MATRICES & LPP TEST PAPER

1. Find the inverse of A = $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ (2M)

2. Find X, if AX = B where
   A = $\begin{bmatrix} 1 & 2 & 3 \\ -1 & 1 & 2 \\ 1 & 2 & 4 \end{bmatrix}$ & B = $\begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ (4M)

3. If three numbers are added, their sum is '2'. If 2 times the second number is subtracted from the sum of first and third number we get '8' and if three times the first number is added to the sum of second and third number we get '4'. Find the numbers using matrices. (4M)

4. Solve the following equations by the method of inversion
   $x - y + z = 4$, $2x + y - 3z = 0$, $x + y + z = 2$. (4M)

5. If A = $\begin{bmatrix} 1 & 1 \\ 1 & 2 \end{bmatrix}$, B = $\begin{bmatrix} 4 & 1 \\ 3 & 1 \end{bmatrix}$ & C = $\begin{bmatrix} 24 & 7 \\ 31 & 9 \end{bmatrix}$ then find matrix X such that AXB = C (4M)

6. Find the inverse of A = $\begin{bmatrix} 1 & 0 & 1 \\ 0 & 2 & 3 \\ 1 & 2 & 4 \end{bmatrix}$ by elementary column transformations. (3M)

7. Find the inverse of A = $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 1 & 5 \\ 2 & 4 & 7 \end{bmatrix}$ by elementary row transformations. (3M)

8. Solve the following L.P.P.
   Maximize z = 6x + 10y
   subject to 3x + 5y ≤ 10, 5x + 3y ≤ 15, x ≥ 0, y ≥ 0 (4M)

9. Solve the following L.P.P
   Minimize : z = 8x + 10y subject to 2x + y ≥ 7, 2x + 3y ≥ 15,
   y ≥ 2, x ≥ 0, y ≥ 0. (4M)

10. A doctor has prescribed two different units of foods A and B to form a weekly diet for a sick person. The minimum requirements of fats, carbohydrates and proteins are 18, 28, 14 units respectively. One unit of food A has 4 units of fats. 14 units of carbohydrates and 8 units of protein. One unit of food B has 6 units of fat, 12 units of carbohydrates and 8 units of protein. The price of food A is 4.5 per unit and that of food B is 3.5 per unit. Form the L.P.P. so that the sick person's diet meets the requirements at a minimum cost. (2M)

11. A factory produced two types of chemicals A and B. The following table gives the units of ingredients P and Q (per kg) of chemicals A and B as well as minimum requirements of P and Q and also cost per kg. chemicals A and B :

CHEMICALS IN UNITS/ Ingredients per kg.	A (x)	B (y)	Minimum requirements in units
P	1	2	80
Q	3	1	75
Cost (in Rs.)	4	6	-

Find the number of units of chemicals A and B should be produced so as to minimize the cost. (4M)

12. Find the feasible solution of the following inequations graphically.
    0 ≤ x ≤ 3, 0 ≤ y ≤ 3, x + y ≤ 5, 2x + y ≥ 4 (2M)

Matrices And Linear Programming With Applications

Yicheng Fang

Matrices And Linear Programming With Applications:

Matrices and Linear Programming with Applications Toshinori Munakata,1979 **Solutions Manual for Matrices and Linear Programming with Applications** Toshinori Munakata,1979 *Matrices in Control Theory* Stephen Barnett,1971

Linear Programming S. Vajda,2012-12-06 This text is based on a course of about 16 hours lectures to students of mathematics statistics and or operational research It is intended to introduce readers to the very wide range of applicability of linear programming covering problems of manage ment administration transportation and a number of other uses which are mentioned in their context The emphasis is on numerical algorithms which are illustrated by examples of such modest size that the solutions can be obtained using pen and paper It is clear that these methods if applied to larger problems can also be carried out on automatic electronic computers Commercially available computer packages are in fact mainly based on algorithms explained in this book The author is convinced that the user of these algorithms ought to be knowledgeable about the underlying theory Therefore this volume is not merely addressed to the practitioner but also to the mathematician who is interested in relatively new developments in algebraic theory and in some combinatorial theory as well The chapters on duality and on flow in networks are particularly directed towards this aim and they contain theorems which might not be directly relevant to methods of computation The application of the concept of duality to the theory of games is of historical interest It is hoped that the figures which illustrate the results will be found illuminating by readers with active geometrical imagination **Linear Algebra with Applications** Hugh G. Campbell,1971 Linear Algebra Ii: Advanced Topics For Applications Kazuo Murota,Masaaki Sugihara,2022-07-28 This is the second volume of the two volume book on linear algebra in the University of Tokyo UTokyo Engineering Course The objective of this second volume is to branch out from the standard mathematical results presented in the first volume to illustrate useful specific topics pertaining to engineering applications While linear algebra is primarily concerned with systems of equations and eigenvalue problems for matrices and vectors with real or complex entries this volumes covers other topics such as matrices and graphs nonnegative matrices systems of linear inequalities integer matrices polynomial matrices generalized inverses and group representation theory The chapters are for the most part independent of each other and can be read in any order according to the reader s interest The main objective of this book is to present the mathematical aspects of linear algebraic methods for engineering that will potentially be effective in various application areas **Representations for the Generalized Inverse of Matrices with Applications in Linear Programming** Randall Eugene Cline,1963 *Scientific and Technical Aerospace Reports* ,1979

Introduction to Linear Programming Richard Darst,2020-08-26 Stressing the use of several software packages based on simplex method variations this text teaches linear programming s four phases through actual practice It shows how to decide whether LP models should be applied set up appropriate models use software to solve them and examine solutions to a **Matrices In Control Theory -with Applications To Linear Programming-** Barnett S., **SIAM Journal on**

Matrix Analysis and Applications ,1998   *Linear and Nonlinear Programming with Maple* Paul E. Fishback,2009-12-09 Helps Students Understand Mathematical Programming Principles and Solve Real World ApplicationsSupplies enough mathematical rigor yet accessible enough for undergraduatesIntegrating a hands on learning approach a strong linear algebra focus Maple software and real world applications Linear and Nonlinear Programming with Maple An Interactive
    Applications of Linear Algebra Chris Rorres,Howard Anton,1979   **Technical Abstract Bulletin** Defense Documentation Center (U.S.),1964   *U.S. Government Research Reports* ,1964   **Elementary Linear Programming with Applications** Bernard Kolman,Robert E. Beck,2014-05-10 Elementary Linear Programming with Applications presents a survey of the basic ideas in linear programming and related areas It also provides students with some of the tools used in solving difficult problems which will prove useful in their professional career The text is comprised of six chapters The Prologue gives a brief survey of operations research and discusses the different steps in solving an operations research problem Chapter 0 gives a quick review of the necessary linear algebra Chapter 1 deals with the basic necessary geometric ideas in Rn Chapter 2 introduces linear programming with examples of the problems to be considered and presents the simplex method as an algorithm for solving linear programming problems Chapter 3 covers further topics in linear programming including duality theory and sensitivity analysis Chapter 4 presents an introduction to integer programming Chapter 5 covers a few of the more important topics in network flows Students of business engineering computer science and mathematics will find the book very useful   *The Bulletin of Mathematics Books* ,1992   Orthogonal Sets and Polar Methods in Linear Algebra Enrique Castillo,Angel Cobo,Francisco Jubete,Rosa Eva Pruneda,1999-02-22 A unique applied approach to problem solving in linear algebra Departing from the standard methods of analysis this unique book presents methodologies and algorithms based on the concept of orthogonality and demonstrates their application to both standard and novel problems in linear algebra Covering basic theory of linear systems linear inequalities and linear programming it focuses on elegant computationally simple solutions to real world physical economic and engineering problems The authors clearly explain the reasons behind the analysis of different structures and concepts and use numerous illustrative examples to correlate the mathematical models to the reality they represent Readers are given precise guidelines for Checking the equivalence of two systems Solving a system in certain selected variables Modifying systems of equations Solving linear systems of inequalities Using the new exterior point method Modifying a linear programming problem With few prerequisites but with plenty of figures and tables end of chapter exercises as well as Java and Mathematica programs available from the authors Web site this is an invaluable text reference for mathematicians engineers applied scientists and graduate students in mathematics   An Introduction to Matrices, Vectors, and Linear Programming Hugh G. Campbell,1965   Theory and Application of Mathematical Programming Gautam Mitra,1976 What is mathematical programming Equivalent linear programming problems and the simplex method Some ancillary features of the simplex method The revised simplex method

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