

Mathematical programming formulations and metaheuristics for biological sample transportation problems in healthcare

Mario Benini ^{*}

Paolo Detti [†]

Garazi Zabalo Manrique de Lara [‡]

Abstract

In this paper, a problem arising from a real-world healthcare application is addressed, dealing with the transportation of biological samples from blood draw centers to a main laboratory. The problem can be modeled as a Vehicle Routing Problem with time-windows and samples lifetime constraints, in which transfers and multiple visits at specific nodes (i.e., the spokes) are allowed to get extra lifetimes of the samples. Mixed Integer Linear Programming formulations and *Hybrid Adaptive Large Neighborhood Search (H-ALNS)* algorithms have been developed for the

^{*}Department of Information Engineering and Mathematics, University of Siena, Via Roma, 56, 53100 Siena, Italy.
e-mail: mbenini@diism.unisi.it

[†]Department of Information Engineering and Mathematics, University of Siena, Via Roma, 56, 53100 Siena, Italy.
e-mail: detti@diu.unisi.it

[‡]Department of Information Engineering and Mathematics, University of Siena, Via Roma, 56, 53100 Siena, Italy.
e-mail: garazizml@gmail.com

Mathematical Problems In The Biological

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Table of Contents Mathematical Problems In The Biological

1. Understanding the eBook Mathematical Problems In The Biological
 - The Rise of Digital Reading Mathematical Problems In The Biological
 - Advantages of eBooks Over Traditional Books
2. Identifying Mathematical Problems In The Biological
 - Exploring Different Genres
 - Considering Fiction vs. Non-Fiction
 - Determining Your Reading Goals
3. Choosing the Right eBook Platform
 - Popular eBook Platforms
 - Features to Look for in an Mathematical Problems In The Biological
 - User-Friendly Interface
4. Exploring eBook Recommendations from Mathematical Problems In The Biological
 - Personalized Recommendations
 - Mathematical Problems In The Biological User Reviews and Ratings
 - Mathematical Problems In The Biological and Bestseller Lists

5. Accessing Mathematical Problems In The Biological Free and Paid eBooks
 - Mathematical Problems In The Biological Public Domain eBooks
 - Mathematical Problems In The Biological eBook Subscription Services
 - Mathematical Problems In The Biological Budget-Friendly Options
6. Navigating Mathematical Problems In The Biological eBook Formats
 - ePub, PDF, MOBI, and More
 - Mathematical Problems In The Biological Compatibility with Devices
 - Mathematical Problems In The Biological Enhanced eBook Features
7. Enhancing Your Reading Experience
 - Adjustable Fonts and Text Sizes of Mathematical Problems In The Biological
 - Highlighting and Note-Taking Mathematical Problems In The Biological
 - Interactive Elements Mathematical Problems In The Biological
8. Staying Engaged with Mathematical Problems In The Biological
 - Joining Online Reading Communities
 - Participating in Virtual Book Clubs
 - Following Authors and Publishers Mathematical Problems In The Biological
9. Balancing eBooks and Physical Books Mathematical Problems In The Biological
 - Benefits of a Digital Library
 - Creating a Diverse Reading Collection Mathematical Problems In The Biological
10. Overcoming Reading Challenges
 - Dealing with Digital Eye Strain
 - Minimizing Distractions
 - Managing Screen Time
11. Cultivating a Reading Routine Mathematical Problems In The Biological
 - Setting Reading Goals Mathematical Problems In The Biological
 - Carving Out Dedicated Reading Time
12. Sourcing Reliable Information of Mathematical Problems In The Biological
 - Fact-Checking eBook Content of Mathematical Problems In The Biological
 - Distinguishing Credible Sources
13. Promoting Lifelong Learning

- Utilizing eBooks for Skill Development
- Exploring Educational eBooks

14. Embracing eBook Trends

- Integration of Multimedia Elements
- Interactive and Gamified eBooks

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