

MSDS - Optimization

Module 4

Sr. No.	Questions
1	Dive deep into how a cloud service provider, with data centers worldwide, might reformulate the warehouse problem to optimize data storage and distribution, considering redundancy, latency requirements, and energy costs.
2	In the dynamic world of fashion e-commerce, elucidate how a platform might employ network analysis to optimize global supply chains, ensuring timely delivery of trending products while navigating customs and regional demands.
3	Given a complex aerospace project, explore how engineers might utilize the knapsack problem to determine which components to include in a spacecraft, ensuring maximum functionality while adhering to strict weight constraints.
4	For a multinational hotel chain, detail how they might approach the assignment problem to allocate staff across global properties, considering language skills, expertise areas, and cultural nuances.
5	In a rapidly evolving disease outbreak, how might global health organizations use linear programming to determine the distribution of medicines and vaccines, factoring in affected populations, logistical challenges, and resource limitations?
6	Elaborate on a scenario where a global automotive company employs network analysis to optimize its supply chain for electric vehicle parts, ensuring timely assembly while factoring in scarce battery materials and regional regulations.
7	Dive deep into how a marine conservation agency might tackle the knapsack problem to allocate limited funding to various preservation projects, ensuring the maximum ecological impact and species protection.
8	For an international film festival, explain how organizers might navigate the assignment problem to schedule screenings, considering venue capacities, film lengths, and anticipated audience interests.
9	In the dynamic airspace above major cities, how might traffic controllers apply linear programming to manage drone flight paths, ensuring efficient deliveries while preventing collisions and adhering to privacy regulations?
10	Given a sprawling university campus, detail how administrators might employ the warehouse problem to optimize the placement of various facilities, ensuring student accessibility while considering land costs and zoning regulations.