This question paper contains **3** printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **1361**

Unique Paper Code : **2531503** **F-7**

Name of the Paper : **Recombinant DNA Technology**

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

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt any *five* questions.

All questions carry equal marks.

Attempt all parts of a question together.

1. (*a*) Define the following (any *six*) : 6×2=12

(*i*) Shotgun sequencing

(*ii*) Amplicon

(*iii*) Probe

(*iv*) Cloning vector

(*v*) Cosmid

(*vi*) Insertional inactivation

(*vii*) YIp.

(*b*) Discuss the use of liposome for gene delivery. 3

P.T.O.

2. (*a*) What is the role of the following scientists in recombinant DNA Technology : 2×3=6

(*i*) Bolivar and Rodriguez

(*ii*) Craig Venter

(*iii*) Smith and Nathans.

(*b*) Differentiate between the following pairs (any *three*) : 3×3=9

(*i*) Isoschizomers and Neoschizomers

(*ii*) Adaptor and linker

(*iii*) Insertional and Replacement Vectors

(*iv*) Restriction enzyme Type I and Type II.

3. (*a*) Comment on the activity and application of the following enzymes (any *two*) : 2×2=4

(*i*) Alkaline phosphatase

(*ii*) Klenow Fragment

(*iii*) Terminal deoxynucleotidyltransferase.

(*b*) Describe the development of M13 vector series. 5

(*c*) Outline the basic principle of Agarose gel electrophoresis. How can it be used to determine the molecular weight a DNA fragment ? 3+3=6

4. (*a*) Discuss the important features of an expression vector using an example. In what ways are expression vectors different from cloning vectors ? 4+2=6

(*b*) Discuss the important criteria for designing a PCR primer pair. 4

(*c*) Explain the most commonly used chemical transformation method for *E.coli* cells. 5

5. (*a*) Write short notes on the following (any *three*) : 3×4=12

(*i*) RT-PCR

(*ii*) pUC series

(*iii*) Microinjection

(*iv*) Chromosome Walking.

(*b*) Enlist the advantages of using *E.coli* as a host for recombinant DNA research. 3

6. (*a*) Describe the construction of a genomic DNA library. Also discuss any two methods to identify a particular clone in a library. 4+4=8

(*b*) Write the strategy for the production of recombinant human insulin in a suitable host. 5

(*c*) What is electroporation ? 2