**NRT/KS/19/2150**

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

**MOLECULAR BIOLOGY**

**Optional Paper—2**

**(Bio-Chemistry)**

Time : Three Hours] [Maximum Marks : 50

**N.B. :—** (1) **ALL** questions are compulsory.

(2) All questions carry equal marks.

1. Discuss the experiment that led to the understanding that DNA replication is semi conservative. 10

**OR**

(a) Write a brief note on rolling circle model of replication. 5

(b) Discuss the termination process of DNA replication. 5

2. Briefly discuss :

(i) Ames' Test and

(ii) Types of DNA damage. 10

**OR**

(a) Write a note on DNA Polymerase I. 5

(b) Briefly discuss SOS repair. 5

3. Enumerating the four phases of transcription, describe the initiation phase in detail. 10

**OR**

(a) Write a note on the conserved features of the promoter. 5

(b) Write a note on intrinsic transcription termination. 5

4. In detail discuss the structure and working of the lac operon. 10

**OR**

(a) Write a note on reverse transcription. 5

(b) Giving the structure of trp operon, discuss its negative control. 5

5. Answer the following (any **TEN**) :

(i) Name types of DNA polymerases in prokayotes. 1

(ii) What is the role of "tus" proteins in replication ? 1

(iii) What do you mean by "priming" in DNA replication ? 1

(iv) What is Klenow fragment ? 1

(v) What enzyme activity is responsible for replication fidelity ? 1

(vi) What are leading and lagging strands ? 1

(vii) Give subunit composition of prokaryotic RNA polymerase. 1

(viii) Give the consensus sequence of Pribnow box. 1

(ix) In a sentence give the role of sigma subunit. 1

(x) Name any one inhibitor of prokaryotic transcription. 1

(xi) What do you mean by the term "attenuation" ? 1

(xii) Which enzyme is responsible for the synthesis of allolactose ? 1