



Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.TECH(BT)/SEM-8/BT-803E/2011**

**2011**

**BIOFERTILIZERS & BIOPESTICIDES**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

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

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

i) 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.

ii) Microaerophilic prokaryote fixing nitrogen is

- a) *Escherichia coli*      b) *Klebsiella*  
c) *Streptococcus*      d) *Bacillus*.



- iii) Mycophagy is the phenomenon of feeding on fungi by
- a) Bacteria
  - b) Amoeba
  - c) Fungi
  - d) Plants.
- iv) Aerobic nitrogen fixer found in soil is
- a) *Rhizobia*
  - b) *Azolla*
  - c) *Bacillus*
  - d) *Beijerinckia*.
- v) *Anabaena* in association with *Azolla* represents
- a) symbiotic, heterocystous association
  - b) non-symbiotic association
  - c) free-living diazotroph
  - d) symbiotic, non-filamentous association.
- vi) The hydrogenase enzyme found in several diazotrophs
- a) wastes cellular ATP
  - b) recycles  $H_2$  produced by nitrogenase
  - c) removes  $N_2$  from ammonia
  - d) adds  $H_2$  to  $N_2$  .
- vii) *nif* genes are arranged as
- a) cassette
  - b) multigene family
  - c) operon
  - d) split genes.
- viii) Photosynthetic and nitrogen fixing genes reside side by side in
- a) *Alcaligenes*
  - b) *Rhodospirillum*
  - c) *Thiobacillus*
  - d) *Klebsiella*.



- ix) The dinitrogenase reductase accepts electron from
- ferredoxin
  - flavodoxin
  - neither (a) nor (b)
  - both (a) & (b).
- x) *B. Thuringiensis* var. *kurastaki* is used to control the attack of
- mosquito
  - moth & butterfly
  - beetle
  - none of these.
- xi) The first chemical pesticide introduced commercially is
- DDT
  - Chlorinated hydrocarbon
  - Organophosphorous
  - None of these.
- xii) The bird repellent agent is
- Good-night
  - Talon
  - Arihol
  - Dihac.

### GROUP – B

#### ( Short Answer Type Questions )

Answer any *three* of the following.  $3 \times 5 = 15$

- What kinds of biopesticides are being used in Tea gardens in West Bengal, Assam ? Can you name some of the pests involved in the destruction of tea leaves ? How do the pesticides work ?
- Briefly discuss the role of *nod* gene in the symbiotic association between Rhizobia and the leguminous plant.

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4. Write a short note on mycoparasitism and amensalism.
5. Name two mycoherbicides and describe the mechanism of function.
6. Biopesticides can act as biofertilizer. Explain with example.

### GROUP – C

#### ( Long Answer Type Questions )

Answer any *three* of the following.  $3 \times 15 = 45$

7. What is heterocyst ? Explain the mechanism of  $N_2$  -fixation in heterocyst. What is their role as microbial inoculant ?  
 $2 + 8 + 5$
  8. How was baculovirus introduced as biopesticide ? What are different types of baculoviruses used as biopesticide ? How are they produced and formulated ? Describe different genetically modified baculovirus developed as better pesticide.  
 $2 + 4 + 4 + 5$
  9. Write the role of Rhizobium as fertilizer. Describe the structure. Explain the phenomenon of Rhizobium managent.  
 $2 + 2 + 11$
  10. Write short notes on the following :  $3 \times 5$ 
    - i) Biofungicide
    - ii) Azolla-biofertilizer
    - iii) Acetobacter.
  11. What is green manuring ? Explain the role of mycorrhiza as biofertilizer. How many types of mycorrhiza are being used ? State the method of producing VAM inoculum for appropriating fields.  
 $3 + 2 + 4 + 6$
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