U.S.N.										

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

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Computer Science and Engineering **Duration: 3 hrs.**
Course Code: 21CS7BSBFE **Max Marks: 100**
Course: Biology for Engineers **Date: 24.02.2023**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
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.

UNIT - I

1	a)	Analyse the differences between plant and animal cell.	**10**
	b)	Draw the structure of a nucleus and analyse it's functions.	**10**

UNIT - II

2	a)	With respect to the following, analyse the design decisions of Ant Colony Optimization: 1. Matrix Interpretation 2. Solution Construction 3. Pheromone Initialization	**10**
	b)	What is Swarm Intelligence? Analyse the different organizing principles of Swarm Intelligence.	**10**

OR

3	a)	Explain the three major flavours of evolutionary algorithms. Explain the Replacement stage of evolutionary algorithms.	**10**
	b)	Explain the different strategies of Recombination with examples.	**10**

UNIT - III

4	a)	Illustrate the standard Particle Swarm Optimization Algorithm and its application for Task Assignment Problems.	**10**
	b)	What are the main issues that influence the way in which Cellular Automata (CA) languages support the design of applications on high performance architectures.	**10**

UNIT - IV

5	a)	Explain the fine structure of Gene with diagram.	**10**
	b)	Explain the central Dogma of Biology with a diagram.	**10**

OR

6	a)	Explain the application of genetic algorithms for computer aided diagnosis systems with suitable block diagram.	**10**
	b)	Explain the use of Inversion Vector for 1 7 6 9 5 8 3 4 2 and recovering from permutation mentioning all steps.	**10**

UNIT - V

7	a)	Explain the three parts of biosensor along with the principle of biosensor. Also mention the applications of biosensor.	**10**
	b)	Explain the components of bioinformatics and enlist any 5 types of data on which analysis is carried out in the field of bioinformatics research.	**10**

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