U.S.N.										

B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU

July 2024 Semester End Main Examinations

Programme: B.E. **Semester: V**
Branch: Computer Science and Engineering **Duration: 3 hrs.**
Course Code: 22CS5BSBCS **Max Marks: 50**
Course: Biology for CS Engineers

Instructions:
1. Answer **ALL** questions in **PART A** and any **THREE** full questions from **PART B**
2. Missing data, if any, may be suitably assumed.

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

		PART A	*CO*	*PO*	Marks
1		"CELL BIOLOGY" is also called as i. Cytology ii. Neurology iii. Morphology iv. none of the above	*CO1*	*PO1*	1
2		The cell theory may be summarized as i. Cells of organisms are differentiated into distinct cell types. ii. A cell is a feature of all organisms with the exception of viruses. iii. The protoplasm is the living content of the cell and determines the activity of the cell and thus the whole organism. iv. all of the above.	*CO1*	*PO1*	*1*
3		Nucleus is _____ of the cell. i. Bimolecular ii. Control central iii. Energy central iv. Heart	*CO1*	*PO1*	*1*
4		Protein Functions are i. Antibodies ii. Contractile Proteins iii. Both i and ii iv. none of the above	*CO1*	*PO1*	*1*

	5		Which type of nano molecules is injected into the body to bind certain tumour cells? i. Dendrimer ii. Nanobots iii. Nanoshells iv. Nanowires	*CO1*	*PO1*	*1*
	6		The bridge between DNA and protein synthesis_____ i. Ribonucleic Acid(RNA) ii. Nucleotides iii. Elongation iv. None of the above	*CO1*	*PO1*	*1*
	7		To get from DNA, written in one chemical language, to protein, written in another, requires two major stages are i. Transcription and Translation ii. Transcription and Synchronization iii. Synthesis and Synchronization iv. Translation and Synthesis	*CO1*	*PO1*	*1*
	8		The process whereby mRNA is converted into proteins by ribosome is _____ i. Translation ii. Termination iii. Initiation iv. Elongation	*CO1*	*PO1*	*1*
	9		The DNA wraps around the histones to form a bead-like structure called _____ i. Chromosomes ii. Nucleosome iii. Both i and ii iv. None of the above	*CO1*	*PO1*	*1*
	10		Applications of Genetic Algorithms i. Function Optimization ii. Machine Learning iii. Engineering and Design iv. All of the above	*CO1*	*PO1*	*1*
	11		----------is a process that models information exchange among several individuals. i. Selection ii. Respect iii. Assortment iv. Recombination	*CO1*	*PO1*	*1*

	12		In Dissecting an Evolutionary Algorithm if if $\alpha = 1$ we have ---------- replacement. i. Direct ii. Tournament iii. Replacement of the worst iv. Random	*CO1*	*PO1*	*1*
	13		Design of Bio Inspired Solutions contains i. Identification of analogies ii. Understanding iii. Engineering iv. All of the above	*CO1*	*PO1*	*1*
	14		The ----------.algorithm is able to find a shortest path between any two nodes. i. Ant Colony Optimization ii. Particle Swarm Optimization iii. Paddy field iv. Genetic Programming	*CO1*	*PO1*	*1*
	15		PSO Swarm Topologies are i. Ring and Star topology ii. Mesh and Star topology iii. Ring and mesh topology iv. None of the above	*CO1*	*PO1*	*1*
	16		Bio-inspired research areas i. Swarm intelligence (SI) ii. Artificial immune system (AIS) iii. Cellular signaling pathways iv. All of the above	*CO1*	*PO1*	*1*
	17		____is an interdisciplinary research area at the interface between computer science and biological science. i. Bioinformatics ii. Bio-pharmacy iii. Biology iv. Cytology	*CO1*	*PO1*	*1*
	18		Application of tools fall into fallowing areas i. Functional analysis ii. Sequence analysis iii. Structural analysis iv. All of the above	*CO1*	*PO1*	*1*
	19		Which tool of Bioinformatics display the structure of DNA, proteins and smaller molecules? i. Clustalw ii. Rasmol iii. BLAST iv. FASTA	*CO1*	*PO1*	*1*

	20		Which objective of Bioinformatics access existing information and submit new entries? i. Organizing biological data ii. Analysis of data iii. Interpretation and application of data iv. All of the above	*CO1*	*PO1*	*1*
	PART B					
	1	a)	Define cell and differentiate between plant cell and animal cell.	*CO1*	*PO1*	**5**
		b)	Explain the components of Evolutionary Programming.	*CO1*	*PO1*	**5**
	2	a)	Write a note on types of carbohydrates.	*CO1*	*PO1*	**5**
		b)	Discuss the following i. Autosomal Recessive Disorders. ii. Autosomal dominant disorder.	*CO1*	*PO1*	**5**
	3	a)	Write a note on Nano scale devices and integrated Nano systems.	*CO1*	*PO1*	**5**
		b)	Compare between Exons and Introns.	*CO1*	*PO1*	**5**
	4	a)	Explain the Particle Swarm Optimization algorithm and list any one advantages of PSO.	*CO1*	*PO1*	**5**
		b)	Write a note on components and application of genetic algorithm.	*CO1*	*PO1*	**5**
	5	a)	Differentiate between Bio-Informatics and Computational Biology	*CO1*	*PO1*	**5**
		b)	Illustrate the steps involved in Transcription Process with a neat diagram.	*CO1*	*PO1*	**5**

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