Reg. No.															

B.Tech. / M.Tech. (Integrated) DEGREE EXAMINATION, JULY 2023

First / Second Semester

21BTB102T – INTRODUCTION TO COMPUTATIONAL BIOLOGY

(For the candidates admitted from the academic year 2021 – 2022 & 2022 - 2023)

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 five kingdom classification was proposed by (A) R.H.Whittaker (B) Robert Hooke (C) Charles Darwin (D) Jean Baptiste Lamarck	1	1	1	4
2. Prokaryotes contains ribosomes in the cytoplasm to make (A) Fats (B) Proteins (C) Carbohydrates (D) Nucleic acids	1	1	1	4
3. In which cell organelle does the oxidation of glucose takes place to produce energy? (A) Nucleus (B) Vacuole (C) Mitochondria (D) Endoplasmic reticulum	1	1	1	4
4. In which phase of the cell division does sister chromatids separate? (A) Prophase (B) Metaphase (C) Anaphase (D) Telophase	1	1	1	4
5. Genetic information is stored in cells in form of (A) DNA (B) RNA (C) tRNA (D) rRNA	1	1	2	1
6. Which of these is not a polysaccharide? (A) Starch (B) Cellulose (C) Glycogen (D) Lactose	1	1	2	1
7. Identify the nitrogenous base that is not present in DNA (A) Adenine (B) Guanine (C) Uracil (D) Cytosine	1	1	2	1
8. Which of these is a nucleic acid database? (A) PDB (B) UniprotKB (C) Prosite (D) GenBank	1	1	2	1

9. Which of these codons is called start codon? 1 1 3 2
   (A) AUG (B) UAA
   (C) UAG (D) UGA

10. Which type of bond is present in proteins? 1 1 3 2
   (A) Ionic bond (B) Covalent bond
   (C) Peptide bond (D) Glycosidic bond

11. The transport protein that carries oxygen in blood to tissues is 1 1 3 2
   (A) Insulin (B) Trypsin
   (C) Testosterone (D) Hemoglobin

12. The protein that is present in hair, nails and feathers is 1 1 3 2
   (A) Keratin (B) Actin
   (C) Hemoglobin (D) Albumin

13. Which of these cells f the nervous system is abundant and has irregular star shape? 1 1 4 1
   (A) Microglia (B) Astrocytes
   (C) Oligodendrocytes (D) Schwann cell

14. Transmission of electrical signal from one neuron to next is carried by 1 1 4 1
   (A) Neurotransmitters (B) Astrocytes
   (C) Microglia (D) Axons

15. Disease of nervous system caused by deposits of amyloid plaques is 1 1 4 1
   (A) Parkinson's disease (B) Multiple sclerosis
   (C) Spongioform encephalopathy (D) Alzheimer's disease

16. The input units in an artificial neuron is equivalent to _____ of a physical neuron 1 1 4 1
   (A) Dendrites (B) Soma
   (C) Axon (D) Synapse

17. B lymphocytes are produced from 1 1 5 1
   (A) Thymus (B) Bone marrow
   (C) Spleen (D) Appendix

18. Type of vaccine that uses only the antigenic compounds instead of entire microorganism is 1 1 5 1
   (A) Live attenuated vaccine (B) Inactivated vaccine
   (C) Subunit vaccine (D) Toxoid vaccine

19. The type of white blood cell that releases chemicals causing allergic reaction is 1 1 5 1
   (A) Neutrophils (B) Basophils
   (C) Eosinophils (D) Monocytes

20. Epitope prediction method for T cells is based on 1 1 5 1
   (A) MHC (B) B cell receptor
   (C) Peptide binding (D) Antibody conformation

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

	Marks	BL	CO	PO
21. Write about prokaryotic cells and describe the function of its organelles.	10	2	1	4
22. Describe about enzymes and hormones and functions with examples.	10	2	2	1
23. Write about different protein visualization tools with examples.	10	2	3	2
24. What are neural networks? How is it applied in biology?	10	2	4	1
25. Write about vaccines and its types.	10	2	5	1
26. Write about stem cells, its classification and applications.	10	2	1	4

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

	Marks	BL	CO	PO
27. Explain about biological databases and how is BLAST algorithm used for sequence search.	15	4	2	1
28. Explain in detail about machine learning and data mining in biology.	15	4	4	1

* * * * *