M.Sc. 4th Semester Examination, 2011

MICROBIOLOGY

PAPER—XIX

Full Marks : 40

Time : 2 hours

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

[*Marks* : 20]

Answer any *two* questions :   10 × 2

1. Differentiate between :   2 × 5

   (a) Ecotone and Edge.

   (b) Little omnivory and Frequent omnivory.

    (c) Connectedness food web and Energy flow food web.

    (d) Resistance stability and Resilience stability.

    (e) Gene frequency and Genotype frequency.

2.   (a) Discuss 'universal model' of energy flow.

    (b) State the important attributes of a population?

    (c) What is an ecotone? Add a note with example. $4 + 3 + 3$

3.   (a) Deduce Hardy-Weinberg genotype equilibrium in a population.

    (b) Calculate the gene frequency of M and N on the basis of following blood types in a population sample :

      $M - 123$, $MN - 72$, $N - 10$

    (c) What is relative fitness? $5 + 3 + 2$

        (*Continued*)

GROUP – B

[*Marks* : 20]

Answer any *two* questions :   10 × 2

4. (a) DNA based analysis is now used to conduct water-quality test.— Explain.

   (b) Compare the frickling filter with activated sludge treatment.

   (c) Briefly mention the composting of biosolids.

   (d) State the negative aspect of Sewage fed aquaculture.   2 + 4 + 2 + 2

5. Write a note on bioremediation mentioning the technology adopted for addition of   10

   (*i*) Oxygen and other gases

   (*ii*) Nutrient

   (*iii*) Surfactants

   (*iv*) Microorganisms or DNA
   to bioremediation system and also state their roles.

6. Write short notes on (any *four*) : $2\frac{1}{2} \times 4$

   (*i*) Biosafety

   (*ii*) Degradation of PCBS

   (*iii*) Air borne toxins

   (*iv*) Bioterrorism

   (*v*) Barophile.