SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION & RESEARCH

(A DEEMED TO BE UNIVERSITY)

M.Sc. Molecular Biology & Human Genetics First Year (Semester-II)

August – 2016 Examination

Time : 3.00 Hrs. **[Max. Marks: 100]**

Paper-I

CELL BIOLOGY

Q.P. Code : MBHG-110

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

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

1. On the basis of Fluid mosaic model, explain different functions of the plasma membrane.
2. Describe the mechanisms of cell-cell interactions.

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

3. Biogenesis of Ribosomes.
4. Cilia and Flagella.
5. Structure and functions of peroxisomes.
6. Write in detail G-protein linked receptors structure and function with example.
7. Structural organization of a metaphase chromosome.
8. Enumerate the behavior and presumed role of Centriole during Mitosis.
9. What is cell motility? Explain the structures involved and the mechanisms.
10. Detailed account of ultra structure of Mitochondria.
11. Difference between Prokaryote and Eukaryote cell.
12. Mechanism and significance of protein sorting.

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

13. Main functions of Basal bodies.
14. Nucleolus.
15. Endoplasmic reticulum.
16. Glycosylation.
17. Intercellular Adhesion.
18. Exocytosis.
19. Heterochromatin.
20. CaM Kinase.
21. Kinetochore.
22. Supernumerary chromosomes.

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Paper-II

PRINCIPELS OF GENETICS

Q.P. Code : MBHG-111

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 and polymorphism. Explain various types of mutations and polymorphisms.
2. Describe the laws of Mendelian inheritance.

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

3. Mechanism of sex determination in humans.
4. RNA synthesis.
5. Pseudo-genes.
6. Structure of eukaryotic gene.
7. Enzymes involved in DNA replication.
8. DNA damages and repair mechanisms.
9. Types of RNA.
10. Hardy-Weinberg Law.
11. Post translational modifications.
12. Mitochondrial inheritance.

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

13. Pedigree analysis.
14. Catalytic RNA.
15. Multiple Alleles.
16. VNTR
17. Gene family.
18. Wobble hypothesis.
19. Barr body.
20. Test cross.
21. Origin of replication.
22. Z-DNA

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Paper-III

MOLECULAR BIOLOGY TECHNIQUES

Q.P. Code: MBHG - 112

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

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

1. Explain the principle, methodology and applications of Multiplex Ligation Dependent Probe Amplification (MLPA) technique.
2. Explain the principle and applications of various types of protein electrophoresis.

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

3. List the various types of mutations and the methods available for their detection.
4. Southern blotting.
5. Multiplex PCR.
6. Ultra-centrifugation.
7. Next Generation Sequencing.
8. Components of PCR mix.
9. DNA fingerprinting.
10. Applications of Microarray.
11. Principe and applications of MALDI-TOF.
12. Ion-exchange chromatography.

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

13. ddNTP
14. Labeled antibody.
15. Hot-Start PCR.
16. Beer Lambert Law.
17. Exome sequencing.
18. Denaturation temperature.
19. Restriction enzyme.
20. Cell sorting.
21. Reverse Transcriptase.
22. PCR primer.

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