



Name :

Roll No. :

Invigilator's Signature :

CS/B.Tech (BT)/SEM-8/BT-803-E/2010

2010

BIO-FERTILIZERS AND BIO-PESTICIDES

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)

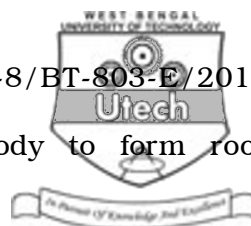
1. Choose the correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Compound produced commercially by deacetylation of chitin
 - a) Methanol
 - b) Chitosan
 - c) Acetic acid
 - d) Whey.
- ii) Avicides are used for the control of
 - a) Mammals
 - b) Insects
 - c) Bacteria
 - d) Birds.
- iii) The Bhopal disaster occurred when a pesticide plant released a gas called
 - a) Methyl isocyanate
 - b) Nitric oxide
 - c) Carbon dioxide
 - d) Ammonia.



- iv) Minamata disease is a neurological syndrome caused by
- a) Arsenic poisoning b) Mercury poisoning
c) Lead poisoning d) Cadmium poisoning.
- v) *Bacillus thuringiensis* (Bt) commonly used as a pesticide is a
- a) Gram-positive bacterium
b) Fungus
c) Nematode
d) Rodent.
- vi) Biological nitrogen fixation (BNF) can be accomplished by
- a) *Rhizobium meliloti* b) *Lactobacillus* spp.
c) *Azolla* d) Neem tree.
- vii) The *nif* comprised which of the following known/proposed genes ?
- a) One gene b) Five genes
c) Ten genes d) More than ten genes.
- viii) A diszotroph is
- a) Nitrogen fixing microorganism
b) Nitrogen containing biomolecule
c) Sulphur bacterium
d) Biopesticide.



- ix) *Rhizobium* sp. enters the plant body to form root nodules through
- Primary root surface
 - Leaf surface
 - Root hairs
 - Flower buds.
- x) The metalloenzyme nitrogenase contains
- Molybdenum
 - Zinc
 - Sulphur
 - Copper.
- xi) Well-studied free-living nitrogen fixing bacteria is exemplified by
- Bradyrhizobium*
 - Azorhizobium*
 - Azotobacter*
 - Escherichia*.
- xii) Carrier substance for packaging biofertilisers is
- Charcoal powder
 - Talcum powder
 - Urea
 - Green plant leaves.

GROUP – B

(Short Answer Type Questions)

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

- Write a short descriptive note on protein antipeptide material of *Bacillus thuringiensis*.
- Write the general formula of biological nitrogen fixation. How do nitrogen fixing bacteria achieve low oxygen tension ?
- Briefly describe one fungal biopesticide.
- Enumerate five major points to distinguish between chemical fertilisers and biofertilisers.
- Describe briefly the role of water fern *Azolla* as biofertiliser.



GROUP – C

(Long Answer Type Questions)

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

7. What are the blue green algae ? Why they known as biofertiliser ? Explain the structure of their N_2 fixing organ. Write the mechanism of N_2 fixation in Cyanobacteria with suitable diagram. $1 + 1 + 4 + (6 + 3)$
8. Describe the structure of *Rhizobium sp.* How many genera of *Rhizobium sp.* used as biofertiliser ? Explain the *Rhizobium* management with respect to the following points :
- i) Isolation
 - ii) Identification
 - iii) Carrier and curing
 - iv) Mode of application. $3 + 3 + 9$
9. Why are biopesticides advantageous than chemical pesticides ? Name the organisms used for production of biopesticide. Explain one of the biopesticide development procedures. $3 + 2 + 10$
10. a) Explain the mechanism of root nodule formation in leguminous plants.
- b) Briefly discuss different theories regarding the biochemical signals that operate during infection by N_2 fixing bacteria forming nodules.
- c) What is green manuring ? $6 + 6 + 3$
11. Write short notes on any *three* of the following : 3×5
- a) Acetibactor
 - b) Biofungicide
 - c) Frankia-biofertiliser
 - d) Baculovirus.
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