

**NKT/KS/17/5194**

**Bachelor of Science (B.Sc.) Semester-V (C.B.S.) Examination**

**BIOTECHNOLOGY**

**(Molecular Biology)**

**Paper—1**

Time : Three Hours]

[Maximum Marks : 50

**N.B. :—** (1) All questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams and give examples wherever necessary.

1. Describe the important properties of DNA polymerase I. 10

**OR**

(a) Describe in detail the semiconservative nature of replication. 5

(b) Write a note on helicase and topoisomerase. 5

2. Give the detailed account of mutagens and explain mechanism of action. 10

**OR**

(a) Explain the mechanism of Mismatch Repair. 5

(b) Describe mis-sense and non-sense mutation. 5

3. (a) Explain the concept of promoter. 2½

(b) Give the significance of sigma factor. 2½

(c) Give the structure and functions of prokaryotic RNA polymerase. 2½

(d) Write a note on promotor escape. 2½

**OR**

(e) Explain rho dependent termination. 2½

(f) Diagrammatically represent the transcription process. 2½

(g) Write a note on prokaryotic RNA polymerase. 2½

(h) Describe the role of -10, -35 sequence in transcription process. 2½

4. (a) Diagrammatically explain the trp operon. 5  
(b) Explain the process of reverse transcription. 5

**OR**

- (c) Describe the intrinsic termination of transcription with suitable diagrams. 5  
(d) Explain the positive control of lac operon. 5

5. Solve **any ten** :-

- (i) Write the role of primase in replication. 1  
(ii) What are okazaki fragments ? 1  
(iii) Write the function of Dna C protein in helicase. 1  
(iv) Which enzyme is responsible for SOS repair ? 1  
(v) What is frame shift mutation ? 1  
(vi) What is photoreactivation ? 1  
(vii) What is rho ( $\rho$ ) factor ? 1  
(viii) What is the role of Nus A in transcription ? 1  
(ix) What is the difference between RNA polymerase core enzyme and holo enzyme ? 1  
(x) What is operon ? 1  
(xi) What is the primer used in reverse transcription ? 1  
(xii) What is the main characteristic of intrinsic transcription termination ? 1