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1. Classify 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. How are algae of importance to man?

- It serves as food for man.
- It serves as thickening agents in ice cream and shampoo.
- It serves as drugs.
- It prevents goitre because of its high iodine content.
- Brown algae yields alginic acid which is used to stabilize emulsions and suspensions.

3. Describe a unicellular form of algae.

A unicellular form of algae is the Chlamydomonas. It is motile. It is found in stagnant water usually along with other forms. Flagella are the structures for mobility. It is bounded by a cellulose cell wall and contains organelles e.g. nucleus, mitochondria, stigma (eye spot), cup-shaped chloroplast, pyrenoid etc. Its nucleus carries the genetic programme of the cell. The stigma is for photoreception. The mitochondria mediate the elaboration of energy molecules. Manufactured sugar is processed into starch on the pyrenoid.

4. How does this unicellular alga described in question 3 carry out its reproduction?

In Chlamydomonas, reproduction is either vegetative or sexual.

Vegetative reproduction: In Chlamydomonas, a cell about to divide loses its flagella. The cell undergoes mitotic division leading to two nuclei, cell walls are elaborated which delimit cytoplasm around each nucleus i.e. two daughter cells (zoospores) are released.

Sexual reproduction: it involves union of sex cells (gametes). In Chlamydomonas, aggregation of cells in a colony (clumping) occurs under favourable conditions. These cells pair by their posterior (flagellated) ends, this pairing is said to be isogamous because the pairing cells (gametes) are morphologically identical. The cytoplasm of the pairing cells fuse (plasmogamy) and the flagella are lost. The two nuclei

fuse (karyogamy); this situation is essentially a fertilization process so that a zygote is formed.

5. Differentiate between the two types of colonial form of algae.

The two types of colonial form of algae are pandorina and volvox.

PANDORINA	VOLVOX
Colony consists of 16 cells	Cells in colony may run into thousands.
Cells are attached to one another	Cells are connected with cytoplasmic strands that run through them
All cells form new colonies	Only large cells at the posterior ends form new colonies.
Sexual reproduction is anisogamous	Sexual reproduction is oogamous

6. Describe a named complex form of alga.

A complex form of alga is Fucus. It is a genus of brown algae. It is found on rocks in the intertidal zones of the sea shores. The plant body is flattened, dichotomously-branched thallus with a mid rib, a vegetative apex, a reproductive apex and a multicellular disk with which the plant is attached to rock surface. It also has air bladders which helps it to float on water. Various species of it vary in size from a few centimetres to about 2 metres in length.