

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 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. 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

27. What happens as a response by the body when vaccine is administered to the body? 15 3 5 1
28. Give details of Parkinson's disease with respect to neurons. "The cause and effect of the disease". 15 3 4 1,5

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