Cairo University
Faculty of science
Mathematics Department

Mid Term Exam (Spring 2015)
Artificial Intelligence
(Comp 408)
45 mins.

Name:---------- ID: ----------

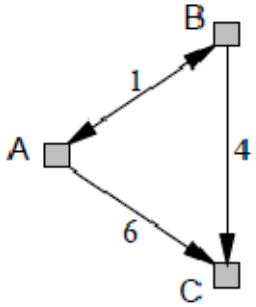
Answer the following questions(The exam is in three pages)

Q(1) (1 points) Under what circumstances would it make sense to go "down hill" (i.e. explore a child whose heuristic value is worse than the parent's) in executing the hill-climbing search algorithm? When would it *not* make sense?

Q(2) (2 points) Explain how does the Genetic Algorithm work? Why is it considered as Local Search Algorithm.

P.T.O

Q(3) (3 points) The following diagram represents the state space of a deterministic problem, with each arrow denoting a possible operator (labeled with the step cost). Assume that the successors of a state are generated in alphabetical order, and that there is no repeated state checking.



i. Show the search tree generated by breadth-first search applied to the problem of staring in A, where C is the goal. Circle the tree node that the search identifies as the solution.

ii. What is the branching factor here?

iii. Which of the following algorithms will find solution in this case breadth first, depth first?

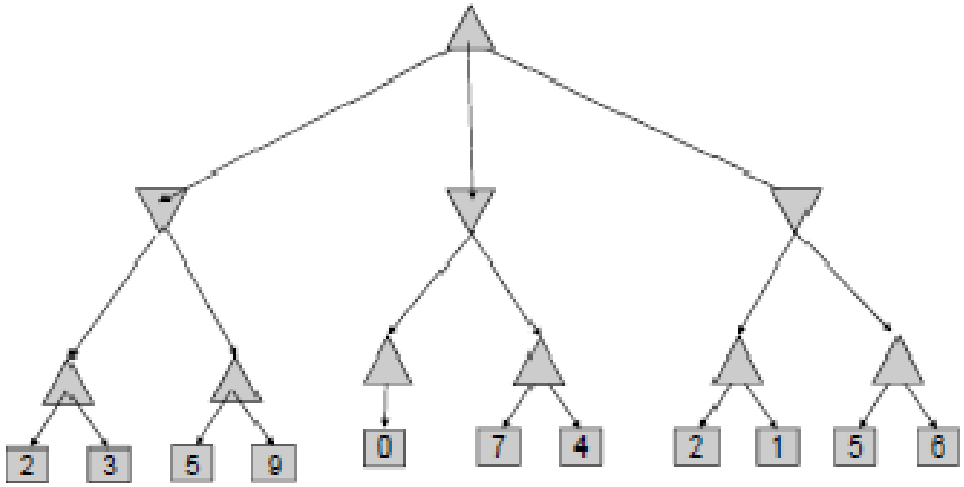
P.T.O

Q(4) (4 points)

Apply the minimax algorithm to the game tree below, where it is the maximizer's turn to play. The values of the evaluation function of the leaves are listed.

i. Write the values of the intermediate nodes

ii. Indicate (mark the edge) the proper move of the maximizer by marking one of the root's outgoing arcs.



iii. Draw the tree after doing α-β pruning.

Best Wishes
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