

## Bio 102 Assignment.

Plant Diversity.

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1) How are fungi important to mankind.

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Fungi e.g yeast are important in food industry.

Mushrooms are eaten by many human societies.

Species e.g *Penicillium notatum* produce important antibiotics.

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

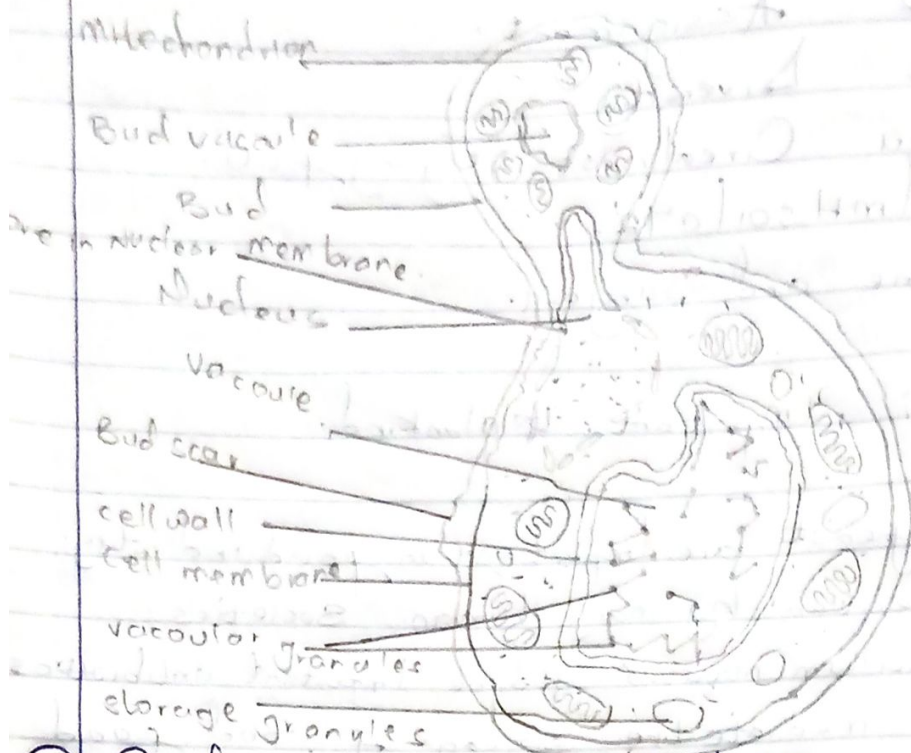
2) Illustrate the cell structure of a unicellular fungus with a well-labelled diagram

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The cell exist in diploid / haploid states, under favourable environmental condition, in both states they multiply rapidly by simple mitotic cell divisions - budding. Involving nuclear division and division of the cytoplasm in

Such a way that one of the segment of the constructed cytoplasm is smaller than others. Diploid cell arise from haploid cells by the process of plasmogamy and karyogamy. A diploid cell may undergo meiosis, under certain conditions to produce a haploid spores - ascospores (contained in a simple structure - an ascus).

# Cell structure of a unicellular fungus



3) Outline the Sexual Reproduction in a typical filamentous form of fungi

Answer

Sexual reproduction occurs when two mating types of hyphae grow in the same medium. Chemical interaction in the two mating types of hyphae induces growths perpendicular to the hyphae in opposite directions. These growths are delimited by a wall such that many nuclei are isolated in what is called a gametogonium. The two gametogonia fuse and a zygote is formed which may undergo prolonged dormancy or resting stage. The nuclei in the zygote fuse in pairs and undergo meiosis independently. The zygote germinates under favourable conditions to produce a fruiting which at maturity liberates the haploid spores.

4) How do Bryophytes adapt to their environment

- a) they have <sup>ans</sup> defined structures for water and nutrient absorption from the soil; therefore the plant body is divided into two (an aerial and subterranean portion)
- b) the aerial portion being exposed to the atmosphere demands excessive loss of water through the body

Surface.

(a) Describe with illustration the following terminologies:  
(a) eusteles (b) atractostele (c) Siphonostele (d) Dictyostele  
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(a) Eusteles:- A stele typical of dicotyledonous plants that consists of vascular bundles of xylem and phloem strands with parenchymal cells between the bundles.

(b) Atractostele:- A type of eustele, found in monocots, in which the vascular tissue in the stem exists as scattered bundles, there is a variant on the eustele found in monocots. The variation has numerous scattered bundles in the stem and is called an atractostele.

(c) Siphonostele:- A stele consisting of a core of pith surrounded by concentric layers of xylem and phloem. In more advanced vascular systems, it is a stele in which the vascular tissue is in form of a cylinder surrounding the pith as in the stems of most ferns and other seedless <sup>vascular</sup> plants.

(d) Dictyostele:- A stele in which the vascular cylinder is broken up to longitudinal series or network of vascular strands around a central pith (as in many ferns) but with closely spaced leaf gaps.

(b) Illustrate the life cycle of a primitive vascular plant  
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The reproductive life cycle of Psilotum (whisk ferns) a dominant epiphyte plant bearing trilobed sporangia produces homosporous spores which germinate into haploid gametophyte. The underground gametophyte forms

mycorrhizal associations with fungi for nutrition and develops archegonia, each with 1 egg and antheridia with flagellated sperm. After fertilization, a diploid zygote forms and eventually develops into a sporophyte plant. Asexual reproduction can take place by means of gemmae. While gemmae are means of sexual reproduction in non-vascular plants such as the liverworts, the difference is that in the non-vascular plants the gemmae develops on the gametophyte while in *Psilotum* the gemmae develops on the sporophyte.