

## Syllabus for ASO (Microbiology) post

1. Microbiology of Ecosystems – Soil, Rhizosphere, Phyllosphere, water and air.
2. Role of microbes in biogeochemical cycles-Carbon cycle, Nitrogen cycle, Sulphur cycle, phosphorous cycle.
3. Factors affecting the movement of microorganisms in soil - Adsorption to soil particles, soil physical properties, plant roots, soil animals and human beings
4. Ecophysiological interactions in microbes & higher plants - Interaction with plant roots, interaction with aerial plant structures microbial diseases of plant with specific examples of mycorrhiza, lichens, Rhizobacteria.
5. Phosphate solubilizing bacteria and fungi (including mycorrhiza), potassium solubilizing bacteria and fungi (including mycorrhiza)
6. Nitrogen fixation - Biochemistry of  $N_2$  fixation, properties of terrestrial nitrogen fixing organisms, free living diazotrophs. Symbiotic nitrogen fixation: Rhizobium - Legume association, Actinorhizal associations, contribution of symbiotic nitrogen fixation. Denitrification.
7. Biocontrol – Concept, types, mode of action & applications of biopesticides and bioherbicides, Biopesticides - classification, advantages. Major biopesticides based on bacteria, viruses & fungi (Bacillus thuringiensis (Bt) toxin, Boverin, DeVine, Collego).
8. Biofertilizer-Mass cultivation of microbial inoculants; green manuring; algalization; Azolla.
9. Microbial products and plant health: PGPR (plant growth promoting rhizobacteria)s
10. Isolation and preservation of different types of microorganisms, methods of sterilization and disinfection, microscopy, microbial assay of enzymes and antibiotics.
11. Industrial production of metabolites. Fermenter designs and types. Control of fermentation process.

**National Institute of Plant Health Management  
Rajendranagar, Hyderabad-500 030**

**F.No. 2(313)/2016-rf-ASO(WS)-Estt**

**Dated: 12.07.2016**

**NOTE**

The syllabus for the post of ASO (Microbiology) may be uploaded & hosted on NIPHM website.

**(Er. G. Shankar)  
REGISTRAR i/c.**

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