(i) Printed Pages : 3

(ii) Questions : 9

Roll No. .....

Sub. Code : 0 9 8 2

Exam. Code : 0 0 3 7

B.Sc. (Hons.) Biotechnology 5th Semester

(2122)

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. Draw diagram wherever required.

(Compulsory Question)

1. Write in brief :
   (a) Main differences between D-DNA and A-DNA.
   (b) What are Minisatellites ?
   (c) Difference between DNA Polymerase I and Polymerase III.
   (d) What is the role of peptidyl transferase ?
   (e) Give the sequences for Amber, Opal and Ochre codons and mention their significance. 5×3

UNIT—I

2. (a) Give the detailed chemical composition of DNA and the structure of B-DNA. Under normal Physiological state which form of DNA exists ? 7

(b) Describe the molecular nature of genetic material in prokaryotes. 6

3. (a) Describe the complete genomic organization of eukaryote. 8

(b) Discuss what are Insertional elements and mention their significance. 5

UNIT—II

4. (a) What is a replicon ? Mention all the initiation factors and their assembly to start the replication in eukaryotes. 7

(b) Discuss the DNA Replication in M13 Virus. 6

5. (a) Describe in detail how disassembly and reassembly of chromatin components takes place during DNA replication in eukaryotes. 8

(b) Discuss the role of telomerase and its mode of action. 5

UNIT—III

6. (a) Differentiate between the r-RNA of Prokaryotes and Eukaryotes. 7

(b) Discuss the structure and function of sigma factor with diagrams. 6

7. (a) Describe the positive and negative regulations of transcription by repressors. 8

(b) Mention diagrammatically clover leaf structure of t-RNA. 5

UNIT—IV

8. (a) Discuss how tRNAs are charged with amino acids and which enzymes are involved in this charging mechanism ? 8

   (b) Discuss the characteristics of genetic codes. How many types of codes are present and what is their role ? 5

9. (a) How is *Tryptophan operon* induced and controlled ? 7

   (b) Discuss the initiation and extension of translation in prokaryotes. 6