

# CONTENTS

<i>Preface to the Second Edition</i>	<i>xi</i>
<i>Preface to the First Edition</i>	<i>xv</i>
<i>UGC Syllabus for Environmental Studies</i>	<i>xvii</i>



## **Chapter 1 Introduction**

**1**

- 1.1 General 1
- 1.2 Importance of Environmental Education 3
- 1.3 Environmental Literacy 4
- 1.4 Environmental Engineering 5
- 1.5 Environmentalism 5
- 1.6 Environmental Studies—the Subject and its Multidisciplinary Nature 8
- 1.7 Components of Environment and their Interactions 9
- 1.8 Man and the Biosphere 10
- 1.9 Impacts of Development on Environment 10
- Review Questions 15*



## **Chapter 2 Natural Resources**

**19**

- 2.1 Forest Resources 19
- 2.2 Dams 31
- 2.3 Water Resources 38
- 2.4 Food Resources 43
- 2.5 Energy Resources 52
- 2.6 Land Resources 60
- Review Questions 65*



## **Chapter 3 Ecology**

**70**

- 3.1 Ecosystem 70
- 3.2 Ecosystem-Anthroposystem Comparison 71
- 3.3 Biome and Ecosystem 72

- 3.4 Energy Flow through the Ecosystem 73
- 3.5 Ecological Succession 74
- 3.6 Food Chains and Webs 74
- 3.7 Ecological Pyramids 75
- 3.8 Biological Magnification or Biomagnification 76
- 3.9 Human versus Natural Food Chains 77
- 3.10 Biogeochemical Cycles 78
- 3.11 The Water Cycle (Hydrologic Cycle) 79
- 3.12 Carbon Cycle 79
- 3.13 Oxygen Cycle 81
- 3.14 Nitrogen Cycle 81
- 3.15 Phosphorus Cycle 82
- 3.16 Sulphur Cycle 83
- 3.17 Forest Ecosystems 84
- 3.18 Grassland Ecosystems 87
- 3.19 Aquatic Ecosystems 88
- Review Questions 91*

**Chapter 4 Biodiversity**

94

- 4.1 Introduction 94
- 4.2 Genetic Diversity 95
- 4.3 Species Diversity 95
- 4.4 Ecosystem Diversity 96
- 4.5 Value of Biodiversity 96
- 4.6 Value of Genes 101
- 4.7 Biopiracy 101
- 4.8 Biogeographical Classification of India 102
- 4.9 India as a Mega Diverse Nation 103
- 4.10 Endemic Species of India 105
- 4.11 Threats to Biodiversity 106
- 4.12 Hotspots of Biodiversity 108
- 4.13 Endangered Species of India 110
- 4.14 Conservation of Biodiversity 113
- 4.15 Genetic Engineering and Biodiversity 116
- Review Questions 118*

**Chapter 5 Environmental Pollution**

121

- 5.1 Air Pollution 121
- 5.2 Water Pollution 135
- 5.3 Soil Pollution 158
- 5.4 Marine Pollution 160

- 5.5 Noise Pollution 165
- 5.6 Thermal Pollution 168
- 5.7 Solid Waste Management 169
- 5.8 Hazardous Waste Management 187
- 5.9 Pollution Prevention 198
- 5.10 Disaster Management 201
- Review Questions 204*



## **Chapter 6 Social Issues and the Environment**

211

- 6.1 From Unsustainable to Sustainable Development 211
- 6.2 Urban Problems Related to Energy 220
- 6.3 Water Conservation 222
- 6.4 Watershed Management 227
- 6.5 Resettlement and Rehabilitation 228
- 6.6 Environmental Ethics 228
- 6.7 Acid Rain 230
- 6.8 Ozone Layer Depletion 231
- 6.9 Greenhouse Effect, Global Warming and Climate Change 237
- 6.10 Pollution Control Boards and Control Pollution Acts in India 248
- 6.11 Nuclear Hazards and Accidents 258
- 6.12 Environmental Impact Assessment 261
- 6.13 Risk Management 267
- 6.14 Precautionary Principle 268
- 6.15 Polluter-Pays Principle 269
- 6.16 The Beneficiary-Pays Principle 271
- 6.17 Role of Non Government Organizations 271
- 6.18 The ISO 14000 Series of Environmental Management Standards 272
- 6.19 Economy and Environment 277
- Review Questions 279*



## **Chapter 7 Human Population and the Environment**

284

- 7.1 Population Growth 284
- 7.2 Human Rights 292
- 7.3 Value Education 297
- 7.4 HIV/AIDS 298
- 7.5 Environment and Human Health 301
- 7.6 Family Welfare Programmes 302
- 7.7 Women and Child Welfare 306
- 7.8 Role of Information Technology in Environment and Human Health 308
- Review Questions 310*



*Contents*



**Appendix 1 International Conventions and Protocols**

**314**

Implementation of Conventions 314

Major International Environmental Conventions 315

Major International Environmental Protocols 321



**Appendix 2 Glossary**

**326**

*Index*

**339**