

2020

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.*

1. Answer **any fifteen** questions :

2×15

- (a) State the function of DNA ligase.
- (b) What is Degeneracy of Genetic code?
- (c) What is telomere? Write two significance of telomere sequence.
- (d) Define promoter clearance.
- (e) DNA Replication is semi-discontinuous – Explain.
- (f) What is primosome? Mention its components.
- (g) Define Alternate splicing and mention its significance.
- (h) Mention the significance of ‘P’ site and ‘A’ site of ribosome.
- (i) Distinguish between prokaryotic and eukaryotic transcription (any 4 points).
- (j) Define split genes.
- (k) What is DNA hyperchromic shift?
- (l) Briefly mention the function DNA glycosylase.
- (m) State the bonds involved in DNA structure (Name only).
- (n) What is RNA editing?
- (o) Write two significance of Northern Blot.
- (p) Define ‘Glucose Effect’ in connection to Lactose operon.
- (q) Mention the function of β -galactosidase and permease.
- (r) State the function of miRNA.
- (s) Briefly mention the role of enhancer sequence.
- (t) Trp repressor is a positive allosteric protein– Explain.
- (u) Define ‘Shine-Dalgarno’ sequence.

Please Turn Over

- (v) Mention θ (theta) model of replication.
- (w) Write at least two mechanisms of epigenetic gene regulation.
- (x) Mention the role of 'Lex A' repressor in SOS repair.
- (y) Describe the role of 'Clamp loader' in DNA replication.

2. Answer *any four* questions :

- (a) Elaborate the process of ρ -independent transcription termination with labelled diagram. 3+2
 - (b) With neat figure, mention the structure and function of oriC. $2\frac{1}{2}+2\frac{1}{2}$
 - (c) Describe the process of polyadenylation of mRNA with diagram. 3+2
 - (d) Explain the process of positive control of lactose operon. 5
 - (e) Write short note on Histone methylation and acetylation. 5
 - (f) With neat diagram, explain the process of Allele Specific PCR amplification. 5
 - (g) Mention the process of 'Nucleotide Excision Repair' in prokaryotes. 5
 - (h) Write the principle and procedure (with figure) of Western Blot technique. $1\frac{1}{2}+3\frac{1}{2}$
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