

1) What is principle of optimality?

A) A problem is said to satisfy the principle of optimality if the subsolutions of an optimal solution of the problem are themselves optimal solutions for their subsolutions

2) List merits and demerits of BFS

A) Merits

1) Finds the shortest path

2) It does not follow single path for long time

Demerits

1) Consumes more memory space

2) ~~It~~ It has more time complexity

3) What is multistage graph

A) A multistage graph is a directed, weighted graph in which the nodes can be divided into a set of stages

4) What is state-space tree

A) It is a tree representing all the possible states (solution or non-solution) of the problem from the root as an initial state to the leaf as a terminal state

5) What is NP-hard problem

1) A problem L is NP hard if and only if satisfiability reduces to L (satisfiability $\leq L$)

Ex: 1) set cover problem

2) vertex cover problem

3) travelling salesperson problem

1) What are drawbacks of Dynamic programming,

→ It takes a lot of memory to store calculated result of every subproblem without ensuring if stored value will be utilized or not

→ Many times, output value gets stored and never get utilized in the next subproblems while execution

2) Applications of DFS

→ used to implement the topological sorting

→ Used to find paths between two vertices

→ used to detect cycles in graph

3) Articulation point

→ An articulation point of a graph is a vertex whose removal from the graph increases its number of connected components

4) Define Back Tracking

→ It is a technique, based on algorithm to solve problem. it uses recursive calling to find the solution step by step.

- 1) What is the relation between P and NP
- P problems are subset of NP problems
 - NP problems are superset of P problems
-

2) Define memoization

→ Memoization is an optimization technique used primarily to speed up computer programs by storing the results of function calls

3) Applications of BFS

- Used to determine the shortest path and minimum spanning tree
 - Used in peer to peer networking
-