

B.A./B.Sc. (General) Fifth Semester  
Industrial Microbiology  
IMB-502: Biofertilizers

Time allowed: 3 Hours

Max. Marks: 33

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting one question from each Unit.

x-x-x

I. Explain/define/comment:-

- a) Endophytes
- b) Net Rx of biological nitrogen fixation
- c) Host plant specificity of *Azospirillum*
- d) Fungi forming VAM
- e) Packing of biofertilizers
- f) ISI standards of biofertilizers

(6x1½)

UNIT – I

- II a) Write a note on serology and taxonomy of *Rhizobium*. 3
- b) Discuss the practical effectivity of carrier based inoculants in increasing crop yield. 3
- III a) Give an overview of different microbes used as biofertilizers. 3
- b) Describe plant host – *Rhizobium* interaction for successful nodulation in legumes. 3

UNIT – II

- IV a) What do you understand by Associative symbiosis? Differentiate Associative and symbiotic nitrogen fixation. 3
- b) Write down characteristics, physiology & mass cultivation of *Azotobacter*. 3
- V Write note on:
  - a) *Azolla Anabaena* association
  - b) Rhizosphere competence of *Azospirillum* 3x2= 6

UNIT – III

- VI a) Describe different types of mycorrhizal associations. 3
- b) Write a note on isolation and collection of Arbuscular mycorrhiza fungi. 3
- VII a) Describe how VAM helps in phosphorus nutrition, growth and yield of plants. 3
- b) Write down contribution of blue green algae in nitrogen nutrition during rice cultivation. 3

UNIT – IV

- VIII Describe different methods used for assessment of nitrogen fixing ability of different strains under controlled conditions. 6
- IX a) Describe how different quality parameters are maintained during production and storage of biofertilizers. 3
- b) Write down methods for identification of different nitrogen fixing microbes. 3

x-x-x