U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

December 2023 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 22BT4PCCMB **Max Marks: 100**
Course: Cell and molecular Biology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		UNIT - I	CO	PO	Marks
1	a)	Elaborate the roles of endoplasmic reticulum and ribosomes in protein synthesis?	*CO 1*		**10**
	b)	Why is higher order chromosomal structure expected in eukaryotes but not in prokaryotes? Discuss.	*CO 1*		**10**
		OR			
2	a)	Distinguish the roles of helicases and SSB proteins in DNA replication.	*CO 1*		**10**
	b)	What is the reverse transcriptase and what is its importance in the management of HIV infection?.	*CO 4*	*PO 6*	**10**
		UNIT - II			
3	a)	DNA damage plays a central role in many biological processes linked to cancer. Explain	*CO 4*	*PO 6*	**10**
	b)	What is the difference between heteroduplex and Holliday junction? Illustrate how gene conversion can occur by replication through the heteroduplex region	*CO 3*	*PO 1*	**10**
		UNIT - III			
4	a)	Bring out the significance of exons, introns, and splicing for mRNAs. Taking a disease condition explain.	*CO 4*	*PO 6*	**10**
	b)	What are SnRNPs? Signify their role in protein synthesis.	*CO 3*	*PO 1*	**10**
		OR			
5	a)	What are transcription factors? Discuss them for three different RNA polymerases in eukaryotes.	*CO 2*	*PO 1*	**08**
	b)	Why do you think that most promoter regions are A-T rich? Analyse.	*CO 2*	*PO 1*	**06**
	c)	Discuss the role of sigma factor and Rho factor in prokaryotic transcription. Explain the termination process in transcription	*CO 2*	*PO 1*	**06**

			UNIT - IV			
	6	a)	List out the inhibitors of translation. Illustrate the structure and function of eukaryotic ribosome	*CO 1*		**10**
		b)	How do Post-translational modifications affect protein folding? With an example explain.	*CO 4*	*PO 6*	**10**
			UNIT-V			
	7	a)	Comment on lac Operon in *Ecoli*. Discuss how it controls the activity of genes which produce enzymes necessary for the catabolism of lactose	*CO1*		**8**
		b)	Of what biological significance is the phenomenon of catabolic repression?	*CO1*		**6**
		c)	Even after a gene has been transcribed, gene expression can still be regulated at various stages. What are they?	*CO 2*	*PO1*	**6**

****