

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 40<sup>th</sup> minute.
- (ii) **Part – B and Part – C** should be answered in answer booklet.

Time: 3 Hours

Max. Marks: 75

**PART – A (20 × 1 = 20Marks)**

Marks BL CO PO

Answer **ALL** Questions

- 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
- Prokaryotes contains ribosomes in the cytoplasm to make  
(A) Fats (B) Proteins  
(C) Carbohydrates (D) Nucleic acids  
1 1 1 4
- 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
- In which phase of the cell division does sister chromatids separate?  
(A) Prophase (B) Metaphase  
(C) Anaphase (D) Telophase  
1 1 1 4
- Genetic information is stored in cells in form of  
(A) DNA (B) RNA  
(C) tRNA (D) rRNA  
1 1 2 1
- Which of these is not a polysaccharide?  
(A) Starch (B) Cellulose  
(C) Glycogen (D) Lactose  
1 1 2 1
- Identify the nitrogenous base that is not present in DNA  
(A) Adenine (B) Guanine  
(C) Uracil (D) Cytosine  
1 1 2 1
- 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 of 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) Spongiform 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

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