CONTENTS

Acknowledgement i
Abbreviations ii-iii
List of Plates iv
List of Tables v-vi
List of Figures vii-ix

CHAPTER-I
INTRODUCTION TO THE STUDY AREA 1-30
1.1 Introduction
1.2 Land Degradation in Coal Mining Areas
1.3 Overview of the Existing Literatures
1.4 Study Area
  1.4.1 Locational Settings
  1.4.2 Coal Reserves and its Chemical Properties
  1.4.3 History of Mining and Land-use
1.5 Objectives of the Study
1.6 Research Questions of the Study
1.7 Data Base
1.8 Methodology
1.9 Organisations of Materials

CHAPTER-II 31-95
PHYSIOGRAPHICAL CHARACTERISTICS OF JHARIA COALFIELD
2.1 Introduction
2.2 Geological Setup
2.3 Physiography and Drainage
2.4 Climate
  2.4.1 Temperature
  2.4.2 Rainfall
  2.4.3 Wind, Evapotranspiration, Cloud and Sunshine
2.5 Morphometric Analysis
  2.5.1 Stream Frequency
  2.5.2 Drainage Density
2.5.3 Drainage Texture
2.5.4 Absolute Relief
2.5.5 Relative Relief
2.5.6 Dissection Index
2.5.7 Ruggedness Index
2.5.8 Slope
2.5.9 Composite Morphometric Index
   2.5.9a How to Derive Principal Component Scores
   2.5.9b Composite Index for the Area
2.6 Conclusions

CHAPTER-III
LAND-USE STUDY OF THE JHARIA COALFIELD
3.1 Introduction
3.2 Major Land-use Influencing Factor in the Jharia Coalfield
3.3 Land-use Pattern in the Jharia Coalfield
   3.3.1 Data Used
   3.3.2 Methodology
   3.3.3 Important Land-use Categories of the Jharia Coalfield
   3.3.4 Generalised Land-use Pattern of the Jharia Coalfield
   3.3.5 Results and Discussion
   3.3.6 Land-use Changes (1992-2001)
   3.3.7 Land-use Changes (2001-2005)
   3.3.8 Land-use Changes (1992-2005)
3.4 Conclusions

CHAPTER-IV
SOIL CHARACTERISTICS OF THE JHARIA COALFIELD
4.1 Introduction
4.2 Soil Sample Collection
4.3 Laboratory Analysis
   4.3.1a Soil Relative Particle Size Study
   4.3.1b Calculations of Soil Texture and Coarseness
   4.3.1c Interpretation for Soil Texture and Coarseness
   4.3.2a Soil pH (Soil Reaction)
   4.3.2b Effect of Soil pH
   4.3.2c Estimation of Soil pH
   4.3.2d Interpretation of Soil Reaction
   4.3.3a Electrical Conductance and Total Dissolved Salt (Salinity)
   4.3.3b Estimation of EC and TDS
   4.3.3c Interpretation of EC and TDS
4.3.4a Heavy Metals
4.3.4b Estimation of Heavy Metal Concentration in Soil
4.3.4c Results and Discussion for Different Heavy Metals in the Study Areas
4.4 Chemical Index of Alteration (CIA)
4.5 Soil Degradation Index (SDI)
4.6 Conclusions

CHAPTER-V
CONCLUSIONS 210-215
REFERENCES 216-231
APPENDICES