[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1783 **L**

Unique Paper Code : 2162011201

Name of the Paper : Microbiology and Plant-Microbe Interactions

Name of the Course : **B.Sc. (Hons.) Botany**

Semester : II

Duration : 2 Hours Maximum Marks : 60

Instructions for Candidates

1. Write your Roll No- on the top immediately on receipt of this question paper.
2. Attempt FOUR questions in all including Question No. 1 which is compulsory.
3. Attempt all parts of a question together.
4. All questions carry equal marks.

1 (a) Find the **one** correct option for the following multiple-choice questions 1x5=5

(i) Which of the following is a PGPR genus?

(A) *Bacillus*

(B) *Plasmodium*

(C) *Penicillium*

(D) *Volvox*

(ii) Viral nucleic acid may consist of:

(A) Only DNA

(B) Only RNA

(C) Either DNA or RNA

(D) Both DNA and RNA simultaneously

P.T.O.

(iii)Baltimore classification of viruses is primarily based on:

(A) Shape of capsid

(B) Host specificity

(C) Type of nucleic acid and replication strategy

(D) Presence of envelope

(iv)Teichoic acids are characteristic components of:

(A) Gram-positive bacteria

(B) Archaeal membranes

(C) Gram-negative outer membrane

(D) Mycoplasma membrane

(v) Which of the following plant bacteria lack a true cell wall?

(A) Mycoplasma

(B) *Streptococcus*

(C) Phytoplasma

(D) *Rhizobium*

(b) State **True** or **False** of the following statements: 1x5=5

(i) During the log phase, bacteria exhibit maximum metabolic activity.

(ii) Transformation in bacteria involves transfer of genetic material through direct contact.

(iii)All nitrogen fixing cyanobacteria require heterocyst for nitrogen fixation.

(iv)Photoautotrophs use organic carbon as their energy source.

(v) Antonie van Leeuwenhoek disproved the theory of spontaneous generation.

c) Match the Following 1x5=5

Column I		Column II	
(i)	Prion	A.	Creutzfeldt–Jakob disease
(ii)	Archaea	B.	Methanogens
(iii)	Spheroplast	C.	Penicillin-treated *E. coli*
(iv)	Viroid	D.	T4 bacteriophage particle
(v)	Virion	E.	Potato spindle tuber disease

2. Differentiate between the following **(any three)** 5x3=15

a) Archaea and bacteria

b) Bacterial and viral diseases in plants

c) PGPR and mycorrhizae

d) Prions and Viroids

3. Write short note on the following topics **(any three)** 5x3=15

a) Microbial world

b) Roles of viruses in medical sciences

c) Discovery of viruses

d) Fermentation

4. Draw well-labelled diagrams of the following **(any three)**: 5x3=15

a) Arbuscular mycorrhizae

b) Binary fission

c) Bacteriophage

d) Gram-negative cell wall

5. Answer the following including suitable diagrams (**any two**): 7.5x2=15

a) Why do rhizobia fix nitrogen inside the root but not in the soil?

b) Why are all viruses considered as obligate intracellular parasites?

c) Endospore formation in bacteria is not a mode of reproduction. Comment.