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Matric no: 19/mhs02/041

Course code: Bio102

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)

Equisetinae(horsetails)

Filicinae(ferns)

Spermatophyta Gymnospermae(gymnosperms)

Angiospermae(angiosperms)

2. **How are algae of importance to man?**

i. Algae are important as food for fish.

ii. Algae serves as food for people and livestock.

iii. Algae are used in thickening agents in icecream and shampoo.

iv. Algae have high iodine content therefore prevents goitre.

v. Algae are considered nutritious becuase of their high protein content and minerals.

vi. Brown algae yields alginic acid which is used to stabilize emulsions and suspensions found in syrups, icecream and paint.

vii. Algae have been used to cure or prevent illnesses e.g cough

viii. Diatoms have been used in forensic medicine as their presence can indicate a person died due to drowning.

3. **Describe a unicellular form of algae.**

Chlamydomonas represents the unicellular and motile forms of green algae. it is 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 mitochondria

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.

4. **How does this unicellular algae in 3 carry out its reproduction.**

The reproduction can either be asexual(vegetative) or sexual.

For asexual 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.

For sexual reproduction, the cytoplasm of the pairing cells fuse and the flagella are lost. The two nuclei fuse and a zygote is formed. The zygote secretes a thick cell wall called a zygospore and may remain dormant in that state. The four products of meiosis are released as haploid zoospores.

5. **Differenciate between the two types of colonial form of algae.**

i. Sexual reproduction in pandorina is anisogamous while that of volvox is oogamous.

ii. pandorina has a colony of 16 cells while volvox run into thousands of cellls connected with cytoplasmic strands that run through the cells.

iii.volvox is concluded to be evolutionarily more advanced than pandorina as the cells show greater levels of differnciation and specialization.

6. **Describe a named complex form of algae.**

Fucus is a complex form of algae. Their 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 and a multicellular disk with which plant is attached to the rock surface. The plant body also has air bladders to aid floating on water. Species of fucus vary in size and the position of sex cells.

Sexual reproduction is oogamous: In the male conceptacles, one of the diploid cells undergo meiosis, the meiotic product undergo many mitotic divisions to produce antheridium having 64 cells. The female conceptacle is similar to the male but produces 8 celled oogonium- each becomes an egg. Motile sperm swims to the eggs through the ostiole and a diploid zygote is formed.. The diploid zygote germinates into a new diploid fucus plant making the diploid the dominant generation.