

PAPER TITLE : CELL AND MOLECULAR BIOLOGY**PAPER CODE : BIO-II.C-4****NAME OF FACULTY : MS. VALLANKA A.V. DIAS****MARKS : 75 MARKS (THEORY) + 25 MARKS (PRACTICAL)****CREDITS : 3 (THEORY) + 1 (PRACTICAL)**

LECTURE	TOPIC	SUBTOPIC	REFERENCES
1	Introductory lecture	Review of the previous semester, Brief description of the paper	-
2	Introduction to Cell Biology	Definition and History of Cell Biology - Cell Theory	Cell and Molecular Biology by Gerald Karp
3	Ultrastructure of the Cell	Prokaryotic and Eukaryotic cell	Cell and Molecular Biology by Gerald Karp
4	Cell Wall & Plasma Membrane	- Chemical Composition, structure and functions of the cell wall	Cell and Molecular Biology by Gerald Karp
5		Chemical Composition, structure and functions of the plasma membrane - Fluid Mosaic Model	Cell and Molecular Biology by Gerald Karp
6	Ultrastructure and Function of Organelles	Nucleus	Cell and Molecular Biology by Gerald Karp, Microbiology by Prescott.
7		Endoplasmic Reticulum	
8		Golgi apparatus	
9		Mitochondria	
10		Chloroplast	
11		Cytoskeleton, Centrioles and Basal bodies	
12		Lysosomes, micro bodies, Ribosomes	
13		Cilia and Flagella	
14	Cellular communication and signal transduction	-Intercellular junctions -Role of Membrane Receptors	Cell and Molecular Biology by Gerald Karp
15	Tutorials/ Revision		

16	Continuous Assessment I (Objective)		
17	Feedback of Continuous assessment I		
18	DNA Replication and Regulation in Prokaryotic and Eukaryotic systems	Watson & Crick's model of DNA - Experimental evidences for Semi-conservative replication of DNA in <i>E.coli</i> .	Cell and Molecular Biology by Gerald Karp
19		Mechanism of DNA replication in Prokaryotes Initiation, Elongation	Lippincott's Biochemistry by Harvey and Ferrier, Lehninger's Principles of Biochemistry by Nelson & Cox, Cell and Molecular Biology by Gerald Karp
20		Termination of replication. Replication of circular DNA (rolling circle model)	
21		Mechanism of DNA replication in Eukaryotes	
22		Regulation of DNA Replication	
23 & 24	Transcription in Prokaryotic and Eukaryotic Systems	Mechanism of Transcription in prokaryotes. Initiation, Elongation and Termination.	Lippincott's Biochemistry by Harvey and Ferrier, Lehninger's Principles of Biochemistry by Nelson & Cox, Cell and Molecular Biology by Gerald Karp
25		Mechanism of Transcription in eukaryotes. Initiation, Elongation and Termination.	
26		Post-transcriptional modifications. mRNA Capping, Splicing & Poly A-tail	
27	Translation in Prokaryotic and Eukaryotic Systems	- Introduction to translation – protein synthesis and genetic code	Lippincott's Biochemistry by Harvey and Ferrier, Lehninger's Principles of Biochemistry by Nelson & Cox, Cell and Molecular Biology by Gerald Karp
28 & 29		Mechanism of Protein synthesis in Prokaryotes Activation of amino acids, Initiation, Elongation and Chain Termination	

30		Mechanism of protein synthesis in Eukaryotes Activation of amino acids, Initiation, Elongation and Termination	
31		Post-translational modifications. Phosphorylation, Acylation, Glycosylation & Disulphide linkage	
32	Regulation of Gene Expression	Lactose operon : Structure, role of Lac repressor and inducer.	Lippincott's Biochemistry by Harvey and Ferrier
33		Tryptophan operon	
34	Tutorials/Revision		
35	Continuous Assessment II (Subjective)		
36	Feedback of Continuous assessment II		
37	DNA Mutation and Repair Systems	Mechanism of DNA Damage - Molecular basis of Mutations - agents causing damage.	Lippincott's Biochemistry by Harvey and Ferrier
38		Types of mutations Nonsense, Missense, Silent, Frameshift, Reversion, Spontaneous	
39		Mechanism of DNA Repair Photoreactivation, Excision Repair, Recombinational repair, SOS Repair	
40	Mechanism of Gene transfer	Conjugation Transduction	Lehninger's Principles of Biochemistry by Nelson & Cox, Cell and Molecular Biology by Gerald Karp
41		Transformation	
42	Tutorials/Revision		
43	Continuous Assessment II (Presentation)		
44	Feedback of Continuous assessment III		
45	Revision, Paper pattern discussion, Instructions for the semester end exam		