2013

M.Sc.

2nd Semester Examination

BIOTECHNOLOGY

PAPER—BIT-204

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.

Group — A

1. Answer any *five* questions from the following : 5×2

(a) What is partitioning of a plasmid ? Do you think BACs have partitioning features ? 1+1

(b) Why GC content is important in primer designing ? What is Tm of DNA ? 1+1

(c) What is λ phage based replacement vectors ? 2

(d) Give examples of high and low copy number plasmids. 2

(e) Why YAC is thus called ? 2

(f) Which one is more stable rRNA or mRNA ? 2

(g) What is insertional inactivation ? 2

(h) What is a proof reading thermostable DNA polymerase ? 2

Group — B

Answer any *two* questions from the following : 2×5

2. Why it is important that a cloning vector should have a number of unique restriction enzyme recognition sites ? What are R–M systems in bacteria ? 3+2

3. What components are necessary to copy DNA *in vitro* ? State the utilities of ribozomes ? 2+3

4. Briefly describe the radioactive labelling of NA. What is *in vitro* packaging ? 4+1

5. What are the differences between cloning vector and expression vector ? 5

Group — C

Answer any *two* questions from the following : 2×10

6. Write a short note on use of a reporter gene in study of gene expression. How does GFP fluorescence occurs ? 5+5

7. Why alkaline phosphatase is important in molecular cloning? Which gene codes for bacterial alkaline phosphatase ? How T-DNA is protected during transfer ? Give two examples of indirect gene transfer method in plant. 3+1+3+3

8. What is gene knock down ? How RNAi regulates gene expression ? What is PCR based mutagenesis ? 2+6+2

9. What is Type IV Secretion System in Bacteria ? Briefly describe different DNA transfection methods in an animal cell. 2+8

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