

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 1791 **FC-3** **Your Roll No.....**

Unique Paper Code : 32531102

Name of the Paper : Bacteriology (C2)

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

Semester : I (CBCS)

Duration : 3 Hours

Maximum Marks : 75

Instructions for Candidates

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

1. (a) What are proteobacteria ? (4)
(b) What factors determine the length of the lag phase in a bacterial batch culture ? (3)
(c) Describe in detail the peptidoglycan structure in gram-positive and gram-negative cell wall. (6)
(d) What are prosthecate bacteria ? (2)
2. (a) Briefly discuss the methods of asexual reproduction in bacteria. (3)
(b) Outline the differences between the flagella and cell membrane of eubacteria and archaeobacteria. (5)
(c) Explain the mechanism of cell movement in spirochetes. (3)
(d) Give a detailed account of the different bacteriological filters. (4)
3. (a) Enumerate the chemical composition of ribosomes of prokaryotic cells. (2)
(b) Give the mathematical derivation for calculation of generation time of an exponentially growing bacterial culture. (4)

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- (c) Diagrammatically explain the structure of bacterial flagellum in a gram negative cell. (4)
- (d) What adaptations enable *Deinococcus* to tolerate high levels of radiation? (3)
- (e) List the advantages of using agar-agar as a solidifying agent in nutritive media. (2)
4. (a) Write short notes on **(any 3)** :
- (i) Methanogens
 - (ii) Stocking of bacterial cultures
 - (iii) Molecular approaches to bacterial taxonomy
 - (iv) Cultivation of anaerobic bacteria (4×3=12)
- (b) Describe the nature and functions of plasmids. (3)
5. (a) Enlist the functions of bacterial capsules. (3)
- (b) Diagrammatically explain the process of sporulation in bacteria. Name two endospore formers. (6)
- (c) Categorise bacteria on the basis of their nutritional requirements. (6)
6. (a) How can heat be used as an agent of microbial control? (3)
- (b) Differentiate between enriched media and enrichment media. (4)
- (c) Outline the salient features of Mycoplasma/Streptomyces. (4)
- (d) Give one example of each of the following **(any 4)** :
- (i) Bacteria containing membrane bound DNA regions
 - (ii) Giant bacteria
 - (iii) Bacteria containing mycolic acids
 - (iv) Causative agent of crown gall
 - (v) Halophilic bacteria (1×4=4)