



OPERATION RESEARCH FOR MANAGERS

PAPER CODE – C 14 SEMESTER – 6

SHORT ANSWER TYPE OF QUESTIONS (3 MARKS)

1. What is Operation Research (OR)?
2. What are the objectives of OR?
3. Discuss the scope of OR in business.
4. How is OR used in decision-making processes?
5. Provide examples of OR applications in business.
6. Explain the addition and multiplication of matrices.
7. What is a sub-matrix?
8. Discuss the important properties of determinants.
9. How is the rank of a matrix determined?
10. Explain the formulation of LP problems.
11. How are LP problems solved graphically?
12. What are the special cases in LP solutions?
13. Define infeasibility in LP problems.
14. What are slack and surplus variables?
15. Discuss the special cases in simplex method solutions.
16. Define degeneracy in simplex method.
17. Explain how the simplex method handles unbounded solutions.
18. Define critical path in network analysis.
19. What is float in network analysis?
20. Differentiate between total float, free float, and independent float.
21. Explain the concept of crashing in project management.
22. How is the probability of project completion calculated in PERT?
23. Discuss the significance of PERT in project management.
24. What are the key components of a PERT chart?
25. Provide examples of situations where PERT is applicable.
26. . What is PERT?
27. How is a network diagram constructed?
28. Describe the simplex method.
29. What is linear programming (LP)?
30. Define a matrix.



LONG ANSWER TYPE OF QUESTION BASED ON OPERATION RESEARCH (15 MARKS)

1. What are the basics of Operation Research (OR)? Discuss its significance in decision-making processes in business.
 2. Explain the objectives of Operation Research and how they are achieved in real-world applications.
 3. Discuss the scope of Operation Research in various sectors of business and industry.
 4. How is Operation Research used to optimize resources and improve efficiency in business operations?
 5. Provide examples of real-world problems where Operation Research techniques can be applied effectively.
6. Define matrices and determinants. Explain their importance in mathematics and various fields of science.
7. Discuss the addition and multiplication of matrices, along with their properties and applications.
 8. Explain the concept of sub-matrix and its relevance in matrix operations.
 9. Discuss the properties of determinants and their significance in solving linear equations and systems.
 10. Explain the rank of a matrix and its relationship with determinant properties.
 11. Define Linear Programming (LP) and discuss its applications in optimization problems.
 12. Explain the formulation of LP problems and the process of converting real-world problems into mathematical models.
 13. Discuss the graphical solutions of LP problems and how they are interpreted in decision-making.
 14. Explain the special cases encountered in LP solutions, such as multiple optimal solutions, infeasibility, and unboundedness.
 15. Provide examples of real-world problems solved using graphical methods of LP.
 16. Introduce the simplex method and its significance in solving LP problems efficiently.
 17. Define slack and surplus variables in the context of LP solutions and explain their roles.
 18. Discuss the special cases encountered in simplex method solutions, including multiple optimal solutions, infeasibility, degeneracy, and unboundedness.



Yogoda Satsanga Mahavidyalaya

(Established in 1967)

NAAC Accredited B++ (CGPA 2.89)

Affiliated to Ranchi University & registered under 2 (F) & 12 (B) of UGC Act



19. Explain how the simplex method handles degeneracy and its implications for solution quality.
20. Provide a step-by-step illustration of the simplex method applied to a real-world LP problem.
21. Describe the process of constructing a network diagram and its applications in project management.
22. Define critical path in network analysis and discuss its importance in project scheduling.
23. Explain float and slack analysis in network diagrams, including total float, free float, and independent float.
24. Discuss the concept of crashing in project management and how it affects project completion time.
25. Explain the Probability of Project Completion (PPC) in PERT and its calculation methods.