2008

MICROBIOLOGY

PAPER—I

Full Marks : 40

Time : 2 hours

Answer **two** questions from each Group

The figures in the right-hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

GROUP—A

Answer any *two* questions

[*Marks* : 20]

1. (*a*) Why anaerobic bacteria can not tolerate oxygen ? While aerobic bacteria can ?

(*b*) What is acidfastness ? State its mechanism.

(*c*) Mention the composition of Endospore wall peptidoglycan. 4 + 3 + 3

2. (*a*) What effect does increasing a limiting nutrient rare on the yield of cells and the growth rate.

(*b*) Calculate generation time in a growth experiment in which a medium was inoculated with cell of *E. Coli* 10/ml and following 60 minutes lag grew exponentially 594 minutes after which the population was 10^9 cell/ml.

(*c*) What is gas vacuole? State its molecular structure and function. 3 + 3 + 4

3. Write notes on: $2\frac{1}{2} \times 4$

(*i*) Molecular mechanism of flagellar movement

(*ii*) L-forms bacteria

(*iii*) Archaebacteria

(*iv*) Chemostat.

GROUP—B

Answer any *two* questions

[*Marks* : 20]

4. (*a*) How do ionizing radiation, ultra violet radiation and visible light harm micro-organisms ? State how these organisms protect themselves against damage from UV and visible light.

(*b*) What is quorum sensing ? State its mechanism and importance. (3 + 2) + (1 + 4)

5. (*a*) Briefly describe the steps of murein synthesis.

(*b*) What is type strain ? Why rRNA homology experiments is considered as most useful in bacterial taxonomy. 4 + (2 + 4)

6. (*a*) What are halophilic microorganisms ? Why they required Na and K ions for their survival ?

(*b*) Write a brief note on the following:

(*i*) Cyanelles

(*ii*) Prochlorons.

(*c*) What is transpeptidation reaction in bacterial cell wall? 3 + 4 + 3