

(A-g) Seat No: \_\_\_\_\_

SARDAR PATEL UNIVERSITY

M. Sc. -Integrated Biotechnology – Ninth Semester Examination

Monday, 17<sup>th</sup> October 2016

Time: 10:00 am to 01:00 pm

PS09CIGIB1: Bio-fertilizers & Bio-pesticides

Total Marks – 70

- Q.1** Mark the right answer of following questions. [08]
- \_\_\_\_\_ protein acts as a uridylyltransferase during regulation of N<sub>2</sub>-fixation process.
    - gln D
    - ntf B
    - gln B
    - P II protein
  - \_\_\_\_\_ is considered as the basic physiological unit of *Anabaena-Azolla* symbiosis.
    - Dorsal lobe
    - Heterocyst
    - Sporocarps
    - Trichome
    - None of these
  - From the following, which one is NOT correct about Host-Parasite interaction of *B. popilliae*.
    - B. popilliae* cause disease of beetle larvae
    - Main sporulation is completed by 21-30 days
    - Vegetative cell proliferate within 3-5 days
    - Physiological starvation causes death of insect
  - \_\_\_\_\_ carbon source does not support growth of *Gluconobacter diazotrophicus*.
    - Succinate
    - Dicarboxylic acid
    - Glucose
    - Fructose
    - a & b
    - c & d
  - \_\_\_\_\_ can fix N<sub>2</sub> under free living as well as symbiosis with plants.
    - Azotobacter*
    - Anabaena*
    - Clostridium*
    - Frankia*
    - Acetobacter*
    - Gluconobacter*
  - Suspo-emulsion is a mixture of \_\_\_\_\_.
    - Emulsion-Suspension
    - Emulsion-Concentrate
    - Suspension-Concentrate
    - Emulsion-capsule
  - What is the main limitation of wettable powder formulation?
    - Eye irritation
    - Inhalation problem
    - Lung infection
    - All of these
  - From the following which is NOT a limitation of entomopathogenic fungi.
    - A potential risk to immuno-suppressive people
    - High degree of host specificity for pest control
    - 2-3 weeks are required to kill insect
    - Mass production is expensive and short shelf life
- Q.2** Answer the following questions. (ANY SEVEN OUT OF NINE) [14]
- Mention the types of natural communities of N<sub>2</sub> fixing *cyanobacteria*.
  - How *cyanobacteria* increase soil fertility?
  - Write taxonomic classification and cyst formation of *Azotobacter*.
  - What are the limitations of microbial pesticides?
  - Discuss advantages and limitations of entomopathogenic fungi (Myco-biocontrol agents)
  - Explain the structure of nitrogenase complex in detail.
  - Differentiate nuclear-polyhedral and cytoplasmic viruses.
  - What is IPM? What are the objectives of IPM?
  - Describe various groups of biofertilizers with appropriate examples.

C.P.T.O.)

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Q.3 A. Write short notes on: 1. Taxonomical classification, physiology and applications of *Azolla-Anabaena*. |06]

2. Discuss key enzymes and physiology of *Acetobacter diazotrophicus*

B. Enlist PGPR activities. Discuss any five PGPR activities of bio-fertilizers in detail. |06]

OR

B. What is hapanoids? Discuss taxonomic classification, physiology and *Actinorhizal-Frankia* symbiosis in detail. |06]

Q.4 A. Describe characteristics features of heterocyst and N-assimilation in *cyanobacteria*. Differentiate vegetative cell and heterocyst activities. |06]

B. What are the general mechanisms of phosphate solubilization? Outline inorganic and organic soil phosphorus mineralization mechanisms of PSM. |06]

OR

B. Explain the role of various proteins involved in nitrogen fixation regulation system. Compare the activities of each protein of diazotroph under N<sub>2</sub> limiting & excess condition. |06]

Q.5 A. Describe mode of action of *Bacillus thuringiensis*, *Beauveria bassiana* & *Pseudomonas* as bio-control agents. |06]

B. Discuss in detail about occurrence and mode of action for milky disease by *Bacillus popilliae*. |06]

OR

B. Write short notes on: 1. *Nematodes* as bio-control agents 2. *Baculovirus* pesticide |06]

Q.6 A. What are the three major classes of bio-pesticides? Write a detailed not on dry formulations of bio-pesticides. |06]

B. Describe harmful impacts of chemical pesticides. Discuss in detail about compatibility of microbial and chemical insecticides for crop improvement. |06]

OR

B. Which carrier materials are used in formulation of bio-pesticides? Give a detailed note on liquid formulations of bio-pesticides. |06]

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