Reg. No.	RA2312703010014

B.Tech. / M.Tech. (Integrated) DEGREE EXAMINATION, JULY 2024
First and Second Semester

21BTB102T – INTRODUCTION TO COMPUTATIONAL BIOLOGY
(For the candidates admitted from the academic year 2021 – 2022 onwards)

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. Find the ODD one out of the characteristics of a cell (A) Responds to environment (B) Grows and develops (C) Changes shape of the cell (D) Homeostasis	1	1	1	1
2. The organelle that disappears when cell divides (A) Nucleolus (B) Cell membrane (C) Centroids (D) Chromosome	1	1	1	2
3. A stack of thylakoids is called (A) Granum (B) Stroma (C) Cisternae (D) Chlorophyll	1	1	4	1
4. DNA replication in prokaryotes is called (A) Mitosis (B) Binary fusion (C) Binary fission (D) Meiosis	1	1	1	1
5. DNA ↔ genetic disease Carbohydrate ↔ diabetes Protein ↔ _____ What is the blank? (A) Epilepsy (B) Arteriosclerosis (C) Flu (D) Sickle cell anemia	1	1	2	2
6. Glycosidic bond is in (A) Starch (B) Palmitic acid (C) mRNA (D) tRNA	1	1	2	4
7. Insulin targets (A) Bones (B) Skeletal muscle (C) Liver (D) Heart	1	1	2	2
8. Pfam is an example of (A) Primary (B) Composite (C) Tertiary (D) Secondary	1	1	2	1

9. UAG codes for
(A) Glutamine (B) Serine
(C) Start (D) Stop

1 1 3 1

10. 'ACC' anticodon is complementary to codon
(A) UGA (B) UGG
(C) TGG (D) UAA

1 1 3 2

11. Keratin is an example of
(A) Derived protein (B) Fibrous protein
(C) Globular protein (D) Non globular protein

1 1 3 1

12. SCOP stands for
(A) Structural Classification of Protein (B) Structural Characterization of Protein
(C) Scientific Classification of Protein (D) Single Cell of Protein

1 1 3 2

13. Find the function of glial cells
(A) Grow myocytes (B) Grow hepatocytes
(C) Form adipocytes (D) Form synapses

1 1 4 1

14. A phase where a neuron is unable to fire is called
(A) Refractory phase (B) Polarization phase
(C) Depolarization phase (D) Defractory phase

1 1 4 1

15. Find the ODD supervised machine learning algorithm.
(A) Decision tree (B) SVM
(C) Principal component analysis (D) Neural networks

1 1 4 1

16. In deep learning "deep" refers to
(A) Multi node (B) Multi inputs
(C) Multi outputs (D) Multi layers

1 1 4 1

17. Epitope is present on
(A) Bacteria (B) Immune cells
(C) Human cells (D) Blood cells

1 1 5 2

18. One of the immune cells contains heparin.
(A) Eosinophil (B) Neutrophil
(C) Basophil (D) Monocyte

1 1 5 1

19. An immunity that lasts only few weeks by introducing antibodies from outside into the host
(A) Active (B) Passive
(C) Humoral (D) Cell mediated

1 1 5 2

20. The type of vaccines used for diphtheria is
(A) Toxoid (B) DNA
(C) Peptide (D) Inactivated

1 1 5 1

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

	Marks	BL	CO	PO
21. Explain the properties, types and uses of a pluripotent cell.	10	2	1	1
22. Elaborate on the structure and function of nucleic acids as macromolecules.	10	2	2	2
23. State the levels of structure in proteins give tools and methods to predict protein secondary structure.	10	2	3	1
24. Map a general overview of ANN and its applications in biology.	10	2	4	1
25. Give an illustration and description for humoral immunity.	10	2	5	2
26. Ribosomes work to produce proteins. Describe the process in detail.	10	2	3	2

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

	Marks	BL	CO	PO
26. The body cells contain the same 46 chromosomes. However each cell does different work, like liver cells function differently from lung cells. How is this possible?	15	3	1	2
27. Today, it is possible for a diabetic patient to purchase human insulin from a pharmacy. What technology makes its possible and how is it beneficial?	15	3	2	2

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