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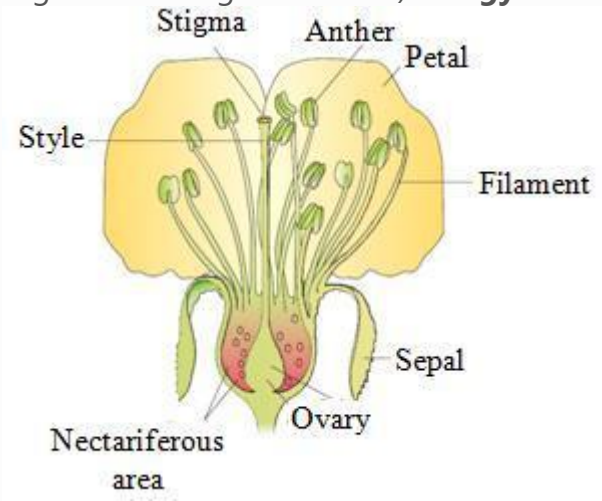
Sub. – Biology

Class 12th

Date:- 24.04.21

Reproduction ensures continuity of species generation after generations as the older individuals undergo senescence and die. Flowering plants shows sexual mode of reproduction and bears complex reproductive units as male and female reproductive units along with accessary structures.

Flower is a modified stem which functions as a reproductive organ and produces ova and/or pollen. A typical angiospermic flower consists of four whorls of floral appendages attached on the receptacle: **calyx, corolla, androecium** (male reproductive organ consisting of stamens) and **gynoecium** (composed of ovary, style and stigma) .



Pre-fertilisation: Structures and Events

• Several structural and hormonal changes lead to formation and development of the floral primordium. Inflorescence is formed that bears floral buds and then flower.

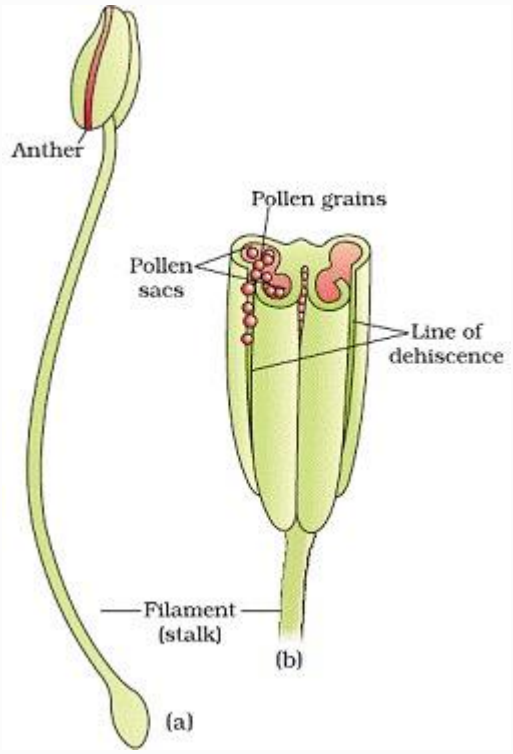
• In flowers, male (androecium) and female (gynoecium) differentiate and develops in which male and female gametes are produced.

Stamen, Microsporangium and Pollen Grain :

• Stamen consists of long and slender stalk called filament and generally **bilobed** anthers. Each lobe contains two theca (**dithecious**).

• The anther is four-sided structure consisting of four microsporangia, two in each lobes.

• Microsporangia develop further and become pollen sacs which contain pollen grains.

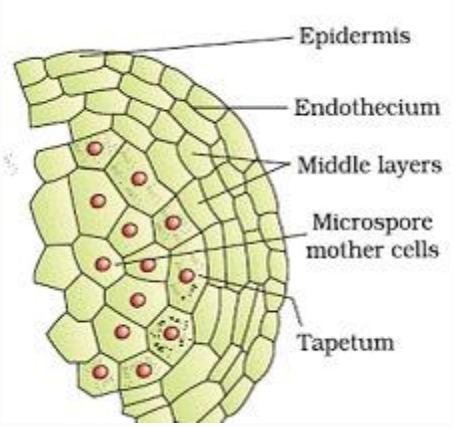


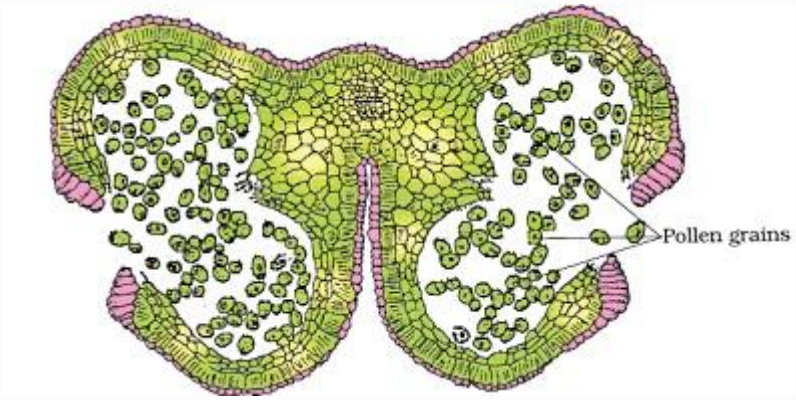
• Microsporangium is generally surrounded by four layered walls- the epidermis, endothecium, middle layer and tapetum. Innermost layer **tapetum** nourishes the developing pollen grains.

• **Sporogenous tissues-** It is compactly arranged homogenous cells which are present at centre of each microsporangium when the anther is young..

Microsporogenesis- The process of the formation and differentiation of microspores (pollen grains) from microspore mother cells (MMC) by reductional division is called microsporogenesis.

• The cells of sporogenous tissues undergo meiotic division to form microspore tetrad. As the anther mature and dehydrate, the microspore dissociate and develops into pollen grains.





Pollen grain represents the male gametophytes. Pollen grains are made of 2 layered Wall,
1. Exine :- Made of sporopollenin- most resistant organic matter known.It can withstand high temperatures and strong acids and alkali. No enzyme can degrade sporopollenin

2. Intine :-
-Thin and continuous layer
– Made of cellulose and pectin

3. Germ pores
– apertures on exine where sporopollenin is absent
– forms pollen tube.

4. A plasma membrane surrounds cytoplasm of pollen grain.