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(ii) Yeast-*E.coli* shuttle vectors

(iii) Ehimulin production in *E.coli*

(iv) DNA Footprinting

(b) Write the contributions of the following scientists
in RDT (**any three**) : (1×3=3)

(i) Messing

(ii) Arber, Smith and Nathans

(iii) Craig Venter

(iv) KaryMullis

(v) Alec Jeffreys

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 1715

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Unique Paper Code : 2532014801

Name of the Paper : Principles of Recombinant
DNA Technology

Name of the Course : **B.Sc. (Hons) Microbiology**

Semester : VIII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions.
3. **All** question carry equal marks.
4. Attempt all parts of the question together.

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1. Define the following (**any nine**) : (2×9=18)

Cosmid, DNA ligase, homopolymer tailing, sister vectors, double digestion, klenow fragment, DNA ladder, gene fusion, gel retardation assay, transcriptome, reporter genes, insertional inactivation.

2. (a) Write a short note on phage display. (6)

(b) Outline the principle of dideoxy method of DNA sequencing and draw the picture of the sequencing gel of any sequence of 15 nucleotides of your choice. (8)

(c) Explain the design of an expression vector with suitable example. (4)

3. (a) What do you understand by antisense RNA technology? Explain with the help of a suitable example. (6)

(b) Describe the principle and applications of Western blotting technique. (6)

(c) Explain the functioning of Ti-based vectors. (6)

OR

Comment on gene therapy and its strategies.

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4. (a) Differentiate between the following pairs (**any four**) : (4×4=16)

(i) Adaptors and Linkers

(ii) Type I and Type II Restriction Enzymes

(iii) pBR series and pUC series

(iv) Biolistics and Microinjection

(v) Insertional and Replacement vectors

(b) What is the solution to the problem of hyperglycosylation of the heterologous products derived from *Saccharomyces cerevisiae*? (2)

5. (a) Describe the construction of cDNA library. How is it advantageous over a genomic library? (8)

(b) Write a short note on a-complementation and its utility in screening of recombinant colonies. (6)

(c) Describe nick translation and its applications. (4)

6. (a) Write short notes on the following (**any three**) : (5×3=15)

(i) Electroporation

P.T.O.