Phylum- Myxomycota

1. These are commonly known as slime molds or myxomycetes.
2. The common members are *Physarum, Physarella, Fuligo, Dictydium, Lycogala, Tubifera.*
3. They have phagotrophic nutrition.
4. Their life cycle has following stages in life cycle-
   a. Three types of uninucleate cells, one of which is flagellate
   b. Multinucleate somatic phase (Plasmodium)
   c. A resistant stage consisting of a scletorium
   d. A reproductive phase with spore containing sporophore
5. They are surrounded by the plasma membrane only-

vegetative phase lacks cell-wall.

6. The spores have the cellulose cell walls.
7. Somatic diploid phase is multinucleate protoplasm called Plasmodium. It may be coloured variously. Plasmodium creeps over the surface of substratum with the help of pseudopodia.
8. The chief mode of nutrition of Plasmodium is saprotrophic, absorbing the organic food from the decaying organic matter (substratum of Plasmodium).
9. Under unfavourable conditions such as drought or cold, the Plasmodium divides to form many multinucleate cysts. Sometimes plasmodium forms a hard dormant structure called sclerotium. On the return of favourable conditions the sclerotium liberates the multinucleate diploid plasmodium.
10. When the plasmodium reaches a certain stage of maturity or the food supply is nearly exhausted, the contents of plasmodium concentrate at one or more places forming papilla-like sessile or stalked sporophores.
11. Each sporophore bears one or more sporangia or fruiting bodies. Each sporangium is surrounded by a hard peridium.
12. The numerous diploid nuclei in the sporangium undergo meiotic division. The multinucleate protoplasm of the sporangium undergoes cleavage to form uninucleate tiny segments. Each uninucleate tiny segment becomes rounded and secretes a cell wall to become spore.
13. When fully mature, the wall of the sporangium bursts to release the spores. The spores are dispersed by air. A large number of spores are often present in the air. Spores of some species such as *Fuligo septica* cause allergic reactions.
14. After falling on a suitable substratum, each spore germinates only when water is available. On germination, a spore generally releases one biflagellate spindle- shaped swarm cell or a non-flagellate myxamoeba. The myxamoebae feed on bacteria and yeasts and multiply in number. The swarm cell swim about actively and finally fuse in pairs at the posterior non-flagellate ends to form zygotes.
15. The zygote creeps over the substratum and feeds on bacteria, yeasts and the other organic matter. It grows in size. The

diploid nucleus of zygote undergoes repeated mitotic divisions and form plasmodium.

Phylum- Oomycota

1. Somatic phase is diploid.
2. Zoospores are biflagellate, laterally attached, heterokont.
3. Cell wall is madeup of glucon with cellulose.
4. Oospores are thickwalled.
5. Some members do not produce zoospores.

Phylum- Zygomycota

1. The members of Zygomycetes produce thick walled resting spore called zygospore.
2. Zygospore develops within a zygosporangium.
3. Zygosporangium is formed after fusion of two gametangia.
4. They have coenocytic mycelium without septa.
5. Asexual reproduction by sporangiospores.
6. Flagellated cells are absent.

Phylum- Ascomycota

1. These are commonly called sac fungi.
2. Only yeast is unicellular.
3. Mycelium is well developed, branched, septate, uni or multinucleate.
4. Unicellular forms reproduce by budding.
5. Asexual spores are oidia, chlamydospores and conidia.
6. They are homothallic or heterothallic.
7. Sexual reproduction takes place by gametangial copulation (*Yeast*), gametangial contact (*Aspergillus, Penicillium, Erysiphe*), somatogamy (*Morchella*) or spermatization (*Polystigma*).
8. Sex organs if present are antheridium and ascogonium.
9. They involve plasmogamy, karyogamy and meiosis.
10. Meiosis occurs in ascus to produce 8 ascospores endogenously.
11. Fruiting body is called ascocarp which is of various shape
    a. Apothecium: Broad plate like with asci on surface (*Peziza*).
    b. Perithecium: Flask shaped with asci on inner surface (*Claviceps*).
    c. Cleistothecium: Globose and completely closed with scattered asci (*Aspergillus, Penicillium*).
    d. Ascostroma: Pseudoparenchymatous with bitunicate asci.

Phylum- Basidiomycota

1. They include mushrooms, puff balls, pore fungi, toad stools, bird's nest fungi, bracket fungi and stinkhorn.
2. Mycelium is well developed, branched, septate with special dolipore.
3. Primary mycelium is monokaryotic and Secondary mycelium is dikaryotic.
4. Cell wall is composed of chitin and glucan.
5. Vegetative reproduction occurs by fragmentation and budding.
6. Asexual reproduction by oidia, conidia, chlamydospores or uredospores.
7. Special sex organs are absent.
8. Dikaryotic mycelium is produced by spermatization, somatogamy, clamp connection or Buller phenomenon.
9. After plasmogamy karyogamy takes place in basidium in which diploid nucleus after meiosis produce four haploid basidiospores exogenously.
10. Aseptate basidium is called holobasidium and septate basidium is called phragmobasidium.
11. Fruting body is basidiocarp with stipe and pileus.

Phylum- Deuteromycota

1. The fungi imperfecti or imperfect fungi, also known as Deuteromycota,
2. These are fungi which do not fit into the commonly established taxonomic classifications of fungi that are based on biological species concepts or morphological characteristics of sexual structures beca
3. Their sexual form of reproduction has never been observed.
4. Only their asexual form of reproduction is known, meaning that these fungi produce their spores asexually, in the process called sporogenesis.
5. Type of nutrition is saprophytic or parasitic.
6. The mycelium is well develoed, branched and septate.
7. Cells are coenocytic.
8. Asexual spores are conidia develops exogenously on conidiophores.
9. Fruiting body if present are synnemata, acervuli, sporodochia or pycnidia.
10. Some members show parasexuality.