U.S.N.										

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

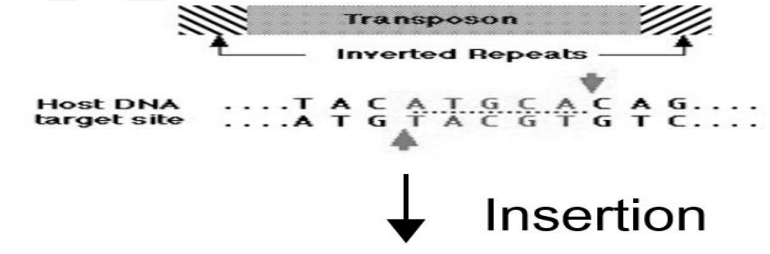
Autonomous Institute Affiliated to VTU

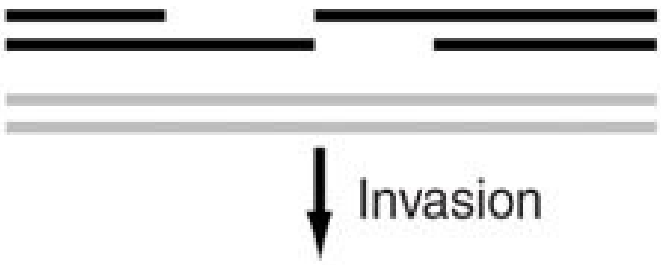
August 2024 Semester End Main Examinations

Programme: B.E. **Semester: III**
Branch: BIOTECHNOLOGY **Duration: 3 hrs.**
Course Code: 23BT3PCCMB **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)	With suitable figure differentiate the packing of genome in prokaryotic and eukaryotic cell.	*CO* 1	-	7
	b)	Replication mechanism of HIV modifies the central dogma of molecular biology. Justify the statement with suitable molecular mechanisms.	*CO* 2	*PO* 1	7
	c)	With at least 4 examples of inhibitors of DNA replication, suggest how the bacterial infections be regulated.	*CO* 4	*PO* 6	6
		OR			
2	a)	Explain the importance of nucleolus in eukaryotic transcription and translation.	*CO* 1	-	6
	b)	Initiation of DNA replication in *Saccharomyces cerevisiae* prevents the re- replication of DNA at the same site .How is the mechanism regulated?	*CO* 2	*PO* 1	8
	c)	Discuss the role of any two cytoskeletal elements in causing neurodegenerative diseases like Alzheimer's.	*CO* 4	*PO* 6	6
		UNIT - II			
3	a)	The following molecular events give rise to products which have evolutionary significance . Write the outcome of each and discuss. i) 	*CO*3	*PO* 1	7

			ii) 			
		b)	Distinguish between NER and BER with suitable figure.	***CO* 3**	***PO* 1**	**8**
		c)	Discuss the set of proteins involved in resolving Holliday junction.	***CO* 3**	***PO* 1**	**5**
			UNIT - III			
	4	a)	Eukaryotic transcription of three types of RNA occurs differently with specific RNA Pol. Elaborate on the initiation process of each type of transcript.	***CO* 2**	***PO* 1**	**10**
		b)	Following is the product of a molecular process which is essential to initiate translation in *Saccharomyces cerevisiae* . Discuss the steps involved in ANY ONE of the process order to obtain the product. 	***CO* 2**	***PO* 1**	**5**
		c)	With suitable diagram enumerate on recent gene editing tool. Add a note on its therapeutic importance.	***CO* 4**	***PO* 6**	**5**
			OR			
	5	a)	With suitable figure, differentiate Intron type 1 from type 2 splicing.	***CO* 2**	***PO* 1**	**7**
		b)	Discuss the different types of factors and promoter sequences required to initiate transcription in prokaryotic cell.	***CO* 2**	***PO* 1**	**7**
		c)	Detail the mechanism of synthesis of transcript, pre- mRNA in eukaryotes	***CO* 2**	***PO* 1**	**6**
			UNIT - IV			
	6	a)	Write a note on inhibitors of translation.	***CO* 4**	***PO* 6**	**4**
		b)	Explain any two each post and co-translational modifications in proteins.	***CO* 2**	***PO* 1**	**8**
		c)	Compare and contrast initiation of translation process in bacteria and yeast.	***CO* 2**	***PO* 1**	**8**
			UNIT - V			
	7	a)	With suitable example each, distinguish between the mono and poly cistronic gene.	***CO* 2**	***PO* 1**	**5**
		b)	Synthesis of tryptophan amino acid is regulated through repressor as well as leader peptide. Substantiate the statement with suitable justification.	***CO* 2**	***PO* 1**	**8**
		c)	Eukaryotic gene regulation occurs via histone modifiers and co-activators. Validate the statement with examples.	***CO* 2**	***PO* 1**	**7**

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