

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

Autonomous Institute Affiliated to VTU

June / July 2025 Semester End Main Examinations

Programme: B.E.

Semester: V

Branch: Computer Science & Engineering

Duration: 1.5 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.

		PART A	<i>CO</i>	<i>PO</i>	Marks
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.	1	Which step of transcription occurs when the enzyme RNA polymerase binds to a region of gene called the promoter? a) Elongation b) Termination c) Initiation d)None of the above	<i>CO1</i>	<i>PO1</i>	1
	2	Which components provide this function: Individuals are selected from the population based on their fitness ? a) Initial b)Selection c) Fitness function d)Mutation	<i>CO1</i>	<i>PO1</i>	1
	3	Which bio-inspired algorithm has initialize,updater and evaluator operator? a)PSO b)ACO c)FireFly d) None of the above	<i>CO1</i>	<i>PO1</i>	1
	4	Which component of Bioinformatics is known as proteomics? a) functional genomics b) structural genomics c) Comparative genomics d)None of the above	<i>CO1</i>	<i>PO1</i>	1
	5	At the time of cell division chromatin becomes thick and ribbon like are known as _____ a) Chromosomes b) Nucleosome c) Nucleus d) None of the above	<i>CO1</i>	<i>PO1</i>	1
	6	Which step of translation occurs when the amino acids are brought to the ribosome by tRNAs and linked together to form a chain? a) Elongation b) Termination c) Initiation d) None of the above	<i>CO1</i>	<i>PO1</i>	1

	7	Lipids are organic molecules composed of a) Carbon, hydrogen, oxygen and nitrogen b) Carbon, hydrogen and oxygen atoms. c) Carbon, hydrogen atoms d) Carbon, hydrogen, and nucleotides atoms	COI	POI	1
	8	Which of the following is application of Genetic Algorithms? a) Function Optimization b) Parameter Optimization c) Initialization d) None of the above	COI	POI	1
	9	Which of the following term used for Ant colony optimization (ACO)? a) Particle b) Pheromones c) Proteins d) None of the above	COI	POI	1
	10	Which objective of Bioinformatics access existing information and submit new entries? a) Organising biological data b) Analysis of data c) Interpretation and application of data d) None of the above	COI	POI	1
	11	Which is an essential component of the Evolutionary Algorithm? a) Initial b) Selection c) Fitness functiond) Mutation	COI	POI	1
	12	Function of Triglycerides is _____ a) Metabolic-fuel b) Fatty acid storage c) Membrane structure d) None of the above	COI	POI	1
	13	mRNA Splicing is an important step in the _____ process a) Translation b) Transcription c) Splicing d) None of the above	COI	POI	
	14	_____ is a process that models information exchange among several individuals a) Selection b) Respect c) Assortment d) Recombination	COI	POI	1
	15	Which bio-inspired algorithm is initialized with group of particles and then searches for optimal for next generations? a)PSO b)ACO c)FireFly d) None of the above	COI	POI	1
	16	Which tool of Bioinformatics display the structure of DNA,proteins and smaller molecules? a) clustalw b) Rasmol c) BLAST d) FASTA	COI	POI	1

17		Which structure defines non-covalent interactions which bind multiple polypeptides into a single and larger protein? a) Primary structure b) Secondary structure c) Tertiary structure d) Quaternary structure	COI	POI	1
18		_____ are based on the ideas of natural selection and genetics a) Genetic algorithms b) Greedy algorithm c) Recursive algorithm d) None of the above	COI	POI	1
19		Which bio-inspired algorithm is able to find a shortest path between any two nodes? a) PSO b) ACO c) FireFly d) None of the above	COI	POI	1
20		Which type of nano molecules is injected into the body to bind certain tumour cells? a) Dendrimer b) Nanobots c) Nanoshells d) Nanowires	COI	POI	1

PART B

1	a)	Explain the three steps of Transcription process	COI	POI	5
	b)	Explain any five components of Evolutionary Programming	COI	POI	5
2	a)	Explain the types of chromosomes	COI	POI	5
	b)	Explain the steps of PSO Algorithm	COI	POI	5
3	a)	Explain the components of Bioinformatics.	COI	POI	5
	b)	Discuss Protein Functions	COI	POI	5
4	a)	Explain the process of recombination during Dissecting an Evolutionary Algorithm with example	COI	POI	5
	b)	Define Biosensor. Explain its three parts with diagram	COI	POI	5
5	a)	Discuss the operators and applications of Ant Colony Optimization	COI	POI	5
	b)	Explain the concept of Fitness score in Genetic Algorithms	COI	POI	5
