**Midterm questions**

1. What are main tasks of the artificial intelligence?
2. What is a rational agent? Give an example of the specific work of the rational agent.
3. What is the Depth-first search algorithm? Describe its advantages and disadvantages.
4. Describe rational and irrational agents. Give examples of these agents.
5. Describe how an agent interacts with the environments. You also need to focus on sensors and actuators.
6. Write down a program in Prolog that finds the result of the following equation Z=(X+2\*Y)/ln(X) for input numbers X and Y. Do not forget to check for allowable values.
7. Write down a program in Prolog that finds the result of the following equation Z=(X-Y) (Y+X) / (2\*X - Y) for input numbers X and Y. Do not forget to check for allowable values.
8. What are main parts of the artificial intelligence? (5 points)

* Machine learning
* Computer vision
* Applications development
* Natural language processing

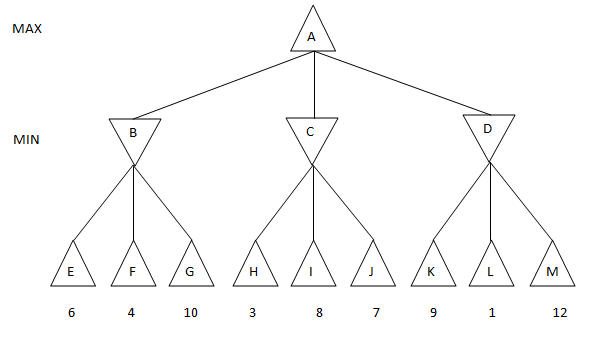
1. What a search strategy are we going to use if the search space is represented by search trees, and a wanted object is located in upper levels? (5 points)

* Heuristic search
* Backtracking search
* Breadth-first search
* Depth-first search

1. What a search strategy are we going to use if the search space is represented by a graph of roads with the distance between nodes? (5 points)

* Uniform cost search
* Breadth-first search
* Backtracking search
* Depth-first search

1. What will be a value of the root node if we have the following minimax problem (10 points)?



* 7
* 1
* 4
* 6

1. What is not a feature of a rational agent? (5 points)

* Sensors
* Actuators
* Restoration
* Performance measure

1. What is a specific feature of a rational agent? (5 points)

* A sequence of actions that can be executed
* A sequence of actions that leads to the final goal
* A sequence of actions that minimizes the time required to complete the task
* A sequence of actions that maximizes the performance measure

1. What a search strategy are we going to use if the search space is represented by search trees, and a wanted object is located in lower levels? (5 points)

* Backgammon
* Heuristic search
* Depth-first search
* Uniform cost search

1. Use the breadth-first and the depth-first search to find a node (10) in this tree (10 points)

