BIOFERTILIZERS AND BIOPESTICIDES
(BIOT 3244)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Acetobacter is used in
(a) rice field (b) cane sugar
(c) corn (d) none of these

(ii) The dinitrogenase reductase accepts electron from
(a) Feredoxin (b) Flavodoxin
(c) Cytochrome (d) none of these

(iii) Bt-toxin kills the pest whose guts are
(a) neutral (b) acidic
(c) alkalaine (d) all of these

(iv) The genes responsible for nitrogen fixing ability in *Rhizobium trifoli* are
(a) *nif* and *nod* genes (b) *lac* and *hup* genes
(c) *nif* and *trp* genes (d) all of these

(v) The regulatory protein of *nif* operon is
(a) Nif A (b) Nif L
(c) Nif D (d) none of these

(vi) Rhaizothamnia is present in
(a) Frankia sp (b) Rhaizobium sp
(c) Azotobacter sp (d) None of these

(vii) White muscardine disease of pests is caused by
(a) M. anisopliae (b) Beauveria sp
(c) Trichoderma sp (d) none of these

(viii) Photosythetic nitrogen fixer is
(a) Rhizobia (b) Azolla
(c) Bacillus (d) Cyanobacteria

(ix) Microaerophillic prokaryote fixing nitrogen is
(a) Escherichia coli (b) Klebsiella
(c) Streptococcus (d) Bacillus

(x) The hydrogenase enzyme found in several diazotrophs
(a) wastes cellular ATP (b) removes N_2 from ammonia
(c) recycles H_2 produced by nitrogenase (d) adds H_2 to N_2.

Group – B

2. (a) Name one aerobic nitrogen fixing bacterial species and clearly state how the organism is adapted to keep its dintrogenase enzyme functioning under favourable aerobic condition.

(b) Write notes on composting.

6 + 6 = 12

3. (a) What are bacteroids ? How they protects their nitrogenase ?

(b) Write noes on lichen.

8 + 4 = 12

Group – C

4. (a) Briefly explain the determination of efficiency of nitrogen fixing and phosphate solublaising bacteria.

(b) How cellulose degrading bacteria contribute carbon to the soil?

(4 + 4) + 4 = 12

5. (a) Write notes on Frankia induced nodulation.

(b) Briefly explain any two mutualistic association where one of the partner is fungi.

4 + 8 = 12

Group – D

6. (a) What are the different types of Nodulin proteins? How are they classified?

(b) Mention the function of different Nod factors.

(2 + 4) + 6 = 12

7. Describe the arrangement, function and regulation of *nif* operon in *Klebsiella pneumonae.*

12

Group – E

8. (a) What is biological control? How are insect viruses used in the control of plant diseases?

(b) Write notes on mycoinsecticides.

6 + 6 = 12

9. What is IPM programme? Mention different steps of effective management of pests.

(6 + 6) = 12

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