國立成功大學

111學年度碩士班招生考試試題

編　號：188

系　所：電腦與通信工程研究所

科　目：人工智慧概論

日　期：0219

節　次：第 1 節

備　註：不可使用計算機

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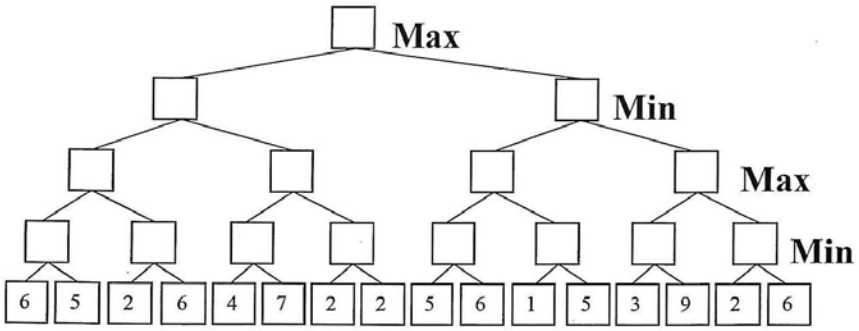
※ 考生請注意：本試題不可使用計算機。　請於答案卷(卡)作答，於本試題紙上作答者，不予計分。

1. (15%) Give one advantage of hierarchical clustering over K-means clustering, and one advantage of K-means clustering over hierarchical clustering.
2. (35%) Answer true/false and explain for each of the following questions.
   (a) Depth first search will find an optimal path with respect to the cost of the path.
   (b) Depth first search will find an optimal path with respect to the number of steps in the path.
   (c) Breadth first search will find an optimal path with respect to the cost of the path.
   (d) Breadth first search will find an optimal path with respect to the number of steps in the path.
   (e) The greedy search algorithm works by always computing the successors of the unexpanded search space node that a heuristic estimates to be closest to a goal node.
   (f) If f1(s) and f2(s) are two admissible A* heuristics, then their sum f(s) = f1(s)+f2(s) is also be admissible.
   (g) A Nash equilibrium in a game is a collection of player strategies where no single player can improve their outcome by changing their strategy.
3. (20%) Consider the game tree below in which the first player is trying to maximize her score and the number at the leaves are the values returned by a static evaluator for the board positions reached.
   (a) Fill in each box with the value returned by the standard minimax algorithm



   (b) What is the best initial move for the first player, left or right? Why?
4. (15%) List three potential advantages of using a random forest classifier over a decision tree classifier.
5. (15%) List three strategies that help reduce overfitting in decision trees?