

CLASS: BTECH
BRANCH: AIML

SEMESTER :VI
SESSION : SP/2025

SUBJECT: AI307 MODERN ARTIFICIAL INTELLIGENCE

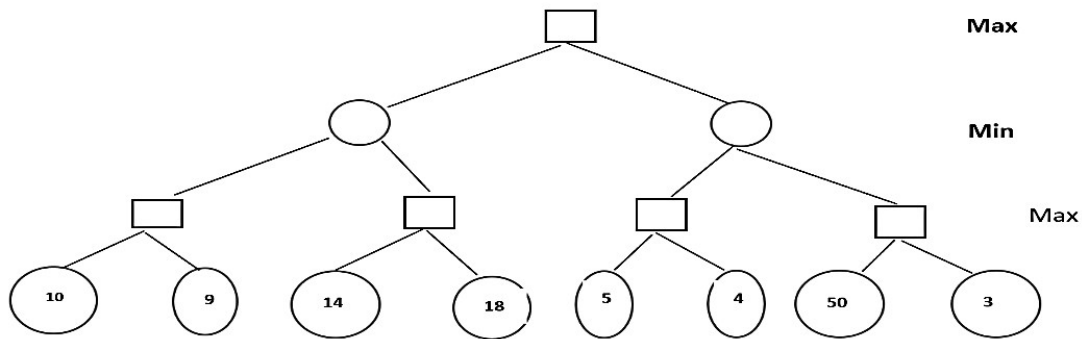
TIME: 02 Hours

FULL MARKS: 25

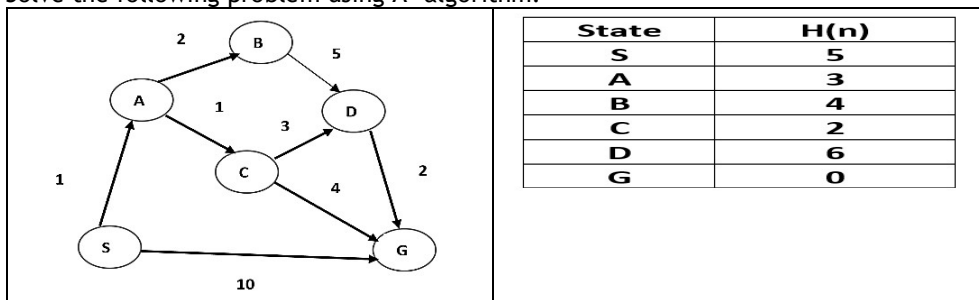
INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

- Q.1(a) How do you define Artificial Intelligence based on thinking humanly and thinking rationally? [2] 1 BL1
- Q.1(b) Explain briefly about model-based reflex agents with the help of a diagram. Give one example based on it. [3] 1 BL2
- Q.2(a) Give examples where AI is useful for risky areas and digital assistants. [2] 1 BL1
- Q.2(b) What do you mean by the Turing test approach? Explain it with the help of an example. [3] 1 BL1
- Q.3(a) What is a vacuum cleaner in the context of AI? [2] 2 BL1
- Q.3(b) Consider a two-player game where each player alternates in making moves. The goal is to maximize the score for player1 and minimize the score for player2. Solve the following using mini max search algorithm [3] 2 BL3



- Q.4(a) Is the problem decomposable into a set of sub problems? Give example. [2] 2 BL1
- Q.4(b) In A* search algorithm, we use search heuristic as well as the cost to reach the node. Here $H(n)$ = Cost to reach from node n to goal node, S is the starting state and G is the goal state. Solve the following problem using A* algorithm. [3] 2 BL3



- Q.5(a) Solve the following using predicate logic. [2] 3 BL3
Every human, animal and bird is living thing who breathe and eat
- Q.5(b) What do you mean by knowledge-based agent? Explain knowledge based architecture with the help of diagram. [3] 3 BL2