Contents

1. Introduction

Nomenclature; Location, Extent, Size and Shape; Boundaries; India in the Context of South and South East Asia, Geo-Political Significance of India's Location; Significance of the Indian Ocean; Historico-Political background; Post Independence Scenario; Indian Federalism; Bases of Indian Federalism; Unity in Diversity.

2. Geological Structure

Geological History of India; Structural Divisions of India; Major Rock Systems of India – Archaean System, Purana Group – Cuddapah System, Vindhyan System, Dravidian Group, Aryan Group; Gondwana System, Upper Carboniferous and Permian Systems; Triassic System, Jurassic System, Cretaceous System, Tertiary System, Middle Pleistocene and Recent System; Ice Ages in India, Volcanicity in India; Hot springs in India; Earthquakes in India, Coastline of India.

3. Physiography

Physiographic Regions; Northern Mountains – Origin and Evolution, Structure, Longitudinal Divisions, Regional Classification, Glaciers in the Himalayas; The Great Plains – Origin, Divisions; The Peninsular Plateau – Origin, Relief, Physical Divisions; Deccan Plateau, Coasts and Islands – Origin of Coasts; Physiographic Divisions of Coastal Plains; The Islands – Bay of Bengal Islands, Arabian Sea Islands, Offshore Islands; Physiographic Regions of India.

4. Drainage and Water Resources

Drainage Patterns; Himalayan Drainage – Evolution; Systems; Peninsular Drainage – Patterns, Evolution, River Systems; Functional Significance of the Drainage Systems; Surface Water Resources; Ground Water Resources; National Water Grid; The Ganga-Kaveri Link Canal, The Brahmaputra – Ganga Link, Links from the Western Ghat's Rivers to the East; National Water Policy; Irrigation Sources – Wells and Tube- wells, Canals, Tanks, Irrigation Potential, Potential Utilization; Spatial Pattern of Irrigated Area; Multi-Purpose Projects – Damodar Valley Project, Bhakra Nangal Project, Rihand Dam Project; Chambal Valley Project, Hirakud Project, Kosi Project, Gandak Project, Tungabhadra Project, Nagarjunasagar Project, Indira Gandhi Canal Project, Narmada Valley Project, Tehri Dam Project; Conservation of Water Resources. 1–15

16-31

32–50

5. Climate

Salient Features of Indian Climate; Origin of Monsoon – Thermal Concept, Dynamic Concept; Recent Theory (Jet Stream Theory); Monsoon Forecast; Weather Conditions – Cold Weather Season, Hot Dry Season, Wet Season, Season of Retreating Monsoon; Distribution of Annual Rainfall, Rainfall Incidence (Regimes); Variability of Rainfall; Droughts; Floods; Climatic Regions (Classification) – by Koeppen, Thornthwaite, Trewartha, Kendrew and Stamp, Johnson, R.L. Singh.

6. Natural Vegetation and Wild-Life

Floristic Regions; Geographical Distribution of Forests; Classification of Forests; Geographical Classification; High altitude (Alpine) Forests, Forest Produce – Major Products, Minor Forest Products; Contribution of Forests to National Economy; Problems of Indian Forestry; Deforestation; National Forest Policy; Essentials of Forest Management; Achievements under the Five Year Plans; Strategy for Forest Management and Conservation; Social Forestry; Forest Conservation; Wildlife; Biosphere Reserves.

7. Soils

Classification of Indian Soils by Schokalskaya, NATMO, RayChaudhary, Indian Council of Agricultural Research; Major Soil Types; Problems of Indian Soils – Soil Erosion, Salinity, Alkalinity and Waterlogging; Desertification, Soil Depletion; Soil Conservation; Soil Conservation through the Plans.

8. Mineral Resources

Mineral Belts; Mineral Reserves; Mineral Production; Problems of Mining Industry; Conservation of Minerals; National Mineral Policy; Classification of Minerals; Iron ore, Manganese, Copper, Bauxite, Chromite, Lead, Zinc, Gold, Silver; Non-Metallic Minerals – Limestone, Dolomite, Mica, Gypsum, Kyanite and Sillimanite, Magnesite, Steatite, Salt.

9. Energy Resources

Energy Scenario in India; Sources of Energy – Coal and Lignite, Distribution, Production, Problems of Coal Industry, Conservation; Petroleum – Exploration; Distribution, Produc-tion, Recent Developments in Oil and Gas, Imports, Refineries, Pipe Lines; Natural Gas; Electricity, Generation, Consumption; Hydro-electricity – Potential, Growth, Spatial Pattern; National Hydro-electric Power Corporation Ltd. (NHPC); North Eastern Electric Power Corporation Ltd. (NEEPCO); Thermal Electricity – Trend of Growth, Spatial Distribution; National Thermal Power Corporation Ltd. (NTPC); Atomic Energy – Progress in Nuclear Energy; Non-Conventional Energy; Energy Crisis; Energy Policies and Prospects.

107-125

126–135

136–156

10. Population

Growth of Population; Spatial Patterns of Population Growth; Distribution of Population; Density of Population; Population Composition – Sex Ratio, Age Structure; Literacy; Urbani-sation; Occupational Structure; Linguistic Composition; Linguistic States; National Language; Religious Composition; Racial Composition; Scheduled Castes Population; Scheduled Tribe Population; Migration; Population Problems, Food Problem, Malnutrition, Poverty, Unemployment, Environ-mental Degradation; Population Policy; Population – Resource Regions.

11. Urbanisation and Urban Settlements

Historical Perspective; Post Independence Era; Growth of Cities in India; Trends in Urbanisation; Growth of Urban Population by Town Size; Growth of Million Plus Cities in India; Salient Features of Indian Urbanisation. Problems Associated with Urbanisation; Urban Settlements; Functional Classification of Towns; Morphology of Towns; Functional Zones; Urban Tracts.

12. Rural Settlements

Distribution of Villages; Types of Rural Settlements; Settle-ment Patterns; Rural Settlements in the Himalayas; Rural Settlements in the Northern Plains; Rural Settlements in the Peninsula; Rural Settlements in the Coastal Plains; Functions of Rural Settlements; Morphology of Rural Settlements; House Types; Chief Features of Indian Villages.

13. Agriculture

Land use; Types of Farming; Farming Regions; Characteristics of Indian Agriculture; Agricultural Problems; Agricultural Inputs and Infrastructure; Agricultural Development through the Plans; Green Revolution; Recent Trends in Agriculture; Sustainable Agriculture; New Thrust Areas in Agriculture; The Second Green Revolution; Spatial Patterns in Indian Agriculture; Agricultural Productivity; Agricultural Efficiency; Cropping Intensity; Crop Concentration; Crop Diversification; Dry Zone Agriculture; Development Strategies; Government's Efforts.

14. Agricultural Crops

Food Crops – Rice (Paddy), Wheat, Jowar, Bajra, Maize, Barley, Pulses; Cash Crops – Sugarcane, Cotton, Jute, Tobacco, Oilseeds; Plantation Crops – Tea, Coffee, Natural Rubber, Coconut. 225–237

238–249

250–279

15. Agricultural Regions

Classifications by Randhawa, Slampa, P. Sengupta, B.L.C. Johnson, R.L. Singh, Jasbir Singh; Agro-Climatic Regions; Agro-Ecological Regions.

16. Allied Activities in Agriculture

Animal Husbandary – Cattle, Buffaloes, Dairying, White Revolution; Sheep Rearing, Sheep Development Programme, Goat Rearing; Pig Rearing, Poultry Farming; Sericulture; Pisci-culture (Fisheries), Floriculture.

17. Industrialisation and Industrial Development

The Beginning; Factors for Slow Growth; Inter-War Period; Industry on the Eve of Independence; Industrial Development in the Post-Independence Era; The Industrial Policy Resolution (1948); Critique of the Industrial Policy, 1956; Industrial Policy 1991; Critique of the New Policy; Industrial Development During the Plans; Spatial Pattern of Industrial Development; Industrial Problems.

18. Major Industries

Metallurgical Industries – Iron and Steel Industry; Aluminium Industry, Copper Industry, Lead Industry; Textile Industry – Cotton Textiles; Jute Textiles, Silk Textiles, Woollen Textiles, Synthetic Silk Textiles; Leather Industry, Engineering Industries – Heavy Mechanical Engineering Industry, Machine Tools, Electronics Industry, Information Technology Industry; Transport Equipment Industry – Automobile Industry, Locomotive, Wagon and Coach Industry, Aircraft Industry, Ship building Industry; Chemical and Allied Industries – Petrochemical Industry, Fertiliser Industry, Drugs and Pharmaceutical Industry, Plastic Industry, Cement Industry, Glass Industry, Forest Based Industries – Paper Industry, Food Industries, Sugar Industry.

19. Industrial Regions

Delimitation of Industrial Regions; Industrial Regions of India – Classification by Trewartha, Karan, A. Dasgupta, Spencer, R.L. Singh, B.N. Sinha; Major Industrial Regions, Minor Industrial Regions, Manufacturing Centres; Industrially Backward Regions/ Districts.

20. Transport

Road Transport – Distribution of Roads; Density of Roads; Classification of Roads; Recent Development in Highways; Problems of Road Transport; Freight and Passenger Traffic; Rail Transport – Growth Trends; Distribution of Railway Network, Railway Management; Traffic; Impact on National Economy; Problems and Prospects; Inland Water Transport – National Waterways; Shipping – Coastal Shipping, Ports; Air Transport – Airports and Aerodromes, Air Services; Problems of Air Transport; Competition and

308–324

325–335

336–347

348-406

407–416

Complementarity of Transport; Rail-Road Coordiation; Natural Superiority of Road Transport; Projection of Railways Against Road Competition; Transport Planning; Tourism.

21. Foreign Trade

Volume of Foreign Trade; Composition of Exports; Composition of Imports; Direction of Foreign Trade – Direction of Exports, Sources of Imports; Salient Features of India's Foreign Trade; India's Trade Policy; Export Promotion – Export Processing Zones; Special Economic Zones; Impact of W.T.O.

22. Planning and Regional Development

Concept and Parameters of Development; Causes of Economic Backwardness and Regional Imbalances; Balanced Regional Development, Indicators of Regional Imbalances; Levels of Development; Measurement of Levels of Regional Development; Planning Regions of India; Poverty – Poverty Line; Estimate of Poverty, Methodology for Estimation of Poverty and BPL Households; Poverty Alleviation, Poverty Alleviation and Employment Generation Programmes; Unemployment; Employment in the Organized Sector.

23. Environmental Scenario in India

Regional Ecology; Environmental Problems; Environmental Pollution; Surface Water Pollution; Ground Water Pollution; Marine Pollution; Environmental Planning; Environmental Planning in India; Environmental Management; Management of Environment : Priority Sectors; Sustainable Development; Concept of Sustainable Development;

24. Natural or Geographical Regions

Classification by Stamp, Baker, Pithawala, Kazi S. Ahmad, Spate, R.L. Singh, Major Natural Regions : 1. Semi-Arid Plain of Rajasthan; 2. Punjab and Haryana Plain; 3. Upper Ganga Plain; 4. Middle Ganga Plain; 5. Lower Ganga Plain; 6. The Assam Valley; 7. Kashmir Region; 8. Himachal Pradesh; 9. Uttarakhand (Garh-Kum) Himalayas; 10. Eastern Himalayas; 11. Purvanchal Pradesh; 12. Udaipur-Gwalior Region; 13. Malwa Region; 14. Bundelkhand Region; 15. Vindhyachal-Baghelkhand, 16. Chhota Nagpur Plateau; 17. Meghalaya – Shillong Plateau; 18. Maharashtra (Deccan) Region; 19. Chhattisgarh Region; 20. Orissa Highlands; 21. Dandakaranya Region; 22. Karnataka Plateau; 23. Andhra Pradesh; 24. Tamilnadu Uplands and South Sahyadri; 25. Gujarat Region; 26. West Coast Reion : Konkan and Malabar Coast; 27. East Coastal Plains; 28. The Indian Islands. 452–467

468–497

498–516

List of Maps and Diagrams

- Fig. 1.1. India's location on the globe.
- Fig. 1.2. India and her neighbours.
- **Fig. 1.3.** India during 6th century B.C.
- **Fig. 1.4.** India in 232 B.C.
- **Fig. 1.5.** India in the 4th century A.D.
- **Fig. 1.6.** India in 1707 A.D.
- Fig. 1.7. India in 1856 A.D. (During the rule of Dalhousie).
- **Fig. 1.8.** India on the eve of Independence (14th August 1947).
- Fig. 2.1. Geological Structure of India.
- Fig. 2.2. Archaean, Dharwar, Cuddapah and Vindhyan rocks.
- Fig. 2.3. Gondwana, Deccan Trap, Tertiary and Pleistocene rocks.
- Fig. 2.4. Permian, Jurassic, Eocene and Miocene rocks.
- Fig. 2.5. Seismic Zones of India (Recent view)
- Fig. 3.1. Physiography of India.
- Fig. 3.2. Origin of the Himalayas according to plate tectonics.
- **Fig. 3.3.** Structure of the Himalayas.
- Fig. 3.4. Himalayas and other ranges.
- Fig. 3.5. The Great Plains.
- Fig. 3.6. Geological Structure of the Peninsular Plateau.
- Fig. 3.7. Physiographic regions of India.
- Fig. 4.1. Drainage of India.
- Fig. 4.2. Evolution of the Himalayan drainage.
- Fig. 4.3. Major drainage basins of India.
- Fig. 4.4. Ground water regions of India (after R.L. Singh).
- Fig. 4.5. Ganga-Kaveri link canal.
- Fig. 4.6. Major sources of irrigation in India.
- Fig. 4.7. Irrigated area as percentage of net sown area.
- Fig. 4.8. Major River-valley Projects of India.
- Fig. 4.9. Indira Gandhi Canal Project.
- Fig. 4.10. Sardar Sarovar Project.
- Fig. 4.11. Narmada Sagar Project.
- Fig. 5.1. Winter Monsoon.
- Fig. 5.2. Summer monsoon.
- Fig. 5.3. Meridional Profile of the Indian Summer Monsoon.
- Fig. 5.4. Walker Cells (Solid arrows indicate normal year; Dotted arrows indicate abnormal year).
- Fig. 5.5. Temperature Conditions (January).
- Fig. 5.6. Rainfall (January).
- Fig. 5.7. Temperature (May).
- Fig. 5.8. Temperature (July).
- Fig. 5.9. Onset and retreat of monsoon.
- Fig. 5.10. Rainfall (Wet Season).

- Fig. 5.11. Tracks of Cyclones.
- Fig. 5.12. Distribution of annual rainfall in India.
- Fig. 5.13. Rainfall regimes (after Johnson).
- **Fig. 5.14.** Variability of rainfall.
- Fig. 5.15. Drought prone areas.
- Fig. 5.16. Flood prone areas.
- Fig. 5.17. Climatic divisions of India (–after Koeppen).
- Fig. 5.18. Climatic divisions of India (– after Thornthwaite).
- Fig. 5.19. Climatic regions of India (– after Trewartha).
- Fig. 5.20. Climatic regions of India (– after Stamp and Kendrew).
- Fig. 5.21. Climatic regions of India (– after R.L. Singh).
- Fig. 6.1. Distribution of forests in India.
- Fig. 6.2. Forest types.
- Fig. 6.3. Forest cover in India.
- Fig. 7.1. Soils of India.
- Fig. 7.2. Soil erosion in India.
- Fig. 7.3. Waterlogged soils in India.
- Fig. 8.1. Mineral belts of India.
- Fig. 8.2. Distribution of Iron Ore and Manganese.
- Fig. 8.3. Distribution of Copper, Lead and Zinc.
- **Fig. 8.4.** Distribution of bauxite and mica.
- Fig. 9.1. Gondwana Coal.
- Fig. 9.2.Coal deposits in India.
- Fig. 9.3. Petroleum Areas in India.
- Fig. 9.4. Oil and gas pipelines.
- Fig. 9.5.Major hydel stations.
- Fig. 9.6. Major Thermal and Atomic Power Stations.
- Fig. 10.1. Population Growth in India.
- Fig. 10.2. Density of Population in India.
- Fig. 10.3. Population density by districts.
- Fig. 10.4. Sex Ratio in India.
- Fig. 10.5. Literacy in India.
- **Fig. 10.6.** Urbanisation in India.
- Fig. 10.7. Language families and major languages.
- Fig. 10.8. Language Regions.
- Fig. 10.9. Races of India (after Guha).
- Fig. 10.10. Scheduled Caste Population in India.
- Fig. 10.11. Scheduled Tribe Population in India.
- Fig. 10.12. Population Resource Regions of India.
- Fig. 11.1. Functional zoning of Lucknow.
- **Fig. 11.2.** Functional zoning of Jaipur. (1. Residential, 2. Commercial, 3. Industrial, 4. Educational, 5. Parks, 6. Parks, 7. Open space)
- **Fig. 11.3.** Functional zoning of Allahabad.
- Fig. 11.4. Urban tracts in India.
- **Fig. 12.1.** Density of Villages in India.
- Fig. 12.2. Compact settlements in district Muzaffar Nagar in the upper Ganga plains.
- Fig. 12.3. Semi compact settlements in the Khader Tract of the Ganga Plain.
- Fig. 12.4. Dispersed settlements in the Barmer and Jalor Districts in Rajasthan.

- Fig. 12.5. Patterns of rural settlements. Fig. 12.6. Village Supur in West Bengal. Fig. 12.7. Village Khirka Junnardar (Distt. Saharanpur, U.P.) Fig. 13.1. Land use in India. Fig. 13.2. Statewise Land use pattern in India. Fig. 13.3. Farming regions of India. Fig. 13.4. Farming regions of India (after Dobby). Fig. 13.5. Farming regions of India (after Whittlesey). Fig. 13.6. Agricultural Productivity in India. Fig. 13.7. Agricultural Efficiency in India. Fig. 13.8. Cropping intensity in India. Fig. 13.9. Rice Concentration regions in India. Fig. 13.10. Crop diversification regions in India. Fig. 14.1. Areas of Rice Production in India. Fig. 14.2. Areas of wheat production in India. Fig. 14.3. Areas Jowar Production in India. Fig. 14.4. Areas of Bajra Production in India. Fig. 14.5. Areas of Maize production in India. Fig. 14.6. Areas of Barley Production in India. Fig. 14.7. Sugarcane growing areas in India. Fig. 14.8. Cotton growing areas in India. Fig. 14.9. Areas of Jute cultivation in India. Fig. 14.10. Tobacco growing areas in India. Fig. 14.11. Groundnut producing areas in India. Fig. 14.12. Rapeseed and mustard producing areas in India. Fig. 14.13. Tea and Coffee producing areas in India. Fig. 14.14. Coconut growing areas. Fig. 15.1. Agricultural regions (after Randhawa). Fig. 15.2. Agricultural Regions (after Slampa). Fig. 15.3. Agricultural Regions (after Sengupta and Sdasyuk). Fig. 15.4. Crop association regions. (after Johnson). Fig. 15.5. Agricultural regions of India. (after R.L. Singh). Fig. 15.6. Crop-Association region. (after Jasbir Singh). Fig. 15.7. Agro-Climatic Regions of India. Fig. 15.8. Agro-ecological Regions of India. Fig. 18.1. Iron and Steel Plants in India. Fig. 18.2. Iron and Steel Plants in the north east Peninsula. Fig. 18.3. Aluminium Industry. Fig. 18.4. Lead and Zinc Industry. Fig. 18.5. Major cotton textiles centres of India. Location of jute mills in the Hugli region. Fig. 18.6. Fig. 18.7. Silk and Rayon Textiles Industry. Fig. 18.8. Woollen Textiles Centres in India. Fig. 18.9. Engineering Industries. Fig. 18.10. Transport Equipment Industry. Fig. 18.11. Fertilizer industry in India. Limestone deposits in India. Fig. 18.12.
- Fig. 18.13. Cement industry in India.

- Fig. 18.14. Major Glass Centres in India.
- Fig. 18.15. Paper Industry in India.
- Fig. 18.16. Sugar Industry in India.
- Fig. 18.17. Major tourist centres of India.
- Fig. 19.1. Industrial regions of India.
- Fig. 19.2. The Hugli industrial region.
- Fig. 20.1. Density of Roads in India.
- Fig. 20.2. Major Highways of India.
- Fig. 20.3. The Golden Quadrilateral and the NS-EW corridors.
- Fig. 20.4. The Railway Network of India.
- Fig. 20.5. Density of Rail routes in India.
- Fig. 20.6. Air Routes.
- Fig. 22.1. Levels of Development (after Mitra).
- Fig. 22.2. Levels of development in district (after Moni).
- Fig. 22.3. Planning regions of India (after Misra, Sundaram and Prakasharao).
- Fig. 22.4. Poverty Ratio at the State Level.
- Fig. 24.1. Natural regions of India (after Spate).
- Fig 24.2. Geographical regions of India (according to R.L. Singh).
- Fig. 24.3. Upper Ganga Plain.
- Fig. 24.4. The Middle Ganga Plain.
- Fig. 24.5. The Lower Ganga Plain.
- Fig. 24.6. Trans Ganga Plain.
- Fig. 24.7. Punjab Haryana Plain-Industries.