2/12/19 M

This question paper contains 4 printed pages]

Roll No. | | | | | | | | | | | |

S. No. of Question Paper : **7516**

Unique Paper Code : **32231501** **J**

Name of the Paper : **Molecular Biology**

Name of the Course : **B.Sc. (Hons.) Zoology**

Semester : **V**

Duration : **3 Hours** Maximum Marks : **75**

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt *five* questions in all.

Question No. **1** is compulsory.

Illustrate your answers with appropriate diagrams.

1. (*a*) Define (any *five*) : 5×1=5

(*i*) Okazaki Fragments

(*ii*) Polyribosome

(*iii*) Alternative splicing

(*iv*) Primer

(*v*) Consensus Sequence

(*vi*) Codon.

P.T.O.

(*b*) Differentiate between (any *five*) : 5×2=10

(*i*) B-DNA and Z-DNA

(*ii*) Leading and lagging strands

(*iii*) DNA Polymerase I and DNA Polymerase III

(*iv*) Monocistronic and polycistronic mRNA

(*v*) Prokaryotic and Eukaryotic ribosome

(*iv*) Topoisomerase I and Topoisomerase II.

(*c*) Expand the following (any *four*) : 4×1=4

(*i*) ARS

(*ii*) snRNA

(*iii*) URE

(*iv*) CTD

(*v*) HU Enzyme

(*d*) Give the contribution of the following (any *four*) : 1×4=4

(*i*) Erwin Chargaff

(*ii*) Maurice Wilkins

(*iii*) Arthur Kornberg

(*iv*) Craig C Mello

(*v*) Carol D Greider

(*e*) Draw neat and well labelled diagrams of the following : 2×2=4

(*i*) m-RNA structure of Globin protein.

(*ii*) Trombone model showing arrangement of different proteins during replication.

2. (*a*) Describe Watson and Crick model of DNA. 6

(*b*) Describe the salient features of Genetic code. 6

3. (*a*) Discuss the mechanism of gene regulation in Tryptophan Operon. 8

(*b*) With the help of suitable diagram describe the mechanism of transcriptional termination in prokaryotes. 4

4. (*a*) Discuss the process of activation of amino acids, formation of initiation complex and elongation of the polypeptide chain in prokaryotes. 8

(*b*) Describe different methods of RNA interference. 4

5. (*a*) Explain the eukaryotic Transcription initiation Factors along with their functions. 6

(*b*) Describe the structure of Globin gene and its molecular mechanism of Splicing. 6

P.T.O.

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5. (*a*) Explain the eukaryotic Transcription initiation Factors along with their functions. 6

(*b*) Describe the structure of Globin gene and its molecular mechanism of Splicing. 6

P.T.O.

6. (*a*) Describe the sequence of events during DNA replication in eukaryotes and explain the role of various enzymes. 8

(*b*) Enumerate the various differences between prokaryotic and eukaryotic translation. 4

7. Write short notes on any *three* of the following : 3×4

(*i*) t-RNA

(*ii*) Replication of telomeres

(*iii*) Genetic Imprinting

(*iv*) DNA mismatch repair.