SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH
(A DEEMED TO BE UNIVERSITY)

M.Sc. Molecular Biology & Human Genetics (Semester-IV)

Examination

[Max. Marks: 100]

Time: 3 Hrs.

Molecular Basis of Human Diseases II
Q.P Code: M4552

Your answers should be specific to the questions asked.
Draw neat labelled diagrams wherever necessary.

Long Essay **2X20=40 Marks**

1. Define genetic mapping and explain linkage, crossing over, genetic markers, and multipoint mapping.
2. Describe the interaction of genes with environment with special emphasis on penetrance, expressivity and phenocopy.

Short Essay **6X10=60 Marks**

3. Describe the classification genetic diseases with suitable examples.
4. Define Epistasis and explain different types of epistatic interactions.
5. Describe the genetic basis of Beckwith Wiedemann and Angelman syndromes.
6. Describe the genetic basis of Achondroplasia and Marfan Syndrome.
7. Describe the genetic basis of Cystic Fibrosis and Brugada Syndrome.
8. Describe the genetic basis of Pseudocholinesterase deficiency and G6PD linked haemolytic anemia.

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M.Sc. Molecular Biology & Human Genetics (Semester-IV)
Examination November 2025 **[Max. Marks: 100]**

Time: 3 Hrs.

Genetic Engineering and Biotechnology

Q.P Code: M4610

Your answers should be specific to the questions asked.
Draw neat labelled diagrams wherever necessary.

LONG ESSAY **2 X 20 = 40 Marks**

1. Describe the unique properties and applications of phagemid and cosmid.
2. Describe the mechanism of action of etanercept, infliximab and adalimumab.

SHORT ESSAY **6X 10 = 60 Marks**

3. Describe the process of preparing recombinant vaccine.
4. Define error rate. Describe the salient features of proof-reading polymerase.
5. Describe the classification of restriction endonucleases. Draw and mark *Eco*R1 site in the cleavage site
6. Describe the methods for transfer of foreign DNA into mammalian cells.
7. Describe the applications of proteins engineering.
8. List the biological barriers to gene delivery and describe the principles of gene therapy.

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