KNT/KW/16/5183

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

BIO-CHEMISTRY

Paper—2

(Molecular Biology)

Time : Three Hours] [Maximum Marks : 50

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

(2) All questions carry equal marks.

1. Discuss in detail the experiment which proved that DNA replication is semiconservative. 10

OR

(a) Discuss in brief the rolling circle model of replication. 5

(b) Briefly discuss the concept of Okazaki fragments and its experimental proof. 5

2. Give a detailed consideration to the following DNA repair mechanisms :

(a) Light induced repair 5

(b) Nucleotide excision repair. 5

OR

Write a detailed note on types of mutations and Ames test for determination of mutations. 10

3. Describe the initiation process of transcription in prokaryotes. 10

OR

Write a detailed note on rho dependent and independent modes of transcription termination. 10

4. Discuss the working of the lac operon. 10

OR

Describe the mechanism of reverse transcription. 10

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

(i) What specific mutation is created by the action of UV rays ?

(ii) The UvrA and UvrB proteins are involved in which kind of DNA repair ?

(iii) Name the subunits of core polymerase III.

(iv) For what purpose is RNA needed in DNA replication ?

(v) What is the function of the single strand binding proteins ?

(vi) The ter and tus proteins are used in which phase of DNA replication ?

(vii) What is the role of 'σ' (sigma) factor ?

(viii) Which of the DNA strand is transcribed-template strand or the coding strand ?

(ix) What is Pribnow box ?

(x) What is altenuation ?

(xi) Name the three enzymes whose expression is controlled in lac operon ?

(xii) What is meant by polycistronic mRNA ? $10 \times 1 = 10$