

## B.Tech/M.Tech(Integrated) DEGREE EXAMINATION, DECEMBER 2023

First Semester

### 21BTB102T - INTRODUCTION TO COMPUTATIONAL BIOLOGY

*(For the candidates admitted during the academic year 2022-2023 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 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 = 20 Marks)

Answer all Questions

		Marks	BL	CO
1. Which of the following is responsible for the transport of materials from the environment to cells?		1	1	1
(A) flagella	(B) Mitochondria			
(C) Endoplasmic reticulum	(D) Plasma membrane			
2. Sugar in DNA molecules is		1	2	1
(A) Deoxy ribose	(B) dioxy ribose			
(C) deoxy ribulose	(D) Ribose			
3. Hydrogen bonds in protein are responsible for		1	1	3
(A) alpha helix	(B) primary structure			
(C) tertiary structure	(D) peptide formation			
4. Peptide bonds are formed between		1	2	1
(A) amino group of adjacent amino acids	(B) amino group and carboxyl group of adjacent amino acids			
(C) amino and carboxyl group of group distant amino acids	(D) carboxyl group of amino acids			
5. Cell characteristics are controlled by		1	1	1
(A) Endoplasmic reticulum,	(B) genes			
(C) nuclear envelop	(D) Nucleolus			
6. Genetic information is stored in the form		1	1	2
(A) RNA	(B) DNA			
(C) r RNA	(D) mRNA			
7. Which of the following is pluripotent stem cells		1	1	1
(A) Zygote	(B) Inner mass cells			
(C) blood stem cells	(D) gametes			
8. Enzymes in Biosensors		1	1	2
(A) Immobilized	(B) inhibited			
(C) mobilized	(D) heat inactivated			
9. The traditional method widely used to recycle nutrients in garden and yard waste is		1	1	2
(A) Composting	(B) Bio apiles			
(C) Land forming	(D) bioreactor			
10. Polio drops are administered at infant stage because of it		1	1	2
(A) Helps in better digestion of antigens	(B) Increases RBC count			
(C) Produces antibodies	(D) bone marrow stem cells synthesis			

11. Alzeimers disease is (A) Long term Memory loss (C) skin allergy	(B) Heart disease (D) Fever	1	4	3
12. Which of the following interactions is crucial for the primary structure of proteins? (A) Hydrogen bond (C) Vander Waals interactions	(B) Di-sulfide bond (D) Peptide bond	1	2	3
13. Which of the following represents the two-dimensional structure of proteins? (A) quarternary (C) Tertiary	(B) Secondary (D) Primary	1	1	2
14. The transmission of a nerve impulse from one neuron to the next is effected by (A) neurotransmitters (C) receptors	(B) hormones (D) cerebrospinal fluid	1	1	4
15. _____ is a plasma-like liquid carried by lymphatic circulation (A) Saliva (C) Endocrine secretion	(B) Blood (D) Lymph	1	2	5
16. The human nervous system is composed of two types of cells namely nerve cells and .....cells (A) Nephron (C) Glial	(B) Endocrine (D) Hepatic	1	1	4
17. Immunity formed in an individual due to antigenic stimulus is (A) Naturalimmunity (C) Passive immunity	(B) acquired immunity (D) Active immunity	1	2	5
18. Which of the following is NOT an example of an autoimmune disease? (A) Influenza (C) Multiple sclerosis	(B) Rheumatoid Arthritis (D) Lupus	1	1	4
19. Active acquired immunity is a result of (A) vaccination (C) Injection of an immune serum	(B) contact with apathogen (D) antibodies of the mother	1	5	5
20. This type of disease results from the inability of the immune system to distinguish self from nonself antigens (A) autoimmune diseases (C) diabetics	(B) genetic disorders (D) cholera	1	2	5

**PART - B (4 × 10 = 40 Marks)**

Answer **any 4** Questions

**Marks BL CO**

21. Write the differences between Prokaryotes and Eukaryotes	10	2	1
22. Describe the process of cell division that helps in growth of organism	10	4	2
23. Explain about the various chemical bonds with examples	10	1	1
24. Write about The human genome project	10	3	2
25. Explain how Protein structures cab be predicted computationally	10	4	3
26. Give an account how computational methods help in immunology.	10	3	5

**PART - C (1 × 15 = 15 Marks)**

Answer **any 1** Questions

**Marks BL CO**

27. Explain how cell organelles help in structure and function of cell with neat diagrams	15	4	1
28. Draw and explain the structure of DNA and add a short note on Artificial intelligence	15	4	5

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