

This question paper contains 3 printed pages.]

Your Roll No.

1447

A

B.Sc. (Hons.)/I

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) Define the following terms (any **six**) :

(i) L-forms.

(ii) Generation time.

(iii) Carboxysomes.

(iv) Signature sequences.

(v) Chemolitho heterotrophs.

(vi) Compatible solutes.

(vii) Amphitrichous flagellation.

.1 × 6 = 6

(b) What is polyphasic taxonomy?

2

(c) Explain different phases of bacterial growth in a batch culture.

4

[P.T.O.]

2. (a) Write short notes on :
- (i) Methanogens.
 - (ii) Plasmids.
 - (iii) Interrupted mating experiment. $3 \times 3 = 9$
- (b) Why do we use peptones, yeast extract and beef extract in a complex media? 3
3. (a) Explain the following :
- (i) Agar is a good solidifying agent.
 - (ii) Membrane filtration is a means of measuring bacterial growth.
 - (iii) Thermophiles have lipids rich in saturated fatty acids. $2 \times 3 = 6$
- (b) Give various methods of preservation of bacterial culture. 4
- (c) What are transposons? 2
4. (a) What are different steps in bacterial sporulation? 4
- (b) Discuss the principle of phase contrast microscope. 2
- (c) What are Mycoplasma? 2
- (d) What are molecular Koch's postulates? 4
5. (a) Differentiate between gram + ve and gram - ve cell walls. 3
- (b) Discuss the molecular mechanism of motility. 4
- (c) Name diseases caused by the following bacteria :
- (i) *Rickettsia*.
 - (ii) *Helicobacter*
 - (iii) *Chlamydia*. $1 \times 3 = 3$

- (d) Discuss the bacterial enzymes produced to remove toxic products of molecular oxygen. 2
6. (a) What are continuous cultures? Enlist the differences between chemostat and turbidostat. 3
- (b) Differentiate between transformation in gram + ve and gram - ve bacteria? 3
- (c) Give an example of bacteria having more than one chromosome. 1
- (d) Differentiate between sphaeroplast and protoplast. 2
- (e) What is ribotyping? 3