

**Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)**



B. Sc. (Ag.) (Sixth Semester - Regular) Examinations, April - 2026

AC(E)-312 – Biopesticides and Biofertilizers

Time: 2 hrs

Maximum: 50 Marks

The figures in the right hand margin indicate marks.

PART – A

Q.1. Fill in the blanks with suitable word / figure.

(0.5 x 10 = 5 Marks)

- is an advanced seed enhancement technique in which seeds are treated with beneficial microorg; under controlled hydration condition
- Example of parapheromones include
- refers to mutualistic relationships between woody plant and *Frankia*.
- Parthenin is the active ingredient present in
- Neem belongs to family
- is the bacterial phosphate solubilizer
- Soluble forms of phosphorus that plants can absorb are mainly,
- infects Japanese beetle causing blue disease.
- The term mycorrhiza is derived from word, meaning
- The first commercially available *Bt* product is

Q. 2. Define (or) Explain the following in one or two sentences. (1 x 5 = 5 Marks)

- Define seed biopriming.
- What do you mean by Endomycorrhiza?
- Define virulence.
- What do you mean by pathogenicity
- Mode of Action of NPV.

Q3. Match the following

(0.5 x 10 = 5 Marks)

Column – A

Column – B

- | | |
|----------------------------------|-------------------------------------|
| (a) Rhizobium | (i) <i>Beauveria bassiana</i> |
| (b) Chromafenozide | (ii) Custard apple |
| (c) Vasicine and Vasicinone | (iii) Juvenile hormone based |
| (d) Boverin | (iv) Determinate nodules |
| (e) Methoprene | (v) Moulting hormone based |
| (f) <i>Frankia</i> | (vi) Baculoviridae |
| (g) Alpha pinene and Beta pinene | (vii) Malabar nut |
| (h) Spodopterin | (viii) Indeterminate nodules |
| (i) Avermectins | (ix) <i>Serratia marcescens</i> |
| (j) Enterobacteriaceae | (x) <i>Streptomyces avermitilis</i> |

Q4. Write True or False against each statement

(0.5 x 10 = 5 Marks)

- a. *Paenibacillus mucilaginosus* is potassium solubilizing group of bacteria.
- b. Akinetes are resting cells of some orders of cyanobacteria.
- c. *Pseudomonas* produces large, flat and irregularly edged circular colonies in nutrient media.
- d. Example of Associative bacteria includes *Azospirillum*
- e. The vegetative cells of *Anabaena* are covered with mucilaginous sheath
- f. *Bacillus edaphicus* bacteria are categorized under potassium solubilizing bacteria
- g. Halofenozide is categorized under Moulting hormone mimics
- h. Example of Associative bacteria includes *Azospirillum*
- i. Primer effect pheromone received through olfactory sensilla
- j. *Rhizobium* possess indeterminate and multilobed nodules

PART – B

Attempt ANY FIVE questions. All question carries equal marks

(6 x 5 = 30 Marks)

5. Explain in brief mass multiplication of solid biofertilizers (carrier based).
6. What do you mean by FCO? Explain its Schedules and importance of FCO specifications.
7. Describe the biological nitrogen fixation by *Rhizobium* in brief. Give the difference between nitrogen fixation by *Rhizobium* and *Frankia*
8. Describe the chemicals (used for management of insect pests) based on insect endocrine system, insect cuticle and communication system.
9. Write a short notes on factors influencing the efficacy of biofertilizers.
10. List the name of microorganisms which is responsible for phosphate solubilization and Potassium (K) solubilization. Explain in details the mechanism of phosphate solubilization.

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