

1. What is optimization?

👉 Optimization is the process of finding the best solution (maximum or minimum) from all feasible solutions under given constraints.

2. What is an objective function?

👉 It is a mathematical function that represents the goal of the problem (maximize profit or minimize cost).

3. Define decision variables.

👉 Decision variables are the unknown quantities whose values are to be determined.

4. What are constraints?

👉 Constraints are the limitations or restrictions on decision variables, usually expressed as equations or inequalities.

5. What is a feasible solution?

👉 A feasible solution satisfies all the constraints of the problem.

6. What is an optimal solution?

👉 The optimal solution is the best feasible solution that maximizes or minimizes the objective function.

7. What is linear optimization?

👉 Optimization where the objective function and constraints are linear.

8. What is non-linear optimization?

👉 Optimization where the objective function or constraints are non-linear.

9. Differentiate between constrained and unconstrained optimization.



Constrained: Has restrictions

Unconstrained: No restrictions

10. What is discrete optimization?

👉 Optimization where variables take integer (whole number) values only.

11. What is continuous optimization?

👉 Optimization where variables can take any real values.

12. What is model formulation?

👉 It is the process of converting a real-world problem into a mathematical model.

13. List steps in model formulation.



Understand the problem

Identify variables

Form objective function

Identify constraints

Write the model

14. What is a mathematical model?

👉 A mathematical model is a representation of a real problem using equations and variables.

15. What is multi-objective optimization?

👉 Optimization involving more than one objective function.

16. What is static optimization?

👉 Optimization where parameters are fixed and do not change.

17. What is dynamic optimization?

👉 Optimization where parameters change

over time.

18. What is the art of modeling?

👉 It is the skill of simplifying real-world problems into effective mathematical models.

19. What are characteristics of a good model?



Simple

Accurate

Flexible

Efficient

20. Why is modeling important?

👉 Modeling helps in analyzing, understanding, and solving real-world problems effectively