K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination: June 2025

Program: M. Tech (Artificial Intelligence)　　Scheme: II

Regular Examination: FY　　Semester: II

Course Code: Bio-Inspired Artificial Intelligence　　Course Name: PCEC203

Date of Exam: 06/06/2025　　Duration: 2.5 Hours　　Max. Marks: 60

Instructions:
(1) All questions are compulsory.
(2) Draw neat diagrams wherever applicable.
(3) Assume suitable data, if necessary.

Ques. No.	Question	Max. Marks	CO	BT Level
Q1	Solve <u>any two</u> questions out of three. (05 marks each)	10		
a)	Explain Multi-Objective Optimization.		1	U
b)	Explain the working principle of Genetic Programming.		2	U
c)	Differentiate ACO and PSO.		5	A
Q2	Solve <u>any two</u> questions out of three. (05 marks each)	10		
a)	Formulate problem statement of any real-world application that can be solved using Ant Colony Optimization.		3	A
b)	Explain Artificial Immune Systems with example.		4	U
c)	Analyze the case of Amazon's E-Commerce website. If the company wishes to apply AI for enhancing the business, explain which is the suitable the base AI algorithm and which Bio-Inspired AI can be used for further optimization.		6	A
Q3	Solve <u>any two</u> questions out of three. (10 marks each)	20		
a)	Minimize the function $f(x) = x^2 + 3x + 2$ using Artificial Bee Colony Optimization.		3	A
b)	Explain Ensemble Learning with suitable example.		1	U
c)	Explain steps to optimize any prediction technique in AI using a suitable bio-inspired algorithm.		6	A
Q4	Solve <u>any two</u> questions out of three. (10 marks each)	20		
a)	Apply Genetic Programming – Decision Tree hybrid approach for optimization of classifier for credit card fraud detection.		2	A
b)	Explain how a Phishing Website Detection System can be designed using the Negative Selection technique from Artificial Immune Systems.		4	A
c)	Explain Particle Swarm Optimization algorithm and discuss its application for Traveling Salesman Problem.		5	A

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