



'সমানো মন্ত্র: সমিতি: সমানী'

## UNIVERSITY OF NORTH BENGAL

B.Sc. Honours 5th Semester Examination, 2022

### CC11- ZOOLOGY

#### MOLECULAR BIOLOGY

Time Allotted: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks.*

1. Answer any **five** questions from the following: 1×5 = 5
  - (a)  $(A + G)/(C + T)$  ratio is always 1 in double stranded DNAs. (State True / False)
  - (b) Mention two inhibitors of DNA replication.
  - (c) Tetracycline inhibits protein synthesis by blocking \_\_\_\_\_ site of ribosome. (Fill in the blank)
  - (d) The transcription factors bind to \_\_\_\_\_ region of a gene. (Fill in the blank)
  - (e) What is klenow fragment?
  - (f) Write the function of SSB protein.
  - (g) Name one inhibitor of translation.
  - (h) Write any one unusual base of DNA.
  
2. Answer any **three** questions from the following: 5×3 = 15
  - (a) Discuss the role of sigma factor in the initiation of transcription.
  - (b) Discuss the proofreading mechanism during replication in *E. coli*.
  - (c) Draw the chemical structure of a dinucleotide chain having the sequence of 5'-Ac-3'.
  - (d) Write a short note on Z-DNA. What do you mean by Minor groove? 3+2
  - (e) With suitable diagram describe the process of Southern Blotting technique. 4+1  
Comment on its application.
  
3. Answer any **two** questions from the following: 10×2 = 20
  - (a) Define genetic code. What are start and stop codons? "The code is degenerate" — Explain the statement. Comment on Wobble hypothesis. 2+2+3+3
  - (b) Describe the Dideoxy method of DNA sequencing. Comment on the applications of PCR technique. 6+4
  - (c) Describe the structure of prokaryotic ribosome. Discuss the initiation process during translation in prokaryotes. Discuss the role of release factors to release the polypeptide chain. 3+4+3
  - (d) Discuss the discontinuous synthesis of DNA. How Okazaki fragments are transformed into a continuous DNA strand? What is Primosome? 5+3+2

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