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**COURSE CODE: BIO102**

**DEPARTMENT : MEDICINE AND SURGERY**

**MATRIC NO: 19/MHS01/366**

**ASSIGNMENT**

1.)Classify 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(Selaginella,Lycopodium)  Equisetinae(Horsetails)  Filicinae(Ferns) |
| Spermatophyta | Gymnospermae(Gymnosperms)  Angiospermae(Angiosperms) |

2.) How are algae of importance to man?

I) They can be used to make drugs to ward off diseases

II)They are considered nutritious because of their high protein content and high concentration of minerals, trace elements and vitamins

III) They have high iodine content and so they prevent goitre

IV) Algae are believed to cure and prevent various diseases /illnesses like cough, goitre, cancer, gallstones, gout, hypertension and diarrhoea

V) It serves as food for people and livestock

3) Describe a unicellular form of algae

An example of a unicellular form of algae is chlymadonomas. It is a unicellular as well as a mobile form of green algae. It is usually found in stagnant water with other forms. It moves with the aid of flagella(whip like locomotive structure). It is bounded by a cell wall which bounds the organelles of chlymadonomas. Some of the organelles include: nucleus, mitochondria, cup-shaped chloroplast, pyrenoid stigma(eyespot) e.t.c. The nucleus carries the genetic energy of the cell. The mitochondria mediates energy molecules. The chloroplast help to provide food for the cell by converting light energy to chemical energy. The pyrenoid synthesizes starch converting glucose to starch molecules. The stigma also known as eye spot is for sensitivity (photoreception)

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

The chlamydonomas, a unicellular alga has two types of reproduction. These are : asexual reproduction and sexual reproduction. The asexual reproduction is also known as vegetative reproduction. This type of reproduction involves mitotic division. This reproduction produces daughter cells which have the same amount and quality of genetic material has the parent cells. Vegetative reproduction is responsible for increasing the number of cells. When a chlamydonomas is about to undergo asexual mode of reproduction, it loses its flagella and carries out mitotic division after which cytokinesis and karyokinesis takes place which forms two zoospores(daughter cells).

Sexual reproduction is triggered by lack of nutrients or moisture. In the case of chlamydonomas, fusion of gametes occur in favourable conditions. The parent cells which are haploid do not form spores directly. Sexual reproduction involves the fusion of gametes and so the parent cells develop into mating strains which are different(positive and negative) but structurally similar. These mating strains fuse together to form a zygote. They pair (isogamous) by their flagellated (posterior) ends. After which, karyogamy and plasmogamy occurs . This results in the formation of a zygote which is a diploid cell. The zygote secretes a thick wall (zygospore) and undergoes a state of dormancy for a while. After which, it undergoes two successive division. First, a meiotic division which halves the genetic material forming two haploid daughter cells and then a mitotic division takes place which forms 4 haploid daughter cells . Therefore, sexual reproduction results in formation of four haploid daughter cells.

5) Differentiate between the two types of colonial form of alga

The two types of colonial form of alga are Pandorina and Volvox. Although, they are both colonial alga, some differences exist between them. Pandorina has 16 cells in a colony while volvox has cells running up to thousands in a colony. The sexual reproduction in pandorina is oogamous while that of volvox is anisogamous. Volvox is more complex than pandorina

6) Describe a named complex form of alga.

An example of a complex form of alga is Fucus. Fucus is a brow algae that is usually found on rocks in the inter tidal zones of the sea shores. The fucus is a plant with a flattened dichotomously branched thalamus with a mid rib , vegetative apex (it becomes reproductive at maturity) and a multi cellular disk (hold fast) used to attach to hard or rocky surfaces. The plant’s body is covered with air bladders which is responsible for the plant’s buoyancy. The fucus has several species that vary in size (ranging from a few centimetres to 2 metres in length). Sexual reproduction in fucus is oogamous . The sex cells that fuse to form zygote are produced in conceptacles with openings(ostioles) on the thallus. These sex cells could be found in the same sexual chamber or different ones. In the male conceptacle, one of the diploid cell from an outgrowth of the wall of the conceptacle undergoes meiosis . The product of this division undergoes several mitotic divisions to produce antheridium of 64 cells. Each of these cells develop into a biflagellate sperm that swims out of the conceptacle through the ostiole.

In the female conceptacle a similar situation occurs and 8 cells (oogonium) I.e female sex cell are formed. A mobile sperm from the antheridium move through the ostiole to the female conceptacle where the eggs are fertilised and a diploid zygote is produced. Apart from the antheridium and oogonia some sterile multicellular filaments (paraphyses) are also produced in the conceptacles and are dispersed among the antheridium and oogonia. The diploid zygote germinates into a new diploid focus plant. This means that the diploid is the dominant generation.