

This question paper contains 4 printed pages]

Your Roll No. ....

1027

**B.Sc. (Hons.)/I**

**C**

**MICROBIOLOGY—Paper III**

**(Bacteriology)**

**(Admissions of 2004 and onwards)**

*Time : 3 Hours*

*Maximum Marks : 60*

*(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) Explain the following (any *two*) : 2×3=6

(i) 16SrRNA molecule is used for phylogenetic classification.

(ii) MacConkey agar is a selective differential media.

(iii) Transformation process is different in *Streptococcus pneumoniae* and *Haemophilus influenzae*.

P.T.O.

- (b) Describe the *four* phases of bacterial growth curve in a closed system. 4
- (c) Name *two* culture collection centers. 2
2. (a) Enlist the different methods for enumeration of bacteria. 5
- (b) List the difference between Gram positive and Gram negative cell wall. 4
- (c) Write the principle of phase contrast microscopy. 3
3. Define the following (Any *twelve*) :
- Signature sequence, Dendrogram, Carboxysomes, Growth rate, Compatible solutes, Arithmetic growth, Resolution, Teichoic acids, Bayer's junctions, Mixotrophs, Pure culture, Extremophiles, Photo.rophs, Synchronous cultures, Pseudopeptidoglycan. 12×1=12
4. (a) Explain the different methods used for cultivation of anaerobic bacteria. 4

- (b) How and when does bacterial sporulation occur ? 4
- (c) What are transposable elements ? 2
- (d) What is Decimal Reduction Time ? 2
5. (a) What are continuous cultures ? Compare a chemostat and a turbidostat. 4

Or

Explain different patterns of bacterial flagellation.

- (b) Differentiate between (any two) :  $2 \times 3 = 6$
- (i) Selective and Differential Media
- (ii) Chemically defined and Chemically undefined media
- (iii) Bright field and Dark field microscopy
- (c) What are S-layers ? 2
6. (a) Write short notes on (any two) :  $2 \times 4 = 8$
- (i) Nitrifying bacteria

(ii) Halophiles

(iii) Bacterial preservation methods

(iv) Sterilization

(b) What are molecular Koch's postulates ? 4

*Or*

Explain the structure and function of bacterial capsule.