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Student's Name: Okam Emmanuel Chijioke

Department: Medicine and Surgery

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**Assignment Title:** GENERAL BIOLOGY II
**Course Title:** General Biology II
**Course Code:** BIO**Question**

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.
7. Classify plants according to Eichler’s group of 1883.

The division with classes in the plant Kingdom according to Eichler’s grouping of 1885 is:

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|  | Division | Class |
| 1 | Thallophyte | Phycotinea (Algae)Mycotinae (fungi) |
| 2 | Bryophyta | Hepaticea (Liverworts)Musci (Mosses) |
| 3 | Pteridophyte | Psilotinate (Psilotum) Lycopodnae (Lycopodium) Seleginella)Equisentinae (Horsetails)Filicinae (Ferns) |
| 4 | Spermatophyta | Gymnospermae (gymnospernis)Angiospermea (Angiosperms) |

1. How are algae of importance to man?
2. Algae can serve as food to man and livestock and drugs to ward off disease
3. Algae have high iodine content which helps prevent goiter
4. Brown algae which yields alginic acid that is used to stabilize emulsions and suspension. The red algae provide agar used for the preparation of various gels.
5. In the food industry, it is used to stabilize pie filling and preserve canned beef.
6. Used in Asia countries for its behaved power to cure or prevent illnesses.
7. It has been surveyed for anticancer
8. Diatoms have been used in forensic medicine.
9. Describe the unicellular form of algae

Clamydomonas represent unicellular form of green algae. It is seen in stagnant water alongside ferns. The structure for motility is flagella. Cellulose cell bound the cell. The cell contains organelles, namely: nucleus which carries the cells genetic programme.

Stigma is for photoreception. Mitochondria, mediates the elaboration of energy molecules. When sugar is manufactured it is processed in the pyrenoid.

1. How does the alga carry out its reproduction?

The reproduction of a typical alga, Chlamydomonas can either be vegetative (asexual) or sexual.

 Vegetative reproduction: this brings about daughter cells. In these daughter cells the amount and quality of genetic materials in the nucleus of the mother is maintained.

If the mother cells nucleus is ‘n’ the daughter cells also has ‘n’ quality of genetic materials.

The type of cell division in the asexual reproductive is mitotic division. Mitotic division is responsible for increase in the number of cells in unicellular organisms and for increase in size in multicellular organisms. When Chlamydomonas cell wants to divide, it loses its flagella. The cell undergoes mitotic division leading to two nuclei. There is elaboration of cell wall that delimit cytoplasm around each nucleus and daughter cells are released.

**Sexual reproductive**

This can result from lack of nutrients or moisture. This triggers the haploid daughter cells to undergo sexual reproductive. Haploid daughter cells form gametes. The gamete have two different mating strains. These strains are structurally similar and are positive and negative strain. The opposite mating strains fuse in a process called isogamy to form a diploid zygote. The diploid zygote contains two sets of chromosomes. The zygote goes into a period of dormancy after it undergoes meiosis.

Meiosis is a type of cell division that reduces the genetic content of a cell by half. It is responsible for producing four genetically unique haploid cells which grows into mature cells. Sexual reproduction happens by union of cells.

The cells pair by their posterior ends. The cytoplasm of the pairing cells fuse and the flagella is lost. Their two nuclei fused. Two cells with n quality of material undergo karyogamy (fusion of nuclei) to produce a single cell with diploid nuclei material. The zygote will secrete thick cell wall called a zygospore and may remain dormant for a time.

After karyogamy the zygote will undergo two successive cell division first division restores haploid condition by meiosis while the second division undergoes a normal mitotic division.

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

|  |  |
| --- | --- |
| Pandorina | Volvox |
| -Occurs in water bloom consist of 16 cells attached to one another | Has more cells in the colony that can run into thousands |
| -Has features of chlamydomonas | The cells are connected by cytoplasmic strands |
| -Vegetative reproduction is through mitotic division | Not all form new colonus. Only larger cells divide to form colonus while others remain vegetative |
| Sexual reproduction is by anisogamous pairing | Sexual reproduction is oorgamcus (male gamet is motile, female is not motile) |
| There is fusion of the cytoplasm (plasmogamy and karyogamy (fusion of nuclei) | Sperms are formed by repeated divisions of cells in the colony to form motile sperm platelets with many sperms colonus are unisexual/bisexual. |
| Less evolutionary | More evolutionary |

1. Describe a named complex form of algae.

This is a genus of brown algae. They are found on rocks of intertidal zones of the sea shores. It has flat body with dicholomously branched thalus with a mid rib vegetative apex, reproductive apex at maturing and a multicelular disk. The multicellular disk helps it to attach to the rock surface.

It has air bladders which helps it float on water.

It has mainly species and varies in size and in terms of whether sex cells are found in the same sex chamber. Sex cells are produced in conceptacles with openings on the thalus surface. One of the diploid cells in the male conceptacle undergoes meiosis. Its meiotic product undergo mitotic division to produce antheridium with 64 cells that will develop with biflagellate sperms which swims out of conceptual through the ostiole.

In the female, similar to male leads to production of 8 cell oogonium. The diploid zygote germinates with a new diploid focus plant.