2021

ZOOLOGY — HONOURS

Paper : CC-2

(Molecular Biology)

Full Marks : 50

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

Answer *any ten* questions.

1. Explain ρ(rho) dependent transcription termination in Prokaryotes with labelled diagram.   3+2

2. Draw and describe the clover leaf model of t-RNA.   2+3

3. (a) Define 'Replicon' and 'Replisome'.
   (b) State the role of DNA Polymerase III in replication.   (1½+1½)+2

4. (a) Distinguish between B-DNA and Z-DNA (at least two characters).
   (b) Mention the code for 'Amber', 'Ochre', 'Opal'.   2+3

5. (a) What do you mean by Chargaff's rule?
   (b) A DNA double helix contains 20% Adenine. State the percentage of Guanine.
   (c) State the functional significance of helicase during DNA replication.   2+2+1

6. Describe the process of telomeric DNA replication with diagram.   3+2

7. DNA replication is semi-conservative.— Justify this statement with diagram.   5

8. (a) Distinguish between inducible and repressible operon.
   (b) Schematically represent the negative control of repressor protein for Lac operon.   2+3

9. Describe the process of initiation of translation in prokaryotes with neat diagram.   3+2

10. Write short notes on :   2½+2½
    (a) DNA methylation
    (b) SOS Repair.

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11. (a) Explain the principle and application of Southern Blot technique.

    (b) Distinguish between probe and primer. (2+2)+1

12. (a) State the role of leader sequence in the regulation of tryptophan operon.

    (b) Define Gratuitous inducer with example.

    (c) Xeroderma pigmentosa is considered as genetic disease. Justify this statement. 2+2+1

13. (a) Describe briefly the miRNA mediated gene silencing specially with diagram.

    (b) What do you mean by 'guide RNA'? (2+2)+1

14. (a) Distinguish between intron and exon.

    (b) State the role of amino acyl t-RNA synthetase during translation. 3+2

15. (a) Why primer annealing temperature is important regarding accuracy of PCR amplification?

    (b) 'Codon is triplet'— Justify this statement. 3+2