P P SAVANI UNIVERSITY

First Semester of M.Sc. End semester Examination
February-2022
SSBT7010/SSMB7010–Advances in Molecular Biology
07.02.2022, Monday Time: 12:00 p.m. to 02:30 p.m. Maximum Marks: 60

Instructions:
1. The question paper comprises of two sections.
2. Make suitable assumptions and draw neat figures wherever required.

Section-I

Q.1	**Very Short Questions (Attempt any five)**	**[10]**
1.1	Brief about Mica experiments for number of base per helix turn	
1.2	What is base flip out from DNA helix?	
1.3	Define role of DNA polymerase-I in *E.coli*	
1.4	Define role of Mg^{+2} in the PCR or DNA synthesis	
1.5	Short note on role of ethidium to unwind DNA	
1.6	Define gene density	
Q.2	**Write Short Notes (Attempt any two)**	**[06]**
2.1	Give reason about initiation of DNA synthesis always begin from 3' end of primer.	
2.2	Short note on histone H1 bind to linker DNA	
2.3	Give an importance of phosphodiester linkage in polynucleotide synthesis	
Q.3	**Detail questions (Attempt any two)**	**[14]**
3.1	Discuss the formation of nucleotides in detail using an appropriate figure.	
3.2	Give an account on Major grooves and minor grooves.	
3.3	Explain in detail about histone property and its composition	

Section-II

Q.1	**Very Short Questions (Attempt any five)**	**[10]**
1.1	Define: template strand, non-template strand	
1.2	What are the roles of RNA Polymerases?	
1.3	Name the enzymes for Ara operon.	
1.4	Compare and contrast the features of a prokaryotic mRNA to a eukaryotic mRNA.	
1.5	Define: positive and negative regulations in operon?	
1.6	What is central Dogma? Draw diagram.	
Q.2	**Write Short Notes (Attempt any two)**	**[06]**
2.1	What purposes do capping and poly-A tail addition serve for eukaryotic mRNAs?	
2.2	What do you mean by Nonsense codons? Give an example	
2.3	Explain where the energy comes from for peptide bond formation.	
Q.3	**Detail questions (Attempt any two)**	**[14]**
3.1	Explain in detail about molecular mechanism of Transcription	
3.2	Give an account on Lac Operon	
3.3	Discuss in detail about the characteristics of Genetic code	