

**M.Sc. (PREVIOUS) PRACTICALS
SCHEME OF PRACTICAL EXAMINATIONS**

There will be two practical examinations of 100 Marks each in MSc. (Previous) of 5 hours duration each day (2 days).

Practical-I (Based on Theory Paper I and II)
100 Marks

Practical-II (Based on Theory Paper III and IV)
100 Marks

**M.Sc. FINAL BIOTECHNOLOGY
2005–2006**

**PAPER–I
GENETIC ENGINEERING**

Duration: 3 hrs

M.M.: 100

UNIT – I

History of development of genetic engineering, its principles and basic methods. Restriction endonucleases– their types, classification and application, palindromes and other enzymes needed in genetic engineering.

Cloning vectors: Plasmids – organization, replication and incompatibility of plasmids, construction of plasmid vectors.

UNIT – II

Phages–characteristics of single and double stranded phages, construction of phage vectors, cosmids and other vectors (YAC).

Molecular cloning: construction of cDNA and genomic library transformation, transfection, microinjection, electroporation etc., screening of recombinations, expression vectors, transcriptional reporting.

UNIT – III

Principles and practice of nucleic acid hybridization.

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Southern, Northern, Western and South–Western hybridization and gel retardation techniques, DNA–finger printing, chromosome walking.

Sequencing of DNA, chemical synthesis of oligonucleotides, site directed mutagenesis, polymerase chain reaction and its applications, gene replacement and gene and protein targeting.

UNIT – IV

Transposons and their use in genetic manipulation. Retroviruses and retroposons.

Applications of genetic engineering with special reference to agriculture and human health. Medical application of recombinant DNA technology, human disorders associated with defects in proteins and enzymes. DNA probes and their applications in molecular diagnosis of genetic and other human disorders. Health care products.

UNIT – V

Transgenic animals, animal clones – methods of their production, ethics and morality.

Biosafety Regulations: Physical and biological containment.

Intellectual rights, patenting of biological materials, patenting laws in

Note:

The paper setter is required to set questions of 3 types contained in 3 Sections (**Section A**- 10 questions, **Section B**- 10 questions and **Section C**- 4 questions) from the 5 units of each paper. There will be 10 questions in **Section A** which will be asked from all the 5 units, i.e., 2 questions from each unit. These questions have to be answered in one word or a few words only. Each question will be of one mark. All the questions in **Section A** are compulsory. In **Section B**, 10 questions will be set from the 5 units, i.e., 2 questions from each unit. Students are required to attempt at least 1 question from each unit. Each question will carry 10 marks. The answers of each question should be given in about 250 words. In **Section C** there will be 4 descriptive type questions set from all the 5 units, not more than 1 question from each unit. These questions may also have subdivisions. The students are required to answer 2 questions, each in approximately 500 words. Each question will carry 20 marks .



