NAME: OBOLO FAITH IFEOLUWA

MAT NO: 19/MHS01/274

DEPT: MEDICINE AND SURGERY

COURSE: BIO 102

ASSIGNMENT

1. Classify plants according to Eichler’s grouping of 1883
2. How are algae of importance to man?
3. Describe a unicellular form of algae
4. How does this unicellular alga described in question 3 carry out its reproduction?
5. Differentiate between the two types of colonial form of algae
6. Describe a named complex form of alga

ANSWER

1. A system of plant taxonomy, the Eichler’s system was the first phylogenic (phyletic) or evolutionary system. He gave the system of classification for the whole plant kingdom. Eichler classified the plant kingdom into two sub-kingdoms which are the Cryptogamae and Phanerogamae.
2. Cryptogamae are flowerless and seedless plants. They are simple and flowerless plants like algae, mosses and ferns which do not produce flowers, fruits and seeds. Cryptogams are considered as lower plants.
3. Phanerogamae are seed bearing plants. So they are known as spermatophtes. They are higher plants. The plant body is differentiated into roots, stem and leaves with a well-developed vascular system. Examples are gymnosperms and angiosperms.

The division will further be explained in the table below;

|  |  |
| --- | --- |
| DIVISION | CLASS |
| Thallophyta  | Phycotinae (Algae)Mycotinae (Fungi) |
| Bryophyta  | Hepaticae (Liverworts)Musci (Mosses)  |
| Pteridophyta | Psilotinae (Psilotum)Lycopodinae (Lycopodium, Saleginella)Equisetinae (Horsetails) Filicinae (Ferns) |
| Spermatophyta  | Gymnospermae (Gymnosperms)Angiospermae (Angiosperms) |

1. Alga are important to man in the following ways;
2. It serves as food for man.
3. It is used as thickening agents in ice cream and shampoo.
4. It is used for making drugs.
5. It contains alginic acid which is used to stabilize emulsions and suspensions, found in products such as syrup and paint.
6. It consists of agar which is used in the preparation of various gels used in scientific research.
7. Agar is also used to in the food industry to stabilize pie fillings and preserve canned meat and fish.
8. It is used in the manufacture of soaps and alums.
9. It can be used to produce fertilizers.
10. Chlamydomonas represents the unicellular forms of the algae, it is found in stagnant water, it uses its flagella for movement, the cell is bounded by a cellulose cell wall; which contains organelles. Examples of these organelles include; nucleus, mitochondria, stigma, cup-shaped chloroplast, pyrenoid etc. The functions of these organelles include;

The nucleus carries the genetic materials 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 Chlamydomonas can either be vegetative (asexual) or sexual.

Vegetative reproduction results in the production of two daughter cells in which the amount and quality of genetic material in the nucleus of the mother cells is maintained in the daughter cells. This kind of cells division is also known as mitotic cell division.

Sexual reproduction involves the union of two sex cells. In Chlamydomonas, aggregation of cells in a colony occurs under favorable conditions. These cells pair by their posterior or flagellated ends. After karyogamy, the zygote undergoes two successive cell divisions. The first division restores the haploid condition and the second division each haploid nucleus undergoes a normal mitotic division. These two divisions which end up with four cells are known as meiosis. The four products of meiosis are released as haploid zoospores.

1. The colonial forms in Algae include:
2. Pandorina
3. Volvox

|  |  |
| --- | --- |
| PANDORINA | VOLVOX |
| Sexual reproduction is anisogamous  | Sexual reproduction is oogamus |
| It’s a genus of green algae  | It’s a complex form of pandorina |
| Unicellular motile thallus  | Multicellular motile thallus  |

1. Complex form in the algae

Fucus

It is a genus of the brown algae whose species are found on rocks in the intertidal zones of the sea shores. The body of the plant is flattened, dichotomously-branched thallus with a mid rib, a vegetative apex and a multicellular disk with which the plant is attached to rock surface. The plant body also has air bladders which is believed to aid the plant to float on the water. It varies in size from a few centimeters to about 2 meters 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 on the surface of the thallus.