NAME: - AKERELE ADEBOLA FUNMILOLA

DEPARTMENT: - NURSING

MATRIC NUMBER: - 19/MHS02/015

COURSE: - BIO 102

LEVEL: - 100

1. Classify plants according to Eichler's grouping of 1883.

Answer

Division	Class
Thallophyta	Phycotinae (algae) Mycotinae (fungi)
Bryophyta	Hepaticae (liverworts) Musci (mosses)
Pteridophyta	Psilotinate (psilotum) Lycopodinae (lycopodium, selaginella) Equisetinae (horsetails) Filicinate (ferns)
Spermatophyta	Gymnospermae (gymnosperms) Angiospermae (angiosperms)

2. How are algae of importance to man.

Answer

i. Algae serves as food for people and livestock, thickening agents in the ice cream and shampoo, drugs to wards off diseases.
ii. Algae has high iodine content therefore it prevents goitre.
iii. Brown algae yield alginic acid which is used to stabilize emulsions and suspensions. They are usually found in products such as syrups, ice cream and paint.
iv. Red algae yield agar and carrageen are used for the preparation of various gels used in scientific research.
v. Algae are considered nutritious because of their protein content and high concentration of minerals, trace elements and vitamins.
vi. Used as food for fishes and even some humans consume it.
vii. Seaweeds extracts can be used in the in the food, pharmaceutical, textile and cosmetic industries.

3. Describe a unicellular form of algae.

Answer

Unicellular algae are plant like autotrophs and contain chlorophyll. Chlamydomonas represents the unicellular and motile forms of green algae. It is found in stagnant water usually along with other forms. Flagella are the structure for 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 pyrenoid.

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

   Answer.

   In chlamydomonas, reproduction can either b vegetative (asexual) 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. Increase in the population of cells in a colony is achieved by repeated mitotic division.

   Sexual reproduction: Certain conditions e.g. lack of nutrients or moisture may trigger the haploid daughter cells to undergo sexual reproduction. Though in chlamydomonas, aggregation of cells in a colony occurs under favorable 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. In other words, two cells each with n quantity of genetic materials (haploid nuclear materials) undergo karyogamy (fusion of nuclei) to produce a single cell with 2n(diploid) nuclear materials. The zygote secretes a thick cell wall called a zygospore and may remain dormant in that state for some time. After karyogamy sometimes, the zygote undergoes two successive cell divisions. The first division restores the haploid condition by halving the nuclear material in the two resulting nuclei. while in the second division each haploid nucleus undergoes a normal mitotic division. These two divisions which end up with four cells and with n quantity of nuclear materials.

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

   Pandorina: it usually occurs in water bloom. The colony consists of 16 cells attached to one another. Each cell has many attributes in common with chlamydomonas e.g. nucleus, large chloroplast, pyrenoid, flagella and stigma. Asexual reproduction is achieved through 4 successive mitotic divisions of each of the 16 cells in the colony therefore producing 16 daughter colony. When the right time comes, each daughter colony is released from the matrix of the mother colony to become independent. Sexual reproduction occurs by division of each cell of the colony into 16-32 zoogametes.

   Volvox: The genus volvox (also green colonial form) shows more complex form than pandorina. The more cells in colony, number may run into thousands and connected with cytoplasmic strands that runs through the cells. Not all cells form new colonies; but the larger cells at the posterior ends(gonidia) are the only ones that divides to form new colonies. Other cells remain vegetative throughout the life of the colony. Sexual reproduction is oogamous.

6. Describe a named complex form of algae.

   The complex form is called FUCUS.

   It is a genus of brown algae whose species are often 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 which is at maturity and a multicellular disk with which plant is attached to rock surfaces. The plant body also has air bladder to float on water. various species of focus

exist; some vary 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 (ostioles) on the surface of the thallus.