

May – Jun 2026

B. Tech Program: Artificial Intelligence & Data Science Scheme :-III

Regular Examination: SY Semester: IV

Course Code: AIC404 and Course Name: AI Algorithms & Ethics

Date of Exam: 24/5/2026

Duration: 02.5 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)	Apply the A* algorithm to find the optimal path from Start node S to Goal node G. <table><tr><th>Node</th><th>h(n)</th></tr><tr><td>S</td><td>7</td></tr><tr><td>A</td><td>6</td></tr><tr><td>B</td><td>2</td></tr><tr><td>C</td><td>1</td></tr><tr><td>G</td><td>0</td></tr></table> Edges with cost: • S → A = 1 • S → B = 4 • A → B = 2 • A → C = 5 • B → C = 1 • C → G = 3		Node	h(n)	S	7	A	6	B	2	C	1	G	0	3	Ap
Node	h(n)															
S	7															
A	6															
B	2															
C	1															
G	0															
b)	Apply the different classes of intelligent agents to a real-world scenario and demonstrate how each agent type performs tasks based on its design and environment	2	Ap													
c)	Apply the Mini max algorithm with Alpha-Beta pruning to the following game tree and determine the optimal value for the MAX player.” MAX / \ MIN MIN / \ MAX MAX MAX MAX / \ 3 5 6 9 1 2 0 -1	3	Ap													
Q.2	Solve any two questions out of three: (05 marks each)	10														
a)	Explain the historical context and evolution of AI Ethics, highlighting key developments and their impact on current ethical practices in AI		4	U												
b)	Analyze how ethical AI principles can be used to ensure inclusive design in an educational AI platform, highlighting the relationships between fairness, accessibility, and user diversity.”		5	An												
c)	Critically analyze how AI exacerbates or reduces global inequality context to digital divide.		6	An												

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

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Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain the capability-based classification of intelligent systems and describe how each category differs in terms of learning, reasoning, and adaptability with the help of real-world examples.”		1	U
b)	Explain the key ethical theories such as utilitarianism, deontology, and virtue ethics in Ethics		4	U
c)	Analyze the implementation of data governance and consent principles in a healthcare AI application, examining how these principles influence data privacy, security, and ethical decision-making.”		5	An
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Demonstrate how various types of agents can be applied in an automated system (e.g., smart home or self-driving car) and explain their roles in decision-making.”		2	Ap
b)	Demonstrate with one example steepest-ascent hill climbing algorithm with its Limitation		3	Ap
c)	Examine an action plan for preparing society for the ethical challenges posed by AGI and ASI, involving governments, industries, and the public		6	An
