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)

B 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 (B) of (A).

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

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

(E) 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 plats can be preserved through vegetative reproduction.

   Reason (R) : Asexual reproduction involves only mitosis.

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.

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/Hisbiscs

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.

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 structure Vegetative part and tiny blob like structures or sporangia are the reproductive parts.

4. **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.

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?

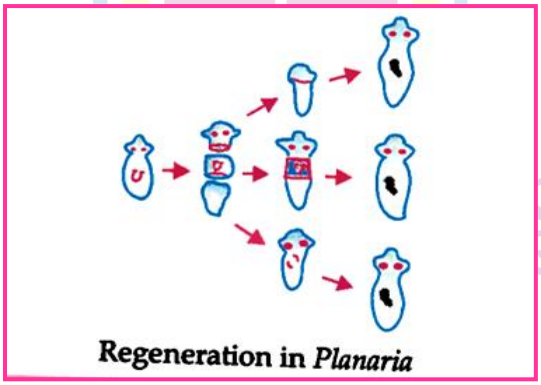
Ans.

(a) Binary fission	Multiple fission
The parents body divides into two identical daughter	Parent body show several nuclear 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.

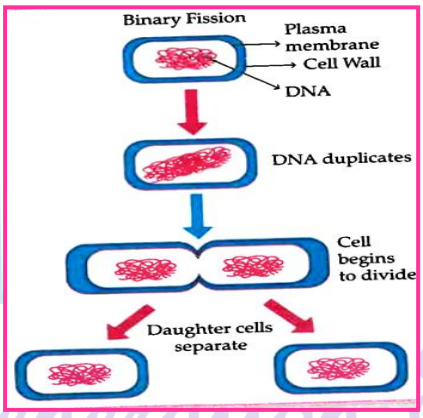
(iv) In sexual reproduction, specialized cells/ germ cells with only half the number of chromosomes are formed. When these germ cells from two individuals combine to form a new individual, the original chromosome number is restored.

(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.

Long Answer Type Questions **(5 marks each)**

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.

4. 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 L 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 amoebae 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 Reprodcution:

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

Topic - 2 Sexual Reproduction in Plants

Objective Type Questions

I. 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

B 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.

Subjective Type Questions

Very Short Answer Type Questions

(1 mark each)

1. List two unisexual flower.

Ans. Watermelon, Papaya.

2. 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.

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

Ans. Sepals/calyx

Petals/corolla

Thalamus

4. Give one example of wind pollinated plant.

Ans. Grass, Maize.

Short Answer Type Questions - I **(2 Mark each)**

1. 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.

2. (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 f a flower.

Fertilisation is the fusion of male and female gametes.

2. **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.

Short Answer Type Questions - II **(3 Mark each)**

1. **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.

2. **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.

3. **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.

4. **What is sexual reproduction ? List its four significance.**

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

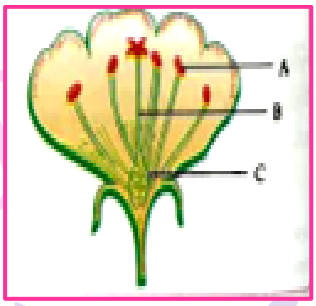
Significance-(i) Incorporate the process of combining DNA from two different individual during reproduction.

(i) Increase genetic variation.

(ii) Promotes diversity in the offsprings.

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

5. **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.

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

Ans. Future shoot – Plumule

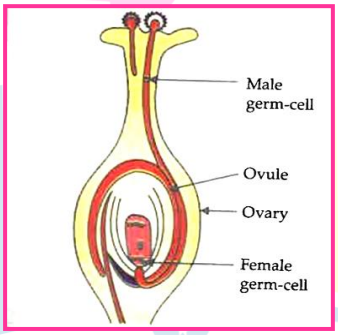
Future root – Radicle

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

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

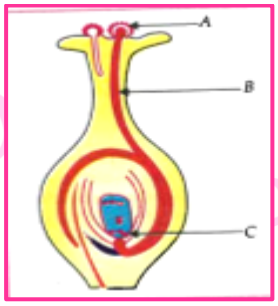
(i) Ovary, (ii) Male germ-cell,(iii) Female-germ cell and (iv) ovule on it.

Ans.



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

8. 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.

Long Answer Type Questions **(5 marks each)**

1. 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;

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

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

2. 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.

Topic -3 Reproduction in Human

Objective Type Questions

(1 mark each)

A Multiple choice Questions

1. 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

2. 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

3. In human males, the tests 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

4. Which among the following is not the function of tests 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)

B 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.

Subjective Type Questions

(1 mark each)

Very Short Answer Type Questions

1. **Name the organs producing sperms and ova respectively in humans.**

   Ans. Testis: Sperms, Ovary: Ova.

2. **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.

3. **Write the role of testes in male reproductive system.**

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

Short Answer Type Questions-I **(2marks each)**

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

(c) 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 one type of the 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 in 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 **(3 marks each)**

1. 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.

2. **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.

3. **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.

4. **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)

5. **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.

6. **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.

7. **(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.

Long Answer Type Questions

(5 marks each)

1. **(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:

Avoids 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.

2. **(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

3. (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.

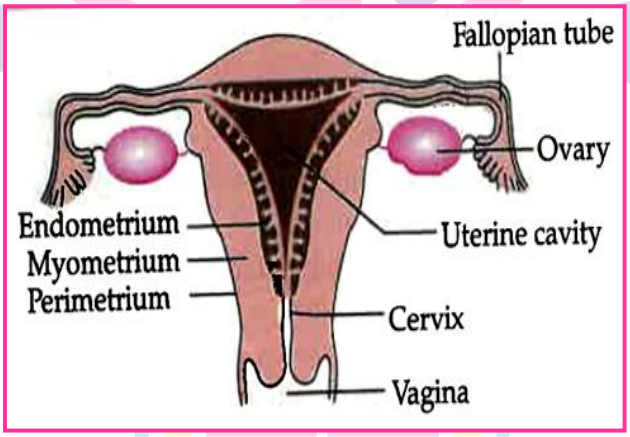
4. (a) Draw the diagram of female reproductive system and match the mark the part(s):

(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.

6. **(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.

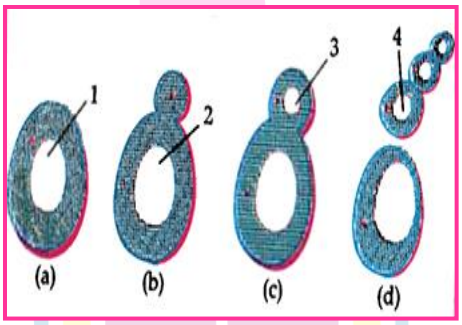
Competency Based Questions

(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

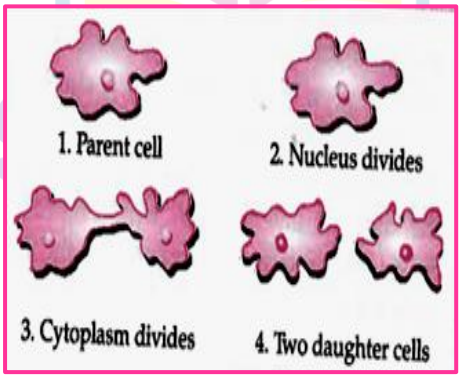
4. A Planaria worm is cut horizontally in the middle into two halves P and Q such that the part P contains the whole head of the worm. Another planaria worm head of the worm. Another planaria worm is cut vertically into two halves R and S in such a way that both the cut pieces R and S contain half head 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. May 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.

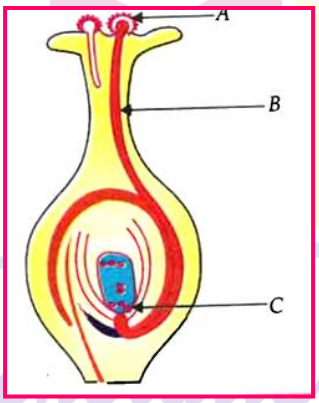
b. Binary fission occurs in a definite orientation in relation to the whip like structure.

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?

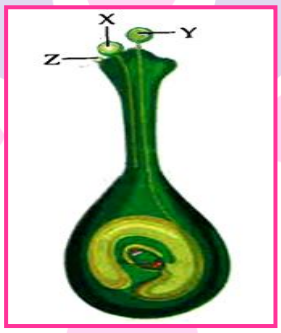
a. Pollen grain gradually disintegrates.

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:

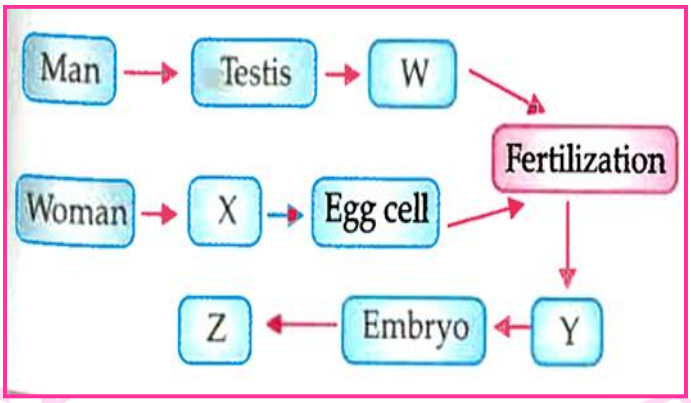
(1) (i) Broadening of shoulder and chest in boys and development of mammary gland or breast in girls.

(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.

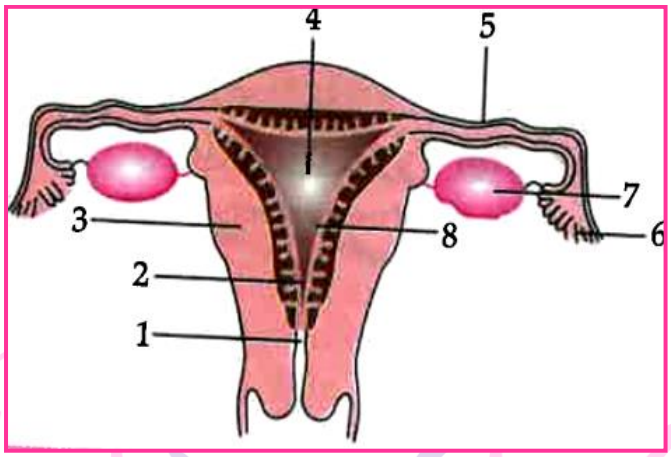
2.Produces egg or female gamete, female sex hormone/oestrogen.

3.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.

4.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.