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**BI0 102 ASSIGNMENT ON PLANT DIVERSITY**

1. **CLASSIFICATION OF PLANTS ACCORDING TO EICHLER’S GROUPING OF 1883**

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| 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) |

1. **IMPORTANCE OF ALGAE TO MAN**

It serves as food for people and livestock, thickening agents in ice cream and shampoo, drugs to ward off diseases. They’re nutritious to man because of their high protein content and high concentrations of minerals, trace elements and vitamins. Algae have high iodine content, it therefore prevent goiter. Algae have been used for centuries for their supported powers to cure or prevent illnesses e.g. cough, hypertension, diarrhea, etc.

1. **UNICELLULAR FORM IN ALGAE**

Chlamydomonas represents the unicellular and motile forms of green algae. They are found in stagnant water usually along with other forms. Flagella are the structures of mobility. The cell is bounded by a cellulose cell wall; contains organelles e.g. nucleus, mitochondria, stigma (eyespot), cup-shaped chloroplast, pyrenoid, etc. The 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.

1. **REPRODUCTION IN UNICELLULAR ALGA**

Chlamydomonas carry out reproduction vegetatively(asexually) whereby two daughter cells(zoospores) are produced by mitotic division. They also carry out reproduction sexually in unfavorable conditions whereby four daughter cells are produced meiotic division.

1. **DIFFERENCES BETWEEN THE COLONIAL FORMS OF ALGAE**

The colonial forms are pandorina and volvox

1. In pandorina, the colony consists of 16 cells attached to one another, but in volvox, number of cells may run into thousands and connected with cytoplasmic strands that run through the cells.
2. Sexual reproduction in pandorina is by anisogamous pairing while in volvox, sexual reproduction is oogamous
3. All cells in pandorina forms colony, but in volvox, all cells do not form colony.
4. **COMPLEX FORM IN ALGAE- FUCUS**

The fucus is a genus of brown algae whose species are often found on rocks in the intertidal zone of the sea shores.

The plant body is flattened, dichotomously-branched thallus with a mid rib, a vegetative apex, a reproductive apex at maturity and a multicellular disk with which plant is attached to rock surface. The plant body also has air bladders which are believed to aid the plant to float on the water. Various species of fucus exist; vary in size from a few centimeters to about 2meters in length.

They also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chambers on different plant bodies.

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

In the male conceptacles, one of the diploid cells from outgrowth of the wall of the conceptacles undergoes meiosis, the meiotic product undergo many mitotic divisions to produce antheridium having 64 cells of which each cell develops into a biflagellate sperm that swims out of the conceptacle through the ostiole.

In the female conceptacle, similar to the situation in the male conceptacle, leads to the production of an 8 celled oogonium­­–– each becomes an egg which is the female sex cell.

Motile sperm cell from the antheridium move through the ostiole into the female conceptacle where the eggs are fertilized and diploid zygote are produced.

Apart from the antheridia and oogonia, sterile multicellular filaments (paraphyses) are also produced in the conceptacles which are dispersed among the antheridial and oogonial outgrowths and at the entrance into the conceptacles.

The diploid zygotes germinates into a new diploid Fucus plant making the diploid the dominant generation.