

2018

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 **question no. 1** and **2** and **any other three** from the rests.

1. Answer **any five** from the following : 2×5
- (a) What is function of sigma factor?
 - (b) Mention significance of telomere.
 - (c) What is DNA hyperchromic shift?
 - (d) Define DNA probe.
 - (e) Distinguish replisome and primosome.
 - (f) State Chargaff's rule.
 - (g) What is Shine Dalgarno sequence?
 - (h) What are non-sense codons?
2. Write short notes on (**any two**) : 5×2
- (a) Western Blotting
 - (b) Leading and lagging strands in DNA replication
 - (c) Mitochondrial D loop region
 - (d) Methyl Capping
 - (e) Wobble hypothesis
 - (f) Principle of PCR.
3. (a) State the structure and function of OriC.
- (b) State the function of DNA Ligase and DNA Pol I in prokaryotic replication.
- (c) If the amount of adenine in a double stranded DNA is 14%, then what are the amounts of other bases in this molecule? (2+2)+(2+2)+2

Please Turn Over

4. (a) Briefly describe 'rho'-dependent transcription termination.
(b) What is amino-acetylation of tRNA? How does it help in protein synthesis?
(c) What is universality of genetic code? Give one example of exception of universal genetic code.
3+(1+3)+(2+1)
5. (a) What is alternate splicing? Mention its merit in eukaryotes.
(b) State the role of histone acetylation in eukaryotic gene regulation.
(c) Elucidate the function of snRNA.
(2+2)+4+2
6. (a) Mention the features of Taq DNA polymerase in PCR.
(b) With suitable diagram, explain nucleotide excision repair (NER) and Base excision repair (BER).
(c) Briefly mention the role of RecA in SOS repair.
2+4+4
7. (a) Distinguish inducible operon and repressible operon.
(b) Briefly describe the positive control of Lac Operon.
(c) With proper reason state whether the following merozygote is constitutive or inducible system for β -galactosidase— $I^+O^cZ^+Y^-/I^-O^+Z^-Y^+$.
3+4+3
8. (a) Briefly state the miRNA mediated gene-silencing mechanism.
(b) State the roles of activators and enhancer in eukaryotic transcription regulation.
(c) Describe the clover leaf model of tRNA.
3+(2+2)+3
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