CT2 QP set3 - There are important questions in it

Artificial Intelligence (SRM Institute of Science and Technology)

CT2 QUESTION PAPER -ARTIFICIAL INTELLIGENCE

1. Why game playing is mapped under adversarial search Methods?

2. State and explain the problems faced in Hill Climbing Algorithm.
3. Compare BFS,DFS based on its Algorithmic properties.
4. List the limitations of prepositional logic and explain how it is solved by using predicate logic.
5. Solve the following
   A. Convert the sentence into predicate logic
      a) Nobody likes everyone
   B. Unify P[(Boy(Ram),Girl(Sita))] ,Q (X,X)
   C. Rose is the mother of John,John is the father of Joshua Write a rule to find the grandmother of Joshua using First order logic.

6. Ignore Negativity and Be cool headed.
   If you ignore negativity you can be happy.
   If you are cool headed you can be happy.
   Prove that the above statements can satisfy the query **Happy** using Resolution.

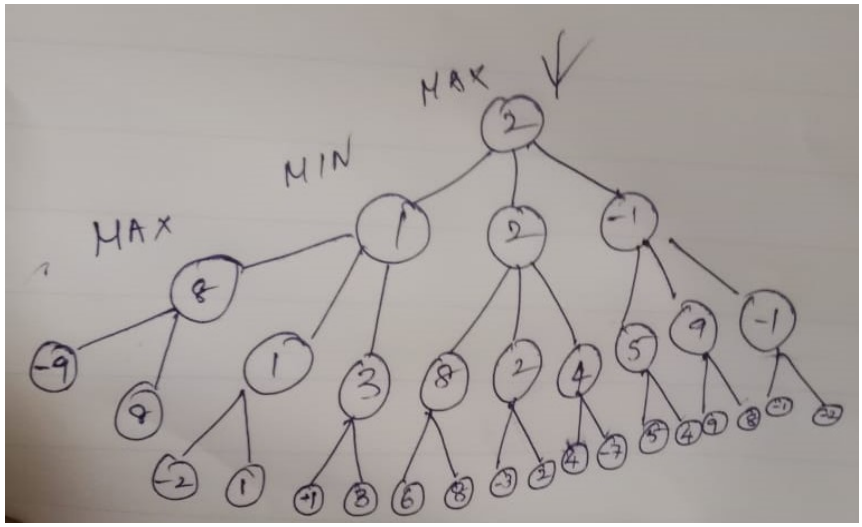
7. How can you minimize the actual search space in Min Max Algorithm and explain the required condition for the same?

8. Find the shortest path using A* Algorithm and list the order of the obstacles the Initial State(dog) passed through in order to reach the Goal State(Bone)

Pole G=3.5 H=6	Rope G=3.8 H=5	**Bone** H=0 G=3
Stand G=6 H=5	Pebbles G=4 H=8	Horn G=3 H=5.5
Stick G=2 H=6	Restricted Lane G=1 H=6	Hurdles G=1 H=6.5
Dog	Blocked	Garden G=5 H=9

9. Consider you have an application which has many features,how will you select the most important features for predicting the target variable.Suggest a Suitable algorithm,inspired from biological evolution and its selection procedures.

10.Find the Value of Root Node using Min Max Algorithm from the tree given below(Assume Root Node as Max Player)



Multiple Choice Question

1.Which Informed Algorithm Search Algorithm doesn't backtrack and it depends only on the current and the upcoming states?
A.A* Algorithm
B.AO* Algorithm
C.Hill Climbing Algorithm
D.Steepest Ascent Hill Climbing

2. Which of the following can act as an admissible heuristic for 8 puzzle problem? **(Checkbox)**

A. Manhattan Distance
B. Based on the number of tiles Misplacement
C. Sum of permutation Inversions
D.Euclidean Distance

3.How does a Informed search technique imbibed Model differs from a simple reflex model?

A. Searching thinks only about the current action.
B. Resembles reflex model to develop a sequence of actions iteratively without reasoning.
C. Generating and reasoning out the consequences of sequence of actions.
D. Building a huge look up table for listing out all possible configurations.

4.Local beam search with n number of nodes such that n=1 and n=infinity resembles

A. Depth First Search and Hill Climbing
B. Breadth First Search and Depth First Search
C. Hill Climbing and Breadth First Search
D. Hill Climbing and Depth First Search

5. In A* Algorithm,the states though its seen but still in hold is called

A. Explored
B. Unexplored
C. Frontier
D. Closed

6. A Search problem after finding optimal solution using Uniform cost search, if we add a positive constant to each step does the obtained path will still be optimal?

A. Yes the obtained path will still be optimal.
B. Adding step cost doesn't have any change in the solution.
C. Solution may/may not vary from the obtained one.
D. Yes the newly obtained path will be optimal.

7. If the goal state is in the level 1 of the state space diagram which type of search Algorithms are preferred **(check box)**

A. BFS
B. DFS
C. DLS
D. IDS

8. A Birectional search should be chosen as a choice under which circumstances **(checkbox)**

A. Can Perform Parallel Search
B. Goal state should be known
C. Requires minimum run time and space
D. When completeness is not required

9. Let A be an initial Solution A' be the next neighbour solution which is accepted with the probability of e^-(ΔE/T) ,e represents the energy,T the temperature of the system indicates **(check box)**

A. Acceptance of Neighbouring Solution.
B. Replacing the Existing one with the Neighbouring Solution.
C. Accepting the Neighbouring solution even if it is a bad move.
D. Acceptance of Neighbouring solution might lead to global Maxima.

10. Consider two solutions S1=101100 and s2=101111 and a random choice of 4 and 5 is chosen as cross over points then the solution S1,S2 after crossover will be

A. S1=111101 and S2=100111
B. S1=101101 and S2=101011
C. **S1=101101 and S2=100111**
D. S1=101101 and S2=101011

11. Building a knowledge base that can add new information to lead the inferences in promising direction and creating such representational structure to develop new structures are called

A. Inferential Efficiency and Representational Adequacy
B. Inferential Efficiency and Inferential Adequacy
C. Inferential Adequacy and Acquisitioned efficiency
D. Acquisitioned efficiency and Inferential Adequacy

12.Which type of logic uses truth values and other type of values **(Check box)**

A. First order logic
B. Prepositional Logic
C. Fuzzy Logic

D. Single value Logic

13.How AO* is different from A* Algorithm **(Check box)**

A. AO* has combination of solutions(OR-AND) and searches for optimal solution

B. It has a single and the best solution with admissible heuristics.
C. It has combination of solutions (OR-AND) and doesn't guarantee optimal solution.
D. **Once it finds a solution it doesn't search for other solutions**.

14. Consider the statements given below and state for which value of X and Y the Inference Rule Angry will be true?

loves(Rahul, Riya).
loves(Sam, meera).
loves(Rohit, Riya).
loves(Riya, Rohit).
loves(Rani,Raja).

Angry(X, Y) :-
loves(X, Z),
loves(Y, Z).

A. X=Rohit ;Y=Riya
B. X=Riya ;Y=Rahul
C. X=Sam;Y=Meera
D. X=Rahul;Y=Rohit

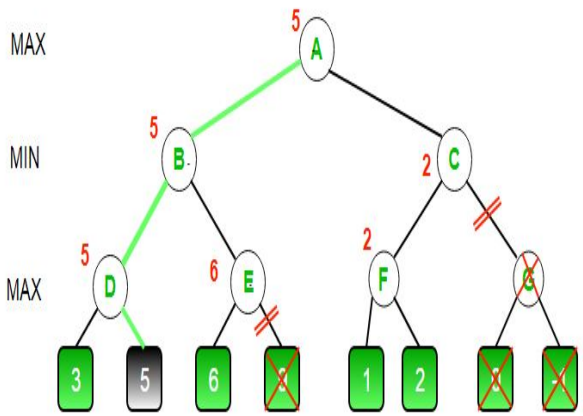
15. Consider the representations in Predicate Logic
BrotherOf(Ramkey) and IsEligible(24) what type of statements are these

A. First one is function and second one is Predicate
B. First one is Variable and second one is Function
C. First one is logical value and second one is Function
D. First one is Recursive function and second one is Predicate

16. Rohan and Ankit are registering for the upcoming new semester. They both have the option to choose either a ML course or a DL course. They just met each other and didn't have time to discuss about the course options. If both enroll for the same course, they will benefit from the opportunity to study for the exams together. However, if they choose different courses, neither of them will get any benefit.This stratergy in game theory is called

A. Nash Equillibrium
B. Multiple Nash Equillibria
C. Zero Sum Stratergy
D. Mixed Stratergy

17. Pruning at the Node C and Node E is called as



A. Alpha Pruning ,Beta Pruning
B. **Beta Pruning,Alpha Pruning**
C. Pruning,Cutoff
D. Layoff,Pruning

18.Best First Search is a search Algorithm that depends on **(Check box)**

A. **Greedy Approach**
B. Heuristics & Distance
C. Only Distance
D. **Only Heuristics**

19. --------- is used for standardizing the sentences during resolution by introducing a new constant

A. String Constant
B. Plank's constant
C. **Skolem Constant**
D. Avogadro constant

20. Prepositions which can not be further divided are called as

A. **Atomic Units**
B. Sentences
C. Clauses
D. Conjunctive Normal Form