

(A-33)

SARDAR PATEL UNIVERSITY
M. Sc. -Integrated Biotechnology – Ninth Semester Examination
Saturday, 18th April 2015
Time: 10:30 am to 01:30 pm
PS09CIGIB1: Biofertilizers and Biopesticides

Total Marks – 70

Q.1

Mark the right answer of following questions.

[08]

1. The most quickly available source of nitrogen to plants are _____.
 a. Amide fertilizer b. Ammonia fertilizer c. Nitrate fertilizer d. All of these
2. A free living nitrogen fixing bacterium is _____.
 a. *Clostridium* b. *Azotobacter* c. *Rhizobium* d. Both a and b
3. The trigger for activation of *Bacillus thuringiensis* is _____.
 a. Acidic pH of the insect gut c. High temperature
 b. Alkaline pH of the insect gut d. Mechanical action of the insect gut
4. From the following which one is NOT true about biopesticides application?
 a. Limited field persistence c. Specific mode of action
 b. Slower killing rate d. Long shelf life
5. BGA are used as biofertilizers in _____.
 a. Wheat field b. Sugarcane field c. Rice field d. Legume field
6. Endomycorrhizal association is present in _____.
 a. 10% of plant families c. 85% of plant families
 b. 40% of plant families d. Less than 5% of plant families
7. *Bacillus thuringiensis* produce _____.
 a. Insecticidal protein c. Fungicidal protein
 b. Nematicidal protein d. All of above
8. Which of the following is a nematophagus fungus?
 a. *Beauveria bassiana* b. *Fusarium sp.* c. *Arthrobotrys oligospora* d. *Alternaria sp.*

Q.2 Answer the following questions. (ANY SEVEN OUT OF NINE)

[14]

1. Discuss the physiological characteristics of *Baculovirus*.
2. Mention the examples of symbiotic and non-symbiotic nitrogen fixers.
3. Explain general phosphorus transformation processes in the environment.
4. What are the objectives of Integrated Pest Management?
5. Write the significant advantages of biofertilizers.
6. Which carrier materials are used in formulations of biofertilizers?
7. What is the role of hydrogenase enzyme in N₂ fixation?
8. Discuss the cultural characteristics of *Rhizobium*.
9. Write the classification of entomopathogens.

- Q.3 A. Illustrate the characteristics of heterocyst. Summarize the N₂ fixation process of *cynobacteria*. [06]
- B. Write a detailed note on the root nodule formation process of diazotrophs. [06]
- OR**
- B. What is the role of ferredoxin in N₂ fixation? Write a note on *nif* gens. [06]
- Q.4 A. What are entomopathogenic fungi? Describe physiology and mode of action of *Beauveria bassiana*. [06]
- B. What is the difference between endotoxin and ectotoxin. Briefly explain the mode of action of *Bacillus thuringiensis*. [06]
- OR**
- B. Write the examples of viruses which are used as bio-control agents. Discuss the role of *Baculovirus* as biopesticides. [06]
- Q.5 A. Define biofertilizers. Write the significances and physiology of *Azotobacter* and *Azospirillum*. [06]
- B. Mention the roles of biofertilizers. Outline the mass production process of biofertilizers. [06]
- OR**
- B. Outline the effects of rhizospheric microorganisms on the plant growth. [06]
- Q.6 A. Write a detailed note on compatibility of microbial and chemical insecticides. [06]
- B. Give an account on application processes of biopesticides for the control of microbial diseases. [06]
- OR**
- B. Summarize the production recovery and formulation processes of *Bacillus thuringiensis*. [06]
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