B.Tech. / M.Tech. (Integrated) DEGREE EXAMINATION, NOVEMBER 2024

First and Second Semester

21BTB102T - INTRODUCTION TO COMPUTATIONAL BIOLOGY

(For the candidates admitted from the academic year2021-2022 to 2023 - 2024)

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 & Part - C** should be answered in answer booklet.

Time: 3 hours

Max. Marks: 75

PART - A (20 x 1 = 20 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
1.	Diploid cell has _____ chromosomes A) 23 B) 24 C) 46 D) 92	1	1	1	4
2.	Inner cell mass is obtained from _____. A) blastocyst B) morula C) gastrula D) zygote	1	1	1	4
3.	The homologous pair of chromosomes for X is A) Y B) 23 C) XY D) 1	1	2	1	4
4.	Always the new generation will have better fitness score than the older one A) Always true B) always false C) sometimes true D) sometimes false	1	1	1	4
5.	The blueprint for the construction of a protein is A) tRNA B) gRNA C) mRNA D) cDNA	1	1	2	1
6.	GenBank is a A) secondary B) primary C) tertiary D) composite database	1	1	2	1
7.	Production of glucagon is because of A) hyperglycemia B) Hyperkalemia C) Hypokalemia D) hypoglycemia	1	2	2	1
8.	A molecule containing sugar, phosphate and a base is called A) nucleoside B) Nucleotide C) amino acid D) carbohydrate	1	1	2	1
9.	A sequence of amino acid bonded together by _____ bonds A) hydrogen B) glycosidic bond C) peptide D) phosphodiester	1	1	3	5
10.	The secondary structure prediction methods can be either Abinitio or _____ A) neural B) Machine learning C) hidden markov D) homology	1	1	3	5

11.	The anticodon for ACU is A) TGA B) GAT C) UGA D) UUA	1	2	3	5
12.	_____determines the propensity or intrinsic tendency of each residue to be in the helix, strand, and β-turn conformation A) PHD B) Chou Fasman C) GOR D) Propred	1	1	3	5
13.	_____is also sometimes called Knowledge Discovery in Databases A) Machine learning B) data mining C) neural network D) genetic algorithm	1	2	4	5
14.	Transmission of an electrical signal from one neuron to the next happens at the _____ A) synapse B) neurotransmitter C) axon D) dendrite	1	2	4	5
15.	_____ division allows conservation of energy A) sympathetic B) parasympathetic C) CNS D) PNS	1	1	4	5
16.	In this disease, there is loss of dopaminergic neurons A) Alzheimer's B) nystagmus C) Parkinson's D) multiple sclerosis	1	1	4	5
17.	_____ makes antibodies A) Bcell B) Tcell C) NK cell D) Monocytes	1	1	5	5
18.	All blood cells arise from a pluripotent stem cell found in A) heart B) liver C) bone marrow D) brain	1	1	5	5
19.	Which immunity gives memory A) active B) passive C) artificial D) natural	1	2	5	5
20.	MHC is present on A) humans B) bacteria C) virus D) fungus	1	1	5	5

PART - B (5 x 8 = 40 Marks)
Answer **ALL** Questions

		Marks	BL	CO	PO
21 a.	Give a note on genetic algorithms	8	2	1	4
	(OR)				
b.	Explain the characteristics of a eukaryotic cell	8	2	1	4
22 a.	Write a detailed note on carbohydrates with illustrated examples	8	2	2	1
	(OR)				
b.	Write about genomics with a special note on comparative genomics	8	2	2	1
23 a.	Write on different structure databases and their structure visualization	8	2	3	5
	(OR)				
b.	Write on the structural and functional classification of proteins.	8	2	3	5
24 a.	Draw and describe the type of glial cells and their functions	8	2	4	5
	(OR)				

	b. Explain in detail about artificial neural networks	8	2	4	5
25	a. Write on cell-mediated immunity	8	2	5	5
	(OR)				
	b. Write on the different immune cells and their characteristics	8	2	5	5

PART - C (1 x 15 = 15 Marks)
Answer **ANY ONE** Question

		Marks	BL	CO	PO
26.	"The cells have memory". Explain with suitable examples.	15	3	5	5
27.	The cell theory - What experiments and results would you use to prove this theory if you were a scientist?	15	3	1	4

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