CONTENTS

CHAPTER-I
INTRODUCTION

1.1 General theory of relativity 02
1.2 Alternative theories of gravitation 06
1.3 Symmetries 16
1.4 Cosmology and cosmological models 18
1.5 Bianchi space-times 21
1.6 Higher dimensional space-time 22
1.7 Cosmological constant 23
1.8 Inflationary universe 25
1.9 Zero-mass scalar field 27
1.10 Bulk viscosity 27
1.11 Electromagnetic field 30
1.12 Cosmic strings 32
1.13 Domain walls 34
1.14 Strange quark matter 35
1.15 Problems investigated 37

CHAPTER-II
ZERO-MASS SCALAR FIELD WITH BULK VISCOSITY COSMOLOGICAL SOLUTIONS IN LYRA GEOMETRY

2.1 Introduction 41
2.2 Metric and field equations 42
CHAPTER V
HIGHER DIMENSIONAL SPHERICALLY SYMMETRIC DOMAIN WALLS AND COSMIC STRINGS IN BIMETRIC THEORY

5.1 Introduction 96
5.2 Metric and field equations 97
5.3 Model with scalar meson field 97
5.4 Non-existence of domain walls 99
5.5 Massive string cosmological model 102
5.6 Conclusion 104
Appendix 105

CHAPTER VI
DOMAIN WALLS STRANGE QUARK MATTER IN EINSTEIN-ROSEN SPACE-TIME WITH COSMOLOGICAL CONSTANT AND HEAT FLOW

6.1 Introduction 110
6.2 Domain walls solutions in the Einstein-Rosen space-time 113
6.3 Physical and kinematical features 117
6.4 The expressions for particle number density and heat
Conduction 119
6.5 Conclusion 121
Appendix 123
### CHAPTER VII

**ANISOTROPIC PLANE SYMMETRIC MAGNETIZED MODEL WITH COSMOLOGICAL CONSTANT**

1. Introduction ........................................... 128
2. Metric and field equations .......................... 129
3. Solutions of the field equations ................. 132
4. Physical features of the model .................. 135
5. Conclusion ............................................. 139
6. Appendix .............................................. 140

### CHAPTER VIII

**KANTOWSKI-SACHS INFLATIONARY UNIVERSE IN GENERAL RELATIVITY**

1. Introduction ........................................... 148
2. Metric and field equations .......................... 149
3. The inflationary model ............................ 151
4. Some physical properties .......................... 153
5. Conclusion ............................................. 154
6. Appendix .............................................. 155
7. REFERENCES .......................................... 163
8. REPRINTS OF THE PUBLISHED PAPERS ......... 179