

**B.Tech. DEGREE EXAMINATION, JUNE 2023**

First and Second Semester

**21BTB102T – INTRODUCTION TO COMPUTATIONAL BIOLOGY***(For the candidates admitted from the academic year 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)**Answer **ALL** Questions

	Marks	BL	CO	PO
1. In cell division, _____ is for cytoplasm division. (A) Meiosis (B) Cytokinesis (C) Interphase (D) Prophase	1	1	1	4
2. The genetic material in a nucleoid region is seen in (A) Bacteria (B) Plant (C) Animals (D) Yeast	1	1	1	4
3. Robert Hooke presented a term called (A) Life (B) Cell (C) Biology (D) Biotechnology	1	1	1	4
4. The work horses of a cell are (A) Ribosome (B) Ribonucleotide (C) Deoxynucleotide (D) Mitochondria	1	1	1	4
5. Transport of amino acids at the site of protein synthesis is carried out by (A) sRNA (B) mRNA (C) rRNA (D) tRNA	1	1	2	1,4
6. Blastocysts is a (A) Multicellular stage of embryo (B) Zygote (C) 8 cell stage of embryo (D) Fertilized cell	1	1	2	1,4
7. DNA is made of A, T, G, C. how many bonds between an 'A' and a 'T' (A) 1 (B) 2 (C) 3 (D) 4	1	1	2	1,4
8. A program compares nucleic acid sequence against a protein database (A) Blast N (B) Blast P (C) Blast X (D) T Blast X	1	1	2	1,4
9. When codon UGA is encountered? (A) Transcription stops (B) Translation begin (C) Translation steps (D) Transcription starts	1	1	3	2,5

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|--|---|---|---|-----|
| 10. Amino acids are joined together in a polypeptide called      | 1 | 1 | 3 | 2,5 |
| (A) Protein  |   |   |   |     |
| (B) DNA  |   |   |   |     |
| (C) RNA  |   |   |   |     |
| (D) Carbohydrates  |   |   |   |     |
| 11. Cofactor is  | 1 | 1 | 3 | 2,5 |
| (A) Vitamins   |   |   |   |     |
| (B) Metal ion  |   |   |   |     |
| (C) Iodine   |   |   |   |     |
| (D) Oxygen   |   |   |   |     |
| 12. Molecular visualization tool is                              | 1 | 1 | 3 | 2,5 |
| (A) Pymol  |   |   |   |     |
| (B) Pyzol  |   |   |   |     |
| (C) Blast  |   |   |   |     |
| (D) NCBI   |   |   |   |     |
| 13. Star shaped brain cells are                                  | 1 | 1 | 4 | 1,5 |
| (A) Astrocytes   |   |   |   |     |
| (B) Microglia  |   |   |   |     |
| (C) Dendrocytes  |   |   |   |     |
| (D) Axons  |   |   |   |     |
| 14. _____ are released at the synapse                            | 1 | 1 | 4 | 1,5 |
| (A) Neurotransmitter   |   |   |   |     |
| (B) Glucose  |   |   |   |     |
| (C) Neurotransmitter   |   |   |   |     |
| (D) ATP  |   |   |   |     |
| 15. ANN does NOT contain this part                               | 1 | 1 | 4 | 1,5 |
| (A) Axon   |   |   |   |     |
| (B) Dendrite   |   |   |   |     |
| (C) Synapse  |   |   |   |     |
| (D) 'N' population   |   |   |   |     |
| 16. Alzheimer's is caused by                                     | 1 | 1 | 4 | 1,5 |
| (A) Plaques  |   |   |   |     |
| (B) Dopamine related neurons                                     |   |   |   |     |
| (C) Spongiform   |   |   |   |     |
| (D) Encephalitis   |   |   |   |     |
| 17. Which of the following is rich in immune cells?              | 1 | 1 | 5 | 1,5 |
| (A) Blood  |   |   |   |     |
| (B) Lymph  |   |   |   |     |
| (C) Saliva   |   |   |   |     |
| (D) Pancreas   |   |   |   |     |
| 18. Polio drops are  | 1 | 1 | 5 | 1,4 |
| (A) Killed vaccine   |   |   |   |     |
| (B) Live attenuated vaccine                                      |   |   |   |     |
| (C) Recombinant vaccine  |   |   |   |     |
| (D) DNA vaccine  |   |   |   |     |
| 19. Epitope is present   | 1 | 1 | 5 | 1,4 |
| (A) Antigen  |   |   |   |     |
| (B) Antibody   |   |   |   |     |
| (C) Nerve cell   |   |   |   |     |
| (D) Plasma   |   |   |   |     |
| 20. Find the "odd one out" of the T cell epitope production tool | 1 | 1 | 5 | 1,5 |
| (A) Net chop   |   |   |   |     |
| (B) Propred  |   |   |   |     |
| (C) Bcepred  |   |   |   |     |
| (D) NetMHCpern   |   |   |   |     |

**PART – B (4 × 10 = 40 Marks)**

Answer ANY FOUR Questions

21. Describe the structure and function of plant cell organelles.
22. Describe nucleic acids.

Marks	BL	CO	PO
10	2	1	4
10	2	2	1

23. Give the tools and a short description of methods to predict protein secondary structure. 10 2 3 2
24. Give uses of machine learning in biology. 10 2 4 1
25. Illustrate humoral immune response. 10 2 5 1
26. Give the characteristics of uses of stem cell. 10 2 1 4

**PART – C (1 × 15 = 15 Marks)**

Answer ANY ONE Questions

Marks	BL	CO	PO
15	3	5	1
15	3	4	1,5

27. What happens as a response by the body when vaccine is administered to the body?
28. Give details of Parkinson's disease with respect to neurons. "The cause and effect of the disease".

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