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

Master of Philosophy (M.Phil)

(Molecular Cell Biology and Medical Genetics)

Semester-I Examination February-2014

Time: 3 Hrs. Max. Marks: 100]

Paper – I

Cytogenetics

Q.P Code: 6111

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

Section – A Cytology (50 Marks)

(Use Separate Answer booklet for Section "A" and Section "B")

LONG ESSAY **2 X 10 = 20 Marks**

1. Discuss the modalities of specimen collection and processing for molecular pathology.
2. Classify tissue on basis of proliferative activity. Discuss the role of cyclins and cyclin dependent Kinase in cell cycle.

IORT ESSAY **3X 5 = 15 Marks**

3 Tumor suppressor gene.

4 Cytoskeleton, functions and abnormalities

5 Pathways of apoptosis

SHORT ANSWERS **5 X 3 = 15 Marks**

6 Ribosomes

7 Functions of endoplasmic reticulum

8 Perosisomes

9 Membrane receptors

10 Lysosomal storage diseases

Section – B Genetics (50 Marks)

(Use separate Answer booklet for Section-B)

LONG ESSAY **2 X 10 = 20 Marks**

1. Notion of pangensis and germ plasm.
2. Classification of chromosome based on location of centromeres

SHORT ESSAY **3X 5 = 15 Marks**

3 Characters of transposable elements

4 Phenotypic effects of translocation

5 Cytological basis of crossing over

SHORT ANSWERS **5 X 3 = 15 Marks**

6 X-linked disorders

7 Co-dominance

8 Penetrance

9 Barr body

10 Mutagens

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Paper – II

(Molecular cell Biology)

Q.P Code: 6121

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

LONG ESSAY **2 X 10 = 20 Marks**

1. Define mutation. Mention the types of mutations and explain diffent mechanisms of DNA repair.
2. Trace the pathway of pyrimidine synthesis. Add a note on its disorders.

SHORT ESSAY **10 X 5 = 50 Marks**

3 Briefly explain the mechanism involved in protein transport in eukaryotes.

4 Degradation of purines.

5 Briefly outline the mechanism of protein synthesis in prokaryotes.

6 Describe the *in vivo* significance of post-transcriptional modifications.

7 Explain the principle and application of southern, northern and western bloting techniques. ✓

8 Concept of restriction enzymes digestion and application in genetic engineering and molecular biology. ✓

9 Transcription termination signal in prokaryotes and eukaryotes.

10 Oxidative DNA damage.

11 Role of promoter sequence in eukaryotic transcription.

12 Differentiate the sequence features of exons and introns and their effects on transcription.

SHORT ANSWERS **10 X 3 = 30 Marks**

13 Telomerases.

14 DNA ligases.

15 Termination codon.

16 TATA binding protein.

17 Central dogma of Molecular Biology.

18 Yeast-artificial chromosome (YAC).

19 Structure of unusual bases.

20 Genetic code.

21 Plasmids.

22 Differentiate B and Z-DNA.

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