Reg. No.															

B.Tech. / M.Tech. (Integrated) DEGREE EXAMINATION, MAY 2024
First and Second Semester

21BTB102T – INTRODUCTION TO COMPUTATIONAL BIOLOGY
(For the candidates admitted during the academic year 2021-2022 , 2022-2023 & 2023-2024)

Note:
(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
(ii) **Part – B** and **Part – C** should be answered in answer booklet.

Time: 3 Hours Max. Marks: 75

PART – A (20 × 1 = 20Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO
1. The unicellular eukaryotic organisms come under which of the following kingdom? (A) Monera (B) Protista (C) Fungi (D) Plantae	1	1	1	4
2. The organel that disappears during cell division is (A) Nucleolus (B) Mitochondria (C) Cytoskeleton (D) Vaccuoles	1	2	4	1
3. Direct transfer of genetic material from one prokaryote to another is by (A) Transformation (B) Transduction (C) Conjugation (D) Recombination	1	2	1	4
4. The cell which can make exact copies of itself indefinitely, can differentiate and produce same type of cell is called (A) Totipotent (B) Pluripotent (C) Multipotent (D) Unipotent	1	2	1	4
5. Meiosis produces (A) 2 diploid daughter cells (B) 4 diploid daughter cells (C) 2 haploid daughter cells (D) 4 haploid daughter cells	1	2	1	4
6. The chemical bond in a disaccharides is called (A) Peptide bond (B) Hydrogen bond (C) Glycosidic bond (D) Covalent bond	1	1	2	1,4
7. _____is the study of how genes and intergenic regions of the genome contribute to different biological processes. (A) Proteomics (B) Metabolomics (C) Structural genomics (D) Functional genomics	1	2	2	1,4
8. The RNA that transfers amino acid to the ribosome is (A) mRNA (B) rRNA (C) tRNA (D) cRNA	1	2	2	1

9. Which among the following is the start codon? 1 1 3 4
(A) AUG (B) AUA
(C) AUC (D) AUT

10. Helix and sheet formation occurs in which among the following level of protein configuration? 1 2 3 1
(A) Primary (B) Secondary
(C) Tertiary (D) Quaternary

11. The process of removal of introns from pre-mRNA is called 1 1 3 2
(A) Splicing (B) Reduction
(C) Hydrolysis (D) Oxidation

12. A protein database that contains the information about 3D structure of protein is 1 1 3 4
(A) PBS (B) PDB
(C) NMR (D) Pymol

13. _____ surround axons in the PNS and form myelin sheath around axons of the PNS. 1 2 4 1
(A) Astrocytes (B) Oligocytes
(C) Microglia (D) Schwann cells

14. The spiking even in the neuron is called 1 2 4 2
(A) Polarization (B) Depolarization
(C) Neutralization (D) Activation

15. The chemical molecule synthesized by the first neuron and detected by the second is called 1 2 4 2
(A) Neurotransmitters (B) Synapse
(C) Afferent molecule (D) Efferent molecule

16. _____is an information processing system that has certain performance characteristics in common with biological net 1 2 4 3
(A) ANN (B) ANS
(C) Phymol (D) Algorithms

17. _____predicts binding of peptides to any known MHC. 1 2 5 1
(A) Net MHC pan (B) CEP
(C) ABCpred (D) BCIPEP

18. Polio vaccine is a type of _____ 1 2 5 3
(A) Inactivated vaccine (B) Live attenuated vaccine
(C) Subunit vaccine (D) Toxoid vaccine

19. _____immunity involve the cell mediated and humoral response 1 1 5 4
(A) Innate (B) Acquired
(C) Adaptive (D) Passive

20. Which of the following cells contribute 60% of the WBC? 1 2 5 5
(A) Neutrophil (B) Eosinophil
(C) Lymphocyte (D) Monocyte

PART – B (4 × 10 = 40 Marks) Marks BL CO PO
Answer **ANY FOUR** Questions

21. What are stem cells? Write on the classification and properties of stem cell. 10 2 1 4

22. Write a discussion on the types and importance of carbohydrates in life process. 10 2 2 1

23. Elaborate on the steps involved in translation. 10 1 3 2

24. Write on the classification and structure of protein. 10 2 3 3

25. What is ANN? Write on the working principle and application. 10 1 4 3

26. Briefly write about the composition of blood and different types of leukocytes. 10 2 5 4

PART – C (1 × 15 = 15 Marks) Marks BL CO PO
Answer **ANY ONE** Questions

27. Elaborately write about the T cell and B-cell epitopses prediction tools. 15 3 5 5

28. Describe on the various organelles present in the eukaryotic cells and add short notes on the functions of each of the organelles. 15 2 1 3

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