



COMSATS University Islamabad, Attock Campus

Department of Computer Science

Fall 2021 Midterm Examination

Course: - Artificial Intelligence

Amir Iqbal

Time: 90 Min

Marks: 50

Program: BSSE, BSCS

Dated: 19 Nov 2021

Name:- _____ Reg. No:- _____

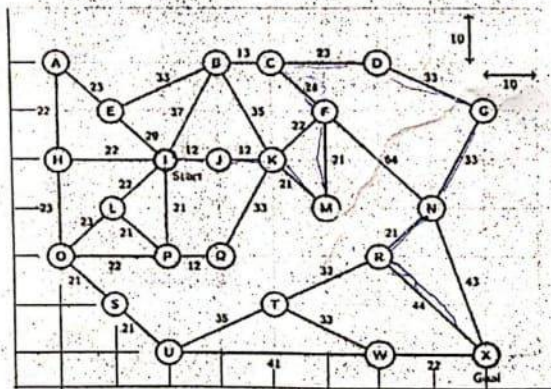
Note:- Don't write anything on Question Paper except your name & Reg. No.

Q. #1 Answer the following short questions concisely. [3 *4 = 12 Marks] [CLO1]

- Define cooperative and competitive agents with the help of example.
- Why hill climbing search got stuck. Explain your answer with example.
- What are the advantages of 'rational agent' approach over other approaches?
- Draw the diagram of learning agent and describe the functions of its components.

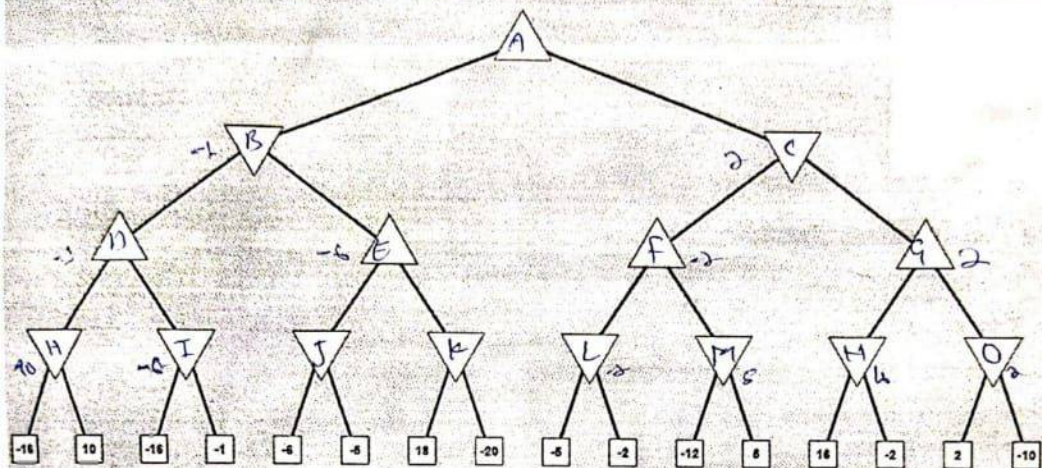
Q. #2 Consider the following figure below where each node is represented by uppercase and distance between each square is

10. Apply A* algorithm to the graph below using Manhattan (City block) distance as heuristic function, [14 Marks] [CLO2]



- Find the Manhattan (City block) distance.
- List the order in which the A* will explore the graph.
- Show the path found by A* along with the cost.

Q. #3 Apply alpha beta pruning to given game tree. [12 Marks] [CL05]



Q. #4 Consider the following given positions for the initial crossover, using the crossover at the rate of 50% from each individual positions. Apply genetic algorithm to reach a position where no queen can attack any other on the board. (As you know that horizontal, vertical, and diagonal moves are allowed in queen problems). Maximum 4 iterations. [12 Marks] [CL05]

