VCD/ / / 10 2022 SYBT SEM III MOLECULAR BIOLOGY 75 MARKS 2 ½ HRS

NOTE:

1. Attempt **all** questions.
2. **All questions** carry **equal** marks.
3. Draw **neat labeled diagrams** wherever necessary.
4. For **Q 2, Q 3 and Q 4** attempt A and B **OR** C and D.

Q 1 Do as directed (Any fifteen) 15

1 What is alternative splicing?

2 What are the housekeeping gene?

3. What is the significance of CII gene in the lysogenic pathway of bacteriophage gene expression regulation.

4. What is the significance of Beta galactose?

5. What is genetic switch?

6. What is the significance of RISC in the RNAi mechanism?

7. Define: Constitutive gene?

8. RNA is synthesized in the _____ to _____ direction.

9. What do you mean by non-template strand in RNA synthesis?

10. State true or False: In bacteria, proteins other than the DNA are involved in the unwinding of DNA for transcription.

11. Give the consensus sequence of Pribnow box.

12. Give the significance of sigma factor.

13. What do you mean by core promoter complex.

Give the significance of the following biomolecules in translation

14. 16S r-RNA

15. RF-2

16. Peptidyl Transferase

17. IF-1

18. EF-G

19. AUG codon

20. m-RNA

Q. 2 A	Elaborate on transcription initiation in prokaryotes.	08
Q. 2 B	Discuss the different types of termination of prokaryotic transcription.	07
	OR	
Q. 2 C	Explain the stepwise events involved in the formation of pre initiation complex in eukaryotic transcription.	08
Q. 2 D	Discuss the processing of premature mRNA to mature mRNA.	07
Q. 3 A	The initiation of translation is coordinated by various biomolecules. Justify the statement with suitable schematic representation.	08
Q. 3 B	Enlist the various proteins required for extension of translation. Explain the extension of translation in brief	07
	OR	
Q. 3 C	Explain the aminoacylation of t-RNA in prokaryotes with suitable schematic representation.	08
Q. 3 D	Peptidyl transferase plays a core role in prokaryotic translation. Justify the statement with suitable schematic representation.	07
Q. 4 A	Explain regulation of gene expression in phage lambda by lysogenic pathway.	08
Q. 4 B	Give an account of RNA interference.	07
	OR	
Q. 4 C	What is chromatin remodeling? Explain it.	08
Q. 4 D	Give an account of lac operon and its positive control.	07

Q. 5 Write a short note on any three of the following **15**

a. RNA modification at the 3' end.

b. Coupled transcription and translation.

c. Post-translational modification

d. Properties of genetic code

e. Molecular attenuation of trp operon
