2011

M.Sc.

3rd Semester Examination

MICROBIOLOGY

PAPER—XIII

Full Marks : 40

Time : 2 Hours

The figures in the right-hand margin indicate full marks.

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

Illustrate the answers wherever necessary.

Answer any *two* questions from each group.

Group — A

[Marks : 20]

1. (a) What do you mean by Southern Blot? What kind of information can be obtained about a gene using this technique?

(b) How do you quantify a specific transcript from a tissue sample by the help of Northern Blotting? (2+3)+5

2. Who was the scientist got Noble Prize twice for his invention in Biology? What are his contributions? How the nucleic acid sequencing technique of Sanger differs from the technique of Maxam-Gilbert?

Schematically describe the Sangers method of DNA sequencing. Mention the principle of automated DNA sequencing. 1+1+3+4+1

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

(a) Shottle vector ;

(b) P^{BR} 322 ;

(c) Chromosome walking ;

(d) Mutant complementation ;

(e) YAC.

Group — B

[Marks : 20]

4. (a) Mention the advantages of direct gene transfer over Tri-plasmid mediated gene transfer in plants.

(b) Compare electroporation with microinjection mentioning their relative merits.

(c) What are molecular probes and what purpose do they serve ? 3+3+(2+2)

5. (a) Show schematically the construction of C-DNA library of an organism. How such a library is screened ?

(b) What is homopolymer tailing ? Name the enzymes involved in the process. (4+3)+(2+1)

4. Write notes on (any *two*) : 5×2

(a) Application of genetic engineering in medicine ;

(b) Type II restriction enzyme ;

(c) Transgenic sheep.

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