1127

B.A./B.Sc. (General) Fifth Semester

Industrial Microbiology

IMB-502: Biofertilizers

Time allowed: 3 Hours Max. Marks: 33

***NOTE**: Attempt <u>five</u> questions in all, including Question No. I which is compulsory and selecting one question from each Unit.*

x-x-x

I. Answer the following:-

a) What is Symbiosis?

b) What is the role of Blue green algae in rice cultivation?

c) Define Soil pore space and Phyllosphere

d) What is meant by the Actinorrhizal nitrogen fixing plants

e) What is the function ofLeghaemoglobin in N2 fixation

f) What is the role ofNitrogenase in nitrogen fixation? (6x1½)

UNIT – I

II. What is the impact of agrichemicals on soil microflora? Discuss different biofertilizers and add a note on their significance in agriculture. (2,4)

III. What are biogeochemical cycles? Explain the role of microbes in Nitrogen cycle.(6)

UNIT – II

IV. Are legumes the only plants to benefit from nitrogen fixing capabilities of bacteria? Explain. (6)

V. a) What is mutualism? How does it differ from the commenalism.

b) What is the function of *Anabaena* heterocyst in nitrogen fixation? (3, 3)

UNIT – III

VI. Describe different types of mycorrhizae and their functions in soil. Write the importance of VAM fungi. (3,3)

VII. a) Explain the role of plant growth promoting rhizobacteria in stimulating plant growth.

b) Describe the process that leads to nodule formation in leguminous plants? (3,3)

UNIT – IV

VIII. a) What is *Azospirullum* rhizosphere competence? Explain with two examples.

b) How will you proceed to assess the nitrogen fixing ability of a bacteria isolated from the soil? (3,3)

IX. Briefly discuss the method of production of a standard biofertilizer of *Azotobacter*. (6)

x-x-x