

MODULE 4

HOW DO ORGANISMS REPRODUCE?

SUB: SCIENCE

CLASS 10

Key points.

Sexual reproduction

Need for sexual reproduction

More variations during sexual reproduction

Chromosome number remains constant during sexual reproduction

Sexual reproduction in flowering plants

SEXUAL REPRODUCTION:

A method of reproduction which needs two parents and there is formation of gametes.

Characteristics:

1. Biparental
2. formation of sex cells called gametes
3. fertilisation of gametes.
4. Offsprings are different from parents
5. More variations hence more evolutionary significance.

NEED FOR SEXUAL REPRODUCTION

1. Creation of two new cells from one involves DNA copying which is not absolutely accurate and the errors are a source of variation in populations of organisms.
2. In a population, variations are useful for ensuring the survival of species.
3. So if there are reproductive methods that allow more variations it would be beneficial for species.
4. Sexual reproduction is that method that allows more variations to be generated among the individuals of a species.

Thus it speeds up the process of variations.

WHY MORE VARIATIONS DURING SEXUAL REPRODUCTION?

1. DNA of each gamete(one from each parent) has already accumulated variations from previous generations. Thus two different individuals in a population would have quite different patterns of variations.

2. Two new cells (gametes) combine or fuse together in fertilization process. So due to combining of new DNAs(DNA of two different gametes) various new combinations are possible. So more variations during sexual reproduction.

HOW DOES THE AMOUNT OF DNA REMAIN CONSTANT DURING SEXUAL REPRODUCTION?

1. IF each new cell(zygote) has to receive DNA from two gametes then the amount of DNA in the zygote should be twice the amount of DNA of previous generation.

2. IF each generation doubles its DNA as compared to previous generation there will be only DNA on the earth.

3. This factor is taken care by gametes which are present in reproductive organs have half the amount of DNA and half the number of chromosomes as compared to the non reproductive cells of the body.

4. Thus when two gametes combine during sexual reproduction it results in re-establishment of the number of chromosomes and the DNA content in the new generation.

Note: Generally one germ cell(gamete) is large and contains the food stores for the zygote and it is called the female germ cell.

The other germ cell is smaller and motile and is known as male germ cell.

SEXUAL REPRODUCTION IN FLOWERING PLANTS

1. Flower is the reproductive part of plants.(Angiosperms)

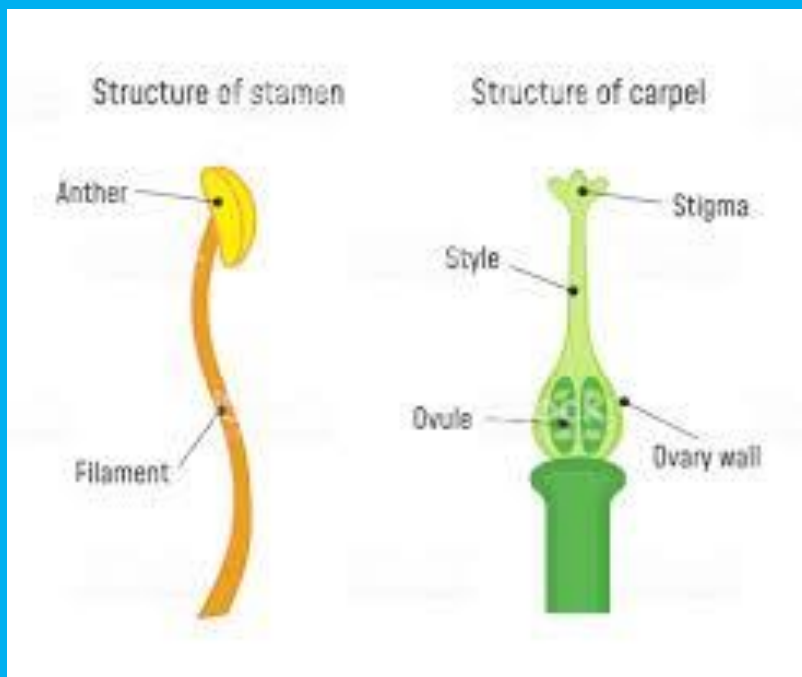
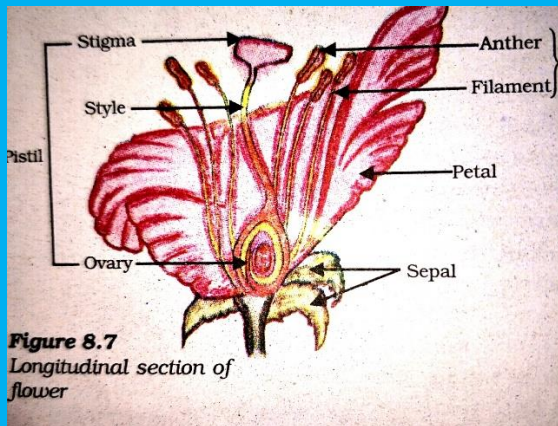
2. PARTS OF A FLOWER (refer to diagrams given below)

a) Sepals : Protects inner parts of a flower (during bud stage) and performs photosynthesis.

b) Petals: Brightly coloured and have fragrance and attract insects for pollination.

c) Stamen: Male reproductive part of a flower and has anther and filament. Anther has pollen grain which contains male gamete.

d) Pistil/carpel: Female part of flower and has stigma, style , ovary and ovule. Ovule contains ovum or egg.



Reference: NCERT book class 10 science

Diagrams: google web page and NCERT