

(FOR THE CANDIDATES ADMITTED

23UCS6E4

DURING THE ACADEMIC YEAR

ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY 2026

BSC COMPUTER SCIENCE(AIDED)

MAXIMUM MARKS: 75

SEMESTER-VI

TIME : 3 HOURS

PART - III

23UCS6E4– ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. Which algorithm is inspired by of natural evolution?
a) Hill Climbing b) Genetic Algorithm c) Minimax d) A* Search
2. Knowledge representation in AI is used to_____.
a) Store and organize information for reasoning
b) Increase hardware speed
c) Design computer networks
d) Reduce memory usage
3. Which model represents probabilistic processes that change over time?
a) Hill Climbing Model b) Hidden Markov Model
c) Genetic Algorithm d) A* Search
4. Which method improves a policy by repeatedly updating state values?
a) Hill Climbing b) Value Iteration c) Genetic Algorithm d) Breadth First Search
5. Which clustering algorithm groups data points based on their distance from cluster centers?
a) K-Means b) Boosting c) Bayesian Network d) Kernel Method

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Define Artificial Intelligence (AI).
7. What is bivalent logic?
8. Define probabilistic reasoning.
9. Define utility function.
10. Define Machine Learning.

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Explain the history and development of Artificial Intelligence.
(OR)
b) Explain the Hill Climbing search algorithm and its limitations.

12. a) Explain bivalent logic and inference in reasoning systems.
(OR)
b) Explain fuzzy rules and their role in reasoning.
13. a) Explain the concept of uncertainty in Artificial Intelligence.
(OR)
b) Describe the idea of probabilistic reasoning over time.
14. a) Describe sequential decision problems in Artificial Intelligence.
(OR)
b) Compare value iteration and policy iteration methods.
15. a) Describe probability distributions used in Machine Learning.
(OR)
b) Explain mixture models and the role of the Expectation-Maximization (EM) algorithm.

SECTION – C**(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 (Or) K5)**

16. a) Explain the Genetic Algorithm as a metaheuristic approach for problem solving.
(OR)
b) Explain the following adversarial search techniques in detail:
i. Minimax
ii. Expectimax
iii. Alpha-Beta pruning
17. a) Explain the methods of knowledge representation and their importance in AI systems.
(OR)
b) Explain the process of fuzzy inference and how fuzzy rules are used in decision making.
18. a) Illustrate the process of approximate inference in Bayesian networks with suitable examples.
(OR)
b) Explain the working principle of Hidden Markov Models in temporal reasoning.
19. a) Analyze the role of utility functions in decision making systems.
(OR)
b) Describe decision making in multi-agent systems and the importance of group decision making.
20. a) Illustrate the working of the K-Means clustering algorithm.
(OR)
b) Describe the structure and working of feed-forward neural networks and error propagation.
