(ii) *Spirochetes*

(iii) *Streptomyces*

(b) Explain the different categories of the bacteria based on oxygen requirements. (5)

(c) Discuss the motility in *Mycoplasma.* (3)

6. (a) Give causative agents of the following diseases (**any four**) : (1×4=4)

(i) Rocky mountain spotted fever

(ii) Plague

(iii) Peptic ulcer

(iv) Gonorrhoea

(v) Tetanus

(b) Enlist the salient features and habitat of Methanogens. Discuss their ecological significance. (5)

(c) Diagrammatically explain the life cycle of Myxococcus. (6)

(d) Write the characteristic features of Picrophilus. (3)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1794 **L**

Unique Paper Code : 2532011201

Name of the Paper : Bacterial Diversity and Systematics

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

Semester : II

Duration : 3 Hours Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions. **All** questions carry equal marks.
3. Attempt **all** parts of a question together.

1. (a) Define the following terms (**any four**) : (2×4=8)

(i) Bacterial strains

(ii) Lithotrophs

(iii) Taxonomy

(iv) Psychrophile

(v) Osmotolerant

(b) Comment upon the role of rRNA oligonucleotide sequencing in classification. (4)

(c) What are salient features of Nanoarchaeota? (3)

(d) List six classes of proteobacteria. (3)

2. (a) Write short notes on the following (**any three**) : (5×3=15)

(i) MLSA

(ii) Halophiles

(iii) *Bacillus*

(iv) Bacterial diversity based on pH

(b) Why is *Deinococcus radiodurans* resistant to high dose of radiation? (3)

3. (a) Differentiate between the following (**any three**) : (4×3=12)

(i) Phenetic and Phylogenetic classifications

(ii) Elementary body and Reticulate body in *Chlamydia*

(iii) *Thiobacillus* and *Clostridium*

(iv) Photolithoautotrophs and Chemoorganoheterotrophs

(b) Explain nucleic acid hybridization technique and comment on its role in molecular taxonomy. (6)

4. (a) What is FAME analysis? How it can be utilized for bacterial identification. (5)

(b) Describe the life cycle of *Bdellovibrio* with the help of diagram. (6)

(c) Give the economic importance of *Mycobacterium*. Why is it called acid-fast bacterium? (4)

(d) Give ecological importance of *Thermotoga*. (3)

5. (a) Give salient features and importance of the following (**any two**) : (5×2=10)

(i) *Rhizobium*