

B.Sc. (Honours) Agriculture Semester-II Examination, 2019

Course No: PPC-121 (New)
(Agricultural Microbiology)

Signature of Centre Superintendent

Roll No. : (in figure) _____ (in words) _____

Student Index No. _____ Regn. No. _____ of _____

Time : Two Hours

Full marks : 50

Questions are of value as indicated in the margin

Part - I
(Objective and Short Answer Type)
(Use only ball point pen)

Time : 30 minutes

Full marks : 20

- Note:** 1. Answer in question paper itself.
2. Striking, rewriting or overwriting are not allowed in the objective type questions.

1. **State True (T) or False (F) in respect of the following statements (*any five*):** 1×5=5
- a) *Pseudomonas fluorescens* produces greenish fluorescent pigment (pyoverdine). ☐
 - b) Nitrogen fixation by *Rhizobium* sp. occurs under aerobic condition. ☐
 - c) Bacterial cells follow exponential progression in Lag phase of growth. ☐
 - d) *Thiobacillus* sp. is a sulphur oxidizing bacteria. ☐
 - e) Bacterio-chlorophyll is not a photosynthetic pigment found in cyanobacteria. ☐
 - f) Hans Christian Gram (1884) developed bacterial flagella staining technique. ☐
2. **Fill up the blanks with most appropriate words (*any five*):** 1×5=5
- a) _____ is an endospore forming bacteria.
 - b) Fungi that survive in association with plant root in the soil are known as _____.
 - c) Peptidoglycan layer of bacterial cell wall can be removed by treatment with _____.
 - d) Bacterial cell that divides in three successive planes regularly at right angle to each other is known as _____.
 - e) _____ is a stem nodulating plant and is an excellent green manure crop in low land rice cultivation.
 - f) Agar agar powder is isolated from _____.
3. **Tick (✓) the correct alternatives (*any five*):** 1×5=5
- a) Who is the father of microbiology?
 - i) Anton Von Leeuwenhoek
 - ii) E. F. Smith
 - iii) Robert Koch
 - iv) None of them.

P.T.O.

- b) The method of discontinuous sterilization (Fractional sterilization) is also known as –
- i) Pasteurization
 - ii) Tyndallisation
 - iii) Fractionation
 - iv) Filtration
- c) Bacteriophage was discovered by –
- i) Frederick Twort
 - ii) Felix d’Herrelle
 - iii) Both of them
 - iv) None of them
- d) Who is considered as the father of Virology?
- i) S. Winogradsky
 - ii) M. W. Beijerinck
 - iii) MS Woronin
 - iv) None of them
- e) The infoldings of cytoplasmic membrane that acts as the site of ATP synthesis is known as –
- i) Chromosome
 - ii) Carboxysome
 - iii) Lysosome
 - iv) Mesosomes
- f) Which is a cyst forming nitrogen fixing bacteria?
- i) *Rhizobium*
 - ii) *Bradyrhizobium*
 - iii) *Azotobacter*
 - iv) *Azospirillum*

4. Match column ‘A’ with column ‘B’ and jot down your answer in column ‘C’ based on column ‘A’

1×5=5

Column-A	Column-B	Column-C
a) Alexander Fleming	i) Transduction	()
b) N. Zinder and J. Lederberg	ii) Penicillin	()
c) Robert Koch	iii) Germ theory	()
d) J. Needham	iv) Postulate for Pathogenicity proof	()
e) Louis Pasteur	v) Theory of spontaneous generation	()

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Part - II
(Descriptive Type)

Time : 90 Minutes

Full marks : 30

Questions are of value as indicated in the margin

Answer *any three* questions from the following.

5. a) Describe the ultra-structure of bacterial cell with suitable diagram.
b) Types of flagellar arrangement around bacterial cell. 7+3=10
 6. a) What is nitrification and denitrification?
b) Discuss the carbon cycle and associated microorganisms. 2+8=10
 7. a) Write the pattern of growth of bacteria with different stages.
b) Write a brief note on bacterial conjugation or transformation. 7+3=10
 8. Write short notes on the following (*any four*) 2.5×4=10
 - a) Spores produced by bacteria
 - b) Biological Nitrogen fixation
 - c) Phosphorus cycle
 - d) Phylloplane microbes
 - e) Bio-pesticide
 9. Differentiate the following (*any four*): 2.5×4=10
 - a) Gram positive and Gram negative Bacteria
 - b) Prokaryotes and Eukaryotes
 - c) Phytoplasma and Spiroplasma
 - d) Rhizosphere and Rhizoplane
 - e) Lytic and Lysogenic cycle of Bacteriophage.
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