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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)

- Notes:**
- 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.
 - Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours

Max. Marks: 75

PART - A (20 × 1 = 20 Marks)

Answer ALL Questions

- In cell division, _____ is for cytoplasm division.
(A) Meiosis (B) Cytokinesis
(C) Interphase (D) Prophase
- The genetic material in a nucleoid region is seen in
(A) Bacteria (B) Plant
(C) Animals (D) Yeast
- Robert Hooke presented a term called
(A) Life (B) Cell
(C) Biology (D) Biotechnology
- The work horses of a cell are
(A) Ribosome (B) Ribonucleotide
(C) Deoxynucleotide (D) Mitochondria
- Transport of amino acids at the site of protein synthesis is carried out by
(A) sRNA (B) mRNA
(C) rRNA (D) tRNA
- Blastocysts is a
(A) Multicellular stage of embryo (B) Zygote
(C) 8 cell stage of embryo (D) Fertilized cell
- 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
- A program compares nucleic acid sequence against a protein database
(A) Blast N (B) Blast P
(C) Blast X (D) T Blast X
- When codon UGA is encountered?
(A) Transcription stops (B) Translation begin
(C) Translation steps (D) Transcription starts

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

PART - B ($4 \times 10 = 40$ Marks)

Answer ANY FOUR Questions

21. Describe the structure and function of plant cell organelles.

22. Describe nucleic acids.

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|---|----|---|---|---|
| 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

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|---|--------------|-----------|-----------|-----------|
| | 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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