CT2 KTR set1 - There are important questions in it

18CSC305J ARTIFICIAL INTELLIGENCE
CT2

MCQs 20*1=20

1.If any search algorithm is able to generate a solution, then the search is called

a) Efficient b) Optimal c) Complete **d) Informed**

2. A parent wants to put his child in a good school. There are many schools in the city, but the parent's preference is to the one that is nearby his house, which of the following search techniques would the parent use in the selection of the school?
a) Depth first search **b)Uniformed cost search**
c)Depth limited search d) All the above

3. Which of the following search technique uses a priority queue?
a) Breath first search b)Depth first search
c)Iterative deepening d) Uniformed cost search

4.In search Technique a node / state is marked to be visited when
a) It is pruned b) Its successor are traversed
c) It is explained **d) Both b and a**

5. Your friend is in a building that has 9 flours and you want to locate him. Which search technique would you use?
a) Depth first search (b)Breadth first search
(c) Depth limited search (d)Iterative deepening

6..In uniformed search
a) Heuristic Plays a very critical role in the decision of next successor
b) There is no information about the nodes
c)The best path is selected
(d)Iterative deepening

7. which statement is highlighting the limitations in Propositional Logic

a) Cannot describe statements in terms of logical relationship
b) More expressive power
c) Negation in the statement which needs to prove
d) Decision of next successor

8. which of the following FOL is correct for this English statement "There exit a student"

a) $\forall$ student (x)
b) $\exists$ (x)
c) $\exists$ **student (x)**

d) ∃ student (x)

9. Sentences Representation is addressed as
a) Cumulative sentences
b) Atomic Sentences, Complex Sentences
c) Symbols

d)Value sentence

10.Types of Quantifiers in FOL
a) Least Quantifier
b) Unintended quantifier
c) Atomic Quantifier
d) Universal quantifier & Existential quantifier

11. Which belongs to the entities in local search Problem
a) Neighbourhood relationship
b) Inventing
c) Recursive
d) Requirement

12.Evolutionary Hill Climbing is a
a) Ridge
b) Random Mutation
c) Alpha beta pruning
d) Tabu search.

13.Inferential knowledge structure inproves
a) structure
b) Inference
c)Horn clause
d) Unification

14.Arc consistency propagates
a) Information
b) unassigned variables
c)Constraints
d)Back tracking

15.Which are coming under memory bounded heuristics category?
a)Relaxed Problem,OR graph
b)Heuristic search
c)IDA , RBFS
d)Hill climbing

16.Backtracking helps in
a) Eliminate invalid search space
b) Contains one or more constraint symbols
c)Restrict the value of a single variable

d) Making the order of values

17. Production rules system consist of
a) Predicate logic
b) Condition, action
c) Syntax
d) Symbols

18.Constraint satisfaction Problem Comprises
a) Forward Checking
b) Constraints
c)Mapping
d)Semantics

19.Which step blogs to unification algorithm?
a)FOL
b)Inference rule for quantifiers
c)Declarative and Procedural Knowledge
d)Indexing

20.Which Representation exhibits the property of ISA relationship and instance representaion?
a) Universe of discourse
b) Existential quantifiers
c)Inheritance
d)Conjunctive normal form

Three Marks Questions 10*3=30

1..List the steps in Resolution.

Ans:

1.Conversion of Facts into First order Logic (FOL)
2.Convert FOL statement into Conjunctive Normal Form
3.Negate the statement which needs to prove
4.Draw resolution graph

2. Narrate the parts of first order logic with example

Ans

- Two parts
    - Subject
    - Predicate

Example :

Reshika is a good girl

Parts of First order logic :

Subject - Reshika
Predicate - is a good girl

3. What are the Predicate Logic or First order Logic Representations?

Ans:

- Objects
- Relationship

- Unary Relationship
- N array Relationship

- Function

4.What is the state space?

Ans : A state space is the set of all possible configurations of a system . It is a useful abstraction for reasoning about the behaviour of a given system and it is widely useful in the field of artificial intelligence and game theory.

5.What is a Searching Technique?

Ans: Searching is an operation or a technique that helps to find the place of the given element or value in the list. Any search is said to be successful or unsuccessful depending upon whether the element that is being searched is found or not. Some of the standard searching technique that is being followed in the data structure are Linear search or sequential search and Binary search.

6. Can you map a greedy approach to any of the search methods discussed? Discuss with an example

Ans : Best first could allow revising the decision, whereas in the greedy algorithm, the decision is the final and not revised.

Example: A search is Best first search but it's not greedy.

A is not greedy in 'building a path 'it is fine with keeping a large set of open paths in expanding the search space towards the true shortest path.

7. Is it possible to relate any of the searching techniques in a case when any Bluetooth enabled device is looking for the other Bluetooth enabled devices?

Ans : Yes , it's Possible

Each Node act as an advertiser and scanner alternatively to find neighboring nodes. After that, source node sends a route request message to its master to find the destination. If the master does not know the destination in the above list, then the master starts to deliver the request message to any slave in its piconet using a breadth first search

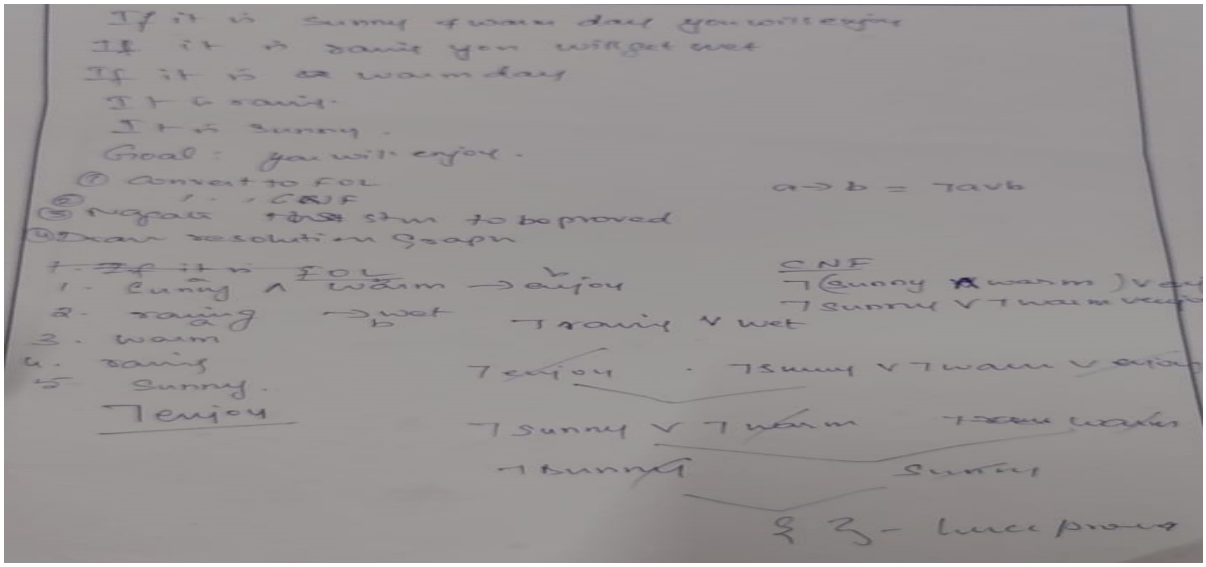
8. Solve the following example with resolution.

If it is sunny an warm day you will enjoy

1. If it is raining you will get wet
2. It is a warm day
3. It is raining
4. It is sunny

Goal : You will Enjoy

Ans:



8. How to define optimality and completeness in Uniformed Search Methods-Breadth first Search?

Ans: Completeness: BFS is complete, which means if the shallowest goal node is at some finite depth, then BFS will find a solution.

Optimality: BFS is optimal if path cost is a non-decreasing function of the depth of the node.

9. Discuss about the time and space complexities of the uninformed search techniques

Ans:

Time Complexity: Time Complexity of BFS algorithm can be obtained by the number of nodes traversed in BFS until the shallowest Node. Where the d= depth of shallowest solution and b is a node at every state.

Space Complexity: Space complexity of BFS algorithm is given by the Memory size of frontier which is $O(b^d)$.

10.Describe about Control Strategy

Ans:

Control Strategy in Artificial Intelligence scenario is a technique or strategy, tells us about which rule has to be applied next while searching for the solution of a problem within problem space. It helps us to decide which rule has to apply next without getting stuck at any point.