

CMD-31 (4/12/2023) (Mormu)

(i) Printed Pages : 3 Roll No.

(ii) Questions : 9 Sub. Code :

0	9	8	2
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Exam. Code :

0	0	3	7
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B.Sc. (Hons.) Biotechnology 5th Semester
(2123)

MOLECULAR BIOLOGY

Paper : BIOT-501-T

Time Allowed : Three Hours]

[Maximum Marks : 67

Note :—Attempt **FIVE** questions in all by selecting **ONE** question from each Unit. Question No. 1 is compulsory.

1. Write in brief :—

- (i) Structure of Z DNA.
- (ii) What is Pribnow box ?
- (iii) Function of Telomerase.
- (iv) Structure of eukaryotic and prokaryotic rRNAs.
- (v) Three characteristics of genetic code. 3×5=15

UNIT—I

2. (a) Describe the composition and structure of prokaryotic DNA and RNA. 8

(b) What do you understand by tandemly repetitive DNA ?
What are minisatellites and mention their significance ?

5

3. (a) Mention the characteristics of highly repetitive DNA. What are microsatellites and give their importance ? 7
- (b) Discuss the molecular nature of genetic material in prokaryotes. 6

UNIT—II

4. (a) Discuss how DNA polymerase is loaded on the DNA during replication of prokaryotes. Mention the factors involved in the same. 7
- (b) How is processivity and fidelity of replication maintained in replication ? 6
5. (a) What is a replicon ? Discuss how the replication initiation complexes assemble at the origin in eukaryotic replication. 7
- (b) Explain the mode of replication in M13 viral DNA ? 6

UNIT—III

6. (a) Discuss the structural features of mRNA along with capping and poly A tail modifications in eukaryotes ? 6.5
- (b) Discuss the structure and function of sigma factor in transcription initiation. 6.5
7. (a) Describe the positive and negative regulations of transcription by repressors. 8
- (b) Discuss the rho dependent and rho independent termination of transcription in prokaryotes. 5

UNIT—IV

8. (a) Describe the factors required for translation initiation and elongation. 8
- (b) How does charging of t-RNA take place ? Mention the enzymes involved in charging of t-RNA. 5
9. What is an Operon ? Describe the regulation of Lac operon in various environments provided in the medium. 13