2008

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 is the difference in property between the chromogenic substrates used for ELISA and western blots ?
   (b) Briefly describe the dot blot technique.
   (c) What are phagemids ? What advantages do they confer over plasmids ?
   (d) Discuss the utility of yeast artificial chromosomes (YAC). 2+2+3+3

2. (a) What is a vector ? What characteristics must a cloning vector have ?
   Give full form and functions of each of the vectors : YEp, YRp, YCp, and YIp. What antibiotic markers are available in pBR 322. $1+2+(1\frac{1}{2}\times4)+1$

3. 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?

Describe the Sangers method of DNA sequencing. What is automated DNA sequencer? 1+1+3+4+1

Group — B

[Marks : 20]

4. (a) Show schematically the steps involved in the preparation of c-DNA from m-RNA. Point out essential differences between c-DNA library and genomic library.

   (b) What are molecular probes? What are their utilities? (4+2)+(2+2)

5. (a) Show the structure of the Ti-plasmid and describe the function of each component.

   (b) What are transgenic plants? What are the strategies commonly followed for producing herbicide resistant transgenic plants? Discuss briefly two methods by which glyphosate resistant transgenic plants have been produced. 4+(1+2+3)

6. (a) How can liposomes engulf and deliver nucleic acids to cells? Are they applicable to all biomolecules?

   (b) What are different types of restriction enzymes? Which type is preferred for gene cloning experiments and why?

   (c) Mention briefly the application of genetic engineering in medicine. 3+3+4

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