	Utech
Name:	<u>A</u>
Roll No.:	In Spanie (VE) marketing and Excellent
Invigilator's Signature :	

CS/B.TECH(BT)/SEM-8/BT-803E/2012

2012

BIO-FERTILIZER 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:

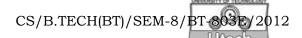
 $10 \times 1 = 10$

- i) Chromatium and chlorobium are
 - a) non-photosynthetic nitrogen fixing bacteria
 - b) photosynthetic nitrogen fixing bacteria
 - c) anaerobic nitrogen fixing bacteria
 - d) symbiotic nitrogen fixing bacteria.
- ii) Anabaena found growing in association with fern Azolla represent
 - a) symbiotic heterocystous cyanobacteria
 - b) non-symbiotic cyanobacteria
 - c) non-heterocystous cyanobacteria
 - d) non-symbiotic heterocystous cyanobacteria.
- iii) genes are responsible for nitrogen fixing ability of Rhizobia.
 - a) Lac and trp genes
- b) Lac and nod genes
- c) Nif and trp genes
- d) Nif and nod genes.

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Hydrogenase enzyme found in several diazotrophs iv) recycles H₂ produced by nitrogenase adds H₂ for nitrogen fixation b) removes H₂ from ammonia c) d) wastes cellular ATP. v) Microaerophillic prokaryote fixing nitrogen is Escherichia b) Klebsiella d) Bacillus. *Streptococcus* c) Photosynthetic and nitrogen fixing genes reside side by vi) side in a) **Alcaligens** b) Klebsiella c) Rhodospirillum d) Thiobacillus. Which of the following compounds inhibits nitrogen vii) fixation? a) Only oxygen b) Only ammonia Only photosystem II apparatus c) d) Only photosystem I apparatus. viii) Non-gene is found in a) pine b) legume rice d) barley. c) LUBILOSA programme is made ix) to demonstrate the harmful effect of biopesticides a) to demonstrate the harmful effect of chemical b) pesticides c) to cause long term effect of biopesticides to cause short term effect of biopesticides. x) Chitosan that allow the plant to defend itself against disease due to a) naturally induced systemic resistance artificially induced resistance b) biologically induced selective resistance c) none of these. d)



- PIP stands for xi)
 - Polymer Induced Particle
 - Pathogen Induced Particle b)
 - Plant Incorporated Protectants c)
 - none of these.
- Entomo pathogenic is the product of xii)
 - bacteria
 - b) fungi
 - c) bacteria, fungi and viruses
 - bacteria, fungi, viruses and nematodes.

GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. State point-wise the important features for which bio-pesticides are preferred over chemical pesticides. Name the crop cultivation process in which chemicals are not used for crop nutrition and protection.
- Give an idea on the kind of plant nutrition that is provided 3. by using the common bio-fertilizers. Can it be possible to substitute the chemical fertilizer use in totality? State the reasons of your conclusion. 2 + 1 + 2
- 4. Write short note on any *one* of the following:
 - Pesticidal poisoning
 - b) Silent spring
 - Environmental estrogen c)
 - Chitosan.
- 5. Briefly explain Azolla-Anabaena symbiosis. Explain the mechanism of N2 fixation in specialized cells of cavanobacteria. 2 + 3
- Describe the most modern theory for host specificity. 6.
- State the method of production of VAM-biofertiliser. 7.

GROUP - C

(Long Answer Type Questions)

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

8. What types of different viruses are considered as potential biopesticides? Give short description of each of them along with their target pest ranges. Describe life cycle of NPN baculovirus in target pest. How viruses are applied in the field as pesticide? 2 + 4 + 6 + 3

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- 9. Describe efforts on improvement of biopesticidic Baculovirus and fungi as more effective biopesticides by genetic engineering.

 10 + 5
- 10. Give an outline of bulk production procedure of *Rhizobium* biofertilizer with sketches. Mention the points of care and control to have optimum production.

 10 + 5
- 11. What are *nif*-genes? Indicate the location of NIF genes in the diagrammatic genome of a known Nitrogen fixer bacterium like *Klebsiella pneumonie*. How many of known discrete units together make the NIF-gene complex? Make general comments on these gene units having specific role in N_2 fixation process. 2 + 3 + 2 + 8
- 12. Write short notes on any *three* of the following: 3×5
 - a) Anabeana-Azolla symbiosis
 - b) Green-manuring
 - c) Advantages of using biofertiliser
 - d) Role of enzyme hydrogenase
 - e) The process through which cyanobacteria fix atmospheric nitrogen.
- 13. Describe the nitrogenease enzyme system responsible for nitrogen fixation. Write the mechanism of nitrogen fixation in root nodules. Name the genes responsible for nitrogen fixation. Write their regulation.3 + 6 + 2 + 4

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