Reg. No.: ....

Name : ....

Sixth Semester B.Sc. Degree (C.B.C.S.S.-OBE – Regular/Supplementary/ Improvement) Examination, April 2024
(2019 to 2021 Admissions)
CORE COURSE IN ZOOLOGY
6B10ZLG : Molecular Biology and Bioinformatics

Time : 3 Hours   Max. Marks : 40

I. **Essay** questions. **Each** question carries **8** marks. Answer **any two.**

1) Elaborate Watson and Crick model of DNA structure.

2) Differentiate between lytic and lysogenic cycle of bacteriophage.

3) Elaborate on genetic code and its features. Mention wobble hypothesis.

4) What are the applications of bioinformatics ?   (2×8=16)

II. **Short essay** questions. **Each** question carries **4** marks. Answer **any two.**

5) What are split genes ?

6) Comment on various enzymes involved in DNA replication.

7) Briefly explain major metabolite data bases.   (2×4=8)

III. **Short answer** questions. **Each** question carries **2** marks. Answer **any six.**

8) Differentiate between condensins and cohesinns.

9) What is RNA interference ?

10) Which are the different types of RNAs ?

11) Define rDNA technology.

12) What are Okazaki fragments ?

13) Which are the various sites found on a functional ribosome ?

14) Explain BLAST.

15) Differentiate primary and secondary data bases.   (6×2=12)

P.T.O.

IV. **Multiple choice questions. Each** question carries **0.5** marks. Answer **all.**

16) The fragments of DNA are joined by
   a) Ligase   b) Polymerase
   c) Gyrase   d) Endonuclease

17) What is a cistron in molecular genetics ?
   a) A segment of RNA that codes for a specific protein
   b) A region on a chromosome that regulates gene expression
   c) A unit of genetic information that codes for a single polypeptide
   d) A type of RNA involved in splicing

18) Which histone protein is not part of the core histones in a nucleosome ?
   a) H2A   b) H2B   c) H5   d) H4

19) How many base pairs are present in a turn of Z DNA ?
   a) 15   b) 12   c) 10   d) 8

20) Who proposed the semiconservative model of DNA replication ?
   a) James Watson and Francis Crick
   b) Rosalind Franklin
   c) Maurice Wilkins
   d) Matthew Meselson and Franklin Stahl

21) Which nucleotide is typically added to the 5' end during capping of hnRNA ?
   a) Adenine (A)   b) Cytosine (C)
   c) Guanine (G)   d) Uracil (U)

22) The lac operon is involved in the metabolism of
   a) Lactose   b) Glucose
   c) Amino acids   d) Fatty acids

23) BLAST is commonly used for
   a) DNA sequencing
   b) Protein structure prediction
   c) Sequence alignment and similarity searching
   d) PCR amplification   (8×.5=4)