

This question paper contains 3 printed pages]

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S. No. of Question Paper : 5831

Unique Paper Code : 2532011102

Name of the Paper : Basic Bacteriology

Name of the Course : Microbiology (NEP-UGCF)

Semester : I

Duration : 3 Hours

Maximum Marks : 90

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any five questions.

All questions carry equal marks.

1. (a) Give one example of the following (any ten) : 1×10=10

- (i) Spiral shaped bacterium
- (ii) Complex medium
- (iii) Bacterium having proteinaceous capsule
- (iv) Gram negative bacterium
- (v) Aerobic bacterium
- (vi) Bud producing bacterium
- (vii) Bacterium having magnetosomes

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- (viii) Bacterium lacking cell wall
- (ix) Bacterium/group having membrane bound nucleoid
- (x) Largest bacterium
- (xi) Bacterium showing grape like arrangement.
- (b) Discuss any *two* physical factors which affect bacterial growth. 5
- (c) What is the significance of high surface area to volume ratio in bacterial cells ? 3
- 2. (a) Write short notes on (any *three*) : 4×3=12
 - (i) Intracytoplasmic membranes
 - (ii) LPS
 - (iii) Streak plate technique
 - (iv) Bacterial flagellar arrangements
- (b) Give composition and function of the following inclusion bodies (any *two*): 3×2=6
 - (i) Polyphosphate Granules
 - (ii) Sulfur globules
 - (iii) Gas vacuole.
- 3. (a) Differentiate between the following (any *three*) : 4×3=12
 - (i) Protoplasts and spheroplasts
 - (ii) Capsule and slime layer
 - (iii) Selective and differential medium
 - (iv) Peptidoglycan and pseudopeptidoglycan.
- (b) Draw a well labelled diagram of Gram-positive flagellum. 4
- (c) How penicillin inhibit bacterial cell wall synthesis ? 2

4. (a) Briefly explain the following terms (any *three*) : 2×3=6
- (i) L forms
 - (ii) S layer
 - (iii) Mesosomes
 - (iv) Batch culture.
- (b) Draw a well labelled diagram of Gram-negative cell wall. 6
- (c) Define generation time and growth rate. Derive the mathematical expression for generation time. 6
5. (a) What is the role of Microbial Culture Collection Centers ? Give name of any *two* such centers. 5
- (b) Explain any *one* method for counting viable bacterial cells. 6
- (c) Define plasmid and explain any *two* types with examples. 4
- (d) Comment on bacterial fimbriae. 3
6. (a) What is teichoic acid ? Give its functions. 4
- (b) Discuss viable but non-culturable bacteria. 4
- (c) Draw well labelled diagram of bacterial endospore. How is it able to survive harsh conditions ? 7
- (d) Comment on fragmentation of bacteria. 3

