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Class 12th

Subject Biology

Date 01.06.2021

Sexual Reproduction in Flowering Plants

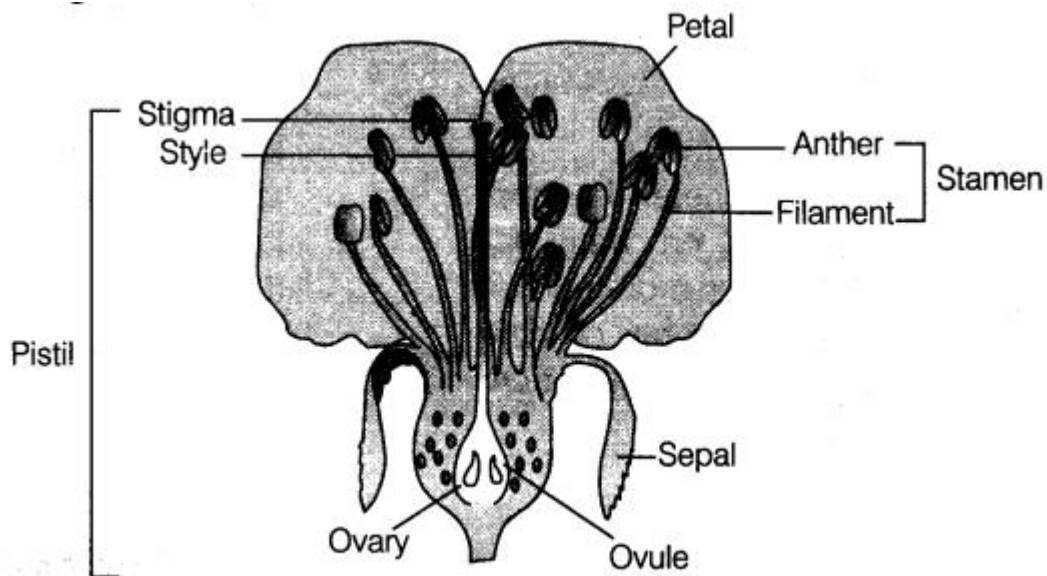
Sexual reproduction is the process of fusion of haploid gametes, resulting in the production of a diploid zygote, which ultimately develops into a new organism. All flowering plants show sexual reproduction.

1. Flowers are the site of sexual reproduction in flowering plants.

(i) A flower has following parts arranged in four whorls, i.e. calyx (sepals), corolla (petals), androecium and gynoecium. These are attached to central axis called thalamus.

(ii) Flowers may contain both male (stamens) and female (carpels or pistils) reproductive parts or organs in it and is called bisexual.

(iii) In unisexual flowers, only either of the reproductive parts are present, e.g. corn, the tassels represent the male flowers (stamens) and the ears or silk represent the female flower (styles and stigma).



Diagrammatic representation of LS of a flower

2. Stamen is the male reproductive unit of angiosperm.

It consists of the following two parts:

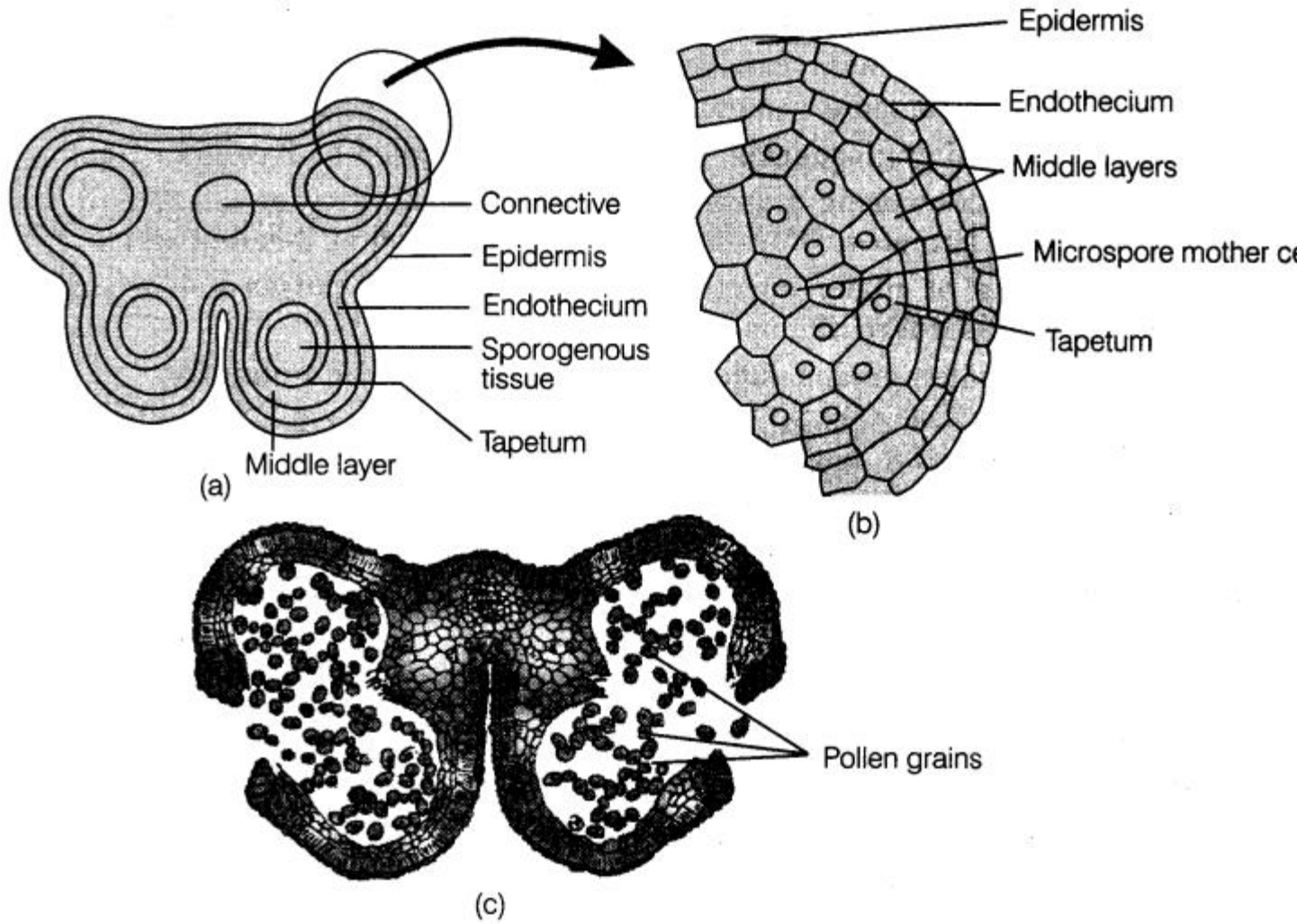
- (i) The long and slender stalk called the filament.
- (ii) The terminal generally bilobed structure called the anther.

3. Anther is a bilobed structure with each lobe having two theca, therefore called dithecous. In a cross section, it is a four sided (tetragonal) structure consisting of four microsporangia, located at the corners, two in each lobe. Microsporangia develop and becomes pollen sacs. Pollen sacs contain pollen grains.

Structure of microsporangium contains following features in a transverse section:

- (i) Appears nearly circular in outline.
- (ii) It is surrounded by four wall layers. The outer three layers are epidermis, endothecium and middle layers. Outer three wall layers are protective in function and help in dehiscence of anther to release the pollen. The fourth and innermost layer called the tapetum nourishes developing pollen grains. It contains cells with dense cytoplasm and more than one nuclei.
- (iii) A sporogenous tissue occupies the centre of each microsporangium in a young anther.
- (iv) Each cell of sporogenous tissue undergo meiosis to form microspore tetrads. Each cell of

the tetrad is known as microspore mother cell.



(a) TS of a young anther (b) Enlarged view of one microsporangium showing four wall layers (c) A mature dehiscing anther