# Contents

<table>
<thead>
<tr>
<th>Description</th>
<th>Page No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acknowledgement</td>
<td>i</td>
</tr>
<tr>
<td>Preface</td>
<td>iv</td>
</tr>
<tr>
<td>Contents</td>
<td>vii</td>
</tr>
</tbody>
</table>

## Chapter-1. INTRODUCTION

1.1 INTRODUCTION  
1.2 A BRIEF REVIEW OF GENERAL RELATIVITY  
1.3 COSMOLOGY  
1.4 STRING COSMOLOGY  
1.5 THE FIELD EQUATIONS  
1.6 REFERENCES

## Chapter-2. AN EXACT STATIC SOLUTION OF EINSTEIN'S FIELD EQUATIONS USING COSMOLOGICAL CONSTANT \( \Lambda \) WITH SPECIFIED EQUATION OF STATE

2.1 INTRODUCTION  
2.2 THE FIELD EQUATIONS  
2.3 SOLUTION OF THE FIELD EQUATIONS  
2.4 SOLUTION FOR THE PERFECT FLUID CORE  
2.5 DISCUSSION  
2.6 LIMITATION  
2.7 REFERENCES
### Chapter 3. A Non Static Cylindrically Symmetric Cosmological Model with Electromagnetic Field

3.1 Introduction 67  
3.2 The Field Equations and Their Solutions 69  
3.3 Some Physical Features 79  
   (a) The distribution in the Model  
   (b) The Doppler effect in the Model  
   (c) Newtonian analogue of force in the Model  
3.4 Discussion 91  
3.5 References 92

### Chapter 4. Investigations on Some Bianchi Type – III String Cosmological Models

[SECTION-A]

String Cosmological Model with Bulk Viscosity in General Relativity

4.1 Introduction 95  
4.2 The Field Equations and Their Solutions 97  
4.3 Discussion 109  
4.4 Summary 109
### Section B

**String Cosmological Model with Bulk Viscosity and Magnetic Field**

4.5 Introduction ........................................... 111
4.6 The Field Equations and its Solutions ............ 112
4.7 Discussion .............................................. 121
4.8 Summary .................................................. 122
4.9 References .............................................. 123

**Chapter 5. String Cosmological Model in Axially Symmetric Bianchi-I Space Time with and Without Magnetic Field**

5.1 Introduction .............................................. 126
5.2 The Field Equations .................................... 131
5.3 Solution of the Field Equations .................... 134
5.4 Discussion .............................................. 146
5.5 References .............................................. 148

**Chapter 6. A Study on Some LRS Bianchi Type–I Cosmological Models with Zero-Mass Scalar Field**

6.1 Introduction .............................................. 150
6.2 The Field Equations .................................... 153
6.3 Solution of the Field Equations .................... 155
6.4 Discussion .............................................. 162
6.5 References .............................................. 165

> Publication details ........................................ 168