

SCIENCE

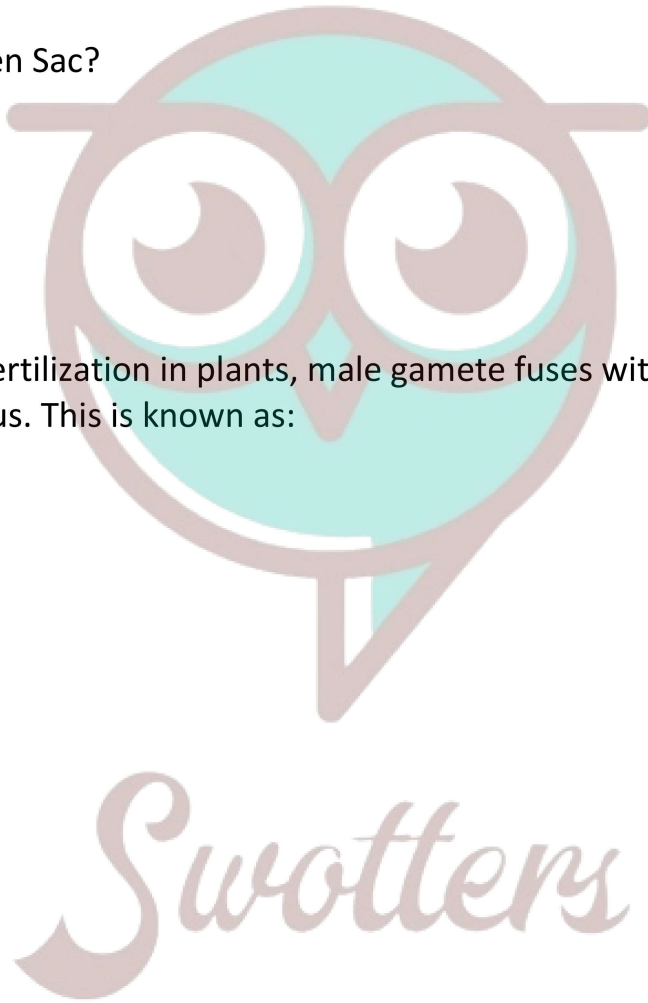
(Biology)



Important Questions

➤ Multiple Choice Questions:

- Binary fission is a method of asexual reproduction in:
 - amoeba
 - hydra
 - fern
 - none of these.
- What is present in pollen Sac?
 - Calyx
 - Ovary
 - Ovule
 - Pollen grains
- During the process of fertilization in plants, male gamete fuses with the egg and the second with the secondary nucleus. This is known as:
 - simple fertilization
 - double fertilization
 - fusion
 - all these.
- Budding is found in:
 - Planaria
 - Hydra
 - Leishmania
 - All of these
- In tissue culture method a small piece of tissue grows and forms:
 - callus
 - monocytes
 - synaps
 - homeostasis
- During pregnancy menstruation is:
 - present



- (b) absent
- (c) intermittent
- (d) present with pain

7. Vegetative reproduction is possible by:

- (a) root
- (b) stem
- (c) leaves
- (d) all these

8. After fertilization which structure forms fruit:

- (a) calyx
- (b) corolla
- (c) stamen
- (d) ovary

Answer:

- (d) ovary

9. How many male gametes are found in pollen tube:

- (a) one
- (b) two
- (c) three
- (d) four

10. In boys the puberty occurs at the age of:

- (a) 10-12 years
- (b) 12-14 years
- (c) 16-18 years
- (d) 20-22 years

➤ **Very Short Question:**

1. Write the full expansion of HIV.
2. Write the full form of IUCD.
3. Name the type of fission carried out by Amoeba.
4. What is vegetative propagation?



5. List two functions performed by ovaries in a human female.
6. What is the effect of DNA copying which is not perfectly accurate in the reproductive process?
7. Name the hormone, secretion of which is, responsible for dramatic changes in appearance in girls when they approach 10-12 years of age.
8. Why is DNA copying an essential part of the process of reproduction?
9. Mention the common mode of reproduction found in
 - Amoeba
 - Planaria.
10. Name any two types of asexual reproduction.

➤ Short Questions:

1. List any two differences between pollination and fertilization.
2. What is reproduction? Mention the importance of DNA copying in reproduction.
3. Define variations in relation to a species. Why is variation beneficial to the species?
4. Mention the information source of making proteins in the cell. What is the basic event in reproduction?
5. Name one sexually transmitted disease each caused by a bacterial infection and viral infection. How can they be prevented?
6.
 - (a) In human body what is the role of
 - seminal vesicles and
 - prostate gland.
 - (b) List two functions performed by testes in human beings.
7. Name the male and female gametes in animals. What is fertilization and where does it take place in human females?
8. What is reproduction? What are the two types? Which one of the two confers new characteristics on the offspring and how?

➤ Long Questions:

1. Draw the diagram of a flower to show its male and female reproductive parts. Label the following in it;

Ovary

Anther

Filament

Stigma.

What is the function of anther? How does fusion of male and female gametes take place in plants?

2.

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

(b) Label pollen grain, male germ cells, pollen tube, stigma, ovary and female germ cell in the above diagram.

(c) How is zygote formed?

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

- Part that produces pollen grains,
- Part that transfers male gametes to the female gametes.
- Part that is sticky to trap pollen grain,
- Part that develops into a fruit.

➤ Assertion Reason Questions:

1. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- Both A and R are true, and R is correct explanation of the assertion.
- Both A and R are true, but R is not the correct explanation of the assertion.
- A is true but R is false.
- A is false but R is true.

Assertion: Internal fertilisation occurs in mammals and birds.

Reason: External fertilisation occurs in reptiles, amphibians, and fishes.

2. For two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- Both A and R are true, and R is correct explanation of the assertion.
- Both A and R are true, but R is not the correct explanation of the assertion.
- A is true but R is false.
- A is false but R is true.

Assertion: Seeds are matured ovules.

Reason: The part of seed which contains stored food for baby plant is called cotyledon.

➤ Case Study Questions:

1. Read the following and answer any four questions from (i) to (v).

A married woman used a device X made of common metal for preventing pregnancy. This device was put into her uterus by some trained medical professional. Unfortunately, she got pregnant after two months of insertion of device. She was in shock to learn that her birth control device has failed.

- i. What is the name of birth control device used by the woman?
 - a. Foam tablets.
 - b. Copper T.
 - c. Diaphragm.
 - d. Both (a) and (b).
- ii. Which metal is commonly used for making device X?
 - a. Iron.
 - b. Copper.
 - c. Silver.
 - d. Gold.
- iii. How does device X prevent pregnancy?
 - a. It prevents ovulation.
 - b. It prevents copulation.
 - c. It suppresses fertilising capacity of sperm.
 - d. None of these.
- iv. Why do you think the woman got pregnant even after using device X?
 - a. Device X might have got expelled without the knowledge of woman.
 - b. Device X might be defective and was not working from the beginning.
 - c. Device X could have been destroyed by the uterine fluid.
 - d. None of these.
- v. Select the correct statement regarding device X.
 - a. Device X is very effective in preventing sexually transmitted diseases.
 - b. Device X can be inserted in uterus by woman herself.
 - c. Device X prevents menstrual cycle in women.
 - d. Device X can cause heavy painful and longer duration periods or menstruation.

2. Read the following and answer any four questions from (i) to (v).

A newly married couple does not want have children for few years. They consulted a doctor who advised them barrier method and chemical method of birth control. Yet another couple who already have two children and are middle aged also consulted doctor for some permanent solution to avoid unwanted pregnancy. Doctor advised them surgical method of birth control.

- i. What are the barrier methods of birth control?
 - a. Condom.
 - b. Diaphragm.
 - c. Oral pills.
 - d. Both (a) and (b).
- ii. How physical barrier prevent pregnancy?
 - a. They kill the sperms.
 - b. They kill the ovum.
 - c. They prevent sperms from meeting the ovum.
 - d. They prevent intercourse.
- iii. How chemical methods prevent pregnancy?
 - a. Vaginal pills contain chemical called spermicides which kill the sperms.
 - b. Oral pills prevent ovulation, so there will be no fertilisation.
 - c. Oral pills stop menstruation in females.
 - d. Both (a) and (b).
- iv. Select the correct statement regarding surgical method of birth control.
 - a. It involves termination of pregnancies in women particularly after eight weeks of conception.
 - b. Small portion of sperm duct or vas deference in males is removed by surgical operation and both cut ends are ligated properly.
 - c. Small portion of oviducts in females is removed by surgical operation and cut ends are ligated.
 - d. Both (b) and (c).
- v. Select the correct statement regarding birth control methods.
 - a. Barrier method of birth control also protects the couple from sexually transmitted diseases.
 - b. Some women experience unpleasant side effects on taking oral pills because of change hormonal balance in body.
 - c. Surgical method in males is called vasectomy and in females is called tubectomy.

d. All of these.

✓ Answer Key-

➤ Multiple Choice Answers:

1. (a) amoeba
2. (d) Pollen grains
3. (b) double fertilization
4. (a) Planaria
5. (a) callus
6. (b) absent
7. (d) all these
8. (d) ovary
9. (b) two
10. (b) 12-14 years

➤ Very Short Answers:

1. Answer: Human immuno-deficiency virus.
2. Answer: Intra-uterine contraceptive device.
3. Answer: Binary fission.
4. Answer: It is the formation of new plants from vegetative parts (e.g., stem, leaf, root, bud) of a parent plant.
5. Answer: Formation of ova Secretion of hormones, estrogen and progesterone.
6. Answer: It produces mutations which give rise to useful, harmful and neutral variations in the progeny.
7. Answer: Estrogen (= oestrogen) produced by growing follicles inside the ovary.
8. Answer: Cell multiplication is essential for reproduction either as a means of multiplication in unicellular organisms or as a means of development of multicellular body from a single celled zygote. Cell multiplication cannot occur without DNA replication or DNA copying because each new cell must carry the full DNA complement.
9. Answer:
 - Amoeba Binary fission in any plane.
 - Planaria: Transverse binary fission.
10. Answer: Fission, Spore formation.

➤ Short Answer:

1. Answer:

Pollination	Fertilization
1. Definition. It is transfer of pollen grains from anther to the stigma of a flower.	It is the fusion of male and female gametes. Fertilization occurs only after pollination when the pollen grain has germinated and male gametes are carried into ovule.
2. Step. Pollination precedes fertilization.	
3. Purpose. It carries the male gamete producing pollen grains to the female sex organ.	It actually brings about fusion of gametes.
4. Process. Pollination is a physical process.	Fertilization is a physico-chemical (biological) process.
5. Occurrence. It occurs only in seed plants.	It occurs in both plants and animals of various types.

2. Answer: Definition: Reproduction is the process of producing new young individuals of similar type by the mature individuals.

Importance of DNA Copying.

DNA carries hereditary information not only for controlling cellular functions but also all the structural and functional traits of organism. It is because of the latter that single celled zygote is able to form the whole multicellular organism. During reproduction there is formation of new cells which must carry the same amount and type of hereditary information as present in the parent cell. This is accomplished by DNA copying, which occurs prior to each cell division. DNA copying is not error proof. Errors give rise to variations.

3. Answer: Definition: Variation is differences in structure, physiology and other characters found in the individuals of the same organism.

Benefits of variations to species.

Many of the variations are pre-adaptations which have no immediate benefit to the individuals. However, they remain in the population. Whenever, environment undergoes a drastic change, the pre-adaptations present in some members of the population allow the latter to survive, grow and regain its former size. Therefore, it is not necessary that variations are beneficial to individuals developing them but can prove useful to the species.

4. Answer: Information Source: The information source of making proteins in a cell is its DNA.

Basic Event in Reproduction: The basic event in reproduction is replication of DNA, growth of cellular machinery and cell division.

5. Answer: Bacterial STD. Gonorrhoea caused by *Neisseria gonorrhoeae*. Viral STD. Genital warts caused by Human Papilloma virus.

Prevention. Avoiding multipartner sex, use of condoms and clean toilet habits.

6. Answer:

(a)

Seminal Vesicles: They secrete 60-70% of semen plasma that is alkaline and viscous having fructose (for nourishing the sperms), fibrinogen, proteins and prostaglandins. Prostaglandins cause movements in the genital tract of the female. Sperms are also activated by secretion of seminal vesicles.

Prostate Gland: It produces 20-30% of semen plasma. The secretion is alkaline and viscous. It has clotting enzyme and chemical essential for sperm activity.

(b) Function of Testes,

Formation of sperms from germinal cells of seminiferous tubules.

Secretion of testosterone by Leydig cells present in the connective tissue in between the seminiferous tubules.

7. Answer:

Male Gamete: Sperm (= spermatozoan)

Female Gamete: Ovum.

Fertilization: It is the fusion of two compatible gametes (e.g., sperm and ovum) to form diploid zygote during sexual reproduction.

In human females fertilization occurs in fallopian tube.

8. Answer:

Reproduction: Reproduction is the process of producing new young individuals of similar type by the mature individuals.

Importance of DNA Copying.

Types. Asexual reproduction and sexual reproduction.

New Characteristics: New characteristics appear only in sexual reproduction due to

- Chance separation of chromosomes during meiosis required for gamete formation,
- Crossing over during meiosis.
- Chance coming together of chromosomes during fertilization,
- Mutations or mistakes during DNA replication.

➤ Long Answer:

1. Answer:

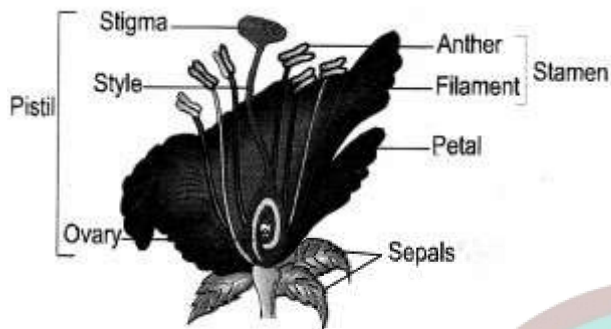


Fig. 3.15. Parts of a flower in longitudinal section.

Function of Anther. To produce haploid pollen grains which on growth form pollen tubes, each containing two male gametes.

Fusion of Male and Female Gametes. On germination over stigma, a pollen grain forms a long pollen tube carrying two male gametes. Pollen tube enters an ovule and bursts open in the embryo sac. One male gamete fuses with the egg to form diploid zygote. It is generative fertilization. The second male gamete fuses with diploid secondary nucleus of central cell to form triploid primary endosperm cell. It is vegetative fertilization. The phenomenon of two male gametes fusing with different cells in the same embryo sac to produce two different structures is called double fertilization.

2. Answer: (a)

Swotters

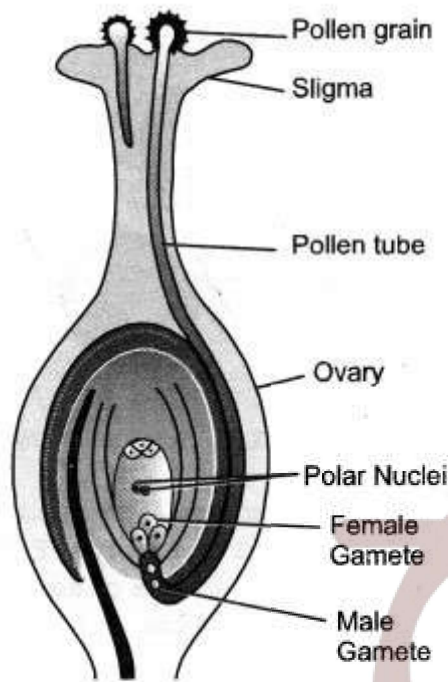


Fig. 3.19. Fertilization in a flowering plant.

(b) Label as required.

(c) Zygote or first diploid cell is formed by fusion of a male gamete (brought by pollen tube) with oosphere or egg inside the embryo sac.

3. Answer:

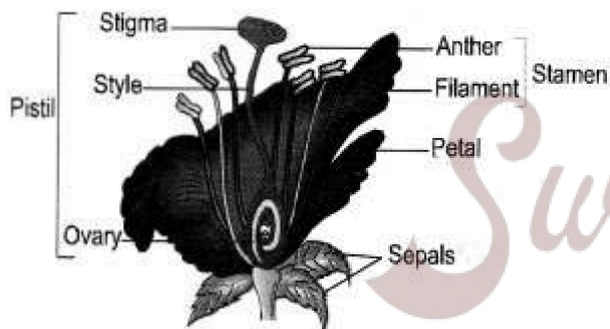


Fig. 3.15. Parts of a flower in longitudinal section.

Labelling,

Anther—part that produces pollen grains.

Style—part that transfers male gametes to female gametes, by providing growth medium to pollen tubes.

Stigma—part that is sticky to trap pollen grain.

Ovary—part that develops into a fruit.

➤ Assertion Reason Answer:

1. (c) A is true but R is false.

Explanation:

The fertilisation which occurs inside the female body is called internal fertilisation. Reptiles show internal fertilisation

2. (b) Both A and R are true, but R is not the correct explanation of the assertion.

Explanation:

Ovule is gradually converted into a seed. A seed is the reproductive unit of a plant. The seed contains a baby plant (or embryo) and food for the baby plant. The part of baby plant in seed which develops into shoot with leaves is called plumule and the part which develops into root is called radicle. The part of seed which contains stored food for the baby plant is called cotyledon.

➤ Case study Questions:

1. i (b) Copper T.

Explanation:

Intrauterine device is placed inside the uterus by a doctor or a trained nurse. Copper T is a common intra-uterine device.

- ii. (b) Copper.
- iii. (c) It suppresses fertilising capacity of sperm.
- iv. (a) Device X might have got expelled without the knowledge of woman.

Explanation:

Intra-uterine devices are highly effective in preventing unwanted pregnancies. But they come with one disadvantage, that is they can get expelled anytime without the knowledge of women. Couple continue active sexual life thinking that their birth control device is still in action.

- v. (d) Device X can cause heavy painful and longer duration periods or menstruation.

Explanation:

Intra-uterine devices do not protect against sexually transmitted diseases. Periods may become heavier, longer, and more painful and there are chances of pelvic infection.

2. i (d) Both (a) and (b).

Explanation:

In barrier methods of preventing pregnancy, the physical devices such as condom and diaphragm are used. Condoms are rubber tubes used by males whereas diaphragm are rubber cups used by females.

- ii. (c) They prevent sperms from meeting the ovum.

Explanation:

Physical barriers prevent the sperm from meeting the ovum by acting as a barrier between them.

- iii. (d) Both (a) and (b).

Explanation:

Chemical methods of birth control include oral pills and vaginal pills. Oral pills are combination of estrogen and progesterone which prevent ovulation (release of egg during monthly cycle) so they prevent fertilisation. Vaginal pills are inserted in vagina before intercourse and release spermicides which kill sperms.

- iv. (d) Both (b) and (c).
v. (d) All of these.

