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Answer 6:

(a) Goal-based agent	Utility based agent
1.	1.
• Suppose a round about has ~~about~~ 3 exits, which one the taxi agent will take?	• Suppose out of the 3 exits, 2 exits can take you to the destination which one to take now?
• Sometimes, in addition to the current state description, the agent needs some sort of goal information that describes the situation that are desirable.	• As it is mentioned, goal based agent only tell "success" and "failure". They can't tell how much the agent is happy.
• The agent programs can combine the stored information about the results of possible actions in order to choose actions that achieve the goal.	• There is a utility function that maps a state (or sequence of states) onto a real no, which describes the approximate degree of "happiness".
• Goal based agent only tell "success" and "failure" They can not tell how much the agent is happy.	

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2. They choose an action, so that they can achieve the goal.	2. The utility based agent is useful when there are multiple possible alternatives, and an agent has to choose in order to perform the best action.
example :- In the case of a round about having 3 exits, goal-based agent can choose any of the three where the goal is achieved.	example :- But here in this case (i.e of a round about with 3 exits) utility based agent choose the best possible action to reach the goal.

(4)

Answer 6:

(b)

Hill climbing search.	Iterative deepening search
→ It is informed search. It had additional information about the goal.	→ It is uniformed search It has no information other than problem definition.
→ It is a local search algorithm and checks only the immediate neighbours & selects the most promising node from them.	→ It performs depth-first search upto a certain 'depth limit' and keeps increasing it after each iteration.
→ It stops if there are no successors states with better values than the current state.	→ It stops if goal node is found or when all the possibilities (depth) are executed/exhausted.
→ It may fail to find a solution due to local maximum, plateau or ridge	→ It always find solution if solution exists.

(c)

Best first search	Depth first search
→ It is informed search strategy - it has additional information available (about the goal)	→ It is uninformed search strategy uses only the information available in the problem definition

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→ It uses an evaluation function $f(n)$.	→ It does not uses any evaluation functions.
→ It selects the node which has lowest value of $f(n)$ & depending on the objective of the problem.	→ It expands deepest unexpanded node.

(d)

Knowledge based systems	Expert systems.
→ It uses reasons and a knowledge base to solve complex problems.	→ It emulates decision-making ability of a human expert.
→ Here the information is not from domain expert.	→ It is a special type of KBS in which the information in knowledge base is obtained from domain expert.
→ It is divided into logic, frames, Rules or Semantic networks for knowledge representation.	→ It is divided into two subsystems: the knowledge base and inference engine (rule interpreter).
→ It represents knowledge in a declarative way.	→ It represents knowledge as if then rules. Example :- MYCIN System.

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(e)

Substitution	Unification
→ A substitution is a finite set of the form $\{t_1/v_1, t_2/v_2, \ldots t_n/v_n\}$ where every v_i is different from term t_i and no two elements in the set have the same variable after the stroke symbol	→ It is a process of determining and applying a certain substitution to a set of expressions in order to make them identical.
→ It does not require disagreement set.	→ It requires a notion of disagreement set.
→ There is no predefined goal, substitution is applied to 'unify' terms and formulae.	→ The goal is to find a most general unifier (m.g.u).

(f)

Semantics	Pragmatics
→ It is the study of words and their meanings in a language	→ It is study of words and their meaning in a language with concern to their context
→ It focuses mainly on the significance of the meaning of words in literal sense.	→ It additionally process on the meaning according to the context & their inferred meanings as well.

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→ So basically it doesn't consider the context and focuses on meaning of language.	→ It considers the content and focuses on the language use.
→ It is narrow compared to pragmatics ex :- watch(I, terrapin) It can be "I watched the terrapin" or "The terrapin was watched by me"	→ It is broader field as compared to semantics ex :- Could you turn in your exam now (command) Could you finish the exam? (Question/command)
(8) Problem solving using search	Problem solving using Planning
→ It searches the state space of possible actions, starting from initial state.	→ It involves tasks of coming up with a sequence of actions that will achieve a goal component of planning system.
→ In this the problem is solved in order. It follows any path that it believes will lead it to goal state - not subgoal state.	→ The planner does not have to solve the problem in order - it can suggest actions to solve any subgoals at any time
→ There is no subgoaling, so problem is not divided into chunks	→ The planner assumes that most part of the world are independent so they can be stripped apart & solve individually