



B.Sc. PLANT BIOLOGY & PLANT BIOTECHNOLOGY

Paper 9a CELL BIOLOGY

B.Sc. va (Candidates admitted from the academic year 2008-2009)

Paper 9a CELL BIOLOGY

B.Sc. va (Candidates admitted from the academic year 2008-2009)

Core Theory

UNIT I

Diversity of cell size and shape. Cell theory.

Terminology: Rods, spirals, comas, cytosol, protoplast and cyclosis. Prokaryotic and Eukaryotic cells.

UNIT II

Ultra structure, functions and biosynthesis of organelles -Cell wall, Nucleus, Endoplasmic reticulum, Golgi apparatus, Mitochondria, Lysosomes, Peroxisomes and Vacuoles.

Terminology: Cisternae, tubules, vesicles, glycogenolysis, detoxification, acrosomes. Secretion -holocrine, apocrine and plerocrine. Granuloma, spherosomes, annuli, NOR.

UNIT III

Plasma membrane -chemical composition. The lipid bilayer- membrane proteins and carbohydrates. Membrane transport mechanism.

Terminology: Gangliosides, extrinsic proteins, intrinsic proteins, proteo lipids, endocytosis, exocytosis, phagocytosis, pinocytosis, active transport and free diffusion.

UNIT IV

The cell cycle -Mitosis.

Terminology: S-phase, G1-phase, G2-phase, interphase, prophase, metaphase, anaphase, telophase, mitogen, microtubules, tubulins, centromere, kinetochore and cytokinesis.

UNIT V

The reproductive cycle - Stages of meiosis, significance of meiosis.

Terminology: Chromomere, synapsis, synaptonemal complex, synaptonemes, lateral element, central element, transverse elements, chiasma and recombination.

UNIT VI

Numerical changes in chromosomes - Aneuploidy and Euploidy.

Terminology: Monosomy, nullisomy, trisomy, tetrasomy, Down's syndrome, autopolyploid, allopolyploid, haploid, colchicine.

Suggested Reading

GERALD KARP.2002.Cell and Molecular Biology, John Wiley & Sons, New York.

GEOFFERY.H.COOPER *et al.*, 2004. Cell-Molecular approach, ASM press, Washington.

GUPTA, P.K. 2004.Third Edition. Cell and Molecular Biology. Rastogi Publications.

MCC, Department of Botany