2) **Karyogamy:** It's the fusion of the nuclei of the two gametes. It's the second step of sexual reproduction.
3) **Meiosis:** It's the last step of sexual reproduction and involves the meiotic division of the zygote due to which spores are formed.

- In sexual reproduction, 2 haploid hyphae fuse together. In some cases, the fusion of haploid cells cause the formation diploid (2n) cells immediately.
- **Dikaryophase:** It is a phase in fungi that causes a momentary pause due to the intervention of a **dikaryon** (a cell in which two nuclei from either parent share a single cytoplasm for a certain period of time or up until conditions are favourable) in between plasmogamy and karyogamy in fungi. Later the nuclei of the parents fuse and become diploid.
- Fungi form fruiting bodies in which reduction division occurs, leading to formation of haploid spores.
- **By mycelium morphology, mode of spore formation and nutrition, fungi can be classified into four categories:**

1. **PHYCOMYCETES:**
   - Found in aquatic habitats, on decaying wood in moist and damp places or as **obligate parasites** (parasites that are completely dependent on the host for its survival.)
   - They have aseptate and coenocytic mycelium (continuous network of hyphae without any separating walls)
   - Reproduce via zoospores (motile) or aplanospores(non-motile). They are produced in the sporangium endogenously.
   - Sexual reproduction between male and female gametes are of three types, namely:

     i. **Isogamous:** Fusion of two gametes that are same in size
     ii. **Anisogamous:** Fusion of two gametes that are dissimilar in size.
     iii. **Oogamous:** Fusion of one large non- motile female gamete and a smaller motile male gamete.
   - Fusion of two gametes results in the formation of zygospores.