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

May-June 2025
(B. Tech) Program: Information Technology Scheme: II
Course Code: ITC604 Course Name: Artificial Intelligence and Data Science - I
Date of Exam: 24/05/2025 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.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	Solve any **two** questions out of three: (05 marks each)	10		
a)	Describe the Structure of Intelligent Agents.		CO1	U
b)	Demonstrate the Confusion Matrix with Respect to Machine Learning Algorithms.		CO4	Ap
c)	Describe the Least Squares Optimization methods along with one example.		CO6	U
Q 2	Solve any **two** questions out of three: (05 marks each)	10		
a)	Illustrate the State-Space Representation and define the Problem as State Space Search.		CO2	Ap
b)	Demonstrate various levels of Knowledge Representation.		CO3	Ap
c)	Illustrate Properties of differential privacy.		CO5	Ap
Q 3	Solve any **two** questions out of three. (10 marks each)	20		
a)	List down all types of Agent architecture. Explain utility-based agent along with Pseudocode.		CO1	U
b)	Demonstrate Adversarial Machine Learning with respect to Model Poisoning and Evasion Attack techniques.		CO5	Ap
c)	Assume the following facts: John likes all kind of food. Apple and vegetable are food Anything anyone eats and not killed is food. Anil eats peanuts and still alive Harry eats everything that Anil eats. **Prove by resolution that: John likes peanuts.**		CO3	Ap
Q 4	Solve any **two** questions out of three. (10 marks each)	20		
a)	Perform the A* algorithm on the following figure. Explicitly write		CO2	Ap

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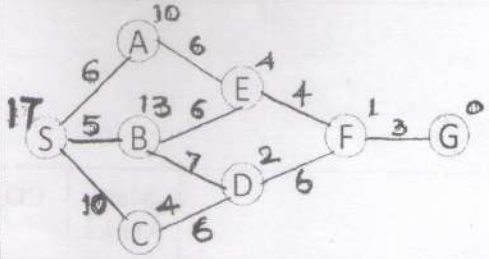
	down the queue at each step. 			
b)	Sketch and explain the steps in Developing a Machine Learning Application.		CO4	Ap
c)	Describe the term "Evaluation and Optimization" considering various case studies in real life.		CO6	U

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