## 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 $\rho(\text{rho})$ 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:	21/2+21/2
	(a) DNA methylation	
	(b) SOS Repair.	

V(1st Sm.)-Zoology-H/CC-2/CBCS  (2)		
11.	(a) Explain the principle and application of Southern Blot technique.	
	(b) Distinguish between probe and primer.	2+2)+
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)+
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