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MATRIC NO: 19/MHS01/408

BIOLOGY 102 ASSIGNMENT

QUESTION1. Classify plants according to Eichler's grouping of 1883.

ANSWER. CLASSIFICATION BASED ON EICHLER'S GROUPING OF PLANTS.

DIVISION	CLASS
Thallopyta	Phycotinae (Algae) Mycotinae (Fungi)
Bryophyta	Hepaticae (Liverworts) Musci (Mosses)
Pteridophyta	Psilotinate (Psilotum) Lycopodinae (Lycopodium, Selaginella) Equisetinae (Horsetails) Filicinae (Ferns)
Spermatophyta	Gymnosperm (Gymnosperms) Angiospermae (Angiosperms)

QUESTION2. How are algae of importance to man?

ANSWER. The importance of algae to man are;

- I. Algae have high iodine content therefore prevent goitre
- II. Algae are highly nutritious plants because of their high protein content and high concentration of minerals, trace elements and vitamin
- III. Algae serves as food for fish
- IV. Algae is used for making fertilizer
- V. Algae serves as a thickening agent in ice cream and shampoo, drugs to ward of diseases

QUESTION3. Describe the unicellular form of algae

ANSWER. DESCRIPTION OF THE UNICELLULAR FORM OF ALGAE

Chlamydomonas represent the unicellular and motile form of green algae, this organism is found in stagnant water usually along with other forms. The posse's flagella structures for movement, with their cell bounded by a cellulose cell wall: contains organelles e.g. nucleus, mitochondria, stigma, cup-shaped chloroplast, pyrenoids etc.

The nucleus also carries the genetic programming of the cell, the stigma is for photoreception. The mitochondria mediate the elaboration of energy molecules and manufactured sugar is processed into starch on the pyrenoid.

QUESTION4. How does this unicellular alga described in question 3 carry out its reproduction?

ANSWER. REPRODUCTION IN CHLAMYDOMONAS {UNICELLULAR ALGAE}

Reproduction in Chlamydomonas can either be vegetative (asexual) or sexual. Asexually (vegetative) reproduction results in production of daughter cells in which the amount and quality of genetic material in the nucleus of the mother cell is n , the daughter cells also have n quantity of genetic material. This kind of cell division is known as mitotic cell division. In Chlamydomonas, a cell about to divide loses its flagella. The cell undergoes mitotic division resulting to two nuclei. Cell walls are elaborated which delimit cytoplasm around each nucleus. Sexually, certain environmental conditions e.g. lack of nutrients or moisture may trigger the haploid cells to undergo this form of reproduction. Instead of forming spores, these haploid cells form gametes that have two different mating strains. These opposite mating strains fuse via ISOGAMY to form a diploid zygote, containing two sets of chromosomes. After a period of dormancy, these zygotes undergo meiosis. These cell division produces four genetically unique haploid cells that grow into mature cells.

QUESTION5. Differentiate between the two types of colonial form of algae

ANSWER. DIFFERENCES BETWEEN THE TWO COLONIAL FORMS OF ALGAE

The two colonial forms of algae are Pandorina and volvox; Pandorina is a colony usually found in water bloom. The colony consists of 16 cells attached to one another. Each cell has many attributes in common with Chlamydomonas. In this colony, sexual reproduction is achieved by anisogamous pairing. While, volvox is also a colony that shows more complex forms than Pandorina. There are more cells in this colony, number may run into thousands and are connected with cytoplasmic strands that run through the cells. Sexual reproduction in this colony is oogamous.

QUESTION6. Describe a named complex form of algae

ANSWER. DESCRIPTION OF A FUCUS {COMPLEX FORM OF ALGAE}

Fucus known by the common names: bladder rack, black tang, rock weed, sea oak, cut weed, rock wrack is a genus of green brown algae whose species are often found on rocks in the intertidal zones the sea shores, It usually has a life span of four years.

They feature bladder-like floats (nematocysts), disk-shaped holdfasts for clinging to rocks and mucilage-covered blades that resist desiccation and temperature changes. This plant body is flattened, dichotomously-branched thallus with a midrib, a vegetative apex at maturity and a multicellular disk with which 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. There are various species of focus that exist. They vary in size and also vary in terms of whether the sex cells are found in the same sexual chamber on different plant bodies. It is a dioecious organism. Sexual reproduction here is oogamous, sex cells are produced in conceptacles which have openings on the surface of the thallus.