Roll No. .....

Total No. of Questions : 9] [Total No. of Printed Pages : 4

(2034)

UG (CBCS) IInd Year Annual Examination

2812

B.Sc. BOTANY

(Biofertilizers)

(SEC-I)

Paper : BOTA 203

Time : 3 Hours] **[Maximum Marks : 70**

Note :– Attempt *five* questions in all. Question No. **1** in Part-A is compulsory. Attempt *one* question each from Parts–B, C, D and E. Attempt all part of a question together.

Part-A

(Compulsory Question)

1. (A) All parts are compulsory :

(i) Which enzyme is required in nitrogen fixation ?

(ii) Explain vermiwash.

(iii) What is mother culture ?

(iv) Name first commercially available biofertilizer in the world.

(v) Name any *two* phosphate solubilizing bacteria.

(vi) Who discovered the process of biological nitrogen fixation ?

(vii) What is actinorhizal symbiosis ?

(viii) Name the family to which azospirillum belongs.

(ix) What are biodegradable wastes ?

(x) Name any *two* plants used as green manure. 1×10=10

(B) (i) Differentiate between aerobic and anaerobic composting.

(ii) Growth and multiplication of azolla. 2×2=4

Part–B

2. (a) Explain different types of fertilizers in detail. Discuss advantages of biofertilizers over chemical fertilizers.

(b) Discuss isolation, identification and mass multiplication of rhizobium. 7×2=14

Or

3. (a) What are carrier-based inoculants. Describe the process of preparation and application of carrier-based inoculants to crop plants.

   (b) Discuss the advantages and disadvantages of biofertilizers in detail. 7×2=14

Part–C

4. (a) Write a detailed note on isolation, multiplication and application of Frankia as biofertizer.

   (b) Discuss about field application and crop response of azospirillum based biofertilizers. 7×2=14

Or

5. (a) Discuss the role of cyanobacteria in reclamation of alkaline soils and wastelands.

   (b) Define Mycorhizza. Discuss various mycorhizal associations in detail. 7×2=14

Part–D

6. Write short notes on the following :

   (a) Heterocysts

(b) Biological nitrogen fixation

(c) Azolla-Anabaena Association

(d) PGPR's (Plant growth promoting rhizobacteria)

$3\frac{1}{2} \times 4 = 14$

Or

7. (a) Write a procedure for isolation, multiplication and application of PSM's.

(b) Define Green Manure. Discuss sowing and working of green manure in the soil. $7 \times 2 = 14$

Part–E

8. (a) Define Composting. Discuss various methods of vermicomposting in detail.

(b) Discuss recycling of biodegradable municipal, industrial and agricultural wastes. $7 \times 2 = 14$

Or

9. (a) Explain VAM. Discuss isolation and culturing of VAM spores from soil.

(b) Define Vermiculture. Discuss various methods for culturing of earthworms. $7 \times 2 = 14$