5. (a) Discuss the advantages and disadvantages of pour plate and spread plate methods for estimation of bacterial counts in a given sample. (4+4=8)

(b) Outline the functions of capsules in bacterial cells. (2)

(c) Explain the significance of VBNCs. (2)

(d) Discuss the different types of archaeal cell walls. (6)

6. (a) What is the significance of high surface area to volume ratio in bacterial cells? (3)

(b) Discuss the diverse morphology and cell arrangement in bacteria. (6)

(c) Name the enzymes that protect bacterial cells from toxic intermediates of oxygen. (2)

(d) Explain the fluid mosaic model of the plasma membrane using a suitable diagram. (4)

(e) Briefly describe the composition of the bacterial ribosome. (3)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1047 **D**

Unique Paper Code : 2532011102

Name of the Paper : Basic Bacteriology

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

Semester : I

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.
3. Attempt **all** parts of a question together.
4. **All** questions carry equal marks.

1. (a) Explain the structure of flagella in Gram negative bacteria with the help of suitable diagram. (5)

(b) What do you understand by the term generation time? Derive the equation for the calculation of the generation time of an exponentially growing bacterial culture. (6)

(c) Discuss various methods of asexual reproduction in bacteria. (4)

(d) Comment on the structure of bacterial nucleoid. (3)

2. Differentiate between **(any six):** (3×6=18)

(a) Photoautotroph and Chemoheterotroph

(b) Protoplast and Sphaeroplast

(c) Selective and Differential media

(d) Lag phase and Stationary phase

(e) Mode of action of lysozyme and penicillin

(f) Sulfur and Volutin granules

(g) Pseudomurein and Murein

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

(i) Plasmids

(ii) Bacterial Endospore

(iii) Enrichment Culture technique

(iv) Preservation of bacterial cultures

(b) Briefly discuss the methods for cultivation of anaerobes. (3)

4. (a) Define the following terms (any four):(2.5×4=10)

Magnetosomes, Gas vacuoles, Phospholipids, Batch Culture, Growth rate

(b) Discuss the structure of Gram positive and Gram negative cell wall with the help of suitable diagrams. (8)