Subject Code : RCCSBO5

CC VII – CELL AND MOLECULAR BIOLOGY

Unit I

Structure of Prokaryotic and eukaryotic cells – Ultra structure of cell organcelles – Plastids, Mitochondria, Golgibody, ER microbodies – peroxisomes and glyoxysomes – Lysosome – Ultra structure and functions of plasma membrane

Unit II

Nucleus – Nucleolus – Structure of euchromatin and hetrochromatin, Special types of chromosomes – Lamp brush chromosome and polytene chromosome – mitosis, meiosis, Cell cycle and stages – Protein synthesis – an overview

Unit III

Genetic material – Properties and replication of genetic material – Structure – Hershey & Chase experiment. C- value paradox – organization of DNA sequences – Satellite DNA, repetitive DNA sequences

Unit IV

Bacterial genome: Transcription and its control in prokaryotes, initiation, elongation and termination. DNA supercoilicy (positive and negative)gene regulation in prokayate & Eukaryetes

Unit V

Chloroplast and mitochondrialgenome – Semi autonomous organization, Receptors, Signal transduction pathway prokin phosphorlation

Practical for Cell and Molecular Biology

1. Observation of plant cells in the onion peeling and Theo leaf
2. Non-living inclusions: Raphides, cystolith and Starch grains
3. Cell division: Mitosis and Meiosis – Squash technique in onion toot tips and Tradescantia / Rheo flower bud respectively
4. Isolation of cell organelles through differential centrifugation
5. photographs: Ultra Structure

Books for Study:

1. Sharma N.S. 2005, Molecular Cell Biology, International Book distributors, Dehradun
2. Verma P.S. and Agarwal V.K. 1986, Cell Biology and Molecular Biology (Cytology) S. Chand and Company, New Delhi

Books for Reference:

1. Old, R.W. and Primrose S.B. 1994, Principles of Gene Manipulation Blackwell Science, London
2. Grierson, D. and Convey S.N. 1989, Plant Molecular Biology, Blackie Publishers, New York
3. Lea, P.J. and Leegood R.C. 1999, Plant Biochemistry and Molecular Biology, John wiley and sons, London
4. Power C.B., 1984, Cell Biology, Himalaya Publishing Co. Mumbai
5. De. Robertis and De Robertis, 1998, Cell and Moleceular Biology, K.M. Verghese and Company