

### Short Answer questions

1. What percentage of soil mass do microorganisms comprise?  
0.5%
2. What percentage of soil metabolism is driven by microflora?  
60-80%
3. How many bacteria are present in one gram of topsoil?  
1000000000
4. What process do microorganisms perform to convert organic materials?  
Decomposition
5. Actinomycetes belong to which class?  
Schizomycete
6. What type of metabolism do Actinomycetes have?  
Heterotrophic
7. Name a common genus of Actinomycetes found in soil.  
Streptomyces
8. Name one organic compound that fungi decompose which bacteria cannot.  
Lignin
9. What is the primary function of a heterocyst in some blue-green algae?  
Nitrogen fixation
10. What is the function of cilia in soil protozoa?  
Locomotion

### Short Notes

#### 1. Write short note on actinomycetes

Actinomycetes are numerous and widely distributed in soil and are next to bacteria in abundance. They are heterotrophic, aerobic and mesophilic (25-30°C) organisms and some species are commonly present in compost and manures are thermophilic growing at 55-65°C temperature (e.g. *Thermoactinomyces*, *Streptomyces*). Actinomycetes belonging to the order of Actinomycetales are grouped under four families: *Mycobacteriaceae*, *Actinomycetaceae*, *Streptomycetaceae*, *Actinoplanaceae*. In the order of abundance in soils, the common genera of actinomycetes are *Streptomyces* (nearly 70%), *Nocardia* and *Micromonospora* although Actinomycetes, Actinoplanes, *Micromonospora* and *Streptosporangium* are also generally encountered.

#### 2. Write on functions of fungi

1. Fungi plays significant role in soils and plant nutrition.
2. They plays important role in the degradation / decomposition of cellulose, hemicellulose, starch, pectin, lignin in the organic matter added to the soil.
3. Lignin which is resistant to decomposition by bacteria is mainly decomposed by fungi.
4. They also serve as food for bacteria.
5. Certain fungi belonging to sub-division Zygomycotina and Deuteromycotina are predaceous in nature and attack on protozoa & nematodes in soil and thus, maintain biological equilibrium in soil.