

BIOLOGY 102 ASSIGNMENT

- **Classify plants according to Eichler's grouping of 1883**

Eichler had a classification scheme with four (4) divisions and each division had its own classes, thus:

Division 1 : Thallophyta

Phycotinae (Algae)

Mycotinae (Fungi)

Division 2 : Bryophyta

Hepaticae (Liverworts)

Musci (Mosses)

Division 3 : Pteridophyta

Psilotinate (Psilotum)

Lycopodinae (Selaginella, Lycopodium)

Equisetinae (Horsetails)

Filicinae (Ferns)

Division 4 : Spermatophyta

Gymnospermae (Gymnosperms)

Angiospermae (Angiosperms)

- **How are algae of importance to man?**

Algae is useful in fishing, in order to bait fish; it serves as food for fish.

Brown algae is used to make Alginic acid, which is used in ice cream, syrup among other suspensions and emulsions.

Their high iodine content is useful for the prevention of goitre.

- **Describe a unicellular form of Algae.**

Chlamydomonas is a common example of a unicellular and motile green algae. It is found in stagnant water. Chlamydomonas has a pair of flagella for movement. It is bounded by a cellulose cell wall. In the cell are spherical, contractile vacuoles for osmoregulation, cylindrically shaped mitochondria for respiration, pyrenoid gland for conversion of manufactured sugars to starch, as well as starch grains to store starch. There is an eyespot to detect light and chloroplast to help with photosynthesis.

- **How does this unicellular algae described in question 3 carry out its reproduction?**

Chlamydomonas undergoes both sexual and asexual reproduction. In asexual reproduction, the Chlamydomonas loses its flagella. It then it undergoes mitotic division and

BIOLOGY 102 ASSIGNMENT

gives rise to the two nuclei, within elaborated cell wall. This delimits the cytoplasm around the nuclei and two daughter cells are released. In sexual reproduction, the cell is usually under unfavorable conditions. The haploid daughter cells do not form spores in this case, they form gametes that have two different mating strain, which although structurally similar, are either positive or negative. Fusion of opposite mating strains (isogamy) occurs. This gives a diploid zygote with two sets of chromosomes. After a period of dormancy, meiosis occurs and four haploid daughter cells are produced.

- **Differentiate between the two types of colonial forms of algae**

Pandorina	Volvox
It has sixteen (16) daughter cells.	It has numerous daughter cells, usually in multiples of thousands.
It does not have cells differentiated for reproduction.	It has cells (gonidia) differentiated for reproduction
Sexual reproduction is anisogamous	Sexual reproduction is oogamous.

- **Describe a named complex form of algae**

Fucus is a genus of a brown coloured algae, that is often found on rocks in the inter-tidal zones of the sea shores. Its body is flattened, and it has dichotomously branched thallus with a mid rib, a vegetative apex, and a multicellular disc, which is also known as a hold fast. The hold fast is useful for securing it to the rock surface. In addition, the plant body has air bladders which help to keep the plant afloat in water. During maturity the vegetative apex becomes the reproductive apex.