

Subject: Biology

Topic : How do organisms
reproduce? Exam Prep Session 01

Class: X

1. a) What is a gonad?
(b) Why is it called primary sex organ?
(c) Give its secondary function.

(a) A gonad is an organ which produces gametes for sexual reproduction.
(b) It is called primary sex organ because its main function is the production of gametes that take part in sexual reproduction.
(c) The secondary function of gonad is to produce sex hormones which are responsible for the development of sexual characters and proper functioning of sex organs.

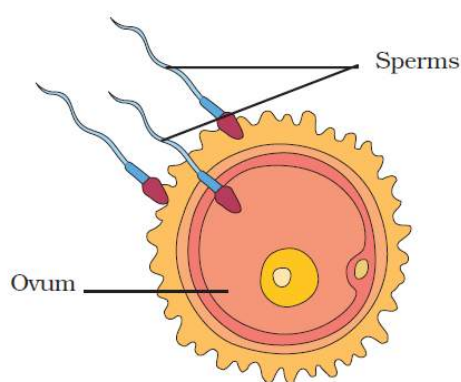
2. Write a difference between radicle and plumule.

The difference between the radicle and plumule are as below:-

- 1) Radicle is mainly the future root, whereas, plumule is the future shoot.
- 2) Radicle acts positively to hydrotropism, whereas, plumule acts positively to phototropism.

3. Describe the process of fertilisation in human beings with the help of a diagram.

When sperms come in contact with an egg, one of the sperms may fuse with the egg. Such fusion of the egg and the sperm is called fertilisation. During fertilisation, the nuclei of the sperm and the egg fuse to form a single nucleus. This results in the formation of a fertilised egg or zygote. The process of fertilisation is the meeting of an egg cell from the mother and a sperm cell from the father. So, the new individual inherits some characteristics from the mother and some from the father.



4. Write a note on androecium and gynoecium.

Androecium:

The third whorl of a flower is called the androecium. Androecium, is made up of male reproductive units called stamens. They produce sperm cells packaged inside pollen grains. An androecium is usually made up of multiple stamens (plural of stamen); each is composed of two parts, the filament and the anther.

1. **Filament:** the long, thin stalk of a stamen

2. **Anther:** the top of a stamen that produces pollen grains



Gynoecium:

The innermost whorl, called the gynoecium, has female reproductive units called carpels. A gynoecium may contain a single carpel, many separate carpels, or many carpels that have fused together.

1. At the top of a carpel is a platform called the **stigma**. It is sticky to catch pollen grains.

2. At the bottom of a carpel is a rounded structure called an **ovary**.

3. Connecting the stigma and ovary is a tube called a **style**.



Pollen grains release sperm cells that travel down the style and into the ovary.

An ovary contains one or more ovules. Inside an ovule is an egg cell. When a sperm cell enters an ovary, it will fuse with the egg cell. This is called fertilization, and the ovule is now called a seed. The surrounding ovary will then usually develop into a fruit to protect its seeds.

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

No.

Copper-T is an Intrauterine Device (IUD) which is placed in the uterus to prevent pregnancy. It cannot prevent sexually-transmitted diseases.

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

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

During sexual reproduction two types of gametes fuse. Although the gametes contain the same number of chromosomes, their DNA is not identical. This situation brings in variations among offsprings. This improves the chances of acquiring new traits that boost biological fitness and survival.

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

The embryo gets nutrition from the mother's blood with the help of a special tissue which looks like a disc-shaped sac called placenta. The placenta is embedded in the uterine wall.

It contains villi on the embryo's side of the tissue and on the mother's side are blood spaces, which surround the villi. This provides a large surface area for glucose and oxygen to pass from the mother to the embryo.

The developing embryo will also generate metabolic waste which can be removed by transferring them into the mother's blood through the placenta.

8. Explain vegetative propagation with the help of two examples. List two advantages of vegetative propagation.

The process in which new plants are grown from the old parts of another plant like roots, shoots and leaves, without involving any reproductive organ, is termed as vegetative propagation. For example, guava trees can be propagated using their roots, and *Bryophyllum* can be propagated by using its leaves.

The advantages of vegetative propagation are as follows:

- The plants cultivated are genetically identical to their parents.
- Plants can be cultivated faster as compared to growing them from seeds.