

PARUL UNIVERSITY
COLLEGE OF AGRICULTURE
B.Sc.(Hons.) Agriculture Winter 2019-20 Examination

Semester: 4

Subject Code: 20100251

Subject Name: Biopesticides and Biofertilizers

Date: 04/12/ 2019

Time: 02:00 pm to 04:30 pm

Total Marks: 50

Instructions

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Make suitable assumptions wherever necessary.
4. Start new question on new page.

Q.1 Do as Directed.**A. Fill in the blanks. (Each of 0.5 marks)****(05)**

1. _____ is the first and most widely used biopesticides included spores of the bacteria.
2. _____ product is used to control mites.
3. _____ scientist discovered *Bt* during study on silk worm moth.
4. *Bacillus popilliae* commercially available in market under trade name _____.
5. _____ is microscopic protozoan is used to control grasshoppers.
6. _____ egg parasitoid used to control the lepidopteran pests.
7. _____ is extracted from the flower of *Chrysanthemum cinerariaefolium*.
8. _____ disease is caused by *Metarhizium anisopliae* in insects.
9. _____ is an active ingredient of neem.
10. _____ and _____ are 2nd generation botanical insecticides.

B. Multiple choice type questions. (Each of 0.5 mark)**(10)**

1. *Beauveria bassiana* is _____

a) Entomopathogenic fungi	c) Entomopathogenic bacteria
b) Entomopathogenic virus	d) Entomopathogenic nematode
2. _____ is a biological nematicide.

a) <i>Acetobacter</i>	c) <i>Paecilomyces lilacinus</i>
b) <i>Salmonella typhi</i> .	d) None of above
3. _____ disease caused by *Bacillus popilliae*.

a) Muscardine	c) Chagas disease
b) Milky disease	d) None of above
4. *Bacillus papillae* is effective against _____.

a) Grass hopper	c) Red cotton bug
b) Stem borer	d) White grub
5. Management of insects by predator and parasite is known as _____.

a) Microbial control	c) Cultural control
b) Biological control	d) Chemical control
6. DD – 136 is a product made of _____.

a) Virus	c) Nematode
b) Fungi	d) Protozoa
7. *Bacillus thuringiensis* is _____ type of bacteria

a) Facultative	c) Spore forming
b) Crystalliferous	d) All of above
8. Most important symbiotic Nitrogen fixing bacteria is _____.

a) <i>Rhizobium</i>	c) Both a and b
b) <i>Azospirillum</i>	d) None of above
9. Commercial product of NPV is _____.

a) Elcar	c) Virin H
b) Virin S	d) All of above
10. Phosphate solubilising bacteria is _____.

a) <i>Pseudomonas</i>	c) Both a and b
b) <i>Bacillus megaterium</i>	d) None of above
11. *Rhizobium* fixes _____ kg N/ha

a) 10-30	c) 50-70
b) 30-50	d) None of above

12. *Azolla* is used in _____ crop.
- a) Wheat
b) Pearl millet
c) Rice
d) Sorghum
13. The *Beauveria bassiana* commercially available in market under trade name _____
- a) Biolep
b) Biosoft
c) Biosep
d) Biobit
14. Biofertilizers can replace _____ % chemical fertilizer.
- a) 25-30
b) 35-40
c) 10-15
d) 40-45
15. *Steinernema carpocapsae* _____
- a) Entomopathogenic fungi
b) Entomopathogenic virus
c) Entomopathogenic bacteria
d) Entomopathogenic nematode
16. The term mycorrhiza was taken from _____ language.
- a) Latin
b) Roman
c) Greek
d) None
17. _____ mainly present in cereal plants.
- a) *Azospirillum*
b) *Acetobacter*
c) *Azotobacter*
d) None of above
18. Slow growing rhizobia is known as _____
- a) *Rhizobium*
b) *Bradyrhizobium*
c) *Rhizobia*
d) None of above
19. _____ ideal carrier material is necessary for the production of good quality of biofertilizer.
- a) Press mud
b) Charcoal
c) Lignite
d) All of above
20. *Azolla* doubles its biomass in _____ days.
- a) 7-9
b) 3-5
c) 10-12
d) 13-15

Q.2 Do as Directed.

A. Define the following. (Any five)

(05)

1. Biopesticides
2. Integrated pest management (IPM)
3. Symbiotic bacteria
4. Biofertilizers
5. Botanical insecticides
6. Predators
7. Biofertilization

B. Answer the following. (Any Five)

(05)

1. Mechanism of phosphate solubilization
2. What is Biological control?
3. Give name of two reference books?
4. Characteristics of ideal microbial insecticide
5. Advantages of biopesticides.
6. Write down properties of Pyrethrum
7. Give three examples of Entomopathogenic fungi.

Q.3 Write short notes. (Any five)

(10)

1. Scope of biopesticides.
2. Plant growth promoting rhizobacteria (PGPR)
3. Botanical insecticides
4. *Azolla* as biofertilizer
5. Microbial control
6. Methods of application of biofertilizers

Q.4 Attempt any Three/Long Questions/Example

(15)

1. Describe symptoms and mode of action of fungi, bacteria and virus.
2. Explain biofertilizers and give mass production technique of mycorrhizal biofertilizer.
3. Explain biopesticides and give mass production technique of *S/NPV*.
4. Explain *Bt*, its mode of action, symptoms and mass production.