

Sl. No. of Question Paper: 1780

Unique Paper Code: 2531102

Name of the Paper: Bacteriology

Name of the Course: Bachelor with Honours in Microbiology (Four Year Undergraduate Programme)

Semester: Part I Semester I

Duration: 3 Hrs

F-3

Maximum Marks: 75 Marks

Instructions for Candidates

Attempt any 5 questions. All Questions carry equal Marks.

Q.1. (a) Fill in the blanks (any eight):

- (i) The extra chromosomal DNA present in bacterial cell is called _____.
 - (ii) The solidifying agent used in nutrient media is _____.
 - (iii) An example of bacteria having membrane bound nuclear body is _____.
 - (iv) The lysozyme degrades the bacterial cell wall by acting on _____.
 - (v) Twitching motility is carried out by _____.
 - (vi) *Agrobacterium* is responsible for causing a disease called _____.
 - (vii) Sterol like components present in bacterial cell membrane are _____.
 - (viii) MacConkey agar is an example of _____ medium.
 - (ix) Bacterial genera widely used in dairy industry is _____ . **1X8 = 8 Marks**
- (b) Discuss the flagellar arrangement in eubacteria. **4 Marks**
- (c) Briefly discuss the functions of ⁶Bacterial capsule. **3 Marks**

Q.2. Write short notes on the following (any three):

- (a) Bacterial Growth Curve
- (b) Archaeobacterial Cell Membrane
- (c) Bacterial endospore
- (d) Sterilization by heat

5X3 = 15 Marks

Q.3.(a) Define the following (any nine):

- (i) S layer
- (ii) Phototaxis

(iii) Oligonucleotide Signature Sequences

(iv) Sphaeroplast

(v) Axial Filament

(vi) Thermoacidophiles

(vii) Gliding Motility

(viii) Periplasm

(ix) Teichoic acid

(x) Mixotrophs

1X9= 9 Marks

(b) Why *Deinococcus* is resistant to radiation damage?

2 Marks

(c) Give a brief account of halophiles.

2 Marks

(d) Why Mycoplasmas are resistant to antibiotics that interfere with cell wall synthesis?

2 Mark

Q.4. (a) Explain the methods of asexual reproduction in bacteria.

4 Marks

(b) Make a well labeled diagram of Gram negative eubacterial cell wall.

4 Marks

(c) Briefly describe nucleic acid hybridization technique used in bacterial taxonomy.

4 Marks

(d) Expand the following terms (any three):

(i) HEPA

(ii) SNP

(iii) PHB

(iv) ATCC

1X3 = 3 Marks

Q.5. (a) Differentiate between the following (any three):

(i) Selective and Enrichment medium

(ii) Photolithoautotrophs and Chemolithoheterotrophs

(iii) Plasmid and Chromosomal DNA

(iv) Streaking and ^Sspread plate technique

3X3 = 9 Marks

(b) Give the significance of the following inclusion bodies:

(i) Carboxysomes

(ii) Magnetosome

(iii) Volutin granules

(iv) Glycogen inclusion

1X4 = 4 Marks

(c) Explain ^{bacterial} generation time.

2 Marks

Q.6. (a) State True or False

(i) Gas Vacuoles are surrounded by a membrane.

(ii) Results of serial dilution and plating are expressed as bacteria per ml.

(iii) Oxygen removal from Gas Pack jar is catalyzed by palladium catalyst.

(iv) Rhizobium is a free living nitrogen fixer.

(v) *Pseudomonas* belongs to Enterobacteriaceae family.

1X5 = 5 Marks

(b) Why Mycobacteria shows acid fast character.

2 Marks

(c) Discuss methods for preservation of bacterial cultures.

4 Marks

(d) What is synchronous culture? Write the methods used to obtain synchrony in a bacterial culture.

4 Marks