

**B.Sc. 5th Semester (Honours) Examination, 2022 (CBCS)**

**Subject : Zoology**

**Course : CC-XI**

**(Molecular Biology)**

**Time : 2 Hours**

**Full Marks : 40**

*The figures in the margin indicate full marks.*

*Candidates are required to give their answers in their own words  
as far as practicable.*

**Group-A**

**1. Answer any five questions of the following:** **2×5=10**

- (a) What are Okazaki fragments?
- (b) Comment on structure of telomere.
- (c) What is the function of Rec A protein?
- (d) DNA replication is semidiscontinuous —explain.
- (e) Write a short note on TATA box.
- (f) What is RT-PCR?
- (g) Define RNA-editing.
- (h) Genetic code is degenerative —Explain.

**Group-B**

**2. Answer any two questions of the following:** **5×2=10**

- (a) Distinguish between repressible operon and inducible operon with suitable examples. 5
- (b) Write a short note on Southern blotting. 5
- (c) Narrate the possible mechanism of in RNA mediated inhibition of protein synthesis. 5
- (d) Interaction of general transcriptional factors with the promoter region of mRNA is very important for successful transcription— discuss. 5

**Group-C**

3. Answer *any two* questions of the following:  $10 \times 2 = 20$
- Describe how initiation of DNA replication takes place in prokaryotes. Explain the mechanism of lagging strand synthesis during replication with suitable diagram. What do you mean by RNA priming?  $4+4+2=10$
  - Explain why  $lac I^s$  mutants of *E.coli* are *cis* dominant to wild type  $lac I^+$  but  $lac I^-$  mutants are recessive to both  $I^s$  and  $I^+$ ? Discuss the control circuit for the *lac* operon with sketch diagram.  $5+5=10$
  - Describe the mechanism of the initiation of protein synthesis in prokaryotes. Add a note on steps of peptide chain elongation in prokaryotes. Mention the role of different factors in termination step of protein synthesis.  $4+4+2=10$
  - Comment on capping and Poly Adenylation of RNA. Describe the Spliceosome-mediated splicing mechanism of pre-mRNA. Mention the significance of alternative splicing.  $3+4+3=10$