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.

(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. 2½+2½

(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 porcess of 'Nucleotide Excision Repair' is prokaryotes. 5

(h) Write the principle and procedure (with figure) of Western Blot technique. 1½+3½

———————