Name: Sudesh Pawar
PRN: F17111037
Class: BE Comp A

1) Compare Informed Search with uninformed search.

Ans.

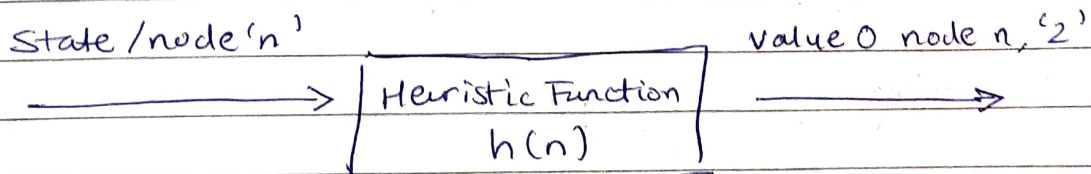| Uninformed Search	Informed Search
i) It is a searching technique which have no additional information about the distance from current state to the goal.	It has additional information about the eliminate distance from current state to the goal state.
ii) It is less efficient.	It is more efficient.
iii) It has access to only problem definition.	It has access to only heuristic function along with problem definition.
iv) It is known as blind search.	It is also called heuristic search.
v) Uses more computations.	Uses less computation.

Q.2) What is heuristic function? Explain with an example.

Ans. A heuristic function is an evaluation function to which search state is given as input & it generates the tangitle representation of the state as output.

State /node 'n'   value 0 node n, '2'

──────────────> | Heuristic Function | ──────────────>
                | h(n) |

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Heuristic function are the most common way of imparting additional knowledge of the problem state to search algorithm.

Eg: 8 Puzzle Problem.

7	2	4
5		6
1	3	8

Start good state

	1	2
3	4	5
6	7	8

Goal State

Two simple heuristic function,

h_1 =   No. of misplaced tiles.

h_2 =   Sum of distance from goal position because tiles cannot be moved diagonally.

Q.3) Under what situations would the following search algorithms be most appropriate (given eg).

Ans. Depth First Search (DFS)
  • For an unweighted graph, DFS traversal of the graph produces the minimum spanning tree of all shortest path tree.
  • Solving puzzles with only one solution such as mazes.
  • Deleting cycle in graph.

ii) Breadth first search (BFS)

- Peer-Peer Network → like BitTorrent used to find neighbouring nodes.
- In garbage collection.
- Broadcasting in Network → Packet follows BFS to search all nodes.

iii) Best First Search

- This function / algorithm with appropriate heuristic function is to determine the best combination of household appliance.