

SARDAR PATEL UNIVERSITY
Programme: B.Sc (Biochemistry)
Semester: V
Syllabus with effect from: June - 2013

Paper Code: US05CBCH01	Total Credit: 3
Title of Paper: Molecular Biology - I	

Unit	Description in detail	Weightage (%)
I	<p>Basic Concept of Molecular Biology Chromosomal Elements: Definition and concept of gene The structure of chromosomes Chromatin consist of DNA and proteins Histones are small basic proteins Nucleosome is the organization unit of Chromatin DNA molecules are much longer than the cellular or viral packages that contain them(viruses, bacteria, eukaryotes and mitochondria Definition of genome and silent features of viral, Prokaryotic and Eukaryotic Genome</p>	25%
II	<p>DNA Replication Central Dogma of molecular genetics, Experiment evidence for semi conservative Replication Meselson-Stahl experiment, Replication begins at an origin and usually proceeds Bidirectional DNA synthesis proceeds in 5' -3' Direction and semi-discontinuous, DNA polymerase I,II and III. Activities of DNA polymerase; 5' -3' polymerization, 5' -3' Exonuclease, 3'-5', Exonuclease activities Other Enzymes involved in Replication (in Brief)</p> <ul style="list-style-type: none"> • Helicases • Topoisomerase • DNA ligases <p>Mechanism of Replication:</p> <ul style="list-style-type: none"> • Initiation, Elongation and Termination of Replication • D Loop mode of Replication • Difference in prokaryotic and Eukaryotic Replication 	25%
III	<p>Transcription RNA polymerase in prokaryotic and Eukaryotic organism, Promoters in prokaryotic and Eukaryotic organism. Mechanism of Transcription : Initiation, Elongation and Termination Post Transcriptional Processing of RNA</p> <ul style="list-style-type: none"> • Splicing Mechanism of Group 1,2,3, and 4 • Generation of 5' cap in m-RNA • 3' poly (A) tail formation • Reverse transcriptase and reverse transcription. 	25%
IV	<p>Translation. Genetic code: definition and properties of genetic code, wobble hypothesis Ribosome: structure and function Role of m-RNA and structure of t-RNA in translation</p>	25%



<p>Mechanism of Translation in prokaryotes and eukaryotes cells.</p> <ul style="list-style-type: none">• Formation of f met t-RNA ^{f-met}• Activation of amino acids• Initiation• Elongation• Termination• Post translation modification <p>Inhibition of Protein Synthesis by antibiotics and Toxins</p> <p>Protein targeting.</p>	
---	--

Basic Text & Reference Books:

- Principle of Biochemistry-Lehninger
- Gene-Levin-8
- Molecular Biology of the Gene-Watson etal
- Gene Cloning by T.A. Brown
- Elements of Biotechnology by R. K. Gupta.

