This question paper contains **2** printed pages]

NY—79—2023

FACULTY OF SCIENCE

M.Sc. (Third Semester) EXAMINATION

NOVEMBER/DECEMBER, 2023

(New/CBCS Pattern)

MICROBIOLOGY

Paper-XII-MB-302

(Recombinant DNA Technology)

(Thursday, 7-12-2023) **Time : 2.00 p.m. to 5.00 p.m.**

Time—3 *Hours* *Maximum Marks*—75

N.B. :— (*i*) *All* questions are compulsory and carry equal marks.

(*ii*) Draw neat and well labelled diagrams wherever necessary.

1. Define "Reverse Transcriptase". Discuss in detail the mode of action and significance of various DNA manipulating enzymes employed in *r*DNA technology. 15

Or

Take a detailed account of ideal features desired in cloning vectors. Explain construction and applications of few artificial chromosome vectors.

2. Define "DNA fingerprinting". Explain significance and differences of enzymatic DNA sequencing versus. 15

Or

What is "Nucleic acid hybridisation. Take a detailed account of Southern blotting, Northern blotting and insitu hybridisation.

3. Define "Gene library". Illustrate and elaborate construction of cDNA libraries and genomic libraries. 15

Or

Explain "Gene of interest" in RDT. Discuss various physical and chemical methods available to insert Gene of interest into a suitable host.

4. Define "Gene Therapy". Discuss in detail various methods and applications of Gene Therapy. 15

Or

Take an account of the various ethical, legal and environmental issues associated with *r*DNA technology.

5. Write notes on (any *three*) : 15

(*a*) Linkers and adaptors

(*b*) PCR based mutagenesis

(*c*) Jumping and hoping libraries

(*d*) Future of stem cell therapy.