**NAME: ONYEBASHI AWELE VICTORY**

**MATRICULATION NUMBER: 19/MHS01/354**

**COURSE: ANIMAL AND PLANT DIVERSITY**

**COURSE OUTLINE: BIO 102**

1.

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| DIVISION | CLASS |
| Thallophyta | Phycotinae(Algae)  Mycotinae(Fungi) |
| Bryophyta | Hepaticae(Liverwort)  Musci(Mosses) |
| Pteridophyta | Psilotinate(psilotum)  Lycopodinae (Lycopodium, Selaginella)  Equisetinae(Horsetails)  Filicinae(Ferns) |
| Spermatophyta | Gymnospermae(Gymnosperms)  Angiospermae(Angiosperms) |

2. Importance of algae include:

a. Fungi are responsible for the decay of organic matter.

b. Fungi e.g. yeast are important in food industry.

c. Some fungi(mushroom) are eaten by humans.

d. Some fungi (Penicillium notatium) produce important antibiotics.

e. Some fungi are parasites to some pests.

f. Many fungi species mediate the spoilage of wood, food, clothes and paper.

3. Unicellular Form in Algae

Chlymadomonas represents the unicellular and motile form of green algae. Found in stagnant water usually along with other forms. The cell is bounded by a cellulose cell wall; contains organelles e.g. nucleus, mitochondria, chloroplast, pyrenoid, etc. The nucleus carries the genetic materials of the cell. The mitochondria generate energy for the cell. Manufactures sugar is processed into starch on the pyrenoid.

4. The algae mentioned above, reproduction can either be vegetative(asexual) or sexual.

Asexual Reproduction: this produces daughter cells with equal number of genetic materials as that of the parent. In chlymadomonas, a cell about to divide loses its flagella. The cell undergoes MITOTIC division leading to two nuclei, cell walls are elaborated which delimits cytoplasm around each nucleus. The two daughter cells(zoospores) are released. Increase in population of the algae is achieved by the repeated mitotic divisions.

SEXUAL REPRODUCTION

Certain conditions may trigger the haploid daughter cells to undergo sexual reproduction. Instead of forming into spores, the haploid daughter cells form gametes have two different mating strains which are structurally similar and are positive and negative strains. Opposite mating strains fuse in a process called ISOGAMY, to form a diploid zygote, which contains two sets of chromosomes. After a period of dormancy, the zygote undergoes MEIOSIS, to produce four genetically unique haploid cells that eventually grow into mature cells. Sexual reproduction involves union of sex cells. In Chlymadomonas, aggregation of cells in colony occurs under favorable conditions. These cells pair by their posterior ends. This pairing is said to be isogamous because the pairing cells are morphologically identical. The cytoplasm of pairing cells fuse(plasmogamy) and the flagella are lost. The two nuclei fuse (karyogamy); the is a fertilization process that a zygote is formed. The zygote forms a thick cell wall called(ZYGOSPORE) and may remain dormant in that state for a while. After karyogamy, sometimes the zygote undergoes two success cell divisions, the first division restores the haploid condition by halving the nuclear material in the two resulting nuclei (reduction division), while the second division, each haploid nucleus undergoes normal mitotic division. These two divisions which end up with four cells and with n quantity of nuclear material are together known as Meiosis. The four product of meiosis are released as HAPLOID ZOOSPORES.

5.

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| PANDORINA | VOLVOX |
| 1. The colony consists of 16 cells attached to one another. | There are more cells in the colony, the numbers may be thousands and are connected with cytoplasmic strands that run through the cell. |
| 1. Sexual reproduction is ANISOGAMOUS( pairing by flagella ends) | Sexual reproduction is OOGAMOUS( male gamete is motile while female gamete is non-motile) |
| 1. All daughter cells can form colonies | Not all daughter cells can form colonies: the larger cells are the only ones that divide to form new colonies. Other cells remains vegetative throughout the life of the colonies. |
| 1. They are less complex than Volvox | They are more complex than Pandorina as their cells show a greater level of differentiation and specialization. |

6. FUCUS

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 midrib, a vegetative apex, a reproductive apex (at maturity) and a multicellular disk (hold fast) with which plant is attached to rock surface. Various species of FUCUS exist; vary in size from a few centimeters to about 2meters in length. The plant body also has air bladders which is believed to aid the plant to float on the water. They also vary in terms of whether the sex cells are found in the same sexual chamber or in different sexual chamber on different plant bodies. Sexual reproduction is OOGAMOUS, sex cells are produced in CONCEPTACLES which have opening(OSTIOLES) on the surface of the thallus. In the male conceptacles, one of the diploid cells from outgrowth of the wall of the conceptacles undergoes meiosis, the meiotic product undergoes many mitotic divisions to produce ANTHERIDIUM having 64 cells of which each cell develops into a biflagellate sperm the swim out of the conceptacle through the ostiole. In the female conceptacle, similar to the situation in the male conceptacle, leads to the production of an 8 celled oogonium—each becomes and egg which is the female sex cell. Motile sperm cell from the antheridium moves through the ostiole into the female conceptacle where the eggs are fertilized and diploid zygotes are produced. The diploid zygote germinates into a new diploid FUCUS plant making the diploid the Dominant generation.