

**SARDAR PATEL UNIVERSITY**  
**Programme: MSC (Integrated Biotechnology)**  
**Semester: II**  
**Syllabus with effect from: December 2010**

<b>Paper Code:</b> PS02CIGB05	<b>Total Credits: 3</b>
<b>Title Of Paper:</b> Cell Biology	

Unit	Description in detail	Weightage (%)
<b>1</b>	<b>Introduction to Cell Biology and Plasma Membrane</b> Definition and History of cell biology Interrelations of cell biology with other biological sciences General account on Prokaryotic and Eukaryotic cells Evolution of Eukaryotic cells from Prokaryotes. Structure of plant and animal cells (with brief outlines of their differences) General features and chemical composition of cell membrane Cell membrane models: Bilayer and Micellar models Functions of cell membrane Junctional complexes (Cell junctions)	
<b>2</b>	<b>Cell Wall and Cell Organelles</b> Structure and chemical composition of cell wall Formation of cell wall and its functions Ultra structure and functions of Eukaryotic cell organelles–I: Mitochondria, Chloroplast, Endoplasmic reticulum) Ultrastructure and functions of Eukaryotic cell organelles–II: Golgi complex, Ribosomes, Lysosomes, Peroxisomes) Ultrastructure and functions of Eukaryotic cell organelles–III: Vacuoles and Ergastic substances	
<b>3</b>	<b>Cytoskeleton</b> Structure, chemical composition and functions of Microtubules Microfilaments and intermediate filaments (including their structure, chemical composition and functions) Structure, chemical composition and functions of Centrioles and Basal bodies Structure and functions of Cilia and Flagella (including their movement and locomotion) Ultra structure and functions of Nucleus	
<b>4</b>	<b>Cell Division</b> Cell cycle Mitosis Meiosis Significance of Mitosis and Meiosis Differences between Mitosis and Meiosis	
	<b>Practical:</b>	
	<ul style="list-style-type: none"> <li>• Structure and working of microscopes (Simple microscope, Compound microscope)</li> <li>• Observation of Prokaryotic and Eukaryotic cells and cell types (Living cells/Temporary/Permanent preparations)</li> <li>• Structure of a plant cell (through chart/model)</li> <li>• Structure of animal cell (through chart/model)</li> <li>• Structure of cell organelles adopting preparations/charts/models</li> </ul>	



	<ul style="list-style-type: none"> <li>○ Mitochondria</li> <li>○ Chloroplast</li> <li>○ Ribosomes</li> <li>○ Endoplasmic reticulum</li> <li>○ Nucleus</li> <li>● Mitosis–Squash preparation of Onion root-tip</li> <li>● Meiosis–Squash preparation of anther lobes</li> </ul>	
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**Basic Text & Reference Books:**

- Cell and Molecular Biology by E.D.P.De Robertis and E.M.P.De Robertis. 8<sup>th</sup> Edition, (Reprinted -2007) B.I.Publications Pvt. Ltd.(Indian Edition).ISBN: 0-7817-3493-2.
- Cell and Molecular Biology: Concepts and Experiments by Gerald Karp.4<sup>th</sup> Edition,2005. Wiley International Edition, John Wiley&Sons, Inc.ISBN:0-471-65665-8.
- Cell Biology by C.B. Powar.(Reprinted-2004)Himalaya Publishing House, Mumbai.
- Cell Biology, Genetics, Molecular Biology, Evolution and Ecology by P.S. Verma and V.K. Agarwal(Reprinted -2007) Pub.S.Chand & Company Ltd.Ram Nagar, New Delhi-110055.
- Cytology by P.S. Verma and V.K. Agarwal (Reprinted -2006) Pub:S.Chand & Company Ltd.Ram Nagar, New Delhi-110055.ISBN: 81-219-0814-0.
- Molecular Biology of **THE CELL** by Albert et al.4<sup>th</sup> Edition, 2002, Garland Science, Taylor & Francis Group. ISBN: 0-8153-3218-1
- The Cell – A Molecular Approach By Geoffrey M. Cooper And Robert E. Hassman. 3<sup>rd</sup> Edition,2004,ASM Press, Sinauer Associates, Inc.ISBN:0-87893-214-3.

