowth in Hydra due to repeated cell division at one specific site.
- When fully mature, the bud detaches itself from the parent body and develops into new independent individual.



Budding in Hydra

10. What happens when

(a) Planaria gets cut into two pieces?

(b) A mature spirogyra filament attains considerable length

(c)On maturation sporangia burst?

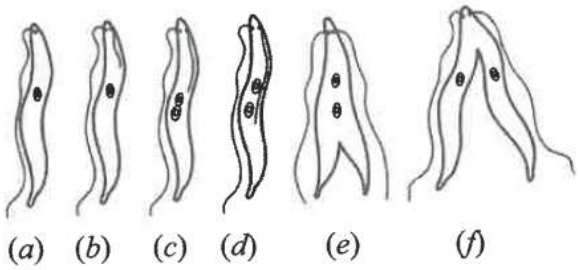
Ans. (a) When planaria gets cut into two pieces, each piece grows into a complete organisms.

(b) A mature spirogyra on attaining considerable length breaks up into two or more small pieces. Each piece then grows into a new individual.

(c) When sporangia burst, spores are released, each one of which develop into new individual.

11. (a) Draw the various stages of binary fission of leishmania.

(b) What are the changes seen in boys at the time of puberty?



Binary fission in *leishmania*

(b) At the time of puberty, the changes which are seen in boys are given below:

Thick hairs grow under armpits and pubic regions. Hairs also grown on other parts of body like chest and face.

Voice started to crack (or deepens).

Penis begins to enlarge and testes start to make sperms.

12. (a) Name the two types of germ – cells present in human beings. How do they structurally differ from each other? Give two differences.

(b) Why are testes located outside the abdominal cavity of the body?

Ans. (a) The two types of germ cells present in human beings are sperm and ova. The sperm of human have either X or Y chromosome. The ova always carry X chromosome. The sperm is structurally long with a tail. Whereas the ova is round in structure.

(b) Testes are located outside the abdominal cavity because sperm formation requires a lower temperature in comparison to normal body temperature. Testes being outside the abnormal cavity, gets an optimal temperature for the production of sperms.

13. (a) Describe why variations are observed in the offspring formed by sexual reproduction.

(b) List two preparations shown every month by the uterus in anticipation of pregnancy in human.

Ans. (a) Variations are observed in the offspring formed by sexual reproduction. During sexual reproduction, two types of gametes fuse. Even though the gametes contain the same number of chromosome, their DNA is not identical. This cause variation among offsprings.

(b) The uterus prepares itself every month to receive and nature the growing embryo. The lining thickens and is richly supplied with blood to nourish the growing embryo.

14. (a) List the parts of human male reproductive system which contribute fluid to the semen. State two advantages semen offers to the sperms.

(b) Describe the role of fallopian tubes in the female reproductive system.

Ans. (a) Prostate gland and seminal vesicles add fluid in the vas deferens. Semen makes transportation of sperms easier and also provides nutrition to the sperms.

(b) Fallopian tubes:

(i) They carry eggs from ovaries to uterus.

(ii) They allow sperm to travel to meet the egg.

15. What is regeneration? Give one example of an organism that shows this process and one organism that does not. Why does regeneration not occur in the latter?

Ans. Regeneration is defined as the ability of any small part of the body to give rise to a new individual e.g.

(a) Hydra and planaria shows regeneration.

(b) Amphibians and human beings do not show regeneration.

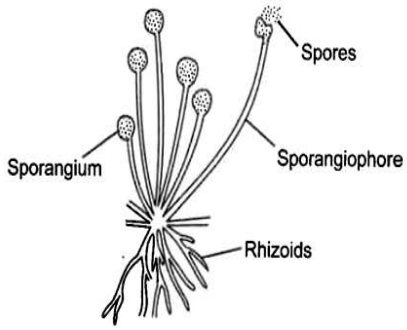
- Regeneration is carried out by certain specialised cells, which can proliferate to make a large number of cells and different cells undergo development to become various cell types and tissues.
- Such regenerative cells are not found in amphibians and humans.

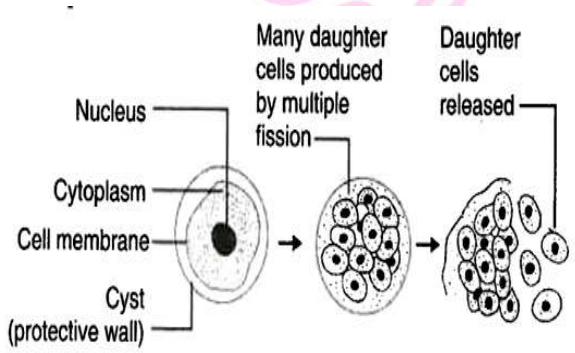
16. Illustrate the following with the help of suitable diagrams:

(i) Spore formation in Rhizopus.

(ii) Multiple fission in Plasmodium

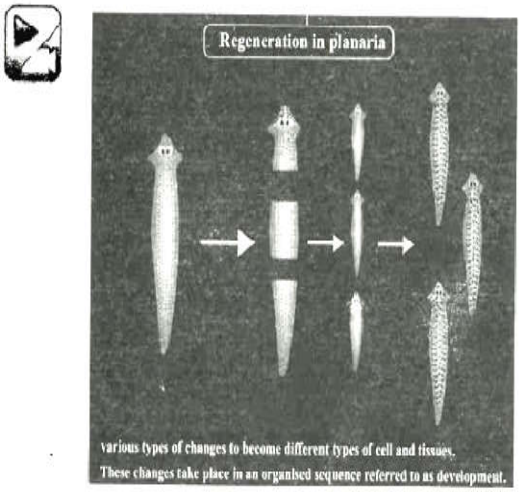
Ans. (i) Spore formation in Rhizopus. (ii) Multiple fission in Plasmodium

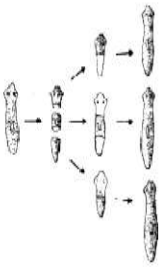




17. Explain the process of regeneration in planaria. How is this process different from reproduction?

Ans. If a planaria is cut into any number of pieces, each piece will grow into a complete organisms. Regeneration is carried out by specialised cells which proliferate and make large number of cells and then tissues.





In regeneration, the organism need to be cut into pieces to get more organisms. In reproduction the organism need not to be multiply.

18. (a) Name the following:

(i) Thread like non-reproductive structures present in Rhizopus.

(ii) 'Blobs' that develop at the tips of the non-reproductive threads in Rhizopus.

(b) Explain how these structures protect themselves and what is the function of the structures released from the 'blobs' in Rhizopus.

Ans. (a) (i) Hyphae (ii) Sporangium

(b) Spores are enclosed within sporangia which protects the spores.

Spores when released from sporangia develops into new Rhizopus.

19. Explain giving one example of each, the unisexual and the bisexual flower. When is it used? Name three methods of vegetative propagation.

Ans. Unisexual flowers contain either stamens or carpels but not both.

Example : Strawberry, Papaya, Palm

Bisexual flowers contain both stamens and carpels.

Example: Hibiscus, Mustard.

The method of developing new plants from the vegetative parts of a plant, such as root, stem or leaf is called vegetative propagation.

Vegetative propagation can be classified into natural and artificial methods.

The method of vegetative propagation is used when some plants like banana, orange, rose and jasmine have lost the capacity to produce seeds.

The three methods of vegetative propagation are cutting, layering and grafting.

20. What is vegetative propagation? State two advantages and two disadvantages of this method.

Ans. Vegetative propagation refers to the development of new plants from vegetative parts (root, stem or leaves) of an existing plant.

Advantages of vegetative propagation.

(i) Vegetative propagation is a cheaper, easier and more rapid method of propagation in plants than growing plants from their seeds.

(ii) Better quality of the plants can be maintained by this method.

(iii) It result in propagation of those plants which do not produce viable seeds or produce seeds with prolonged period of dormancy.

(i) The plants generated from vegetative means require less time to grow and have the advantage of being more uniform and genetically similar to the parent stock.

Disadvantages:

(a) No genetic variation is created.

(b) Continued vegetative propagation can lead to loss of vigour.

21. Differentiate between the following:

(a) Bud of Hydra and bud of bryophyllum

(b) Fragmentation and regeneration

(c)Fertilization and germination

Ans. (a)

Bud of Hydra	Bud of Bryophyllum
Hydra has special regenerative cell that gives rise to small bud on its body surface that later develops into a new individual after detachment.	Bud reproduces through vegetative propagation. Buds produced in the notches along the leaf margin of bryophyllum fall on the soil and develop into new plant.

(b)

Fragmentation	Regeneration
It is a mode of sexual reproduction in which body of a simple multicellular organism breaks up into two pieces on maturing, each of which subsequently grow to from a complete new organism.	It is a mode of asexual reproduction in which some organisms can grow small cut parts of their body to form a whole new organisms in all respects

(c)

Fertilization	Germination
It is defined as the fusion of a male gamete (sperm) with a female gamete (an ovum or egg) to form a zygote during sexual reproduction	It is the initial stages in the growth of a seed to develop into a seeding under appropriate conditions

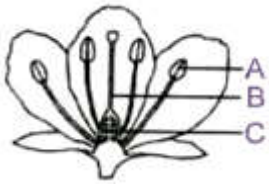
22. Name the two reproductive parts of a bisexual flower which contain the germ cells. State the location and function of its female reproductive part.

Ans. The two parts of a bisexual flower are stamen and carpel. Stamen is the female reproductive part of the plant. They are the little stalks with swollen tops just inside the rings of petals in a flower.

It is made up of two parts, i.e. a filament and an anther. Filament is the stalk of stamen and it bear anther and consists mainly of conducting tissue. Anther are sac-like structures which produce male gamets known as pollen.

The carpel is the female reproductive organ located at the centre of a flower. It consists of ovary, style and stigma. The ovary is the swollen part in the centre of the carpel is the style. The elongated part in the centre of the carpel in the style. The stigma is stickly so that it can trap pollen grains easily. Pollen tube that grows from the pollen grain to the ovary aids fertilisation.

23. Name the three parts A, B and C of the flower shown in the following diagram and state one function of each.



Ans. A = Anther of stamen.

Function: Anther contains two pollen sacs within which numerous pollen grains are produced.

B = Carpel

Function: It is the female reproductive organ of a flower which receives pollen grains that moves through the style and causes fertilisation in the ovaries.

C = Ovule.

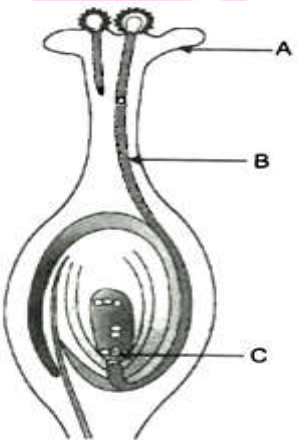
Function : Ovule contains female gamete, egg.

24. What is meant by pollination? Name and differentiate between the two modes of pollination in flowering plants.

Ans. Pollination is the transfer of pollen grains from the anther of a stamen to the stigma of a carpel. The two modes of pollination are self pollination and cross pollination.

Self - Pollination	**Cross-pollination**
(i) Self-pollination occurs within a flower or between two flowers of the same plant.	(i) Cross-pollination occurs between two flowers borne on different plants of the same species.
(ii) Flowers do not depends on other agencies for pollination	(ii) Agents such as insects, water and wind are required for pollination.
(iii) pollen grains are produced in small numbers	(iii) pollen grains are produced in large numbers

25. Identify A, B and C in the given diagram and write one function of each.



Ans.

A = stigma

B = Pollen tube

C = Female germ cell

Function of stigma. Stigma helps in receiving the pollen grains from the anther of stamen during pollination.

Function of pollen tube: The pollen tube facilitates movement of male germ cell through it to reach female germ cell.

Function of female germ cell: It meets with the male germ cell to form zygote which divides many times to form an embryo.

26. State the basic requirement for sexual reproduction? Write the importance of such reproduction? Write the importance of such reproductions nature.

Ans. Sexual reproduction requires male and female individuals of the species.

New genetic variations are created, where each variation would be novel, as sexual reproduction combines DNA (genetic material with accumulated variations) from two different individuals. Such genetic variations are useful in ensuring survival of species.

27. List six specific characteristics of sexual reproduction.

Ans. Specific characteristics of sexual mode of reproduction.

(i) Sexual reproduction promotes diversity of characters in the offsprings.

(ii) It results in new combinations of genes brought together in the gametes and this reshuffling increases genetic variation.

(iii) It plays a prominent role in the origin of new species.

(iv) The sexual mode of reproduction incorporates process of combining DNA from two different individuals during reproduction.

(v) It need two parents to produce an offspring.

(vi) Sex cells are used in sexual reproduction.

28. Name the male and female gametes in animals. What is fertilization and where does it take place in human females?

Ans. The male and female gametes in animals are sperm and ovum respectively.

Fertilization is defined as the fusion of a male gamete (sperm) with a female gamete (an ovum or egg) to form a zygote during sexual reproduction.

Fertilization takes place in the fallopian tube of a human female.

29. State the changes that take place in the uterus when:

(a) Implantation of embryo has occurred.

(b) Female gamete/egg is not fertilised.

Ans. (a) After implantation, the cell divisions continue to occur.

A placenta develops and the embryo gets nutrition from the mother's blood through placenta.

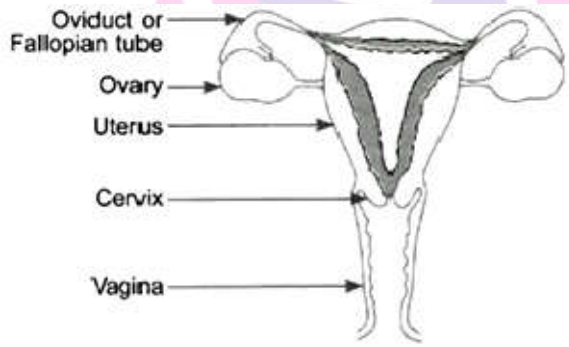
The complete development of the foetus occurs in about nine months.

(b) When the female gamete is not fertilised, the thickened and spongy lining of the uterus is not required any more.

Hence, the lining along with its blood vessels, breaks and comes out through the vagina as blood and mucus, in the process, called menstruation.

30. Draw a well labelled diagram of human female reproductive system. Explain the menstrual cycle of female.

Ans.



The uterus prepares itself every month to receive and nurture the fertilized egg. The lining of the uterus thickens and is richly supplied with blood to nourish the embryo. If the egg is not fertilized, the thick and nourishing lining of the uterus breaks and comes out through vagina as blood and mucous which is called menstruation. The cycle of events taking place in the ovaries and uterus every twenty eight days and marked by menstrual flow is called menstrual cycle.

31. In human females, what happens when

(a) egg is fertilised

(b) egg is not fertilised?

Ans. The lining of uterus becomes thick and spongy before release of an egg.

(a) If the egg is fertilized, it moves upto uterus and gets implanted on uterus. The uterine wall thickens and richly supplied with blood. The region between embryo and uterine wall grows into placenta which provides nourishment and oxygen to the embryo. The child is borne s a result of rhythmic contraction of the uterine muscle.

(b) If the egg is not fertilized, the thick and nourishing lining of the uterus breaks and comes out through vagina as blood and mucous which is called menstruation.

32. What are sexually transmitted diseases. List two example of each diseases caused due to (i) bacterial infection and (ii) viral inflection. Which device or device may be used to prevent the spread of such diseases.

Ans. STDs are diseases which spread by sexual contact from an infected person to a healthy person.

(i) Gonorrhoea and syphilis are STDs caused by bacterial inflection.

(ii) AIDS and genital Warts are STDs caused by viral infection.

Spread of STDs can be prevented by -

(a) Avoiding sexual contact with infected persons.

(b) Using condom for penis during sexual act.

33. What is AIDs? Which microbe is responsible for AIDS infection? State one mode of transmission of this diseases. Explain in brief one measure for the prevention of AIDS.

Ans. AIDS is the Acquired Immune Deficiency Syndrome. It is caused by a virus called Human Immunodeficiency Virus.

AIDS is transmitted by sexual contact with an infected person.

AIDS can be prevented by avoiding sexual contact with an infected person or by condom during sex.

34. What does HIV stand for? Is AIDS an infectious diseases? List any four modes of spreading AIDS.

Ans. HIV Stand for Human Immunodeficiency Virus. Yes, AIDS is an infections disease.

Four modes of spreading AIDS are as follows:

(i) By having sexual contact with an infected person.

(ii) By the transfusion of blood from an infected person.

(iii) Through infected needles used for injection.

(iv) Through the placenta from the mother to child during pregnancy.

35. Expand AIDS. List any four methods of prevention (control) of AIDS.

Ans. AIDS stands for Acquired Immune Deficiency syndrome.

Four methods of prevention or control of AIDS are as follows.

(i) Using condom using sex.

(ii) Avoiding sharing of needles or use of disposable needles.

(iii) Testing blood for AIDS before transfusion.

(iv) Avoiding sexual contract with unknown person.

36. List four categories of contraceptive methods. State in brief two advantages of adopting such preventive methods.

Ans. Four methods of contraception used by humans are:

(a) Mechanical barrier such as condom

(b) Surgical method such as vasectomy or tubectomy.

(c) Chemical method such as oral or vaginal pill.

(d) Copper – T

Advantages of using contraceptives.

(a) It helps in avoiding unwanted pregnancy.

(b) Condom helps in preventing transmission of STDs.

37. List three points of significance of reproductive health in a society.

Ans. (i) The mother carrying a child should be physically matured.

(ii) The mother should be mentally fit to take care of the child.

(iii) There should be at least 3 years gap between 2 children.

(iv) Nutritious food should be available to the mother during pregnancy and lactation period.

38. List three techniques that have been developed to prevent pregnancy. Which one of these techniques is not meant for males? How does the use of these techniques have a direct impact on the health and prosperity of family?

Ans. The techniques to prevent pregnancy include:

(i) Creation of mechanical barriers.

(ii) Changing the hormonal balance of the body.

(iii) Use of intra- uterine contraceptive devices.

(iv) Surgical methods.

Use of infra-uterine device is not meant for males.

Impact of use of contraceptives:

(i) Use of mechanical barrier like condoms can prevent the spread of sexually-transmitted diseases.

(ii) Pregnancy will make major demands on the body and mind of the woman and if she is not ready for it, her health will be adversely affected; such a condition can be avoided.

(iii) By having a small family, the standard of living can be improved.

39. List three distinguishing features between sexual and asexual types of reproduction, in tabular form.

Ans. Distinguishing features between sexual and asexual reproduction:

Sexual reproduction	**Asexual reproduction**
(i) Sexual reproduction uses two individuals	(i) Asexual reproduction need only one individual
(ii) Hereditary characters vary from one generation to next generation.	(ii) Hereditary characters remain same.
(iii) It play a prominent role in the origin of a new species.	(iii) Its role in the origin of new species is minimum.

40. list any four method of contraception used by humans. How does their use have a direct effect on the health and prosperity of a family.

Ans. Four methods of contraception used by humans are

(i) Mechanical barrier such as condom

(ii) Surgical method such as vasectomy for male and tubectomy for female.

(iii) Chemical method such as oral vaginal pills.

41. (i) Which are the two main types of reproduction in living organisms?

(ii) Classify the following under these two types:

Amoeba, Frog, Earthworm, Yeast

Ans. (i) The two main types of reproduction in living organisms are – Asexual reproduction and sexual reproduction.

(ii) Asexual reproduction : Amoeba, yeast

Sexual reproduction: Frog, earthworm

42. Write one difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival- the one reproducing asexually or the one reproducing sexually? Give reason to justify your answer.

Ans. Differences between asexual and sexual mode of reproduction.

Asexual reproduction	Sexual reproduction
(ii) A single parent is involved. (iii) There is no formation or fusion of gametes. (iv) No genetic variation is created in the progeny.	(i) Two parents (a male and a female) are involved. (ii) There if formation and fusion of gametes. (iii) There is genetic variation in the progeny. (any one)

- The species reproducing sexually will have better chances of survival because genetic variation is created during sexual reproduction; in case of an adverse environment change, atleast some variant will survive and continue the race.

43. Describe 'double fertilisation' in plants.

Ans. During fertilisation in plants, the following events take place:

(i) One of the male gametes fuses with the female gamete present in the embryo sac.

(ii) The other male gametes fuses with the two polar nuclei in the embryo sac.

The first fusion product gives rise to the zygote while the second one forms the endosperm. The process of fusion occurring twice in the embryo sac is called double fertilisation.

Short Answer Type Questions-I

1. **(a) Trace the path a male gamete takes to fertilise a female gamete after being released from the penis.**

   (a) State the number of set of chromosomes present in a zygote.

   Ans. (a) Male gamete (sperm) travels in the female reproductive tract after being released. The path which it takes to fertilise the female gamete(egg) is vagina, uterus, fallopian tube resulting in a zygote; Alternatively accept the labelled figure of human female reproductive system indicating the passage of sperm from vagina to uterus and then to fallopian tube for fertilization resulting in zygote.

   (b) Zygote has 2 sets of chromosomes alternatively accept 2n.

2. **What is the main difference between sperms and eggs of humans? Write the importance of this difference.**

   Ans. Sperms contain two types of sex chromosomes i.e., X-chromosomes and Y-chromosomes. Egg contains one type of sex chromosomes only i.e., X-Chromosomes fuses with egg,

   This chromosomal difference helps in determination of sex. If sperm carrying Y-Chromosome fuses with egg, the resultant zygote will develop in male. If sperm with X chromosome fuses with egg, the zygote will develop into a male. If sperm with X chromosome fuses with egg, the zygote will develop into a female child .

3. **List any two contraceptive methods practised only tube in the human female reproductive system.**

   Ans (i) Oral pills : Change hormonal balance so eggs are not released.

   (ii) Loop / Copper – T : Placed in the uterus. Prevent pregnancy by checking the entry of sperms through the vagina.

Short Answer type Questions - II

(3marks each)

1. **(a) List in tabular form two differences between binary fission and multiple fission.**

   (b) What happens when a mature spirogyra filament attains considerable length?

(a) Binary fission	Multiple fission
The parents body divides into	Parent body show several nuclear

Ans.

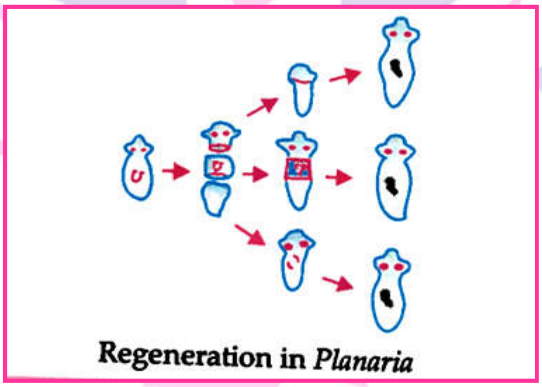
two identical daughter	division producing daughter cells.
Occurs only in favourable conditions	Occurs in favourable / unfavourable conditions. (or any other)

(b) A mature spirogyra breaks into smaller pieces and each fragment develops into a new organism

2. (a) Budding, fragmentation and regeneration, all are considered as asexual mode of reproduction. Why?

(b) With the help of neat diagram, explain the process or regeneration in planaria.

Ans. (a) Because these methods involve only one parents / organisms are formed as a result of mitotic division / progeny (Organisms) are similar in their genetic make up and no variations.



Regeneration in *Planaria*

(b) Planaria can be cut into any number of pieces and each piece grows through specialised cells into a complete organism.

3. Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival-that one reproducing asexually or the one reproducing sexually? Justify your answer.

Ans. Any one of the following difference.

(i) In sexual reproduction, two opposite sexes are involved whereas in asexual reproduction, only one individual is involved.

(ii) In sexual reproduction, male and female gamete formation takes place whereas in asexual reproduction no gamete formation occurs.

Sexually reproducing organisms have better chance of survival.

Because more variations are generated.

4. What is vegetative propagation ? state two advantages and two disadvantages of this method.

Ans. Vegetative propagation is a mode of asexual reproduction in which new plants are formed from roots, stems, leaves and buds of the individual vegetative parts of the plants. e.g., eyes of potato.

Advantages:

(i) Offsprings are genetically identical and therefore useful traits can be preserved.

(ii) It is a rapid and economical method.

Disadvantages:

(i) New characters cannot be introduced.

(ii)The disease of the parent plant gets transferred to the offsprings.

5. What is regeneration ? Give one example of an organism that shows this process and one organism that does not. Why does regeneration not occur in the latter?

Ans. Regeneration : Ability of organisms to give rise to new individual organisms from their body parts.

Planaria shows regeneration while Hydra does not show regeneration

Regeneration is carried out by specialised cells. Which are not present in non regenerating organisms.

6. What happened when:

(a) Accidently , planaria gets cut into many pieces?

(b) Bryophyllum leaf falls on the wet soil?

(C) On maturation , sporangia of Rhizopus bursts?

Ans. (a) Each piece regenerates into new planaria.

(b) Buds called leaf buds at its notches develop into new plants.

(c) It releases spores which germinate into new mycelium in moist conditions.

Detailed Answer:

(a) When planaria gets cut into many pieces, each piece regenerates into a new planarian organism.

(b) When Bryphyllum leaf falls on the wet soil, the buds that are present along the margin of the leaf will develop into new plants by the process known as vegetative propagation.

(c) When the sporangia of Rhizopus burst upon maturation, it releases spores which germinates into new mycelium in moist conditions.

7. How do organisms, whether reproduced asexually or sexually maintain a constant chromosome number through several generations? Explain with help of suitable example

Ans. (i) When organism reproduce asexually, only mitotic divisions are involved and the chromosome number remains the same.

(ii) During asexual reproduction, the DNA (in the chromosomes) or the cells involved are copied and then equally divided among the two daughter cells. Thus, chromosome number remains unchanged.

(iii) In sexual reproduction , organisms produce gametes through a special type of division called meiosis reduction division, in which the original number of chromosomes is reduced to half.

These two male & female gametes fuse to from the zygote and the original number of chromosomes is restored.

(iv) In sexual reproduction, specialized cells/ germ cells with only half the number of chromosomes are formed. When these germ cells from two individuals combine to form a new individual, the original chromosome number is restored.

(v) Example: In humans , the parents (father and mother) each have 46 or 23 pairs of chromosomes in the gametes. The sperm has half the number of chromosomes i.e., 23 and the egg also has 23 chromosomes. When the sperm and the egg fuse, the zygote has 46 or 23 pairs of chromosomes. Thus, the chromosome number remains constant.

8. Define the term pollination. Differentiate between self pollination and cross pollination. What is the significance of pollination?

Ans. Pollination is the transfer of pollen from anther to stigma.

Self Pollination	Cross Pollination
Transfer of pollen in the same flower.	Transfer of pollen from one flower to another.

Pollination leads to fertilisation resulting in the formation of zygote.

Detailed Answer:

The transfer of pollen grains from the anther to the stigma of flower is known as pollination.

The two types of pollination are:

(a) Self Pollination : When the pollen grains from the stamens of a flower fall on the stigma of the same flower, then it is called self pollination.

(b) Cross pollination : When pollen grains from the stamens of a flower fall on the stigma of another flower, it is called cross pollination.

Significance of pollination:

(i) It is a significant event because it precedes fertilisation.

(ii) It bring the male and female gametes closer for the process of fertilisation.

(iii) Cross-pollination introduces variations in plants because of the mixing of different genes. These variations further increase the adaptability of plants toward the environment or surrounding.

9. Distinguish between pollination and fertilisation. Mention the site and the product of fertilisation in a flower.

Ans. Pollination : Transfer of pollen grains from stamen/anther to stigma.

Fertilization : Fusion of male & female gametes for germ cells

Site of fertilisation: Ovary / Ovule.

Product : Zygote.

10. What is carpel ? Write the function of its various parts.

Ans. Female reproductive part of the plant.

(i) Stigma : Receive pollen grains

(ii) Style : Passage for the growth of pollen tube

(iii) Ovary : Site for fertilisation

Detailed Answer:

Carpel is the female reproductive part that produces egg cells.

Main parts of carpel are:

(i) Stigma being sticky in nature receives pollen grains during pollination.

(ii) Style connects the stigma and ovary thus helping with the transfer of pollen through style to the ovary.

(iii) Ovary is the reproductive organ of carpel which produces the female gamete ovule.

11. What is sexual reproduction ? List its four significance.

Ans. Two major processes namely formation of gametes and fusion of gametes constitute sexual reproduction.

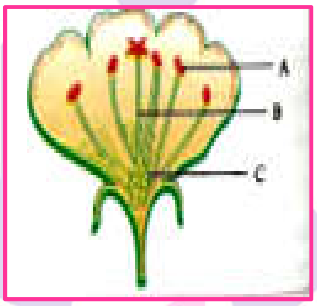
Significance-(i) Incorporate the process of combining DNA from two different individual during reproduction.

(i) Increase genetic variation.

(ii) Promotes diversity in the offsprings.

(iii) Plays a role in the origin of new species.

12. Name the parts A,B and C shown in the following diagram and state one function of each.



Ans. A. Anther: It produces pollen grains.

B. Style : It provides the path through which the pollen tube grows and reaches the ovary.

C. Ovary : It contains ovules and each ovule has an egg cell/female gamete. It develops into fruits after fertilisation.

13. In a germinating seed, which parts are known as future shoot and future root ? Mention the function of cotyledon.

Ans. Future shoot – Plumule

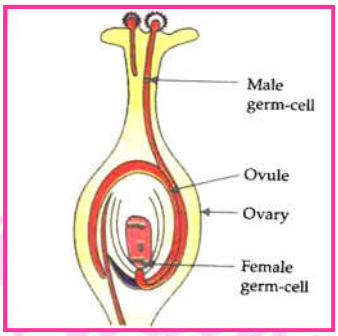
Future root – Radicle

Future of cotyledon – It stores food for the future plant or embryo.

14. Draw a diagram of the longitudinal section of a flower exhibiting germination of pollen on stigma and label.

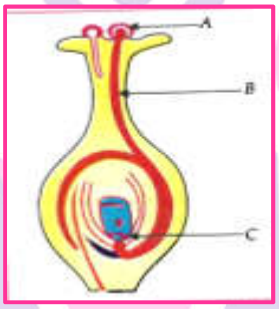
(i) Ovary, (ii) Male germ-cell,(iii) Female-germ cell and (iv) ovule on it.

Ans.



Four correct labelling viz., ovary, male germ cell, female germ cells and ovule.

15. Name the parts A, B and C shown in the diagram and write their functions.



Ans. Part A is stigma.

Function : It is the terminal part of carpel, which may be sticky and helps in receiving the pollen grains from the anther of stamen during pollination.

Part B is pollen tube.

Function : The pollen tube grows out of the pollen grain through the style to reach the ovary . It carries male gametes into the embryo sac in ovule.

Part C is Female Germ Cell.

Function : It is a female gamete which fuses with male gamete to form a diploid cell known as zygote.

16. state the basic requirement for sexual reproduction ? Write the importance of such reproduction in nature.

Ans. Formation of male and female gametes, fusion of gametes/syngamy

Importance : Combination of DNA from two different individuals lead to increase in genetic variation in the organism.

This leads to diversity in the population which helps in natural selection.

Detailed Answer:

Basic requirements in sexual reproduction are:

(i) Formation of gametes through meiosis.

(ii) Transfer of male gametes into the female body.

(iii) Fusion of male and female gametes. (fertilisation).

(iv) Formation of offspring from a single celled zygote post fertilisation changes.

The basic requirement for sexual reproduction to take place are involvement of two parents and fusion of haploid gametes.

Importance of sexual reproduction:

Fusion of gametes results in genetic variations in the offspring. This promotes diversity of characters in offspring. These genetic variations, thus, lead to evolution of species as well as allow the organisms to become better adapted in the changing environment.

17. Mention the total number of chromosomes along with the sex chromosomes that are present in a human female and a human male. Explain how in sexually producing organisms the number of chromosomes in the progeny remains the same as that of the parents.

Ans. Total number of chromosomes is 46. In human male, two sex chromosomes i.e., X and Y are present, while in human female, both sex chromosomes are X.

During sexual reproduction, a female gamete or egg cell fuses with a male gamete or sperm cell which are haploid to form zygote. Zygote is diploid. (2n) which contains 46 chromosomes, 23 chromosomes from mother and 23 from father. In this way , an equal genetic contribution of male and female parents is ensured in the progeny.

18. Write the functions of the following parts of human female reproductive system:

(i) Ovary, (ii) Fallopian tube (iii) Uterus.

Ans. (i) Ovary: Produces egg or female gamete, female sex hormone/ oestrogen.

(ii) Fallopian tube : Transfer of ovum to the uterus, site for fertilisation

(iii)Uterus: Site of implantation of zygote, development of embryo.

19. State briefly the changes that take place in a fertilised egg till birth of the child in the human female reproductive system. What happens to the egg when it is not fertilized?

Ans. Changes in fertilised egg:

(a) Zygote/fertilised egg starts dividing .

(b) Implantation of zygote in the inner uterine wall.

(c) Embryo starts growing with the help of the placenta which results in the development of the child.

(d) Birth of a child as a result of rhythmic contraction of the muscles in the uterus.

When egg is not fertilised, the inner lining of the uterus slowly breaks and comes out through the vagina as blood and mucous (Menstruation)

20. List three techniques that have been developed to prevent pregnancy. Which one of these techniques is not meant for males? How does the use of these techniques have a direct impact on the health and prosperity of a family?

Ans. (a) Three techniques that have been developed to prevent pregnancy are:

(i) Barrier method : Physical methods such as condom, diaphragm and cervical caps are used to prevent entry of sperms in females.

(ii) Chemical methods: Drugs such as oral pills and vaginal pills are used by females.

(iii) Surgical methods such as vasectomy in males and tubectomy in females.

(b) Chemical methods are not meant for males.

(c) (i) The use of these techniques helps in controlling population explosion thus providing better living conditions.

(ii) It helps in keeping proper gap between siblings thus gives better health to mother as well as children.

21. **Name the two types of mammalian gametes. How are these different from each other? Name the type of reproduction they are involved in. Write the advantages of this type of reproduction.**

Ans. Male gamete : sperm

Female gamete : Ovum/ egg sperms are motile and produced by male individual, ova. eggs are non-motile and produced by female individual.

Type of reproduction is sexual reproduction

Advantage: Generates more variations.

22. (a) Mention the role of the following organs of human male reproductive system:

(i) Testis ; (ii) Scrotum; (iii) Vas deferens;

(iv)Prostate glands.

(b) What are the two roles of testosterone?

Ans. (a) (i) Testis: To produce male gametes / sperm or male hormone / testosterone.

(ii) Scrotum: To provide optimal temperature to testis for the formation of sperms.

(iii) Vas deferens : To deliver the sperms to the urinary bladder.

(iv) Prostrate glands: To secrete the fluid which provides nutrition and medium for transport of sperms.

(b)(i)Regulates formation of sperms , (ii) Brings about that changes in boys during adolescence.

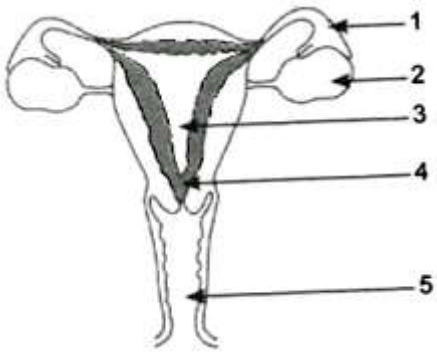
23. In a bisexual flower inspite of the young stamens bring removed artificially, the flower produces fruit. Provide a suitable explanation for the above situation.

Ans. Removal of stamens of a bisexual flower will not affect pollination as its pistil is inact. Therefore, formation of fruit will take place as transfer of pollen grains from the anther of flower to the stigma of flower will take place which causes cross-pollination

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

Ans. Yes, because cell division in a unicellular organism results in the formation of two daughter cells, which means it produces more individuals of the organisms.

25. (a) Identify the given diagram. Name the parts 1 to 5.



(b) What is contraception? List three advantages of adopting contraceptive measures.

Ans. (a) 1. Oviduct 2. Ovary 3. Uterus 4. Cervix 5. Vagina

(b) The prevention of pregnancy in women is called contraception.

(i) It helps in maintaining health of women as frequent pregnancies have adverse effect on the health of the mother.

(ii)It helps in preventing sexually transmitted diseases such as AIDS, syphilis gonorrhoea, etc

(iii) Is help in birth control. If a family is small then each child will get proper resources like attention, education, food, clothes, etc.

For example, amoeba is a simple unicellular organism that splits into two daughter cells.

26. What is a clone? Why do offsprings formed by sexual reproduction exhibit remarkable similarity?

Ans. Clone is the exact genetic replica of another individual. All the offsprings formed from a parent through asexual method of reproduction are same. The remarkable similarity of asexually produced daughter individuals is due to genetic similarly as they possess exact copies of DNA their parent.

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

Ans. Energy is essential for any activity in living organisms. Sugar provides this energy for sustaining all life activities in yeasts. In water, it fails to reproduce because of inadequate energy in its cells. So, colonies of yeast fail to multiply in water but multiply in sugar solution.

28. Why does bread mould grow profusely on a moist slice of bread rather than on a day slice of bread?

Ans. Bread mould required moisture and nutrients for its growth. A moisture and nutrients, hence it grows profusely as compared to a dry slice of bread which contains only nutrients but no moisture.

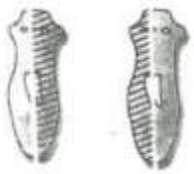
29. Give two reasons for the appearance of variations among the progeny formed sexual reproduction.

Ans. (i) In sexual reproduction, two parents have different sets of characters.

(ii) Gene combinations are different in gametes.

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

Ans. Yes, A planaria cut vertically into two halves regenerate into two individuals. The shaded parts in figure D and E represent the regenerated halves.



D E

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

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

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

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

Ans. (a) No, there is no correlation between chromosome number and size of the individual.

(b) No, chromosome number does not affect reproduction. Reproduction depends on environment factors like nutrients availability, water source, etc.

(c) Yes, since major component of chromosome is DNA, if there are more chromosomes in a cell means more DNA.

32. 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?

Ans. The number of chromosomes in the female gamete is 24. The number of chromosomes in the zygote is 48.

33. Why can fertilisation take place in flowers if pollination does not occur?

Ans. Pollination is essential for brining the male gametes to meet the female gamete. Only after the arrival of pollen grains on stigma and entry of pollen tube into ovary, male gamete fuse with female gamete. In absence of pollination, there will be no male gamete to bring about fertilisation.

34. 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?

Ans. Yes the chromosome number of zygote,, embryonal cells and adult of a particular organism is always constant. The constancy is maintained because the cells in all these three structures undergo only mitotic divisions.

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

Ans. Zygote is located inside the ovule which is present in the ovary part of the pistil.

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

Ans. In production, DNA passes from one generation to the next. The copying of DNA takes place with consistency but will minor variation and this consistency leads to stability of species.

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

Ans. General growth is the growth of different types of developmental process in the body like increase in height, weight gain, changes in shape and size of the body. Reproductive organs are less active during this phase.

Sexual maturation is a set of changes in the body of an individual at puberty like cracking of voice, new hair patterns, development of breast in female, etc.

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

Ans. The sperms comes out from tests into the vas deferens and then pass through urethra before ejaculation.

The secretions of seminal vesicle and prostate glands provide nutrition to the sperms and also facilitate their transport.

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

Ans. The changes observed in the uterus subsequent to implantation of young embryo are –

The uterine wall thickens and is richly supplied with blood. The contact region between embryo and uterine wall grows into placenta which provides nourishment and oxygen to the embryo. Waste material of developing embryo are removed by transferring them into the mother's blood through the placenta.

40. What are the benefits of using mechanical barrier during sexual acts?

Ans. The benefits of using mechanical barriers during sexual act are _

(i) Prevention of pregnancy – Mechanical barrier like condom prevents the sperms from reaching the egg, which is an effective method to avoid pregnancy.

(ii) Non- transmission of infections – There is no transfer of diseases from the infected person to non-infected person.

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

Ans. The ration of chromosome number between an egg and its zygote is 1:2. Egg is produced through meiosis and therefore, contains half number of chromosomes of its parent cell whereas zygote is the product of fertilization between male and female gamete and thus, contains double the number of chromosomes with respect to egg.

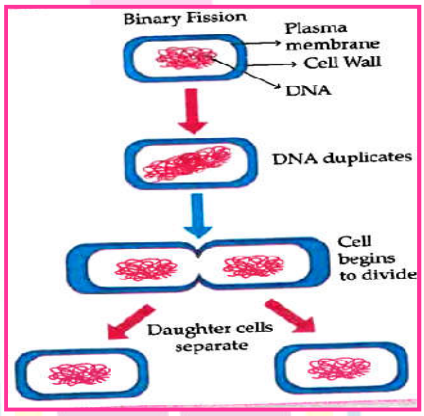
Sperm is genetically different from the egg in the way that is contains either X or Y chromosome whereas, an egg always contains an x chromosome.

(5

Long Answer Type Questions

1. (a) Describe the various steps involved in the process of binary fission with the help of a diagram.

   (b) Why do multicellular organisms use complex way of reproduction?



(b) Multicellular organisms cannot reproduce by cell because they are not simple random collection of cells. In them, specialized cells are organised as tissues which are organised into organs. Cell- by -cell division organisms, therefore require to use more complex ways or reproduction.

2. What is vegetative propagation? List with brief explanation three advantages of practising this process for growing same types of plants. Select two plants from the following which are grown by this process:

Banana, Wheat, Mustard, Jasmine, Gram.

Ans. (a) Vegetative propagation is the development of a new plants from the vegetative parts/root stem and leaves of plant.

(b) Advantages: (i) Such plants can bear flowers and fruits earlier than those produced from seeds.

(ii)Allows propagation of plants (banana, orange etc) that have lost capacity to produce seeds.

(iii) All pants produced are genetically similar to the parents plant and hence hence all its characters.

3. Different organism reproduce by difference methods suitable to their body design .

(a) Justify the above statement using example of three method of asexual modes of reproduction.

Ans. (a)Amoeba: Binary Fission

Plasmodium Multiple fission

Hydra: Budding

Planaria : Regenration

(b) Sexual two parents; Asexual single parents.

Detailed Answer:

(a) (i) Binary Fission in Amoeba: In this method the nucleus first divides mitotically into two, followed by the division of the cytoplasm . The cell finally splits into two daughter cells. So, from one Amoeba parents, two daughter amoeba are formed.

(ii) Budding in Hydra: in budding a small part of the body of the parents grows out as a 'bud' which then detaches and becomes a new organism. Hydra reproduces by budding using the regenerative cells. A bud develops as an outgrowth in Hydra to repeated cell division at one specific site . When fully mature, the bud detaches itself from the parents body and develops into new independent individuals.

(iii) Regeneration in planaria : In this method , small cut or broken parts of the organisms body grow or regenerate into separate individuals. Planaria can be cut into any number of piece and each piece grows into complete organism.

(b) Differences between sexual and Asexual Reproduction:

S.No	Sexual Reproduction	Asexual Reproduction
(i)	Two parents are required	Only one parent is required
(ii)	Offsprings are genetically dissimilar from parents	Offsprings are identical to parents

4. Define pollination . Explain the different types of pollination. List two agent of pollination. How does suitable pollination lead to fertilisation?

Ans. Pollination: Transfer of pollen from anther / stamen to stigma of the flower

Types of Pollination;

(b) self pollination : Transfer of pollen from anther/stamen to stigma occurs in the same flower.

(c) Cross pollination : Pollen is transferred from anther/stamen of one flower to stigma of another flower.

Agents of pollination: Wind , Insects and Animals(Any two)

A tube grows out of the pollen grain and travels through the style , to reach the female germ cell in the ovary to cause fertilisation.

5. Give one example each of unisexual and bisexual flowers. Differentiate between the two types of pollination that occur in flowers. What happens when a pollen lands on a suitable stigma? Write about the events that occur till the seed formation in the ovary.

Ans. Unisexual Flower papaya/water-melon/ any other

Bisexual flower: Hibiscus/Rose/ any other

Self Pollination : The pollen grains are transferred from the anther to the stigma of the some flower or to the flower of the same plant.

Cross pollination: The pollen grains are transferred from the anther to the stigma of flower of a different plant.

After pollen lands on a suitable stigma, a pollen tube grows out of pollen grain and travels through the style to reach the ovary.

The male germ cell fuses with the female germ cell to form zygote

Zygote divides several times to from an embryo within the ovule.

The ovule develops tough coat and gradually gets converted into a seed.

6. **(a)"Use of a condom is beneficial for both the sexes involved in a sexual act," Justify this statement giving two reasons.**

   (b) How do oral contraceptive help in avoiding pregnancies?

   (c) What is sex selective abortion? How does it affect a healthy society? (state any one consequence)

Ans (a) Two reasons:

Avoid unwanted/undersirable pregnancies/STD's 1.

Use of condom prevents the transmission of infections from one person to another.

(b) Oral contraceptives change the hormonal balance of the body so that the eggs are not released.

(c) Sex selective abortion is a procedure that is done for female foetuses/ female foeticide. It adversely affect the male-female sex ratio.

7. **(a) Suggest any two categories of contraceptive methods to control the size of human population which is essential for the prosperity of a country. Also explain about each method briefly.**

   (b) Name two bacterial and two viral infections each that can get sexually transmitted.

   (c) List two advantages of using condom during sexual act.

Ans. (a) Categories of contraceptive methods:

(i) Mechanical Barrier – The sperm does not reach the egg

(ii) Contraceptive pills - Change the hormonal balance so that egg are not released.

(iii) Contraceptive devices – placed in the uterus to prevent pregnancy.

(iv) Surgical methods – Blocking/cutting of vas deferens/fallopian tube.

(b) Two bacterial infections:

(i) Gonorrhoea (ii) Syphillis

Two viral infections:

(i) AIDS (ii) Warts

(c) (i) Avoids unwanted pregnancies.

(ii) prevents transmission of infections/STD's

8. (a) Describe the role of prostate gland, seminal vesicle and testes in the human male reproductive system.

(b) How is the surgical removal of unwanted pregnancies misused?

(c) Explain the role of oral contraceptive pills in preventing conception.

Ans.(a) Prostate glands and seminal vesicle add their secretions so that the sperms are in a fluid and it makes their transport easier and also provides nutrition. Testes secrete testosterone which brings about changes in the appearances in the boys at the time of puberty.

(b) Female foeticides/illegal sex selected abortion of female foeticide.

(c) Interfere in release of egg and eggs are not released.

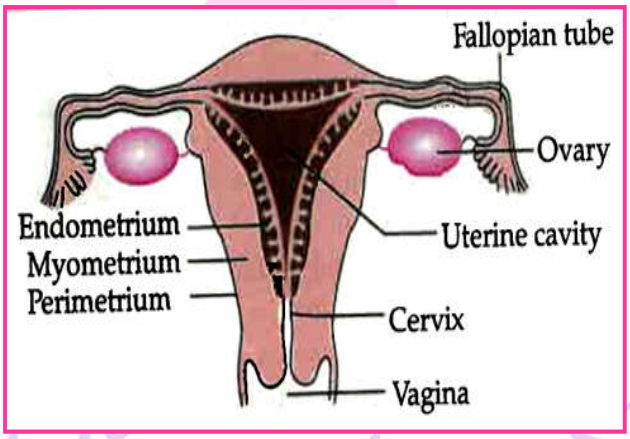
9. (a) Draw the diagram of female reproductive system and match the mark the part(s):

(i) When block is created surgically to prevent fertilisation.

(ii) Where CuT is inserted?

(b) Why do more people prefer to use condoms? What is the principle behind use of condoms?

Ans:



Correct diagram with correct labelling, correctly matched with the following parts:

(i) Fallopian Tube/Oviduct

(ii) Uterus

(iii) Vagina

(c) People prefer use of condom as it prevents STD's gives privacy to the user. Condoms help create a mechanical barrier preventing meeting of sperms and ovum.

10. **(a) Write the functions of following parts in human female reproduction system:**

(i) Ovary, (ii) Oviduct, (iii) Uterus

(b) Describe in brief the structure and function of placenta.

Ans. (a) (i) Ovary: Release egg / Female gamete/ ovum, Release oestrogen/female hormones.

(ii)placenta : It is disc like tissue embedded in uterine wall which contains villi on the embryo side of the tissue and blood space on mother side.

Function of placenta: Provides nourishment to embryo from mother's blood/Removal of waste from embryo to mother's blood.

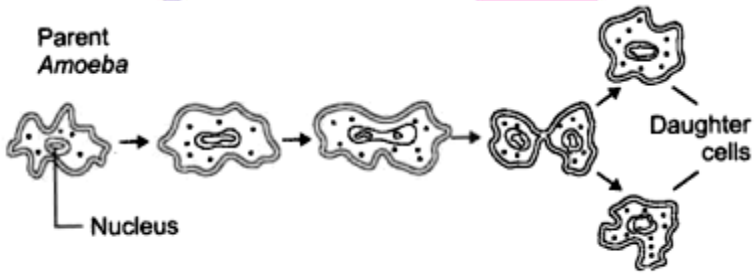
11. **(a) With the help of a diagram show the different stages of binary fission in Amoeba.**

(b) How do plasmodium and leishmania reproduce? Write one difference in their mode of reproduction.

(c)Why are budding, fragmentation and regeneration all considered as sexual types of reproduction?

Ans.

(a) Binary fission is the division of one cell which cuts into two similar or identical cells.



Binary fission in *Amoeba*

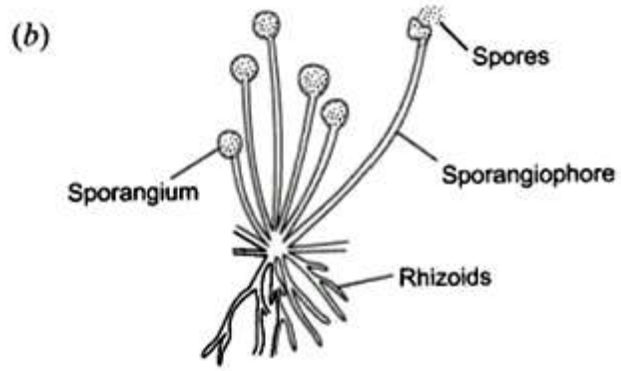
(b) Plasmodium and Leishmania reproduce through fission an asexual method of reproduce. Leishmania reproduce with the help of binary fission. Plasmodium reproduce by multiple fission dividing itself into many daughter cells inside its cell wall.

(c) Budding, fragmentation and regeneration are all considered as asexual type of reproduction because they involve the formation of new individuals from single parent without fertilisation or fusion of gametes.

12. **(a) What is spore formation?**

(b) Draw a diagram showing for organisms to reproduce themselves through spores.

Ans. (a) Spore formation : When a slice of bread is kept in moist dark place for a few days, spores of Rhizopus present in air settle on the bread to form new fungus plants of Rhizopus. The Rhizopus consists of fine thread-like projections called hyphae. It has a knob-like structures which are involved in reproduction called sporangia, containing spores, that develop into new Rhizopus.



(c)Two advantages for organisms to reproduce themselves through spores are as follows:

(i) It is faster mode of reproduction.

(ii) Offspring produced are identical.

13. (a) What is tissue culture? How it is done?

(b) Discuss two advantages of tissue culture.

Ans. (a) Tissue culture is the method of developing plants from plant cells or small pieces of plant tissue in a synthetic/artificial medium. Tissue culture for producing new plants is done as follows.

(i) The tissue/cells are collected from the shoot tip of a desired plant.

(ii) These cells then grown in nutritive artificial medium where they divide and form a mass of identical cells known as callus.

(iii) The callus then allowed to grow in another medium containg hormones needed for growth and development.

(iv) When small plantlets are developed, they are transplanted into soil or pots where they can grow to form mature plants.

(b) (i) It is a fast technique in which thousands of platelets can be produce in short span of time.

(ii) New plants produce through tissue culture are disease free.

(iii) Platelets can be grown throughout the year, irrespective of weather or season.

14. (a) When is pollination? Explain its significance.

(b) Explain the process of fertilisation in flowers.

Name the parts of the flower that develop after fertilisation into

(i) seed,

(ii) Fruit.

Ans. (a) It is the transfer of pollen grain from the anther of a flower to the stigma of a carpel.

Significance of pollination:

(i) It is necessary for seed formation and thus, perpetuation of species.

(ii) It stimulates the development of fruits.

b. After the pollen lands on a suitable stigma, it has to reach the female germ cells in the ovary.

- The pollen tube grows out of the pollen grain through the style to reach the ovary.
- Male germ cell travels through the pollen tube to reach the female germ cell and fertilizes it.
- After fertilisation, the zygote divides several times to form an embryo within the ovule.

(i) Ovule becomes seed.

(ii) Ovary becomes fruit.

15. (a) How does pollination occur in plants?

(b) How does pollination lead to fertilisation?

Explain.

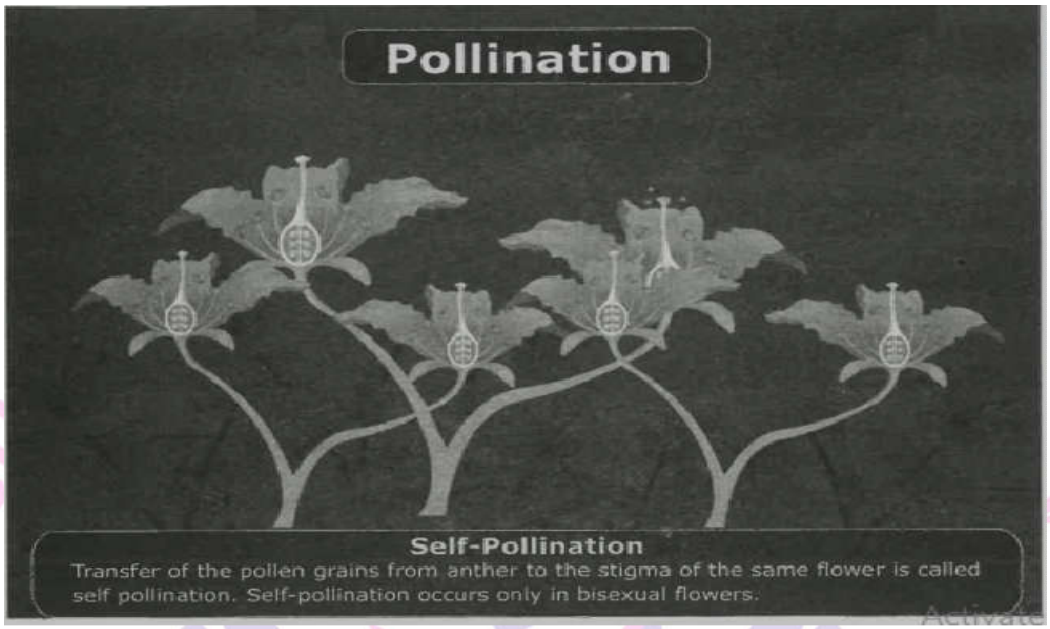
(c) Draw a diagram showing germination of pollen on stigma of a flower.

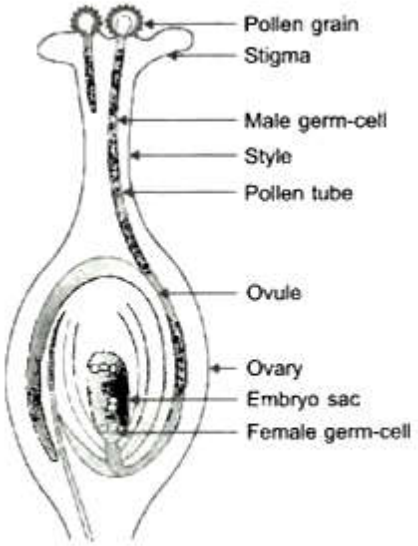
Ans. (a) Pollination is of two types- self-pollination and cross-pollination.

Self-Pollination: It is the transfer of pollen grains from the anther of a flower to the stigma of the same flower or another flower of the same plant. It is seen in pea plant.

Cross Pollination: When the pollen grains from the anther of a flower on one plant are transferred to the sigma of a flower on another similar plant, it is called cross pollinaton.

(b) When pollen grains fall on the stigma of the carpel, it grows pollen tube downwards through the style towards the female gamete in the ovary. A male gamete moves down the tube. When pollen tube enters the ovule, its tips bursts open and male gamete comes out of the pollen tube and combine with the nucleus of the female gamete and forms zygote. This process is known as fertilization.





Fertilisation in a flowering plant

16. (a) Name the human male reproductive organ that produces sperms and also secretes hormones. Write the functions of the hormone secreted.

(b) Name the parts of the human female reproductive system where (i) fertilization and (ii) implantation occur respectively. Explain how the embryo gets nutrition inside the mother's body.

Ans. (a) The formation of sperms takes place in the testis. It secretes the hormone, called testosterone. In addition to regulating the formation of sperms, testosterone brings about changes in appearance seen in boys at the time of Puberty.

(b) (i) The fertilisation takes place in the fallopian tubes.

(ii) The implantation occurs in the uterus.

The uterus prepares itself every month to receive and nurture the growing embryo. The lining thickens and it richly supplied with blood to nourish the growing embryo.

The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta. The development of the child inside the mother's body takes approximately nine months. On completion of nine months, the child is born due to a rhythmic contractions of the muscles in the uterus.

17. Draw a longitudinal section of a flower and label the following parts:

(a) Part that produces pollen grain .

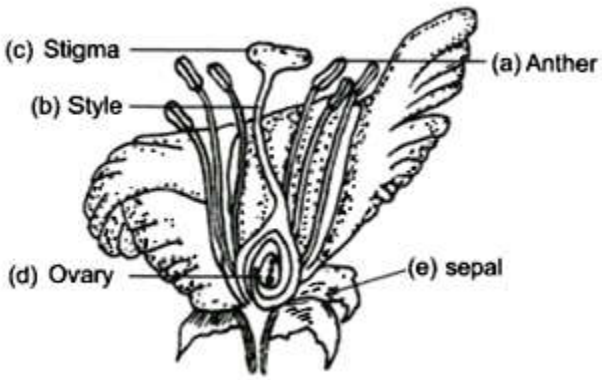
(b) Part that transfer male gametes to the female gametes.

(c) Part that is sticky to trap the pollen grain.

(d) Part that develops into a fruit.

(e) Green leaf-like parts in the outermost circle of a flower.

Ans.



18. (a) Write the functions of the following parts in human female reproductive system:

(i) Ovary (ii) Oviduct (iii) Uterus

(b) Describe the structure and function of placenta.

Ans. (a) (i) Ovary

- It produces the female gametes or germ cells, called ova.
- It secretes the female sex hormones such as oestrogen and progesterone.

(ii) Oviduct

- It transports the ova from the ovary to uterus/Womb.
- Fertilisation occurs in the oviduct.

(iii) Uterus

- Implantation of the embryo occurs in the lining of uterus and the complete development of foetus occurs here.
- The contractions of the muscles of uterus help in child birth.

(b) Structure of placenta:

- placenta is a disc – like structure embedded in the uterine wall.
- It contains villi on the embryo's side and on the mother's side there are blood spaces, which surround the villi; this arrangement provides a large surface area for exchange of materials.

Functions of placenta:

- It transfers glucose and oxygen the mother's blood to the foetus.
- It also removes the wastes (CO_2 and nitrogenous wastes) generated by the foetus to the mother's blood.

19. (a) Why does fertilisation occur only once in a month in a human female? Explain.

(b) Prenatal sex determination has been prohibited by law. State the necessity of enforcement of this law.

(c)Where are human testis located and why? State their functions.

Ans. (a) On attaining puberty, the eggs in the ovaries of a human female starts maturing. Only one egg is produced by one of the ovaries every month. Fertilisation can therefore occurs only once in a month in human female.

(b) The most ideal female, male sex ratio for a healthy society is 1000:1000. Because of reckless female foeticide, sex ratio is decreasing at an alarming rate in some sections of our society. It has therefore become necessary to ban detection of sex of the foetus.

(c) Testis are located outside the abdominal cavity inside the scrotum in a human male. The scrotum provides optimum temperature for the formation of sperms.

20. Describe in brief the role of (i) Testis (ii) Seminal vesicle, (iii) vas deferens, (iv) ureters and (v) Prostate gland in human male reproductive system.

Ans. (i) Testis: Testis are oval-shaped primary reproductive organs in men. The function of testes is to produce sperms and male sex hormone testosterone. The scrotum provides optimal temperature for the formation of sperms.

(ii) Seminal vesicle : Seminal vesicles are a pair of thin- walled muscular elongated sac which secrete fluid for nourishment of sperms.

(iii) Vas deferens: The sperms are carried by a long tube called vas deferens to organs called seminal vesicles where the sperms get nourishment and stored.

(iv) Ureter: It is the tube that carry urine from kidney to the urinary bladder. In humans, there are two ureters, one attached to each kidney.

(v) Prostate gland: Prostate gland produce a fluid which is released in the urethra along with the secretion of seminal vesicles for nourishment and transportation of sperms.

21. (a) Name the organ that produces sperms as well secretes a hormone in human males Name the hormone it secretes and write its functions.

(b) Name the parts of the human female reproductive system where fertilisation occurs.

(c)Explain how the developing embryo gets nourishment inside the mother's body.

Ans. (a) The male organ is testis. It secretes the hormone testosterone and regulates the formation of sperms.

- It bring about changes in the appearance of boys at the time of puberty.

(b) Fertilisation occurs in the oviduct.

(c) The developing embryo gets nourishment from the mother's blood with the help of a special tissue, called placenta.

The placenta provides a large surface area for the passage of glucose and oxygen from the mother's blood to the embryo.

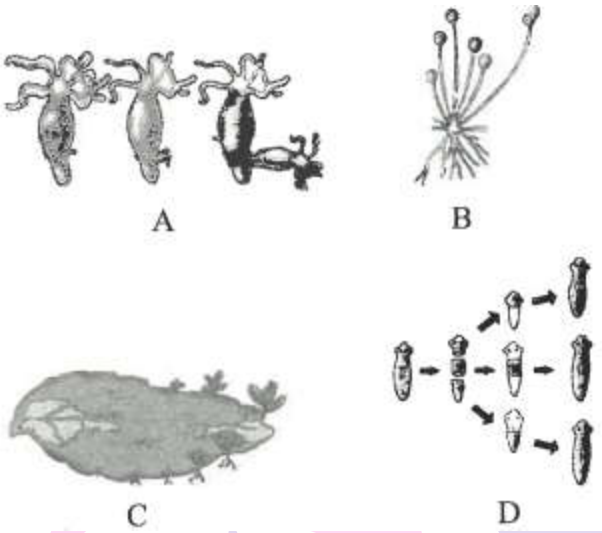
22. State in brief the changes the take places in a fertilised egg (zygote) till birth of the child in the human female reproductive system. What happens to the egg when it is not fertilised?

Ans. The egg gets fertilised in the oviduct. The fertilised egg, the zygote, get implanted in the lining of the uterus and starts diving. The uterus prepares itself every month to received and nurture the growing embryo. Its lining thickens is richly supplied with blood to nourish the growing embryo.

The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta. The development of the child inside the mother's body takes approximately nine months. On completion of 9 months, the child is born as a result of rhythmic contractions of the muscles in the uterus.

If the egg is not fertilized, the thick and nourishing lining of the uterus breaks and comes out through vagina as blood and mucous.

23.



(a) Identify the organisms in figure A,B,C and D.

(b) Identify the life process shown in all the figures.

(c) How is this life process advantageous in all the organisms?

Ans. (a) A. Hydra B. Rhizopus

C. Bryophyllum D. Planaria

(b) The life process shown in the figure is asexual mode of reproduction.

(c) This life process advantageous to the organisms because

(i) Only one individual is required.

(ii) Large numbers of offspring are produced.

24. What is a seed? What are the parts of a seed? Explain with the help of labelled diagram. What are the advantages of seed formation for the plant?

Ans. A seed is the reproductive unit of a plant.

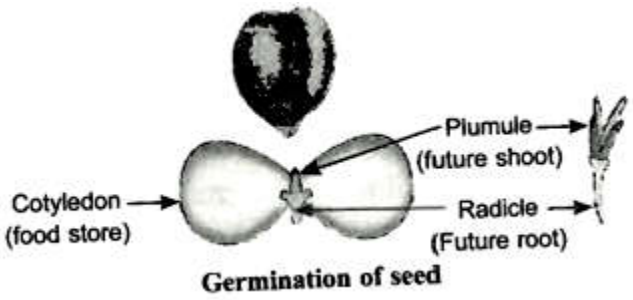
A see has following parts:

Seed coat: It is the protective covering of the seed.

Cotyledons : These are the embryonic leaves that store food for the germination of young plant.

Plumule : It is the part of that gives rise to shoot.

Radicle: It is the part of embryo that gives rise to root.



Germination of seed

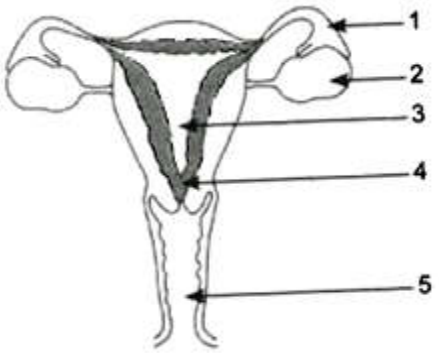
Seed provide the following advantages to a plant:

(i) Seed provide protection to young embryo.

(ii) Seed formation is more dependable, therefore, it helps the species to spread in other areas by different modes of dispersion.

(iii) Seeds stores food for embryo to be nourished.

25. (a) Identify the given diagram. Name the parts 1 to 5.



(b) What is contraception? List three advantages of adopting contraceptive measures.

Ans. (a) 1. Oviduct 2. Ovary 3. Uterus 4. Cervizx 5. Vagina

(b) The prevention of pregnancy in women is called contraception.

(i) It helps in maintaining health of women as frequent pregnancies have adverse effect on the health of the mother.

(ii) it helps in preventing sexually transmitted diseases such as AIDS, syphilis, gonorrhoea, etc.

(ii) It helps in birth control. If a family is small then each child will get proper resources like attention, education, food, clothes, etc.

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

Ans. Differences between:

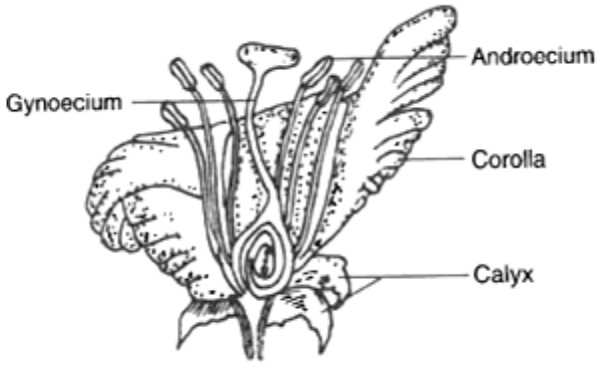
Gamete	Zygote
(i) It is germ cell that takes part in fertilisation.	(i) It is a product of fertilisation.
(ii) There are two types of gametes – male and female.	(ii) Zygote is one type.
(iii) A gamete has haploid or 1n chromosome number.	(iii) Zygote is of one type.
(iv) A gamete carries characteristics of only one parent.	(iv) It carries characteristics of both the parents.
(v) Gamete is the last cell of its generation.	(v) It is the first cell of new generation.

Role of Gamete in sexual reproduction – Gamete is the sex or germ cell specialised to take part in sexual reproduction. Fusion of male gamete with a female gamete produces a zygote.

Role of zygote in sexual reproduction – zygote develops into embryo that the later forms the new individual.

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

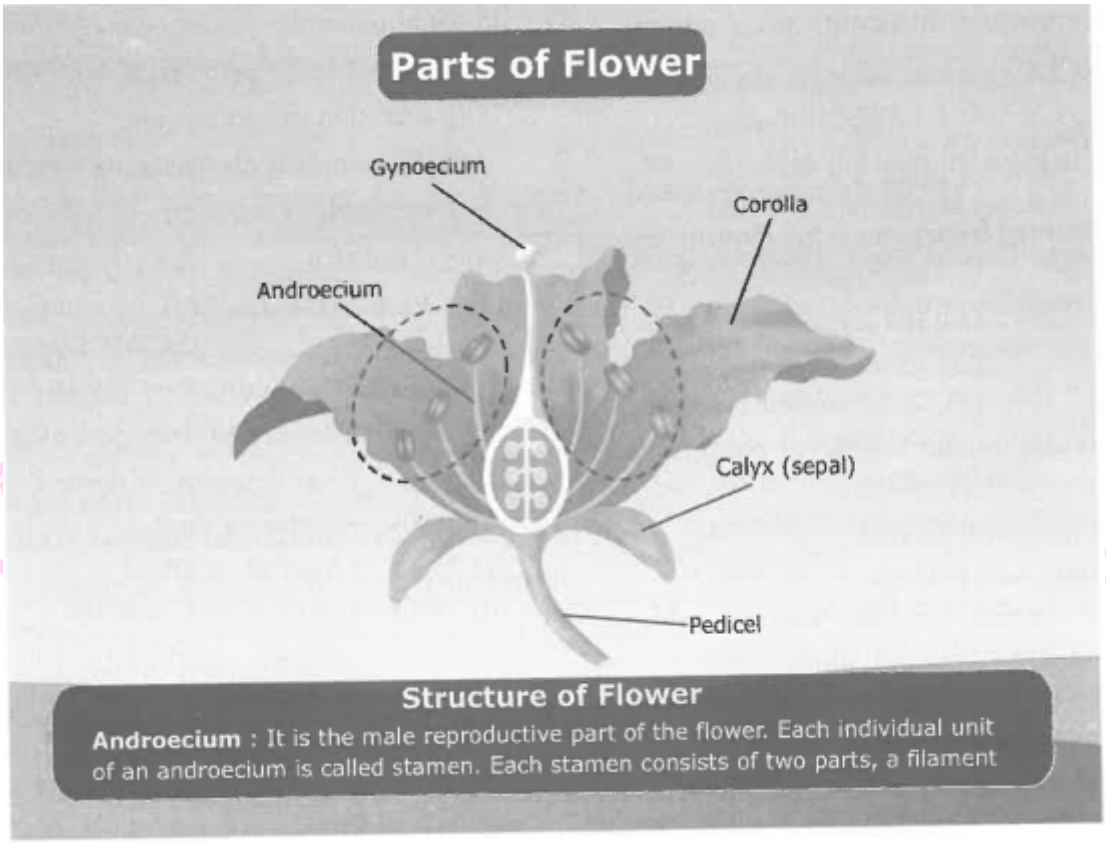
Ans.



Parts of a Flower

Male gamete forming part – Anther of stamen.

Female gamete forming part – Ovary of pistil.



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

Ans. Fertilisation takes place in the following ways:

(i) The sperm enters through the vaginal passage during intercourse and moves upward.

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

(iii) Sperm encounters egg in the oviduct and fertilisation takes place. Fertilisation occurs once in a month because egg is released by female ovary once every month in the middle of menstrual cycle.

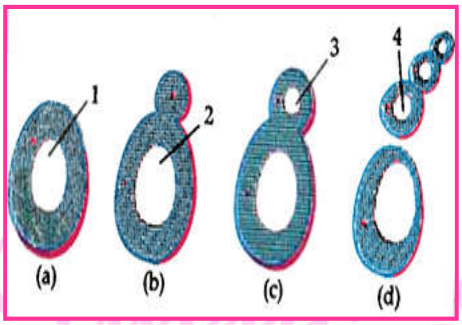
Competency Based Questions

(4 marks each)

Case based MCQs

1. Read the passage given below and answer the questions that follow:

Asexual reproduction is a mode of reproduction in which a new offspring is produced by a single parent. The new individuals produced are genetically and physically identical to each other, i.e., they are the clones of their parent. Asexual reproduction is observed in both multicellular and unicellular organisms. The given diagram represents a type of asexual reproduction. Study the same.



1. Identify the above process.

a. Binary fission b. Fragmentation

c. Budding d. Regeneration

2. Which organism uses the above method for reproduction?

a. Yeast b. Spirogyra c. Amoeba d. Leishmania

3. An organism capable of reproducing by two asexual reproduction methods one similar to the reproduction methods one similar to the reproduction in yeast and the other similar to the reproduction in planaria is:

a. Spirogyra **b. Hydra** c. Bryophyllum d.Paramecium

4. A Planaria worm is cut horizontally in the middle into two halves P and Q such that the part P contains the whole head of the worm. Another planaria worm head of the worm. Another planaria worm is cut vertically into two halves R and S in such a way that both the cut pieces R and S contain half head each. Which of the cut pieces of the two planaria worms could regenerate to form the complete respective worms?

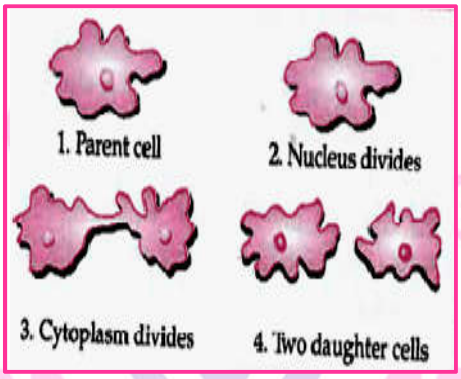
a. Only P b. Only R and S c. P,R and S **d. P,Q,R and S**

II. Read the passage given below and answer the questions that follow:

Are there male and female bacteria? How could you tell? Remember, bacteria have just one chromosome; they do not have an X or Y chromosome. So, they probably have a vey simplified form of reproduction. Asexual reproduction, the simplest and most primitive method of reproduction, involves a single parent and produces a clone, an organism that is genetically identical to the parent. Haploid gametes are not involved in asexual reproduction. A parent passes all of its genetic material to the next generation. All prokaryotic and some eukaryotic organisms reproduce asexually.

Asexual reproduction can be very rapid. This is an advantage for may organisms. It allows these organisms to crowd out other organisms that reproduce more slowly. Bacteria, for example may divide several times per hour. Under ideal conditions, 100 bacteria can divide to produce millions

of bacterial cells in just a few hours. The given picture represents a method of sexual reproduction in a bacteria. Study the same and answer the following questions.



1. Which of these organisms divides by the above process?

a. Amoeba b. Spirogyra c. Leishmania d. Yeast

2. In multiple fission:

a. Two daughter cells are produced.

b. Many daughter cells are formed simultaneously.

c. Two types of gametes fuse together

d. None of these

3. Which of the following statement is correct about the above type of reproduction?

a. It involves two individuals.

b. It involves a mature parent cell.

c. It involves union of two types of gametes.

d. All of these

4. Which of these statement is correct about the fission in Leishmania?

a. Splitting into two cells during division can take place in any plane.

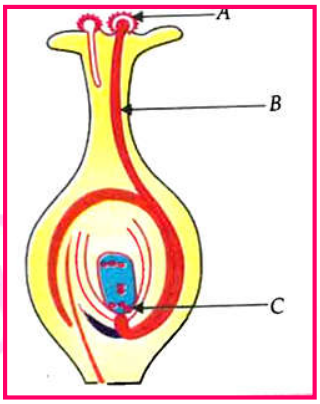
b. Binary fission occurs in a definite orientation in relation to the whip like structure.

c. Both of these

d. None of these

III. Read the passage given below and answer the questions that follow:

The pistil is unique to angiosperms. It serves a protective role and functions as a conduit for pollen tubes to grow to the ovary, but it also provides a venue for pollen-pistil interaction that regulate pollen tube growth and, hence, fertilization. Study the diagram given below, which represents the pollen-pistil interaction and answer the following questions.



1. The role of part labelled as B is :

   a. Transport of male gametes to the ovary.

   b. Transport of female gametes to the ovary

   c. Contains ovules which develop into seeds.

   d. All of these

2. How many male gametes are produced by each pollen grain?

   a. One **b. Two** c. Three d. Four

3. What happens to the label A when falls on a suitable stigma?

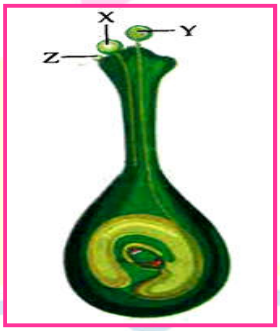
   a. Pollen grain gradually disintegrates.

   b. Pollen grain directly reaches the embryo sac.

   c. pollen grain starts germinating and forms a pollen tube.

   d. Pollen grain changes into and then to fruit.

4. In the given diagram showing the carpel of an insect pollinated flower, the most likely reason for the non-germination of pollen grain Z is:



   a. pollen grains X and Y were brought to the stigma earlier, therefore, their germination inhibited the germination of pollen grain Z.

   b. Pollen grain Z was brought to the flower brought to the flower by insects.

   c. Pollen grain Z lacks protrusions that allow it to adhere properly onto the stigma surface.

   d. Pollen grain Z comes from a flower of an incompatible species.

Case Based subjective Questions

1. Read the passage given below and answer the questions that follow:

The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. Reproduction is the process by which organisms increase their population. The process os sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human being to control the size of population.

1. List two common signs of sexual maturation in boys and girls.
2. What is the result of reckless female foeticide?
3. Which contraceptive method changes the hormonal balance of the body?
4. Write two factors that determine the size of a population.

Ans. 1. Thick hair growth in armpits, genital area/thinner hair on arms, legs, face/ more active oil secretion from glands on skin/occurrence of pimples.

2. Imbalance in male – female ration/decline in child sex ration
3. Oral pills
4. Rate of birth and death.

Detailed Answer:

Common signs for sexual maturation in boys and girls are:

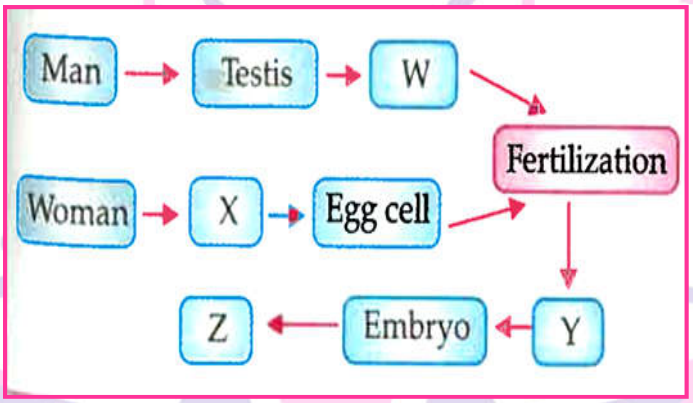
(1) (i) Broadening of shoulder and chest in boys and development of mammary gland or breast in girls.

(ii) Appearance of hair on body parts like pubic area, armpits and face.

1. The number of females will becomes low in comparison to males. Hence, there will be huge imbalance between male and female ratio in the population.
2. Chemical method of contraception e.g., Oral pills.
3. Factors are : Birth rate and death rate.

II. Read the passage given below and answer the questions that follow:

Every living being on this planet, which is a result of sexual reproduction, marks the start of its journey on this planet when a female egg is fertilized with male sperm. Fertilization occurs when a sperm fuses with the female gamete during intercourse and further forms an egg that gets implanted in uterus of the female. The given flow chart represents the process of fertilization in humans. Study the same and answer the following questions.



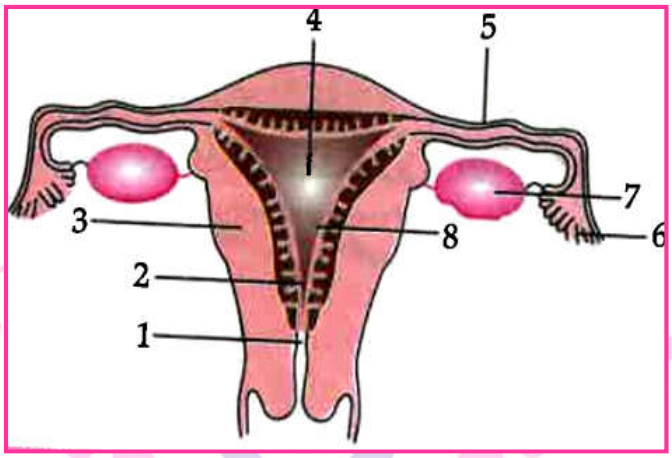
1. Identify W,X,Y and Z.
2. What is the main function of part X?
3. What happens in case of egg released by the ovary is not fertilized?
4. Name two surgical methods used for men and women respectively, which help in contraception.

Ans.1.The label W represents sperm, X is Ovary , Y is Zygote, and Z represents Foetus.

1. Produces egg or female gamete, female sex hormone/oestrogen.
2. If fertilisation does not occur, the egg withers always and the thick cell lining of the uterus gets removed and discharges the contents through gets removed and discharges the contents through the birth canal. This process is referred to as menstruation.
3. Sterilization is a permanent method of birth control. Sterilization procedures for women are called tubectomy while the procedure for men is called vasectomy.

III. Read the passage given below and answer the questions that follow:

The female reproductive system is designed to carry out several functions. It produces the female egg cells necessary for reproduction, called the ova or oocytes. The system is designed to transport the ova to the site of fertilization. Study the given diagram of Human female reproductive system and answer the following questions.



1. Identify the part which produce ovum.
2. Where the implantation of embryo does takes place?
3. What is fertilisation? Where does it occur in a human female?
4. In what respect is the human male gamete different form the female gamete?

Ans. 1. The label 7 represents ovary . Ovum is produced by ovaries.

2.Implantation of embryo takes place in part 4, which represents uterus.

3.Fertilisation is the fusion of male and female gametes to fro, diploid zygote. In human female, it occurs in ampulla part of fallopian tube.

4. Male gamete or sperm is smaller, dart-like motile gamete with scanty amount of food reserve. Female gamete or ovum is larger, rounded, non-motile gamete with a good amount of reserve food.