U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: IV**
Branch: Biotechnology **Duration: 3 hrs.**
Course Code: 19BT4DCCMB **Max Marks: 100**
Course: Cell & Molecular Biology **Date: 15.09.2023**

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

UNIT - I

1	a)	Describe any one classical experiments which demonstrated the semi-conservative mode of DNA replication.	**08**
	b)	Distinguish the roles of helicases and SSB proteins in DNA replication.	**07**
	c)	Differentiate between Heterochromatin and Euchromatin.	**05**

OR

2	a)	Elaborate the roles of endoplasmic reticulum and ribosomes in protein synthesis?	**08**
	b)	What is the reverse transcriptase and what is its importance in the management of HIV infection?	**07**
	c)	List the proteins involved in DNA replication processes of Eukaryotes.	**05**

UNIT - II

3	a)	When two adjacent bases in the same strand of DNA dimerize, what happens to the DNA? Explain the process with a figures.	**10**
	b)	Which recombination model explains the molecular process involved during the exchange of DNA between two homologous double stranded DNA molecules. Discuss.	**10**

UNIT - III

4	a)	What are transcription factors? Discuss them for three different RNA polymerases in eukaryotes.	**10**
	b)	Investigate the role of sigma factor in prokaryotic transcription.	**05**
	c)	Capping is essential for translation initiation in eukaryotes. Justify the statement.	**05**

OR

5	a)	Why do you think that most promoter regions are A-T rich? Analyse	**04**
	b)	Differentiate between Rho dependent and Rho independent transcription termination process in prokaryotes.	**08**
	c)	Discuss the splicing mechanism in two different types of introns.	**08**

UNIT - IV

6	a)	Explain the process of initiation of translation in Yeast.	**10**
	b)	List the inhibitors of translation. Add a note on mode of action of any two inhibitor.	**05**
	c)	How does translation terminate in prokaryote	**05**

UNIT - V

7	a)	Comment on lac Operon in *E. coli*. Discuss how it controls the activity of genes which produce enzymes necessary for the catabolism of lactose.	**10**
	b)	Discuss the major steps in regulation of prokaryotic gene expression. How do you justify positive versus negative regulation?	**10**

****