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TE comps A.

Postlab-6.

Q.1) Difference between A* and AO*

A*	AO*
1.) Not designed for handling changes in the environment.	1.) Specifically designed to adapt to changes without initiating a new search.
2.) Primarily uses AND operation considering one path at a time.	2) Uses both OR and AND operations exploring multiple paths simultaneously.
3) Generally more resource efficient, explores fewer nodes.	3) May explore more nodes due to adaptability potentially requiring more computational resources.
4) Requires a complete restart of the search after an environmental change.	4) Eliminates the need for a full restart, saving time and computational resources when changes occur.
5) May struggle in environments subject to frequent alterations.	5) Handles changes seamlessly, ensuring that plans as the environment evolves

Q.2) Why AO* algorithm only works when heuristic values are underestimated?

1) Optimistic Bias: AO* algorithm relies on the principle of optimistic bias. Understanding heuristic values encourages an optimistic outlook on the remaining cost to reach the goal, guiding the search towards promising areas of the search space.

2) Maintaining guidance: It ensures the search remains guided towards the goal, preventing aimless wandering in the search ~~place~~ space.

3) Avoiding premature termination: prevents premature termination of the search by maintaining interest in exploring the entire space thoroughly.

4) Handling dynamic environments: Allows for effective adaption in dynamic environments by adjusting estimates based on encountered costs.

5) Optimality guarantee: While not guaranteeing optimality, underestimating heuristics often leads to better performance and a higher likelihood of finding the optimal solution by focusing on promising paths while allowing exploration of alternatives.