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1. Classification of plants according to Eichler’s grouping of 1883

Division Class

Thallophyta -Phycotinae (Algae)

Mycotinae (Fungi)

Bryophyta -Hepaticae (Liverworts)

Musci (Mosses)

Pteridophyta -Psilotinate (Psilotum)

Lycopodinae (Lycopodium,Selaginella)

Equisetinae (Horsetails)

Filicinae (Ferns)

Spermatophyta - Gymnospermae (Gymnosperms)

Angiospermae (Angiosperms)

**2)** Importance of algae to man

a) Man use algae e.g seaweeds which are source of three chemical extracts used extensively in the production of food, pharmaceutical, textile and cosmetic industries.

b) Algae have high iodine content therefore prevents goitre in man.

c) Man use algae for their purported powers to cure or prevent illnesses.

**3)** Unicellular form of algae

Chlamydomonas represents the unicellular and motile forms of green algae. They are found in stagnant water. Flagella are the structures for mobility.

The cell is bounded by a cellulose cell wall; contains organelles e.g nucleus, mitochondria, stigma (eyespot), cup-shaped chloroplast, pyrenoid etc.

Manufactured sugar is processed into starch on the pyrenoid.

The nucleus carries the genetic programme of the cell.

The stigma is for photoreception. The mitochondria mediate the elaboration of energy molecules.

**4)** Chlamydomonas reproduction can either be asexual or sexual.

- In asexual reproduction, they reproduce through repeated mitotic division. This is the kind of cell division which maintains the quantity and quality of genetic material. It is responsible for the increase in number of cells in unicellular organisms and for the increase in size in multicellular organisms.

-In sexual reproduction, instead of forming spores, the haploid daughter cells form gametes that have two different mating strains which are structurally similar and are positive and negative strains. Opposite mating strains fuse in a process called **isogamy** to form a diploid zygote. After a period of dormancy, the zygote undergoes meiosis, a type of cell division that reduces the genetic content of a cell by half. This cell division produces four genetically unique haploid cells that eventually grow into mature cells.

**5)** Differences between the two types of colonial form of algae.

Pandorina consists of 16 cells attached to one another **while** in Volvox there are more cells in the colony, number may run into thousands and connected with cytoplasmic strands that run through the cells.

**6)** Description of a named complex form of alga

FUCUS

A genus of brown algae whose species are often found on rocks in the intertidal zones of the sea shores. The plant body is flattened, dichotomously-branched thallus with a midrib, a vegetative apex, a reproductive apex at maturity) and a multicellular disk (hold fast) with which plant is attached to rock surface. The plant body also has air bladders which is believed to aid the plant to float on water.

The various species of focus exist due to the way they vary in size from a few centimetres to about two metres in length. They also vary in terms of whether the sex cells are found in the same sexual chamber or different sexual chambers on different plane bodies.

Sexual reproduction is oogamous, sex cells are produced in conceptacles which have openings (ostioles) on the surface of the thallus.