

Weekly Content Management Bulletin Vol.01 No.04 2020

List of New Arrivals Journals, Books & Reports

1. 2020 General Studies for Civil Services Preliminary Examination
2. Cooperator
   Vol.58 No.04 2020
3. General Knowledge Manual 2020
4. General Studies for Civil Services Preliminary Examination
5. General Studies Paper-1
6. Genes & Genetic Systems
   Vol.95 No.02 2020
7. Indian Farmers Digest
   Vol.53 No.08 2020
8. Indian Navy Dockyard Apprentice
9. Rubber Science
   Vol.33 No.02 2020
10. Yojana
    Vol.37 No.03 2020

For more information visit
University Library Website
Web - uasbagrilibindia.org
E-mail- librarian@uasbangalore.edu.in

McGraw-Hill Celebrates 50 Years of Unlocking Potential in India

2020

GENERAL STUDIES

for Civil Services Preliminary Examination



GS PAPER II

- Comprehension
- Interpersonal Skills Including Communication Skills
- Logical Reasoning and Analytical Ability
- Decision Making and Problem Solving
- General Mental Ability
- Basic Numeracy



Mc Graw Hill

Includes Solutions of CSAT Question Papers from 2015-2019 with Explanation

Also useful for State Public Service Commission Examinations

Contents

About the Contributors *ii*
A Word from the Publishers *v*
Syllabus *vii*
CSAT (General Studies Paper-II): Trends and Analysis ix
Detailed Analysis of Questions (2015–2019) xix

Comprehension **1–16**

Interpersonal Skills Including Communication Skills **1–41**

Introduction 3
1. Sentence Completion 19
2. Critical Reasoning and Paragraph Comprehension 31

Logical Reasoning and Analytical Ability **1–104**

1. Introduction to Logical Reasoning 3
2. Logical Reasoning Based on Arrangements 11
3. Logical Reasoning Based on Rankings 21
4. Team Formations 31
5. Quantitative Reasoning 45
6. Sequences and Series 59
7. Blood Relations 67
8. Direction Test 77
9. Puzzle Test 89

Non-Verbal Reasoning **1–8**

Decision Making and Problem Solving **1–42**

General Mental Ability **1–108**

Introduction 3
1. Syllogisms 17
2. Logical Deductions 43
3. Statement and Conclusions 49
4. Statement and Assumptions 55
5. Assertion and Reason 61
6. Statement—Courses of Action 65
7. Mathematical Operations 71
8. Set Theory, Venn Diagrams and Network Diagrams 77
9. Permutations and Combinations 91

Basic Numeracy and Data Interpretation **1–116**

1. HCF and LCM of Numbers 3
2. Fraction 9
3. Percentage 17

4. Average 27
5. Ratio and Proportion 33
6. Problems on Simple Equations 41
7. Chain Rule 45
8. Time and Work 51
9. Profit, Loss, and Discount 57
10. Time and Distance 63
11. Data Interpretation 73
Practice Paper: Set - 1 *105*
Practice Paper: Set - 2 *109*
Practice Paper: Set - 3 *113*

Practice Test Papers **1 –330**

Practice Test Paper - 1 *3*
Practice Test Paper - 2 *27*
Practice Test Paper - 3 *51*
Practice Test Paper - 4 *75*
Practice Test Paper - 5 *97*
Practice Test Paper - 6 *119*
Practice Test Paper - 7 *143*
Practice Test Paper - 8 *165*
Practice Test Paper - 9 *187*
Practice Test Paper - 10 *209*
Practice Test Paper - 11 *229*
Practice Test Paper - 12 *249*
Practice Test Paper - 13 *269*
Practice Test Paper - 14 *291*
Practice Test Paper - 15 *311*

Previous Years' Solved Papers **1 – 112**

General Studies Paper-II – 2015 (Solved Papers) *3*
General Studies Paper-II – 2016 (Solved Papers) *25*
General Studies Paper-II – 2017 (Solved Papers) *49*
General Studies Paper-II – 2018 (Solved Papers) *69*
General Studies Paper-II – 2019 (Solved Papers) *91*

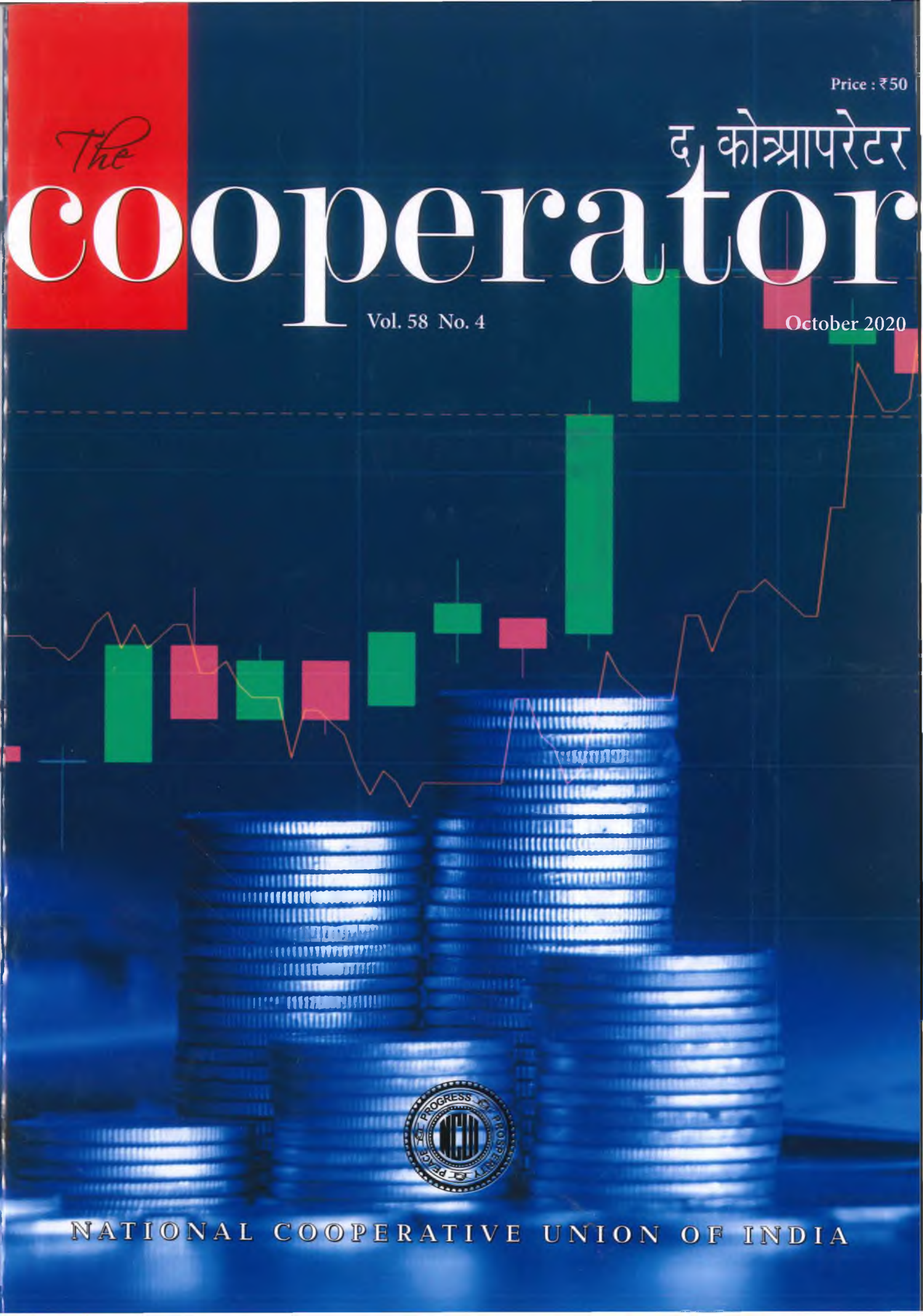
Price : ₹50

The cooperator

द कोऑपरेटर

Vol. 58 No. 4

October 2020



NATIONAL COOPERATIVE UNION OF INDIA

The cooperator
VOL. 58 NO. 4 OCTOBER 2020

ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಗ್ರಂಥಾಲಯ
ಗಾ.ಕೃ.ವಿ.ಕೆ., ಬೆಂಗಳೂರು-560 065
24 OCT 2020
39/59
ನಿ.ಸಂ.

U.A.S. UNIVERSITY LIBRARY
BANGALORE
ACC. NO.

inside



07 बैंकिंग कानून व्यवस्था में बदलाव
09 Small amendments enough to avoid PMC Bank like crisis: NCUI President
11 Opportunity in Crisis
16 भारतीय राष्ट्रीय सहकारी संघ में हिंदी पखवाड़े का आयोजन
17 Boon or Bane
20 Major Reliefs for Cooperative Societies of Gujarat
21 Time to Prepare for the Second Innings
23 India's largest project in Piggery
24 Choice by Lot: Logic or Luck?
27 TESCUBFED organizes webinar on SARFAESI Act
28 सहकारिता पर नए कृषि सुधार का असर
30 भारतीय कृषि के उत्थान में सहकारिताओं का योगदान
32 IN NEWS

EDITOR-IN-CHIEF
N. Satya Narayana

EDITOR
Sanjay Kumar Verma

CONSULTING EDITOR
Alok Kumar

PUBLISHED BY

National Cooperative Union of India
Tel: 011-49407837, 41811157, 40793299
E-mail : ncui.pub@gmail.com

SUBSCRIPTION RATES

Life - Rs. 5000
Annual - Rs. 500

FOR ARTICLES

Contact: Sanjay Kumar Verma
(Mobile No. 9871146034)

PRODUCTION SUPPORT BY
Swati Communications
T: 011-41659877, 09213132174

Opinions expressed in 'The Cooperator' do not reflect views of the National Cooperative Union of India

TOTAL PAGES 36

- Useful for UPSC, SSC, Banking, NDA, LIC, State Civil Service Examinations, and other administrative examinations
- Includes more than 1400+ previous years' questions with 4000+ practice questions

Pearson SUCCESS COMPANION



General Knowledge Manual 2020

UP-TO-DATE • COMPREHENSIVE • CLEAR

Pearson

EDGAR THORPE
SHOWICK THORPE

THORPES

Contents

Preface xvii
Photo Credits xix

SECTION A: THE WORLD

Chapter 1 Physical Geography A.3

The Universe A.3
Vastness of the Universe A.3
Composition of the Universe A.3
Theories of the Universe A.4
Galaxy and the Local Group A.6
Hubble's Classification of Galaxies A.7
Cosmology and Cosmic Rays A.8

Solar System A.8
Origin, Age, and Characteristics of the Solar System A.9
The Sun A.10
The Planets A.12
The Phases of the Moon A.18
Stars A.19
Constellation A.20
Asteroids, Meteors, and Comets A.20

Basic Knowledge about the Earth A.24
Shape and Structure of the Earth A.24
Composition A.27
Geological History A.27
Earth's Movements A.29
Seasons A.29
Equinoxes and Solstices A.31
Eclipses A.33
Spheres of the Earth A.33

Atmosphere A.33
Composition A.33
Atmospheric Layers A.36
Winds A.37

Lithosphere A.39
Rocks A.40
Continents A.41
Mountains A.41

Hydrosphere A.44

Tides A.45
Ocean Currents A.45
Shipping Canals A.47
Major Rivers of the World A.48
Time A.48

Global Positioning System (GPS) A.50
How it Works A.50
Other GPS Systems A.50

Chapter 2 World Geography A.59

The World We Live in A.59
A Profile of the World A.59

Continents A.63
Asia A.63
Africa A.66
North America A.68
South America A.70
Europe A.71
Language Families of Europe A.72
Antarctica A.73
Oceania/Australasia A.73

Principal Climates of the World A.80
Climatic Divisions of the World A.81
Köppen Climate Classification A.84
Köppen—Geiger Climate Classification A.85
Major Natural Resources A.87
Countries Rich in Natural Resources A.91
Regional Grouping of Countries of the World A.92
Economic Classification of Countries of the World A.94
People of the World A.101

A Glossary of Geographical Terms A.103

World Architecture A.129
Wonders of the World A.129

Chapter 3 International Organizations A.140

The United Nations A.140
Charter of the UN A.140
The UN Flag and the Emblem A.141
Membership of the UN A.141
Organizations of the UN A.143
UN Observations A.146
Agencies Related to the United Nations A.150

The Commonwealth A.156
Membership A.156
Commonwealth Secretariat A.157
The Non-aligned Movement A.158
Founder Members of the 'NAM' A.158
Basic Principles of the 'NAM' A.158
Organizational Structure and Membership A.159
South Asian Association for Regional Cooperation (SAARC) A.160
Regional Centres A.160
SAARC Summits A.161
South Asian Free Trade Area A.161
Meeting of SAARC Culture Ministers A.161
Meeting of SAARC Energy Ministers A.162
The European Union A.162
Five 'EU' Institutions A.162
Important Treaties (Establishment) A.163
Member States A.163
Other World Organizations A.163
Caribbean Community (CARICOM) A.163
Organization of Petroleum Exporting Countries (OPEC) A.164
Arab League (League of Arab States) A.164
North Atlantic Treaty Organization (NATO) A.164
The Group of 77 ..... A.165
The Group of Seven (G-7) A.165
Colombo Plan A.165
Organization of American States (OAS) A.166
Organization for Economic Cooperation and Development (OCED) A.166
Association of South-East Asian Nations (ASEAN) A.166
World Trade Organization A.167
Organization of the Islamic Co-operation A.167
Organization for Security and Co-operation in Europe (OSCE) A.168
Council of Europe (CoE) A.168
The Commonwealth of Independent States (CIS) A.169
Collective Security Treaty Organization (CSTO) A.169
Eurasian Economic Union (EEU) A.169
Turkic Council A.169
African Union A.169
Union for the Mediterranean A.170
Cooperation Council for the Arab States of the Gulf (GCC) A.170
Union of South American Nations A.170
Asia-Pacific Economic Cooperation (APEC) A.170
China–Japan–South Korea Trilateral Summits A.170
Shanghai Cooperation Organisation (SCO) A.171
Australia–New Zealand–United States (ANZUS) Security Treaty A.171
Brazil–Russia–India–China–South Africa (BRICS) A.171
Colombia–Indonesia–Vietnam–Egypt–Turkey–South Africa (CIVETS) A.171
Next Eleven (N-11) A.172
Mexico–Indonesia–Nigeria–Turkey A.172
India–Brazil–South Africa (IBSA) Dialogue Forum A.172
E-7 (Emerging-7) A.172
E-9 Nations A.172
G-4 ..... A.172
Uniting for Consensus A.173
G-8 (Group of Eight) A.173
G-6 (Group of Six) A.173
G-(8+5) A.173
G-15 ..... A.173
G-20 (Group of 20) A.173
G-20 Summits A.173
G-24 (Group of 24) A.174
World Bank A.174
International Monetary Fund (IMF) A.175
Asian Development Bank (ADB) A.176
Bay of Bengal Initiative for Multi-Sectorial Technical and Economic Cooperation (BIMSTEC) A.176

Important Treaties A.177
Nuclear Non-Proliferation Treaty (NPT) A.177
Izmir Treaty A.177
Antarctic Treaty A.177
Kyoto Protocol A.177
Libya Accord A.178
International Courts—At a Glance A.178

Chapter 4 General Knowledge A.187

Languages A.187
Language Families: Number of Speakers A.188

Books A.188
Famous Quotations A.190
Noted Works by Indian Authors (English) A.195
Ancient Classical Writers A.197
Ancient Books on Science and Medicine A.200
Some Famous Foreign Books A.200
Some Important Books A.201
Important Shakespeare Plays A.202
Famous Books/Plays A.203

World's Great Personalities (Who's Who) A.216
Life Sketch of Great Personalities A.216
Abbreviated Titles of Some Well-known Figures A.234

Well-Known Freedom Fighters A.235
International Figures A.235
Prominent Figures of the Indian Freedom Movement A.237
Exploration and Discoveries A.238
Women Achievers A.239
'Firsts' in the World A.242
Prominent Economists A.243
Schools of Thought A.244
Ancient Philosophers and Thinkers A.245
International Awards and Honours A.245
Nobel Prize A.245
Pulitzer Prize A.247
Ramon Magsaysay Awards A.248
Booker Prize (Man Bookers Prize) A.249
Right Livelihood Award A.250
Important International Awards A.253
Religions of the World A.254
Sports A.256
Sport Festivals A.256
Olympics A.258
Introduction of Events in the Olympics A.261
Commonwealth Games A.264
Important Trophies and Associated Games A.267
Places Associated with Sports A.269
Sports Authority of India A.270
Lakshmibai National Institute of Physical Education A.271
Important Government Schemes Relating to Sports A.271
National Youth Policy 2014 ..... A.272
National Scheme Relating to Talent Search and Training A.272
National Sports Development Fund A.273
World's Great Structures A.273

SECTION B: EVERYDAY SCIENCE

CHAPTER 1 Physics B.3

Introduction B.3
Mechanics B.3
Matter B.3
Mass B.4
Weight B.4
Density B.4
Force B.4
Friction B.5
Energy B.5
Surface Tension B.5
Motion B.5
Work B.6
Periodic Motion, Wave and Fluid Mechanics B.9
Heat and Thermodynamics B.11
Heat and Temperature B.11
Evaporation B.12
Latent Heat B.12
Transfer of Heat B.12
Radiation B.13
Convection B.13
Laws of Thermodynamics B.13
Light and Optics B.13
Composition B.13
Phenomenon of Light B.14
Mirrors B.15
Lenses B.16
Characteristics of Image B.17
Sound B.17
Characteristics B.17
Phenomena Related to Sound B.17
Sound Waves and Music B.17
Ultrasonic and Supersonic Sounds B.18
Speed of Sound B.18
Electricity B.18
Electric Current B.19
Heating Effect of Electricity B.19
Fuse Wire B.19
Magnetic Effect of Electricity B.19
Types of Electricity B.20
Household Wiring System B.20
Magnetism B.20
Magnets B.20
Magnetic Induction B.20
Magnetic Field of the Earth B.21
Modern Physics B.21
Non-conductors B.21
Semiconductors B.21
Important Laws of Physics B.22
Archimedes' Principle B.22
Avogadro's Law B.22
Newton's (1642–1727) Laws B.22
Coulomb's (1738–1806) Law B.22
Stefan's (1835–1883) Law B.22
Pascal's (1623–1662) Law B.23
Hooke's (1635–1703) Law B.23

Lenz's (1805–1865) Law B.23
Dalton's (1766–1844) Law B.23
Faraday's (1791–1867) Laws B.23
Ohm's (1787–1854) Law B.23
Phenomena and Important Terms of Physics..... B.23
Physics in Everyday Life B.24

Chapter 2 Chemistry **B.35**

Elements..... B.35
Types of Elements B.36
New Elements B.37
Metals..... B.37
Chemical Nature of Metals B.37
Steel and Iron..... B.39
Non-metals B.39
Alloys..... B.39
Minerals..... B.41
Chemical Compounds B.42
Chemical Reaction and Chemical Change B.42
Air B.47
Water B.47
Important Gases..... B.48
Industrial Chemistry B.49
Soaps B.49
Glass..... B.49
Cement B.49
Organic Chemistry B.49
Carbon Compounds B.50
Organic and Inorganic Compounds..... B.50
Carbon..... B.53
Coal and Petroleum..... B.54
Liquefied Petroleum Gas B.55
Synthetic Fibre B.55
Synthetic Rubber B.55
Radioactivity B.55
X-rays..... B.58
General..... B.58
Important Chemical Tests B.58
Important Laws of Chemistry..... B.59
Important Chemical Processes B.59
Terminologies in Chemistry B.61
Chemical reactions B.64

Chapter 3 General Biology (Botany and Zoology) **B.72**

Cell B.72
Historical Background B.72
Structure B.72
Cell Division..... B.74
Classification of The Living Organisms B.74
Scientific Nomenclature B.74
General Classification..... B.75
Classification of the Plant Kingdom (Plantae) B.75
Parts of Plants B.76
Modification of Plant Parts B.77
Classification of the Animal Kingdom (Animalae) B.77
Protozoa..... B.77
Metazoa B.77
Important Biological Phenomena B.79
Photosynthesis..... B.79
Metabolism..... B.79
Respiration B.79
Fertilization..... B.80
Transpiration B.80
Glossary B.81
Botanical Terms B.81
Zoological Terms B.85

Chapter 4 Human Body **B.92**

Anatomy and Physiology..... B.92
Blood B.92
Skeletal System (Bones) B.94
Muscular System..... B.97
Organs of Human Body..... B.97
Sense Organs B.101
Reproductive Organs B.106
Glands B.107
Human Cell, Genes and Heredity B.109
Human Genetics B.111
Medical Biochemistry B.112
Human Diet B.113
Food Nutrients..... B.113
Diseases of the Human Body B.114
Types of Diseases..... B.114
Agents of Diseases..... B.115
Defence Mechanism Against Infection B.116
Common Diseases B.118
Common Blood Diseases B.119
Diseases of the Eyes B.119
Common Body Disorders..... B.120
Common Drugs..... B.121
Medical Science..... B.122
Medical Aids (Equipment)..... B.122
Medical Treatment..... B.123
Marvels of Medical Science B.123
Glossary B.125

Chapter 5 Ecosystem and Biosphere B.133

Community and Ecosystem Dynamics B.133
Community Structure B.133
Classification of Communities B.133
Change in Communities Over Time B.133
Disturbances of a Community B.134
Ecosystems and Communities B.134
Food Chain B.135
Biosphere B.136
Biogeochemical Cycles B.137
Important Phenomena in Biosphere B.139

SECTION C: INDIA

Chapter 1 History of India and Freedom Struggle C.3

Introduction C.3
Ancient India C.3
Indus Valley Civilization C.3
The Vedic Period: The Aryans C.6
Emergence of Mahajanapadas or Kingdoms C.10
Growth of Buddhism and Jainism C.11
Buddhism C.11
Jainism C.13
Magadha Empire (6th–4th Century BCE) C.16
Alexander's Invasion (Greek Invasion) C.16
The Mauryan Empire (320–180 BCE) C.16
The Gupta Dynasty (320–550 CE) C.20
Harshavardhana (606–647 CE) C.22
The Rajputs (650–1200 CE) C.23
Other Dynasties C.24
Medieval India C.27
The Sultanate of Delhi (1206–1526 CE) C.28
The Mughal Dynasty (1526–1540 and 1555–1857) C.33
The Marathas, the Sikhs and the Jats C.38
Modern India C.41
East India Company and British Rule C.43
British Rule C.47
Viceroys of India C.49
Indian Freedom Struggle C.54
First War of Independence C.54
British Rule After the 1857 Revolt C.56
The Indigo Revolt of 1859–60 ..... C.57
The Indian National Congress C.57
Partition of Bengal (October 16, 1905) C.58
Swadeshi Movement (1905) C.58
Muslim League (1906) C.58
Swaraj C.58
Surat Congress (December 26, 1907) C.59
Morley-Minto Reforms (1909) C.59
Home Rule Movement (1915–1916) C.59
Lucknow Pact (1916) C.59
August Declaration of 1917 ..... C.59
The Gandhian Era (1918–1947) C.59
Rowlatt Act (1919) C.59
Jallianwala Bagh Massacre (April 13, 1919) C.60
Khilafat Movement (1920) C.60
Non-cooperation Movement (1920) C.60
Chauri Chaura Incident (1922) C.61
Swaraj Party (1923) C.61
Simon Commission (1927) C.61
Lahore Session (1929) C.61
Dandi March (1930) C.62
The First Round Table Conference (1930) C.62
Gandhi–Irwin Pact (1931) C.62
The Second Round Table Conference (1931) C.62
The Communal Award (1932) C.63
Poona Pact (1932) C.63
The Third Round Table Conference (1932) C.63
The Government of India Act (1935) C.63
Demand for Pakistan (1940) C.63
Quit India Movement (1942–1945) C.64
Gandhiji's Fast C.64
Cabinet Mission Plan (May 16, 1946) C.64
Azad Hind Fauj C.64
Direct Action Campaign C.65
Interim Government C.65
Formation of Constituent Assembly C.65
Mountbatten Plan (June 3, 1947) C.65
The Indian Independence Act (1947) C.65
Partition of India C.65
Recent Political History of India (Post-Independence Era) C.66
India—Immediately After Independence C.66
First Border Disputes in Sovereign India C.66
Pakistan War of 1971 ..... C.66
Janata Party Comes to Power C.66
Entry of Rajiv Gandhi C.67
Presidential Rule in Assam C.67
The Punjab Problem C.67

Assassination of Indira Gandhi C.67
Mizoram Issue C.67
The Bofors Scandal C.67
Formation of National Front C.67
National Front Comes to Power C.67
Mandal Commission C.68
Ayodhya Issue C.68
Chandra Shekhar becomes Prime Minister C.68
Unrest in Tamil Nadu and LTTE C.68
Assassination of Rajiv Gandhi C.68
Rise of BJP in the Indian Political Scene C.68
No-confidence Test of Rao Government C.69
Beginning of Downfall of Congress (I) C.69
Hawala Scandal C.69
Story of Prime Minister for 13 Days C.69
Birth of the United Front C.69
I. K. Gujral as New Prime Minister C.69
Entry of Sonia Gandhi in Politics C.70
K. R. Narayanan—First 'Dalit' President of India C.70
Fall of Gujral's Government C.70
Sonia Gandhi, Congress (I)'s Trump Card C.70
Atal Bihari Vajpayee becomes 'PM' Again C.70
Congress Back to Power in 2004 General Elections C.70
Congress Remained in Power in 2009 General Election C.70
BJP-Led NDA Gained Power in 2014 General Election C.70

Chapter 2 Constitution of India C.99

Drafting of the Constitution C.99
Salient Features C.100
The Preamble C.100
Nature of Citizenship in the Indian Republic C.102
Fundamental Rights C.103
Directive Principles C.104
Duties of a Citizen of India C.105
Machinery of the Union Government C.106
The Judiciary C.120
Important Commissions and Key Functionaries C.124
The State Executive C.125
State Council of Ministers C.126
The Chief Minister C.126
The State Legislature C.127
Legislative Council (Vidhan Parishad) C.127
Legislative Assembly (Vidhan Sabha) C.128
The State Judiciary C.128
High Court C.128
Advocate-General C.129
Miscellaneous Constitutional Provisions C.133
General Elections C.133
Political Parties C.133
Special Position of Jammu and Kashmir in the Indian Union C.134
Centre–State Relationships C.134
Official Language C.134
Constitutional Safeguards for SC/STs C.135
Welfare of Minorities C.135
Panchayats—as Rural Self-Governing Institutions C.136
Conduct of Business in the Parliament C.138
Motions and Resolutions C.140
Amendment of the Constitution C.141
List of Schedules C.144
States and Union Territories of India C.145
The Budget C.146

Chapter 3 Population of India C.157

Census C.157
Rural and Urban Population C.159
Literacy Rate C.160
National Population Policy, 2000 ..... C.165

Chapter 4 National Awards, Culture and Literature C.167

National Awards C.167
Republic Day Awards (Civilian Awards) C.167
Gallantry Awards C.167
Other Awards C.168
Cultural and Literary Activities C.170
Lalit Kala Akademi C.170
Sahitya Akademi C.170
Sangeet Natak Akademi C.171
Museums C.172
Literature National Book Trust C.173
Dances of India C.173
Important Regional Dances C.175
Other Important Dances/Dance Dramas C.176
Musical Instruments and Musicians C.176

Chapter 5 Geography of India C.182

Geographical Position of India C.182
Location C.182
Dimensions C.182
Frontiers C.182
Physical Features C.183
Himalayan Range C.183
Northern Plains C.183
Deccan Plateau C.184
Coastal Plains C.185
Islands C.185
Soils C.185
Alluvial Soil C.185
Black Soil C.185

Red Soil C.185
Laterite Soil C.185

River Systems of India **C.186**
Himalayan System C.186
Deccan System C.186
Third River System C.187

Climate **C.188**
Monsoons C.188

Forests in India **C.189**

Agriculture **C.190**
Land Utilization C.190
Agricultural Scenario in India C.190
Agricultural Marketing C.191
Agricultural Marketing Infrastructure (AMI) C.191
Marketing Reforms in Agriculture Sector C.191
Advances in Indian Agriculture
Policy Framework for Agricultural Extension (PFAE) C.193
Green Revolution C.195
Fertilizers C.196
Irrigation C.196

Mineral Resources of India **C.201**
Other Minerals C.203

Indian States and Union Territories **C.204**
Indian Cities on River Banks C.204
Important Indian Cities C.204
Hill Stations of India C.207

National Parks and Wildlife Sanctuaries **C.207**
National Parks C.207
Wildlife Sanctuaries C.207
Project Tiger C.207
Project Elephant C.207

Important Monuments: India **C.209**

Indian Tribes and Their Habitat **C.211**

Chapter 6 Indian Economy C.220

Planning in India **C.220**
Historical Background C.220
The NITI Aayog C.220
Organizational Structure of NITI Aayog C.221
Planning Commission C.226

Reforms Initiated By Niti Aayog **C.227**
Reforms in Agriculture C.227
Reforming Medical Education C.227
Digital Payments Movement C.227
Atal Innovation Mission C.228
Indices Measuring States' Performance in Health, Education and Water Management C.228
Sub-Group of Chief Ministers on Skill Development C.228
Task Force on Elimination of Poverty in India C.228
Task Force on Agriculture Development C.228
Transforming India Lecture Series C.228
Planning Commission C.228
Five-Year Plans C.229
Poverty Line C.233
Literacy and Education C.241

Ayushman Bharat **C.247**

Currency System **C.253**
Historical Background C.253
Devaluation of Currency C.253

Public Finance **C.254**
Sources of Revenue C.254
Annual Financial Budget C.256
Public Debt C.256

Goods and Services Tax (GST) **C.256**
The Constitution (One Hundred and First Amendment) Act, 2016 ..... C.256

Banking System **C.258**
Composition of Banking System C.258
Development of Banking System in India C.259
Narasimham Committee Report on Banking-Sector Reforms C.259
Reserve Bank of India C.261
Imperial Bank of India C.262
Scheduled Banks C.262
Public Sector Banks C.263
Nationalization of Banks C.263

Other Important Banks and Financial Institutions **C.264**
NBFC & MFI C.264
Other Banks C.265
New Banks in Private Sectors C.266
A Brief on Banking-Sector Reforms in India C.266
Monetary and Credit Policy C.271
Insurance C.271
Merger of General Insurance Companies C.272
National Pension System C.272
Social Security Group Scheme C.272
Social Security Scheme - Aam Aadmi Bima Yojana C.273
Insurance Regulatory and Development Authority C.274

Disinvestment **C.276**
Policy Framework C.276
National Investment Fund (NIF) C.276
Unit Trust of India (UTI) C.277

Stock Exchanges **C.277**
Securities and Exchange Board of India C.277

Mints and Presses **C.277**

Industrial Finance Institutions C.278
Industrial Finance Corporation of India (IFCI) C.278
The Industrial Credit and Investment Corporation of India Ltd (ICICI) C.278
Industrial Development Bank of India (IDBI) C.278
State Financial Corporations C.279
Small Industries Development Bank of India (SIDBI) C.279
Unit Trust of India (UTI) C.279
Industrial Reconstruction Bank of India (IRBI) C.279

Industries C.280
Background C.280
Large-Scale Industries C.280
Various Organizations Connected with Industries C.280
Petroleum and Natural Gases C.286

Chapter 7 Communication and Transport Systems C.297

Indian Communication System C.297

Postal Services C.297
Postal Circles C.297
Quick Mail Service (QMS) C.300
Speed Post Services C.300
Agency Functions C.301

Telecommunications C.303
Indian Telecom Sector C.303
New Frontiers of Growth C.304
Projects in the Pipeline C.306

Media C.308
Newspapers and Periodicals C.308
News Agencies C.312
All India Radio (AIR) C.312
Mann Ki Baat C.312
Doordarshan (DD) C.312

Indian Railways C.313
Rail Tracks C.313
Administration C.313
Traction C.314
Public Undertakings (PSUs) and Other Organizations C.316
Indian Railways—Research and Development C.317

Shipping C.317
Shipping Corporation of India C.317
Shipping Companies C.317
Shipyards C.318
Training Institutions C.318
Major Ports in India C.318
National Waterways C.319
Areas of Maritime Interest for India C.319

Air Transport C.319
Policy Framework C.320
SWOT Anaysis of Indian Aviation Industry C.320
Strategy Plan for Indian Aviation Industry C.321
Pawan Hans Helicopters Limited C.321
Airport Authority of India C.322
Creation of Heliport C.323

Road Networks in India C.323
History C.323
Other Facts About Roads in India C.323
Classification of Roads in India and Authority Responsible C.324
G.T. Road C.324
National Highways C.324
Road Transport and Road Safety C.324

Chapter 8 Defence and Security C.333

Indian Defence C.333
India's Defence Set-up C.333
The Indian Armed Forces C.334
Integrated Defence Staff C.334
The Chiefs of Staff Committee C.335
Battle Tanks C.338
Indian Air force C.338
Organizational Structure by Squadrons C.339
Developments in Air Force C.340
Chiefs of Air Staff C.340
Indian Navy C.340
Organizational Hierarchy at Indian Navy C.341
Naval Authorities under Administrative Control of Flag Officers Commanding Chiefs C.341
A Peek into India's Naval Fleet C.341
Aircrafts and Helicopters C.342
Chiefs of Naval Staff C.344
Location of Defence Establishments C.344
The Department of Defence Production C.345

India's Internal Security C.347
Central Police Organizations C.347
Central Armed Police Forces C.349
Other Important Defence and Security Institutions C.350
Role of Women in the Armed Forces C.351

Chapter 9 Science and Technology C.355

History of National Policies for Science and Technology in India C.355
Key Milestones C.355
Policy Vision—STI 2013 ..... C.356
Key Elements—STI 2013 ..... C.356

Science and Technology (S&T) Activities in India C.356

Central Government S&T Departments C.357
Department of Science and Technology C.357
Professional S&T Bodies in India C.358
Important Autonomous S&T Institutions of India. C.358
Science and Engineering Research Board C.359
National Geographical Information System C.359
National Mission on Nano Science and Technology C.359
National Missions on Climate Change C.359
National Science and Technology Entrepreneurship Development Board C.359
National Atlas and Thematic Mapping Organization C.360
Survey of India C.361
National Map Policy (*Rashtriya Manchitran Niti*) C.361
National Topographical Data Base C.361
Department of Atomic Energy C.361
Atomic Energy Commission C.362
Atomic Energy Regulatory Board (AERB) C.363
India's Atomic Research C.364
Bhabha Atomic Research Centre (BARC) C.365
Nuclear Power Projects in India C.365
Table—Atomic Power Plants (Under Construction) C.367
Table—Nuclear Power Projects for Starting of Work during XII Five-Year Plan C.367
Department of Scientific and Industrial Research .. C.368
Department of Space C.369
The ISRO C.370
India's Space Programme C.371
Indian Space Establishments C.371
Satellite Programme C.373
Space Research Programme C.375
Other Space Science Missions C.376
Recent GSLV South Asia Launch C.377
Important Feats/Personalities Related to Indian Space Programmes C.378
The Department of Defence Research and Development C.378
India's Missile Programme C.380
Agni System C.380
Prithvi System C.380
Akash System C.381
Trishul System C.381
Nag System C.381
Astra Missile C.381
Brahmos Missile C.382
Other Missiles C.382
Ministry of Earth Sciences C.382
The Earth System Science Organization C.382
National Centre for Antarctic and Ocean Research (NCAOR) C.384
Circumnavigation C.386
Department of Bio-Technology C.386
Centres of Excellence and Innovation in Biotechnology (CEIB) C.386
Bioinformatics C.386
The Biotechnology Information System Network (BTISnet) C.387
The National Bio-resource Development Board (NBDB) C.387
International Centre for Genetic Engineering and Biotechnology (ICGEB) C.387
Autonomous Institutions under the Department of Biotechnology C.387
PSUs under the Department of Biotechnology C.387
The Indian Council of Medical Research C.387
List of ICMR Institutes/Centres C.388
India's First in Medical Research and Technology C.388
The Indian Council of Agricultural Research C.389
ICAR Institutions C.389
Other Indian Research and Development Organizations C.391

Chapter 10 National Insignia and Other Facts C.401

Introduction C.401
National Insignia C.401
National Flag C.401
National Emblem C.401
National Anthem (Jana Gana Mana) C.402
National Song (Vande Mataram) C.402
National Calendar (Saka) C.402
National Animal C.403
National Bird C.403
National Flower, National Tree and National Fruit C.403
National Language C.403
National Day C.403
Other Important Days C.403
The People C.404
The Arts C.404
General Elections and Political Parties C.405
Political Parties C.407
Record Makers (India) C.409
World Records Held by India C.411
Trade and Industry C.411

Agriculture/Natural Resources C.411
Buildings/Roads/Bridges C.411
Miscellaneous C.412
Individual Achievements C.412
India's Superlatives C.412

SECTION D: CURRENT AFFAIRS

The Jammu and Kashmir (Reorganisation) Bill, 2019 ..... D.3
Response of the Announcement D.3
Backgrounder on Article 370 and Article 35A D.4
What changes after the President's 2019 order? D.6
General Elections 2019 ..... D.6
Pm's Swearing-In Ceremony D.8
The New Cabinet D.8
Representation of Women in Lok Sabha D.11
Assembly Elections 2019 ..... D.12
Pulwama Terrorist Attack D.14
Other National News D.15
Formation of the 22nd Law Commission D.15
Minimum Support Price D.16
Sedition Law Stays in IPC D.16
CPRF gets the Status of an Organized Cadre D.16
One Nation One Ration Card D.16
Sewage Flow into Ganga to Stop completely D.17
EWS Reservation D.17
Decision on Increase in MSPs of all Kharif Crops for 2019–20 ..... D.17
Decision on Code on Wage Bill D.17
Decision on PPP lease of three Airports D.17
No 'Special Category Status' to any State D.18
Geo-tags for Waqf Properties D.18
Ayodhya Mediation Panel D.18
States and Union Territories D.18
Bihar D.18
Kerala D.19
Jammu And Kashmir D.19
Maharashtra D.19
Odisha D.20
Gujarat D.21
Uttar Pradesh D.22
Goa D.22
Haryana D.22
Punjab D.22
Arunachal Pradesh D.23
Madhya Pradesh D.23
Pudducherry D.23
Andhra Pradesh D.23
Sikkim D.23
West Bengal D.24
Delhi D.24
Jharkhand D.24
Tamil Nadu D.24
Karnataka D.25
Art and Culture D.25
Kartarpur Corridor D.25
Taj Mahal—Site Management Plan D.25
Food Safety Day 2019 ..... D.26
LGBTQ Discrimination D.26
Norte-Dame Cathedral Destroyed by Fire D.26
Education and Employment D.26
Draft NEP (National Education Policy) 2019 ..... D.26
UGC on Boosting Research in India D.28
Supreme Court Verdicts and Other Legal News D.28
Elevation of SC Judges D.28
Retrospectivity of Black Money Law of 2016 ..... D.28
SC agrees to Hear Writ Petition on AES Outbreak in Bihar D.29
SC Reaffirms FRs under Article 19 and Article 21 ..... D.29
SC PG Medical Admission in Maharashtra D.29
Electoral Bond Scheme D.29
Defence and Security News D.30
Aerial Version of BrahMos Test Fired D.30
Plea to Challenge Appointment of Navy Chief Rejected D.30
Indian Coast Guard's Haul of Smuggled Heroin D.30
Tribunal to Look into Ban of SIMI D.31
Ban of ISJK D.31
SPIKE Deal Cancelled D.31
Garuda VI Indo-French Air Force Joint Exercise D.31
Varuna 2019 Indo-French Navy Joint Exercise D.31
IAF's An-32 Aircraft Crash D.31
DRDO's Hypersonic Cruise Missile System D.32
BrahMos Integration for Sukhoi Fighters D.32
Lockheed Martin Goes Exclusive for India to sell F-21 ..... D.32
India Gets its First Apache Guardian Attack Helicopters D.32
INS Ranjit Decommissioned D.32
Nirbhay Missile Test Fired D.32
Dhanush Artillery Guns D.33
IAF Planned Procurements D.33
Science and Technology D.33
RISAT-2B Launched D.33
NASA's TESS D.33

Chandrayaan-2 ..... D.33
Square Kilometre Array (SKA) D.34
Artificial Atom Created D.34
World's Largest Aircraft D.34
Mission Shakti D.34
Google's STADIA D.35
ISRO's EMISAT Launch D.35
Dementia Diagnosis New Technique D.35
Hyderation of Hydrogen Fuel D.35
Google BOLO D.35
Energy from Wi-Fi Signal to Electricity D.36

Environment, Climate Change and Sustainable Development D.36
Deficiency Recorded in Pre-monsoon D.36
Tiger reported in Goa's BM National Park D.36
Arctic Council—India Re-elected as Observer D.36
UN Environment Finance Initiative project D.37
Cyclone-Fani D.37
IPBES Report D.37
Permission to Remove Mangroves D.37
Resolution on single-use plastic D.37
Comprehensive Survey on Orchids of India D.38

International Current Affairs D.38
Major Topics D.38

Nations of the World D.41
Sri Lanka D.41
Taiwan D.41
Japan D.42
Iran D.42
USA D.42
Sudan D.42
Pakistan D.43
Brunei D.43
UK D.44
Nepal D.44
Singapore D.44
China D.44
New Zealand D.44

Bilateral/Multilateral Agreements D.45
India—China D.45
India—Morocco D.45
India—Indonesia D.45
US—China D.45
US—China—Iran D.46
Singapore—Malaysia D.46
USA—Turkey D.46
USA—India D.46
USA—Pakistan D.47
India—Africa D.48
India—Bolivia D.48

Summits and Organizations D.48
United Nations Organization (UNO) D.48
Shanghai Cooperation Organization (SCO) D.48
BIMSTEC D.49
G-20 ..... D.49
ASEAN D.50
WTO D.50
EU D.51
Arab League D.51

Indian Economy D.51
Overview of the Economy D.51

Macroeconomic Framework Statement D.53
Economic Survey 2018–19 ..... D.54

Union Budget 2019–20 ..... D.60
National Policy For Electronics (NPE) 2019 ..... D.69

Miscellaneous Economic Sector News D.70
Reserve Bank of India News D.70
NITI Aayog Initiatives D.70
Indian Business News D.70
Government Economic News D.71
International Business News D.73

Sports and Tournaments D.74
ICC Cricket World Cup 2019 ..... D.74
Tennis Grand Slams 2019 ..... D.76
FIFA 2022 ..... D.77
Sports Tit-Bits D.77
Major Tournaments and Their Results D.79

Miscellaneous Topics D.87
Awards and Honours D.87
Books and Authors D.94
Important Abbreviations D.96
Persons in News D.98

ALSO KNOWN AS CSAT

Pearson SUCCESS COMPANION

GENERAL STUDIES

For Civil Services Preliminary Examination

Edgar Thorpe Showick Thorpe

2020

PAPER-II

Pearson

THORPES

Contents

Preface xiii
Acknowledgements xv
About the Examination xvi
Six-years Analysis of the General Studies (2014–2019) xviii

PREVIOUS YEARS' PAPERS

1 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2019 1.3
Detailed Analysis 1.3
Solved General Studies Paper-II (2019) 1.4

2 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2018 1.23
Detailed Analysis 1.23
Solved General Studies Paper-II (2018) 1.24

3 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2017 1.43
Detailed Analysis 1.43
Solved General Studies Paper-II (2017) 1.44

4 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2016 1.63
Detailed Analysis 1.63
Solved General Studies Paper-II (2016) 1.64

5 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2015 1.82
Detailed Analysis 1.82
Solved General Studies Paper-II (2015) 1.83

6 ANALYSIS OF THE GENERAL STUDIES (PAPER-II) 2014 1.102
Detailed Analysis 1.102
Solved General Studies Paper-II (2014) 1.103

READING COMPREHENSION

1 READING COMPREHENSION 2.3
Introduction 2.3
Social Studies and Humanities 2.5
Practice Exercises *2.8*
Explanations *2.40*
Socio-Economic and Political 2.46
Practice Exercises *2.50*
Explanations *2.71*
Science 2.74
Additional Exercise 2.107
Explanations *2.158*

INTERPERSONAL SKILLS, COMMUNICATION SKILLS, DECISION MAKING AND PROBLEM SOLVING

1 INTERPERSONAL SKILLS AND COMMUNICATION SKILLS 3.3
Development of Interpersonal Skills 3.3
Decision Making and Problem Solving 3.15
Solved Illustrations *3.25*
Practice Exercise 1 *3.35*
Explanations *3.41*
Practice Exercise 2 *3.43*

Explanations 3.50
Practice Exercise 3 3.53
Explanations 3.59
Practice Exercise 4 3.61
Explanations 3.67
Practice Exercise 5 3.70
Explanations 3.74
Practice Exercise 6 3.76
Explanations 3.81

LOGICAL REASONING AND ANALYTICAL ABILITY

SECTION 1 LOGICAL REASONING

1 STATEMENT 4.5
Deductive Logic 4.5
Multiple Choice Questions 4.8
Explanations 4.21

2 NUMBER OF ELEMENTS IN A FIGURE 4.30
Multiple Choice Questions 4.30
Explanations 4.33

3 LOGICAL DIAGRAMS 4.37
Multiple Choice Questions 4.39
Explanations 4.44

SECTION 2 ANALYTICAL REASONING

1 ANALYTICAL REASONING 4.49
Analytical Reasoning 4.49
Tips for Solving Analytical Reasoning Problems 4.49
Symmetrical Relationships 4.49
Puzzles on Building Pairs/Teams 4.50
Location Quandaries 4.52
Distribution Dilemmas 4.53
Fixing Schedules 4.54
CATCH-22 Connections 4.55
Other Common Problems 4.55
Multiple Choice Questions 4.57
Explanations 4.65

GENERAL MENTAL APTITUDE

SECTION 1 MENTAL ABILITY (CONVENTIONAL TYPE)

1 SERIES COMPLETION 5.5
Series Completion 5.5
Number Series 5.6
Alpha-Numeric Series 5.7
Multiple Choice Questions 5.8
Explanations 5.11

2 CLASSIFICATION 5.15
Odd Man Out/Classification 5.15
Number Classification 5.15
Word Classification 5.16
Multiple Choice Questions 5.16
Explanations 5.19

3 ANALOGY 5.21
Analogy Questions 5.21
Word Analogy 5.21
Multiple Choice Questions 5.22
Explanations 5.26

4 CODING/DECODING 5.29
Coding/Decoding 5.29
Multiple Choice Questions 5.29
Explanations 5.36

5 BLOOD AND FAMILY RELATIONSHIPS 5.44
Multiple Choice Questions 5.46
Explanations 5.48

6 SENSE OF DIRECTIONS 5.52
Direction Questions 5.52
Multiple Choice Questions 5.53
Explanations 5.56

SECTION 2 MENTAL ABILITY (EVOLVED TYPE)

1 RANK AND SEQUENCE 5.67
Rank and Sequence 5.67
Multiple Choice Questions 5.68
Explanations 5.71

POSITION OF DIGITS, ALPHABETS AND MEANINGFUL WORDS 5.74

Position of Digits, Alphabets and Meaningful Words 5.74
Multiple Choice Questions 5.76
Explanations 5.80

AGE, TIME AND CALENDAR 5.85

Age, Time and Calendar 5.85
Multiple Choice Questions 5.85
Explanations 5.87

INSERTING THE MISSING CHARACTERS 5.89

Inserting the Missing Characters 5.89
Multiple Choice Questions 5.89
Explanations 5.94

MATHEMATICAL OPERATIONS 5.98

Mathematical Operations 5.98
Multiple Choice Questions 5.98
Explanations 5.99

SITTING ARRANGEMENTS 5.101

Seating Arrangement 5.101
Multiple Choice Questions 5.101
Explanations 5.104

SECTION 3 MENTAL ABILITY (NON-VERBAL TYPE)

TEST OF NON-VERBAL ABILITY 5.109

Non-verbal Reasoning 5.109
Series Completion 5.109
Analogies 5.110
Classification 5.111
Arranging of Figures in Sequence 5.111
Pattern Comparison and Pattern Completion 5.111
Mirror Reflection 5.112
Finding Hidden Figures 5.112
Blocks and Squares 5.112
Cubes and Dices 5.113
Making Figures From Broken Pieces 5.113
Clock Movements 5.113
Practice Exercise 5.114
Practice Exercise (Mixed) 5.118

NUMERICAL APTITUDE

SECTION 1 BASIC NUMERACY

NUMBER SYSTEM 6.5

Positive and Negative Numbers 6.5
Elementary Concepts of Number System 6.5
Test of Divisibility 6.6
Tables for Oral Calculations 6.6
Another Short-cut for Division and Multiplication 6.7
Multiple Choice Questions 6.11
Explanations 6.14

HCF AND LCM 6.18

Greatest Common Measure (GCM) 6.18
Least Common Multiple (LCM) 6.19
Multiple Choice Questions 6.23
Explanations 6.26

UNITARY METHOD 6.30

Various Types of Questions 6.30
Multiple Choice Questions 6.31
Explanations 6.32

SIMPLIFICATION 6.34

Multiple Choice Questions 6.34
Explanations 6.40

FRACTIONS AND DECIMALS 6.48

Fractions 6.48
Basic Principles 6.48
Addition and Subtraction of Fractions 6.49
Decimals 6.51
Principles in Working with Decimals 6.51
Multiple Choice Questions 6.52
Explanations 6.55

6 POWERS AND ROOTS 6.61

Powers and Roots 6.61
Powers of Ten Notation 6.61
Squares 6.62
Exponents 6.63
Negative Exponents 6.64
Square Root 6.64
Cube Root 6.65
Frequently Asked Questions 6.65
Multiple Choice Questions 6.67
Explanations 6.70

7 AVERAGE 6.75

Some Common Types of Questions 6.75
Multiple Choice Questions 6.76
Explanations 6.79

8 PERCENTAGE 6.85

To Find How Much Per cent One Quantity is of Another 6.85
Population Formula 6.85
Reduction in Consumption 6.86
Tax and Revenue 6.86
Effect of Dearness on a Salary 6.88
Election/Vote 6.88
Multiple Choice Questions 6.88
Explanations 6.91

9 RATIO AND PROPORTION 6.96

Ratio 6.96
Proportion 6.96
Multiple Choice Questions 6.101
Explanations 6.104

10 PROFIT AND LOSS 6.109

Terms and Formulae 6.109
Multiple Choice Questions 6.111
Explanations 6.114

11 MIXTURES AND ALLEGATIONS 6.119

Find the Proportion of Ingredients 6.119
Three Ingredients/Number of Proportions Unlimited 6.120
Method of Linking 6.121
Mixing Ingredients 6.121
Butler Stealing Wine 6.121
Fineness of Gold 6.121
Interchange of Components 6.122
Pouring Liquids from one Vessel into Another 6.122
An Important Result 6.123
Multiple Choice Questions 6.123
Explanations 6.126

12 PARTNERSHIP 6.132

Working Partner/Sleeping Partner Example 6.132
Finding the Capital Contributed 6.132
Sharing the Rent 6.133
Multiple Choice Questions 6.133
Explanations 6.134

13 COMMERCIAL MATHEMATICS 6.137

Simple Interest 6.137
Compound Interest 6.137
Multiple Choice Questions 6.139
Explanations 6.142

14 TIME AND WORK 6.149

Basic Principles 6.149
Work and Wages 6.149
Multiple Choice Questions 6.150
Explanations 6.153

15 TIME AND DISTANCE 6.159

Too Late and too Soon 6.159
Reaching and Returning 6.159
Multiple Choice Questions 6.159
Explanations 6.163

16 TRAINS, BOATS AND STREAMS 6.168

Short-Cut Formulas 6.168
Trains Passing a Telegraph Post or Stationary Man 6.168
Train Crossing a Bridge or Passing a Railway Station 6.168
Trains Running in Opposite Directions 6.168
Trains Running in the Same Direction 6.169
Train Passing a Man who is Walking 6.169
A Man Sitting in Another Train 6.169
Boats and Streams 6.169
Multiple Choice Questions 6.170
Explanations 6.172

17 PIPES AND CISTERNS 6.178

Multiple Choice Questions 6.179
Explanations 6.180

18 RACES AND GAMES 6.184
Multiple Choice Questions 6.185
Explanations 6.187

19 CLOCKS AND CALENDARS 6.189
Clocks 6.189
Calendars 6.190
Multiple Choice Questions 6.191
Explanations 6.193

20 ALGEBRAIC EXPRESSIONS AND OPERATIONS 6.196
Addition and Subtraction 6.196
To Multiply Two Polynomials 6.196
To Divide One Monomial by Another Monomial 6.196
Use of Algebra in the Simplification of Fractions 6.196
Algebraic Formulae 6.197
Bits and Bytes 6.197
Addition or Subtraction of Like Terms 6.197
To Multiply a Polynomial by a Monomial 6.197
Principal Algebraic Expressions and Formulas 6.198
Surds and Indices 6.198
Cross-Multiplication Method for the Solution of the Equations 6.198
Rearrangement and Transposition of Terms in Formulas 6.198
Order of Performing Arithmetic Operations 6.199
Coin Problems 6.199
Consecutive Integer Problems 6.200
Age Problems 6.200
Interest Problems 6.200
Mixture 6.200
Motion Problems 6.201
Work Problems 6.201
Multiple Choice Questions 6.202
Explanations 6.205

21 PROGRESSION 6.212
Arithmetical Progression 6.212
Geometrical Progression 6.213
Multiple Choice Questions 6.213
Explanations 6.215

22 PERMUTATION AND COMBINATION 6.218
Fundamental Principles 6.218
Multiple Choice Questions 6.220
Explanations 6.221

23 PROBABILITY 6.223
Multiple Choice Questions 6.224
Explanations 6.226

24 STATISTICS 6.229
Important Definitions 6.229
Multiple Choice Questions 6.231
Explanations 6.232

25 GEOMETRICAL PROPERTIES 6.234
Key Points 6.234
Types of Triangles 6.235
Geometric Propositions 6.236
Multiple Choice Questions 6.240
Explanations 6.244

26 AREA AND VOLUME 6.252
Square 6.252
Rectangle 6.253
Parallelogram 6.253
Right-angled Triangle 6.253
Acute-angled Triangle 6.253
Obtuse-angled Triangle 6.254
Trapezoid 6.254
Trapezium 6.254
Circle 6.255
Circular Sector 6.255
Circular Segment 6.255
Circular Ring 6.256
Circular Ring Sector 6.256
Spandrel or Fillet 6.256
Cube 6.257
Square Prism 6.257
Prism 6.257
Pyramid 6.257
Cylinder 6.258
Portion of Cylinder 6.258
V = Volume; S = Area of Cylindrical Surface 6.258
Hollow Cylinder 6.259
Cone 6.259
Sphere 6.259
Hollow Sphere 6.260
Multiple Choice Questions 6.260
Explanations 6.263

SECTION 2 DATA INTERPRETATION

1 DATA INTERPRETATION **6.271**

Tables 6.271
Graphs 6.271
Multiple Choice Questions *6.273*
Explanations *6.289*

SECTION 3 DATA SUFFICIENCY (NUMERICAL APTITUDE BASED)

1 DATA SUFFICIENCY **6.301**

Original Information 6.301
Question Stem 6.301
The Statements 6.301
Notes on Answer Categories 6.302
Pitfalls 6.302
Multiple Choice Questions *6.302*
Explanations *6.308*

MOCK TESTS

Mock Test 1 M1.
Mock Test 2 M2.2
Mock Test 3 M3.3
Mock Test 4 M4.5
Mock Test 5 M5.7
Mock Test 6 M6.8
Mock Test 7 M7.10
Mock Test 8 M8.12
Mock Test 9 M9.13
Mock Test 10 M10.15

Also available as e-Book

2nd Edition



GENERAL STUDIES

PAPER-1

Based on NCERT Syllabus

For Civil Services & State Services Examinations

KVK



• Sheelwant Singh • Kriti Rastogi • Sarika

Mc Graw Hill Education

Contents

Preface ..... *vii*
Strategy For Prelim Examination ..... *ix*

SECTION – I

Part-A: Indian Polity & Constitution

CLASS-VI

Our Civic Life

1. **Our Civic Life** **IA.4**
2. **The Changing Face of Our Villages** **IA.5**
3. **Rural Upliftment and Community Development** **IA.7**
   Community Development Programme *IA.8*
   Implementation of Community Development Programme *IA.8*
4. **Our Economic Life and Cooperation** **IA.10**
   Meaning of Cooperation *IA.10*
   Advantages of Cooperation *IA.10*
   Chief Cooperative Societies *IA.11*
5. **Village Panchayat** **IA.12**
   Block Development Officer *IA.13*
   Village-level worker *IA.13*
   Cooperation *IA.13*
   Panchayat *IA.13*
   Panchayati Raj *IA.14*
   Zila Praishad *IA.15*
   Municipalities and Municipal Corporations *IA.15*
   District Administration *IA.15*
   Public Property *IA.15*

CLASS-VII

1. **How We Made Our Constitution** **IA.20**
2. **What Our Ideals Are: The Preamble** **IA.23**
   The Preamble of Indian Constitution *IA.23*
3. **Chief Features of Our Constitution** **IA.25**
   Federal System *IA.25*
   Citizenship *IA.25*
   Fundamental Rights *IA.26*
   Secularism *IA.26*
4. **Our Fundamental Rights** **IA.27**
   Right to Equality *IA.27*
   Right to Freedom *IA.27*
   Right Against Exploitation *IA.28*
   Right to Freedom of Religion *IA.28*
   Cultural and Educational Rights *IA.28*
   Right to Constitutional Remedies *IA.28*
5. **Directive Principles: Principles of State Policy** **IA.29**
   Need For Directive Principles of State Policy *IA.29*
   Purpose of Directive Principles *IA.29*
   Chief Directive Principles *IA.29*
   Directive Principles and Fundamental Rights *IA.30*
6. **Our Law-Making Bodies** **IA.31**
   India and Its Government *IA.31*
   State Legislatures *IA.33*
7. **Our Parliament in Action** **IA.34**
   Lok Sabha Speaker and its Functions *IA.34*
   Chairperson of Rajya Sabha and its Functions *IA.34*
   Functions of Parliament *IA.34*
8. **Who Executes Laws?** **IA.36**
   Right to Make Law in the Country *IA.36*
   Process of Execution of Laws Passed by Parliament *IA.36*
   The President *IA.36*
   The Working of the Council of Ministers *IA.37*
   The Prime Minister *IA.37*
   The Civil Service *IA.37*
9. **State Executive (Who Executes Laws?)** **IA.39**
   State Executive *IA.39*
10. **Our Courts** **IA.42**
    Country and Courts *IA.42*

The Supreme Court of India IA.42
High Courts IA.43
Lok Adalats IA.44
11. Citizenship **IA.46**
Meaning of Citizen IA.46
Who are Indian Citizens? IA.46
Getting Indian Citizenship IA.46
Loss of Citizenship by an Indian IA.46
Who is Good Citizen? IA.46
12. Our Fundamental Duties **IA.48**
Meaning of Duty IA.48
Fundamental Duties IA.48
13. Our National Symbols **IA.50**
Meaning of National Symbol IA.50

CLASS-VIII

1. Our National Goals and Democracy **IA.54**
2. Democracy and the Citizen **IA.56**
Importance of Citizen in Democracy IA.56
3. Education and Democracy **IA.58**
Importance of Education in a Democracy IA.58
Progress in Education IA.58
4. The Caste System **IA.60**
Origin of the Caste System IA.60
Evils of the Caste System IA.60
Move Against Caste Discrimination IA.61
Means Helpful for Eradication of Caste System IA.61
5. Untouchability: A Curse for Indian Society **IA.62**
Meaning of Untouchability IA.62
The Constitution of India and Untouchability IA.62
Efforts for the Abolition of Untouchability IA.62
How to Remove Untouchability IA.63
6. Other Social Problems **IA.64**
Position of Women IA.64
Beggary IA.65
Drinking and Drug Addiction IA.65
Dowry IA.65
Communalism IA.65
Some Economic Offences IA.66
7. Welfare of the Scheduled Castes and the Scheduled Tribes **IA.67**
The Scheduled Castes IA.67
The Scheduled Tribes IA.68
8. Our Major Economic Problems **IA.69**
Poverty IA.69
Unemployment IA.69
Price Rise IA.70
9. Agricultural Development **IA.71**
Importance of Agriculture IA.71
Agricultural Production IA.71
10. Industrial Development **IA.73**
11. National Integration **IA.75**
12. India's Defence **IA.77**
Defence System of India IA.77
13. Foreign Policy of India **IA.78**
14. The United Nations **IA.80**
Historical Background of the Establishment of United Nations IA.80
Objectives of United Nations IA.80
Organs of the United Nations IA.81
India and the United Nations IA.82
15. World Problems **IA.84**
Human Rights IA.84
Arms Race IA.85
Disparities Between the Developed and the Developing Countries IA.85
Environmental Pollution IA.85

CLASS-XI

1. Landmarks in the Constitutional Development of India **IA.88**
Foundation of British Authority IA.88
Steps of the Constitution Development IA.91
2. Indian National Movement and Its Heritage **IA.93**
Indian National Congress IA.93
Extremist Movement IA.93
Revolutionaries IA.95
Muslim Communalism IA.95
Jinnah's Fourteen Points IA.96
Swaraj Party IA.98
Civil Disobedience Movement (1930–32) IA.98
First Round-Table Conference IA.98
Gandhi–Irwin Pact (1931) and the Second Round-Table Conference IA.98
Poona Pact IA.98
Resumption of Civil Disobedience Movement (1932–34) IA.99
Quit India Movement (1942) IA.99
3. Indian Constitution: Preamble, Salient Features and Indian Federation **IA.100**
Preamble to the Indian Constitution IA.100

Salient Features of Indian Constitution IA.102
Indian Federation and its Working IA.102
4. **Fundamental Rights, Fundamental Duties and Directive Principles of State Policy** **IA.105**
Fundamental Rights IA.105
Fundmental Duties IA.107
Directive Principles of State Policy IA.107
Panchayati Raj System IA.114
Seventy-third Amendment IA.114
Urban Local Government IA.115
5. **Indian Administration–Organisation and Functions** **IA.117**
Central Administration – Organisation and Functions IA.117
State Administration: Organisation and Functions IA.119
District Administration: Organisation and Function IA.121

Part-B: Geography

CLASS-VI

Land and People

1. **The Earth in our Solar System** **IB.124**
Heavenly Bodies IB.124
Solar System IB.125
Sun IB.125
Planets IB.125
Asteroid IB.126
Earth IB.126
Satellite IB.126
Moon IB.127
Earth in Universe IB.127
Points to Remember IB.128
2. **Latitude and Longitude** **IB.130**
Important Vocabulary IB.132
3. **Earth's Movement** **IB.133**
Rotation IB.133
Revolution IB.133
Important Vocabulary IB.135
4. **Biosphere** **IB.136**
Lithosphere IB.136
Hydrosphere IB.137
Atmosphere IB.138
Biosphere IB.139
5. **Africa** **IB.140**
Introduction IB.140
Position and Size IB.140
Physical Features IB.140
Rivers of Africa IB.141
The Lakes of Africa IB.142
The Deserts of Africa IB.142
Islands IB.142
Climate and Natural Vegetation IB.142
Natural Resources IB.144
Transport and Trade IB.145
6. **Country of Forest: Zaire** IB.147
Zaire: An Introduction IB.147
Land and Climate IB.147
Resources and its Use IB.147
Soil and Crops IB.147
Mineral and Industry IB.148
Hydro-Electric Power IB.148
Population IB.148
Main Cities IB.148
Ports IB.148
7. **The Country of Palm Trees: Nigeria** **IB.149**
Nigeria: An Introduction IB.149
Land and Climate IB.149
Resources and its Use IB.149
Mineral and Industry IB.149
Hydro-Electric Power IB.150
Population IB.150
Ports IB.150
Industrial Cities IB.150
8. **Gift of Nile River: Egypt—Arabian Republic** **IB.151**
Egypt: An Introduction IB.151
Land and Climate IB.151
Resources and its Use IB.151
Mineral and Industry IB.152
Population IB.152
Capital IB.152
Transportation IB.152
9. **Country of Gold and Diamonds: South Africa** **IB.153**
South Africa: An Introduction IB.153
Land and Climate IB.153
Resources and its Uses IB.153
10. **North America** **IB.155**
Introduction IB.155
Physical Features IB.155
Rivers IB.157
Climate and Natural Vegetation IB.157
Natural Resources IB.159
Mineral–Based Industries IB.162
Transport IB.162

11. South America **IB.164**
Introduction *IB.164*
Physical Features *IB.164*
Drainage *IB.165*
Resource Base and Economic Features *IB.166*
12. Australia **IB.168**
Introduction *IB.168*
Physical Features *IB.168*
The Climatic and Vegetation Belts of Australia *IB.169*
Mineral Resources *IB.170*
Power Resources *IB.170*
13. Antarctica **IB.172**
Introduction *IB.172*
Natural Resources *IB.172*
14. Asia **IB.174**
General Introduction *IB.174*
Drainage System *IB.176*
Natural Vegetation and Wildlife *IB.177*
Resources *IB.178*

CLASS-VII

Land and People

1. Atmosphere and its Temperature **IB.186**
Meaning of Atmosphere *IB.186*
Composition of Air *IB.186*
Layers of Atmosphere *IB.187*
Meaning of Temperature *IB.187*
Factors of Affecting Insolation *IB.187*
Distribution of Temperature and Heat Zone *IB.188*
2. Movement of Air **IB.190**
Motions of Air *IB.190*
Atmospheric Pressure *IB.190*
Air Pressure Zones *IB.191*
Permanent Air Zones *IB.192*
Monsoon *IB.194*
Local Winds *IB.194*
3. Water in Air **IB.196**
Water Vapour *IB.196*
Evaporation *IB.196*
Humidity *IB.196*
Condensation *IB.196*
Form of Condensation (Dew and Fog) *IB.196*
Precipitation and its Type *IB.197*
4. Local Weather and Sky **IB.199**
Weather *IB.199*
Climate *IB.199*
Temperature *IB.199*
Atmospheric Pressure *IB.199*
Direction of Wind and Speed *IB.199*
Humidity *IB.200*
Precipitation *IB.200*
Sky at Night *IB.200*
5. Ocean **IB.201**
Hydrosphere *IB.201*
Ocean *IB.201*
Movement of Ocean *IB.201*
6. North America – Land, Climate, Resources and its Uses **IB.204**
North America: An Introduction *IB.204*
Physical Features *IB.204*
Climate *IB.205*
Vegetation *IB.206*
Land Resources *IB.206*
7. USA **IB.207**
USA: An Introduction *IB.207*
Physical Features *IB.207*
Climate and Vegetation *IB.208*
Agriculture *IB.208*
Animal Husbandry *IB.209*
Fisheries *IB.209*
Forests *IB.209*
Minerals and Power Projects *IB.209*
Industry *IB.209*
Population *IB.210*
Transportation and Trade *IB.210*
8. Canada **IB.211**
Canada: An Introduction *IB.211*
Physical Features *IB.211*
Climate and Vegetation *IB.212*
Agriculture *IB.212*
Animal Husbandry *IB.212*
Forestry *IB.212*
Fisheries *IB.213*
Mining *IB.213*
Industry *IB.213*
Population *IB.213*
Transportation *IB.213*
9. Europe–Land, Climate, Resources and its Uses **IB.215**
Introduction *IB.215*
Physical Divisions of Europe *IB.215*
Rivers *IB.217*

Lakes IB.217
Climate and Natural Vegetation IB.217
Natural Vegetation Belts IB.217
Natural Resources IB.218
Minerals and Power Resources IB.218
Energy Resources of Coal IB.219
Petroleum IB.219
Natural Gas IB.219

10. The United Kingdom, France and Germany **IB.221**
United Kingdom: An Introduction IB.221
Relief IB.221
Climate IB.221
Resources IB.222
Agriculture IB.222
Industry IB.222
France: An Introduction IB.222
Topography IB.223
Climate IB.223
Resources IB.223
Agriculture IB.223
Industry IB.224
Transportation IB.224
Germany: An Introduction IB.224
Physical Features IB.224
Climate IB.225
Forest IB.225
Agriculture IB.225
Resources IB.225
Industry IB.225
Transportation IB.225
Main Cities IB.226

11. Russia: A Country of Two Continents **IB.227**
Introduction IB.227
Physical Feature IB.227
Climate IB.228
Vegetation IB.228
Agriculture IB.228
Animal Husbandry IB.228
Main Business IB.228
Minerals IB.229
Energy Resources IB.229
Industries IB.229
Transportation IB.229

CLASS-VIII

Land and People

1. Inside the Earth **IB.232**
The Earth's Interior IB.232
The Lithosphere IB.233

2. Changing Landforms **IB.235**
The Surface Features of the Land IB.235
Tectonic Activities IB.235
Volcanoes IB.235
Earthquakes IB.236

3. Sculpturing of the Landscape **IB.238**
Weathering IB.238
Mass Wasting IB.239
Soil and its Formation IB.239
Work of River IB.240

4. Landforms Made by Ground Water, Winds, Glaciers and Sea Waves **IB.242**
Landforms Made by Ground Water IB.242
Landforms Made by Winds IB.242
Landforms Made by Glaciers IB.243
Landforms Made by Sea Waves IB.243

5. Asia–The Physical Landscape **IB.245**
Asia: A General Introduction IB.245
Physical Features IB.245
The Climate IB.246
Natural Vegetation and Wild Life IB.247

6. Asia–People and Natural Resources **IB.249**
The People IB.249
Natural Resources IB.249
Economic Activities IB.250
Transport IB.251

7. Nepal, Bhutan and Pakistan **IB.252**
Nepal: An Introduction IB.252
Physical Features IB.252
Climate and Natural Vegetation IB.253
Natural Resources and Economic Activities IB.253
Bhutan an Introduction : IB.253
Physical Features IB.254
Climate and Natural Vegetation IB.254
Natural Resources and Economic Activities IB.254
Pakistan an Introduction IB.255
Physical Features IB.255
Climate and Natural Vegetation IB.255

Natural Resources and Economic Activities IB.256
8. **Myanmar, Bangladesh and Sri Lanka** **IB.257**
Myanmar: An Introduction IB.257
Physical Features IB.257
Climate and Natural Vegetation IB.258
Natural Resources and Economical Activity IB.258
Bangladesh: An Introduction IB.259
Physical Features IB.259
Climate IB.259
Natural Resources and Economic Activities IB.259
Sri lanka: An Introduction IB.260
Physical Features IB.260
Climate and Natural Vegetation IB.260
Natural Resources and Economic Activities: IB.260
9. **Indonesia and Malaysia** ***IB.262***
Indonesia: An Introduction IB.262
Physical Features IB.262
Climate and Natural Vegetation IB.262
Natural Resources and Economic Activities IB.263
Malaysia: An Introduction IB.263
Physical Features IB.263
Climate and Natural Vegetation IB.263
Natural Resources and Economic Activities IB.264
10. **China and Japan** **IB.265**
China: An Introduction IB.265
Physical Features IB.265
Climate and Natural Vegetation IB.266
Natural Resources and Economic Activities IB.266
Japan An Introduction IB.267
Physical Features IB.267
Climate and Natural Vegetation IB.267
Natural Resources and Economic Activities IB.268
11. **India** **IB.269**
India: An Introduction IB.269
Physical Features IB.270
The Climate IB.272
Natural Resources IB.272
Wood IB.276
Economic Activities IB.277

Part-C: General Science & Technology

CLASS - VI

1. **Science in Everyday Life** **IC.282**
2. **Things Around Us** **IC.283**
Naturally Occurring Materials IC.283
Man Made Materials IC.283
3. **Separation of Substances** *IC.***287**
Methods of Separation IC.287
4. **Measurement** *IC.***290**
5. **Changes Around Us** *IC.***292**
Some Other Important Facts IC.293
6. **Motion, Force and Machines** *IC.***294**
Motion IC.294
Speed IC.294
Force IC.295
Machines IC.296
7. **The Living World** **IC.297**
Classification of Plants IC.298
Classification of Animals IC.298
8. **Structures and Functions of the Living Body** **IC.299**
Specific Parts of Plants IC.299
Specific Parts of Animals IC.300
9. **Air** **IC.302**
Air is Useful to Human Beings IC.302
10. **Water** **IC.304**
Water Cycle in Nature IC.305
Hard and Soft Water IC.305

CLASS - VII

1. **States of Matter** **IC.308**
2. **Elements, Compounds and Mixtures** **IC.309**
Symbols and Formulae IC.309
3. **Heat Energy** **IC.312**
Effects of Heat IC.312
Hotness and Temperature IC.312
Amount of Heat IC.313
Melting Point IC.313
Boiling Point IC.313
4. **Transfer of Heat** **IC.314**
5. **Light and Shadows** **IC.316**
Light IC.316
Source of Light IC.316
How Light Travels IC.316

Shadows IC.317
Main Conclusion About Shadow Formation IC.317
The Eclipses IC.317
Reflection of Light IC.319
6. **Mirrors and Reflection of Light** **IC.319**
Reflection of Light IC.319
Image formed by a Plane Mirror IC.319
Spherical Mirrors IC.320
7. **Sound** **IC.321**
Vibrations or Oscillations IC.321
Loudness and Pitch IC.321

CLASS - XI

1. **Energy** **IC.324**
Meaning of Energy IC.324
Human and Energy IC.324
Accounting Energy IC.324
Accounting Power IC.324
Solar Heating Devices IC.325
Wind Energy IC.326
Hydroelectricity IC.326
Energy from the Oceans IC.326
2. **Fuels** **IC.328**
Different Forms of Fuel IC.328
Classification of Fuels IC.329
Combustion of Fuels IC.330
Attributes of an Ideal Fuel IC.330
3. **The Sun and Nuclear Energy** **IC.331**
4. **Nutrition** **IC.334**
Energy Requirements of the Body IC.334
Balanced Diet IC.334
5. **Space Exploration** **IC.335**
Space Science in World IC.335

Part-D: Science & Technology

CLASS - XII

1. **Nuclear Programme** **ID.340**
2. **Defence Technology** **ID.344**
3. **Space Technology** **ID.355**
India's Space Research Centres ID.356
Milestones in Indian Space Research and Development ID.357
4. **Information and Communication Technology** **ID.360**
National Informatics Centre (NIC) ID.360
Biotechnology Information System Network (BTISNET) ID.360
NICNET (NIC Network) ID.360
Software Technology Parks of India (STPI) ID.360
National e-Governance Plan (NeGP) ID.360
Information and Library Network (INFLIBNET) ID.361
Internet ID.361
Education and Research Network (ERNET) ID.363
Important Services of Internet ID.363
Medium of Communication ID.365
3G Standards ID.366
4G Technology ID.366
Bluetooth and Wireless Technology ID.367
FOCUS ID.369
IMAX ID.370
GPRS ID.370
IPTV ID.371
5. **Computer** **ID.376**
History ID.376
Characteristics of Computer ID.376
Limitations of Computer ID.376
Generations of Computer ID.377
Classification of Computer ID.378
Hardware ID.379
Input Device ID.380
Output Device ID.380
Memory ID.380
Types of RAM ID.381
Cache Memory ID.381
MANTRA ID.383
Computer Networks ID.384
Voice Telephony (VoIP) ID.385
Generations of Computers ID.385
Computer Simulation ID.385
Global Innovation and Technology Alliance (GITA) ID.387
EYCIN ID.388
Optical Discs ID.388
Google Earth ID.389
Identity Theft ID.389
Phishing ID.390
Optical Computing ID.390
Blogging / Blog ID.390
Virtual Reality (VR) ID.391
GSM ID.391
EDGE / EGPRS ID.392
Expert Systems ID.392

6. Renewable and Non-Renewable Energy ID.393
General Introduction ID.393
Ultra Mega Power Projects (Umpps) ID.394
Non-Conventional Energy ID.395
Natural Resources and Associated Problems ID.396
The Unequal Consumption of Natural Resources ID.396
Planning Land Use ID.397
Need for Sustainable Lifestyles ID.397
Renewable and Non-Renewable Energy Sources ID.397
Tidal Energy ID.399
Limitations of Non-Renewable Energy Sources ID.402
Natural Gas ID.403
Biomass Power / Cogeneration ID.403
Rural Energy Programmes ID.405
Integrated Rural Energy Programme (IREP) ID.405
URJAGRAM ID.406
Chemical Sources of Energy ID.406
Geo Thermal Energy ID.407
Energy from Urban and Industrial Wastes ID.408
National Programme on Energy Recovery from Urban and Industrial Wastes ID.409
Magneto Hydro Dynamics (MHD) ID.409
Fuel Cell ID.409
CFL ID.410

Part-E: History

CLASS - XI

Ancient History

1. The Prehistoric Period IE.412
Stone Age IE.412
Paleolithic Age IE.412
Mesolithic Age IE.413
Neolithic Age IE.413
Chalcolithic Phase IE.413
2. Indus Valley Civilisation (2500 BC–1500 BC) IE.414
Script and Language IE.414
Religion IE.414
Burial Practices IE.414
Trade and Commerce IE.415
Decline IE.415
Pottery IE.415
Seals IE.416
Major Sites IE.416
3. Vedic Age (1500 BC – 1000 BC) IE.420
Rig Vedic Polity IE.420
Rig Vedic Society IE.421
Social Divisions IE.421
Rigvedic Gods IE.421
Position of Women IE.423
4. Later Vedic Age (1000 BC–600 BC) IE.425
Political Organisation IE.425
Social Organisation IE.425
Later Vedic Religion IE.426
Vedic literature IE.426
Rig Veda IE.426
Yajur Veda IE.426
Sama Veda IE.426
Atharva Veda IE.426
The Upanishads IE.427
Ashramas IE.427
Kalpa Sutras IE.427
Dharma Shastras IE.427
Puranas IE.428
Epics IE.428
5. The Sangam Age IE.429
Three Early Kingdoms IE.429
Sangam Administration IE.430
Sangam Literature IE.430
6. Hinduism, Buddhism and Jainism IE.432
Hindu Literature IE.432
Schools IE.435
Buddhist Sects IE.436
Buddhist Philosophy IE.437
Buddhist Architecture IE.439
Philosophy IE.439
Sects of Jainism IE.441
7. The Rise of the Magadha Kingdom (600–300 BC) IE.444
The Mahajanapadas IE.444
Magadhan Ascendancy IE.444
8. The Mauryan Empire (325 BC–183 BC) IE.446
Chandragupta Maurya IE.446
Bindusara IE.446
Asoka IE.446
9. The Age of the Guptas (AD 320–550) IE.450
Chandra Gupta I IE.450
Samudra Gupta IE.450
Kumaragupta I IE.451
10. The Post-Gupta Period IE.454
Harshavardhana (AD 606–647) IE.454
Pallavas (AD 560–903) IE.454

Chola Empire (9th–12th Century) IE.454
Chalukyas (AD 543–757) IE.455

CLASS - XI

MEDIEVAL INDIA

1. **Political Development during Medieval India** **IE.458**
Vijayalaya IE.458
Aditya I IE.458
Parantaka (AD 907) IE.458
Sundarachola (AD 957–73) IE.458
Uttama Chola IE.459
Rajraja (AD 95–1024) IE.459
Rajendra I (AD 1014–1042) (The Zenith of Chola Power) IE.459
2. **North India on the Eve of Muslim Invasion** **IE.462**
Multan and Sindh IE.462
Kannauj IE.462
The Chauhans (Capital at Ajmer) IE.462
The Tomars IE.462
The Solankis of Gujarat (The Chalukyas) IE.462
The Parmaras IE.463
The Kalachuris IE.463
Palas IE.463
3. **Mahmud Gazni and Advent of Islam in North** *IE.464*
Mahmud Gazni IE.464
Qutubuddin Aibak (AD 1206–1210) IE.465
Aram Shah IE.465
Iltutmish (1211–36) IE.465
Ruknuddin Firuz IE.466
Raziya Sultan (1236–40) IE.466
Nasiruddin Mahmud (1246–66) IE.466
Balban (1266–86) IE.466
Kaiqubad IE.467
Kaymurs IE.467
4. **Our Civic Khilji Dynasty Life** **IE.469**
Jalaluddin Khilji (1290–96) IE.469
Allauddin Khilji (1206–1316) IE.469
Successors of Alauddin Khilji IE.471
Qutubuddin Mubarak Shah (only 17–18 years old) IE.472
5. **Tughlaq Dynasty** **IE.473**
Ghiyasuddin Tughlaq (1320–25) IE.473
Mohammad Bin Tughlaq (1325–1351) IE.473
Firuz Shah Tughlaq (1351–1388) IE.476
Mohammad Khan (1387) IE.477
Ghiyasuddin Tughlaq Shah II (1387–89) IE.477
Abu Baqr (1381–90) IE.477
Nasiruddin Muhammad Shah (1390–94) IE.477
Humayun (1394–95) IE.477
Mahmud Shah (1394–1412) IE.477
Daulat Khan Lodi (1413–1414) IE.478
Sayyids (1414–1450) IE.478
6. **Lodi Dynasty** **IE.479**
Bahlul Lodi (1451–89) IE.479
Sikandar Lodi (1489–1517) IE.479
Ibrahim Lodi (1517–1526) IE.479
Regional Kingdoms IE.480
Sultanate's Administration IE.482
Ministers and Departments IE.483
Amir Khusro IE.484
Zia-ud-din Barani IE.484
Vijayanagar Empire and the Bahamani Kingdoms IE.486
7. **The Sangama Dynasty** **IE.488**
8. **The Saluva Dynasty** **IE.489**
The Tuluva Dynasty IE.489
Achyuta Raya (1529–1542) IE.491
Venkata I Ventatadri (1542) IE.491
9. **The Aravidu Dynasty** **IE.492**
Vijayanagar Architecture IE.492
Vijayanagar Society and Administration IE.492
10. **Bahmani Kingdom** **IE.494**
Alauddin Hasan Bahman Shah (1347–1358) IE.494
Taj-ud-din Firoz Shah (1397–1422) IE.494
Ahmad Shah Wall (1422–1435) IE.494
Mahmud Gawan IE.494
11. **The Mughals** **IE.495**
Babur (1484–1530) IE.495
Humayun (1530–1556) IE.496
Sur Interregnum IE.497
Akbar (1542–1605 ad) IE.498
Religious Policy IE.500
Jahangir IE.500
Shah Jahan IE.501
Aurangzeb IE.502
12. **Mughal Architecture** **IE.504**
Babar IE.504
Humayun IE.504
Akbar IE.504
Jahangir IE.505

Shahjahan IE.505
Aurangzeb IE.505
Regional Architecture IE.505
Mughal Painting IE.506
Rajasthani School IE.507
Later Mughals IE.508
13. Medieval Religious Movements **IE.510**
Bhakti Movement IE.510
Sankaracharya (788–820) IE.510
Ramanujacharya (d. 1137) IE.511
Madhvacharya (1199–1278) IE.511
Nimbarka (Thirteenth Century) IE.511
Vallabh Acharya (1479–1531) IE.511
Srikanth Acharya IE.512
Bengal IE.512
Sikhism IE.513
14. Mystical Movement in Islam: Sufi Movement **IE.514**
Chistiyya Silsilah IE.515
Suhrawardi Order IE.515
Firdausiyya Order IE.516
Kubrawiyya Order IE.516
Qalandars IE.516
Shattari Order IE.516
Qadariyya Order IE.517
Nakshbandiyya Order IE.517
Mahadawi Movement IE.517
Raushaniya Movement IE.518
Rise of the Marathas IE.518
Shivaji's Administration IE.528
The Peshwa Administration IE.530
Village Administration IE.531
Town Administration IE.531
Judicial Administration IE.531
Revenue Administration IE.531

CLASS - XII

Modern India

1. The Advent of the Europeans **IE.534**
Portuguese IE.534
Dutch IE.534
English IE.534
Danish IE.535
French IE.535
2. Ascendancy of the British **IE.536**
The Carnatic Wars IE.536
The East India Company and the Bengal Nawabs IE.536
Mir Qasim (1760–64) IE.537
Nizam-ud-Daulah (1765–72) IE.537
Anglo Mysore Wars IE.537
Anglo-Maratha Wars IE.537
Anglo-Sikh Wars IE.538
Anglo-Burmese Wars IE.538
Anglo-Afghan Wars IE.538
3. Economic and Commercial Policy **IE.539**
Phases of Economic Policy in India IE.539
Drain of Wealth Theory IE.540
Land Revenue Systems IE.540
4. The Revolt of 1857 **IE.542**
The Beginning IE.542
Causes of the Revolt IE.542
5. Social and Religious Movement **IE.544**
Brahmo Samaj IE.544
Sadharan Brahmo Samaj IE.545
Dharma Sabha IE.545
The Paramahansa Mandali IE.545
The Prarthana Sabha IE.545
Arya Samaj IE.546
Rama Krishna Paramhansa and Swami Vivekanand IE.547
6. The Indian National Congress **IE.549**
Political Associations Before 1885 IE.549
7. Swadeshi Movement **IE.553**
The Moderates and the Extremists IE.554
The Extremists IE.555
Home Rule Movement IE.557
Rowlatt Satyagraha IE.558
8. Freedom Struggle Phase-1 **IE.560**
The Earlier Phase IE.560
Khilafat and the Non-Cooperation Movement IE.561
Revolutionary Terrorism IE.563
Bengal IE.563
Punjab IE.563
Maharashtra IE.563
Abroad IE.564
9. Freedom Struggle Phase – 2 **IE.565**
Influences on Revolutionary Movement IE.565
Miscellaneous IE.565
Swaraj Politics and Towards Civil Disobedience Movement IE.566
Towards Civil Disobedience Movement IE.567

Civil Disobedience Movement (CDM) IE.568
Pause IE.569
Delhi Pact (Gandhi-Irwin Pact—1931) IE.569
Communal Award and Poona Pact IE.570
CDM Compared to NCM IE.571
Gandhi's Harijan Campaign IE.571
Third Round Table Conference IE.571
Towards Quit India Movement IE.571
Provincial Elections Under the GOI Act 1935 IE.572
August Offer, 1940 IE.572
Individual Satyagraha IE.572
The Cripps Mission: March–April 1942 IE.573
Quit India Movement IE.573
Public Participation IE.573
Towards Freedom IE.574
Indian National Army IE.575
Rin Mutiny (1946) IE.575
Cabinet Mission (March–June 1946) IE.575
Attlee's Announcement (February 1947) IE.576
Mountbatten Plan (3rd June Plan) IE.576
Indian Independence Act 1947 IE.577
Integration of States IE.577

10. Development of Education **IE.578**
Sir Charles Wood Despatch (1854) IE.578
The Hunter Education Commission (1882–83) IE.578
The Raleigh Commission (1902) IE.578
The Indian Universities Act (1904) IE.578
Sadler Commission (1917–19) IE.579
Wardha Scheme IE.579
Sargeant Plan of Education (1944) IE.579
Constitutional Development IE.579
The Regulating Act, 1773 IE.579
The Pitts India Act, 1784 IE.579
The Charter Act of 1793 IE.580
The Charter Act of 1813 IE.580
The Charter Act of 1833 IE.580
The Charter Act of 1853 IE.580
The Government of India Act, 1858 IE.580
The Indian Council Act, 1861 IE.581
The Indian Council Act, 1892 IE.581
Indian Council Act, 1909 (Morley-Minto Act) IE.581
The Government of India Act, 1919 IE.581
The Government of India Act, 1935 IE.582
Indian Independence Act, 1947 IE.582
India's Freedom Struggle IE.582

11. Governor-Generals and Viceroys **IE.587**
The Governors of Bengal IE.587
Governor-Generals (1772–1857) IE.587
Sir John Shore (1793–1798) IE.588
Lord Wellesley (1798–1805) IE.588
George Barlow (1805–1807) IE.588
Lord Minto 1(1807–1813) IE.588
Lord Hastings (1813–1823) IE.588
Lord Amherst (1823–28) IE.589
Lord William Bentick (1828–35) IE.589
Sir Charles Metcalfe (1834–1836) IE.589
Lord Auckland (1836–42) IE.589
Lord Ellenborough (1842–44) IE.589
Lord Hardinge I (1844–48) IE.589
Lord Dalhousie (1848–56) IE.589
Administrative Reforms IE.590
Educational Reforms IE.590
Public Works IE.590
Lord Canning (1856–62) IE.590
Lord Elgin I (1862–63) IE.591
Sir John Lawrence (1864–69) IE.591
Lord Mayo (1869–72) IE.591
Lord Northbrook (1872–76) IE.591
Lord Lytton (1878–80) IE.591
Lord Ripon (1880–84) IE.591
Lord Dufferin (1884–88) IE.592
Lord Lansdowne (1888–94) IE.592
Lord Elgin II (1894–1899) IE.592
Lord Curzon (1899–1905) IE.592
Lord Minto II (1905–1910) IE.592
Lord Hardinge II (1910–1916) IE.593
Lord Chelmsford (1916–21) IE.593
Lord Reading (1921–1926) IE.593
Lord Irwin (1926–1931) IE.593
Lord Willingdon (1931–1936) IE.594
Lord Linlithgow (1936–1944) IE.594
Lord Wave II (1944–1947) IE.594
Lord Mountbatten (March–August 1947) IE.594
C. Rajagopalachari IE.594

12. Art and Culture **IE.595**
Music IE.595
Khayal IE.597
Thumri IE.597
Tihaayi IE.597
Dadra IE.597
Ghazal IE.597
Dance IE.598

Drama IE.602
Art, Architecture and Sculpture IE.604
Personalities IE.606

Part-F: Indian Economy

CLASS - XI & XII

Introduction to Indian Economy & Economic Development & Growth

1. **Basic Concepts** IF.612
Meaning of Economics IF.612
Branches of Economics IF.612
Meaning of Economy IF.612
2. **National Income** IF.616
Concept of National Income IF.616
National Income IF.617
Estimates of National Income IF.617
3. **Agriculture** IF.618
Land Reform IF.619
Classification of Major Crops in India IF.620
Green Revolution in India IF.620
New National Agricultural Policy IF.622
Major Schemes of Agriculture IF.624
4. **Industrial Sector** IF.627
Importance of Industry IF.627
Industrial Policy in India IF.628
Development of Micro, Small and Medium Enterprises (MSMEs) IF.629
Sixth Economic Census IF.630
Maharatna, Navratna, Mini Ratna IF.630
Industrial Sickness IF.633
Industrial Finance IF.633
5. **Budget** IF.634
Types of Budget IF.634
Types of Funds IF.635
Public Receipts IF.636
Public Expenditure IF.637
Types of Deficit IF.638
Some Important Facts Related to Budget IF.639
6. **Economic Planning of India** IF.640
Meaning of Economic Planning IF.640
Objectives of Planning IF.640
Different Types of Planning IF.640
Planning Commission IF.642
Vision of 12th Five-Year Plan (2012–17) IF.645
Economic Reform IF.647
7. **Money and Banking** IF.649
Meaning of Money IF.649
Difference between Capital and Assets IF.649
Commercial Banks IF.651
Commercial Bank Divided in Two Parts IF.652
8. **Poverty, Unemployment and Employment Programmes** IF.653
Poverty IF.653
Unemployment IF.655
Underemployment IF.657
Causes of Unemployment in India IF.657
Poverty Alleviation and Employment Generation Programmes IF.657
Social Protection IF.659
9. **Inflation** IF.660
Meaning of Inflation IF.660
Factors of Inflation IF.661
Types of Inflation IF.662
Effects of Inflation IF.663
10. **Infrastructure** IF.665
Rural Infrastructure IF.665
Urban Infrastructure IF.665
UIDAI IF.666
11. **Tax** IF.673
Meaning of Tax and Fee IF.673
Classification of Taxes IF.674
Types of Tax IF.674
Some Important Direct Tax IF.675
Some Important Indirect Tax IF.675
12. **International Economic Organisations** IF.677
13. **Glossary** IF.679

SECTION – II

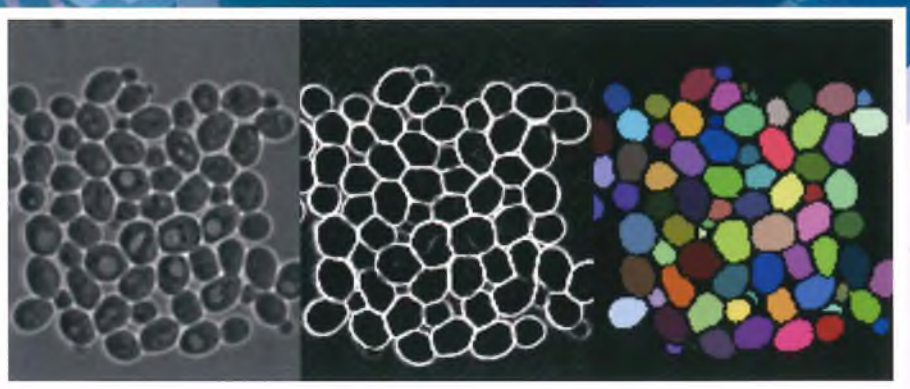
General Studies Model Test Papers

- **GS Model Test Paper-1** II.3
- **GS Model Test Paper-2** II.27
- **GS Model Test Paper-3** II.44

Genes & Genetic Systems

April 2020 Vol.95, No.2

ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಗ್ರಂಥಾಲಯ
ಗಾ.ಕೃ.ವಿ.ವಿ., ಬೆಂಗಳೂರು-560 065
14 OCT 2020
T63/95



GGS https://gsj3.org

ISSN 1341-7568

Genes & Genetic Systems

(The Genetics Society of Japan)

April 2020 Vol.95, No.2

CONTENTS

Full papers

Construction of genomic marker sets based on the chloroplast genome of a green alga, *Ulva pertusa* (syn. *Ulva australis*), leads to simple detection of *Ulva* species — Chisa Mitsuhashi, Hiroshi Teramura and Hiroaki Shimada — 55

De novo transcriptome analysis reveals an unperturbed transcriptome under high cadmium conditions in the Cd-hypertolerant fern *Athyrium yokoscense* — Yuko Ukai, Komaki Inoue, Manaka Kamada, Hiroshi Teramura, Shunsuke Yanagisawa, Kazuyoshi Kitazaki, Kazuhiro Shoji, Fumiyuki Goto, Keiichi Mochida, Toshihiro Yoshihara and Hiroaki Shimada — 65

A novel tracking and analysis system for time-lapse cell imaging of *Saccharomyces cerevisiae* — Fumito Kanada, Yuhei Ogino, Toshiyuki Yoshida and Masaya Oki — 75

Nutritional conditions and oxygen concentration affect spontaneous occurrence of homologous recombination events but not spontaneous mutagenesis in *Escherichia coli* — Lan Anh Thi Le, Phooi Yee Chang, Sayaka Ando, Thomas M. Conrad, Shohei Nunose, Akiko Sakai, Haruka Uefune, Asako Furukohri, Masahiro Tatsumi Akiyama and Hisaji Maki — 85

Short communication

Development of self-fertile deletion homozygous and ditelosomic lines for the long arm of chromosome 2A in common wheat — Shotaro Takenaka, Giri P. Joshi and Takashi R. Endo — 95



Front inset: Single-cell tracking is critical for cell lineage analysis. In this issue, Fumito Kanada et al. developed a software-based system to analyze time-lapse cellular images of budding yeast, *Saccharomyces cerevisiae*. This approach involves sequential cell extraction/tracking and analysis phases. The cell extraction/tracking phase generates a set of necessary information for each cell, such as geometrical properties and daughter–mother relationships, using image processing-based analysis techniques. The cover pictures show the cell region extraction process. In the left panel, the outer peripheral edge of cells is visible in a raw image of a monolayer colony. The middle panel shows the cells after edge enhancement and interpolation to enhance outer peripheral edges. On the right is the result of cell region extraction after the watershed algorithm was applied to the middle panel. Each cell is shown in a different color. The system took only two minutes to identify 1,708 cells in one frame.

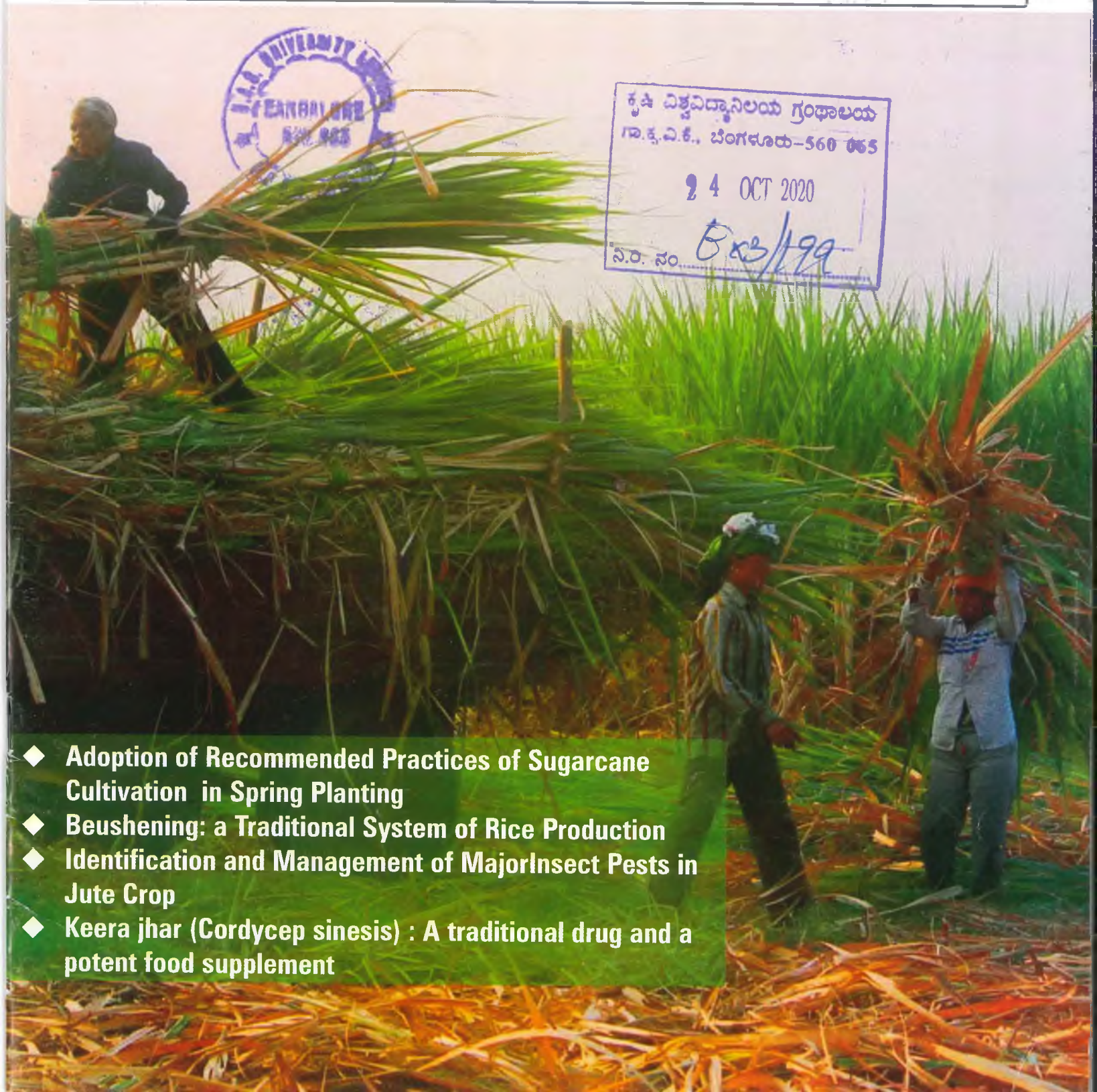
Printed by Letterpress Co., Ltd.

Postal Regd. No. UA/NTL- 10/2015–2017

ISSN 0537-1589

Indian Farmers' Digest

This copy ₹15.00 | August 2020 | Annual Subs.₹150.00



ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಗ್ರಂಥಾಲಯ
ಗಾ.ಕೃ.ವಿ.ಕೆ., ಬೆಂಗಳೂರು-560 065
24 OCT 2020
ನಿ.ರಿ. ಸಂ. 8x3/199

- Adoption of Recommended Practices of Sugarcane Cultivation in Spring Planting
- Beushening: a Traditional System of Rice Production
- Identification and Management of MajorInsect Pests in Jute Crop
- Keera jhar (Cordycep sinesis) : A traditional drug and a potent food supplement

Ex3/199

Indian Farmers' Digest

Volume: 53, No. 08

August 2020

PATRON
Dr. Tej Partap
Vice-Chancellor

Director Communication
Dr. S.K. Bansal

Joint Director Communication
Dr. Neelam Bhardwaj

EDITORS
Dr. M. A. Ansari
Dr. V. L. V. Kameswari
Email id: indianfarmersdigest@gmail.com

EDITORIAL BOARD
Dr. S.K. Guru
Dr. A.K. Upadhyay
Dr. P.K. Omre
Dr. Ashutosh Singh
Dr. Anita Rani
Dr. Vipul Gupta

Publisher and the Editor are not responsible for views expressed in the articles published in this issue. Authors are required to base their articles on authenticated material/source.

For subscription & advertisement contact:
BUSINESS MANAGER
V.K. Singh
Directorate of Communication
G.B.P.U.A.&T., Pantnagar
bmpantuniversity@gmail.com

Cost of one copy	Rs. 15
Annual Subscription	Rs. 150
Five years' Subscription	Rs. 675
Ten years' Subscription	Rs. 1,200
Fifteen years' Subscription	Rs. 1,800

Contents

Editorial 02

Agro-World News Round up 03

1. **Potential Effect of Covid-19 on Indian Agriculture and Government Initiatives to neutralize Covid-19 Effects** 04
   Girijesh Singh Mahra, J.P. Sharma, R.R. Burman and Ritu Jain
2. **Future of Globalization after Corona Crises** 10
   Awadhesh Narayan Shukla, S.K. Tewari and Ajay Kumar Tripathi
3. **Beushening: a Traditional System of Rice Production** 13
   S. Chaturvedi, J.P. Singh and Pradeep Kumar
4. **Improved Management of Major Insect Pests in Jute Crop** 15
   B S. Gotyal, S. Satpathy and V. Ramesh Babu
5. **Keera jhar (Cordycep sinesis) : A traditional drug and a potent food supplement** 19
   K.C.Verma, Kanchan Gairola and Nidhi Joshi
6. **Recommended Practices of Sugarcane Cultivation under Spring Planting** 21
   Kushal Vir
7. **Round the year green fodder production systems** 24
   Devendra Kumar Meena and Nidhi
8. **Subabul - Fodder tree for livestock** 29
   Vishnu K Solanki
9. **Agricultural water contamination: Impact on human health, crops and environment** 31
   R. K. Srivastava, Raj Kumar Pandey and Maitreyie Narayan
10. **Enhancing production through new rural technologies** 34
    R.S. Sengar, Alok Kumar Singh and Reshu Chaudhary
11. **Common deficiency diseases of dairy animals** 38
    N.S. Jadon, Akanksha Godiyal and Nikhil Pratap Singh
12. **Bamboo - The Green Gold** 40
    Sarala Yadav, Alok Kumar and S.K. Yadav
13. **Role of Youth in Agriculture: Challenges and Opportunities** 43
    M.A. Ansari and Neha

Published by : Communication Centre
G.B. PANT UNIVERSITY OF AGRICULTURE & TECHNOLOGY
PANTNAGAR - 263 145, U.S. NAGAR (UTTARAKHAND)

ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಗ್ರಂಥಾಲಯ
560 65
14 OCT 2020
Ex3/199
ನಿ.ರಿ. ಸಂ.....

CONQUER THE SEA

arihant

INDIAN NAVY DOCKYARD APPRENTICE

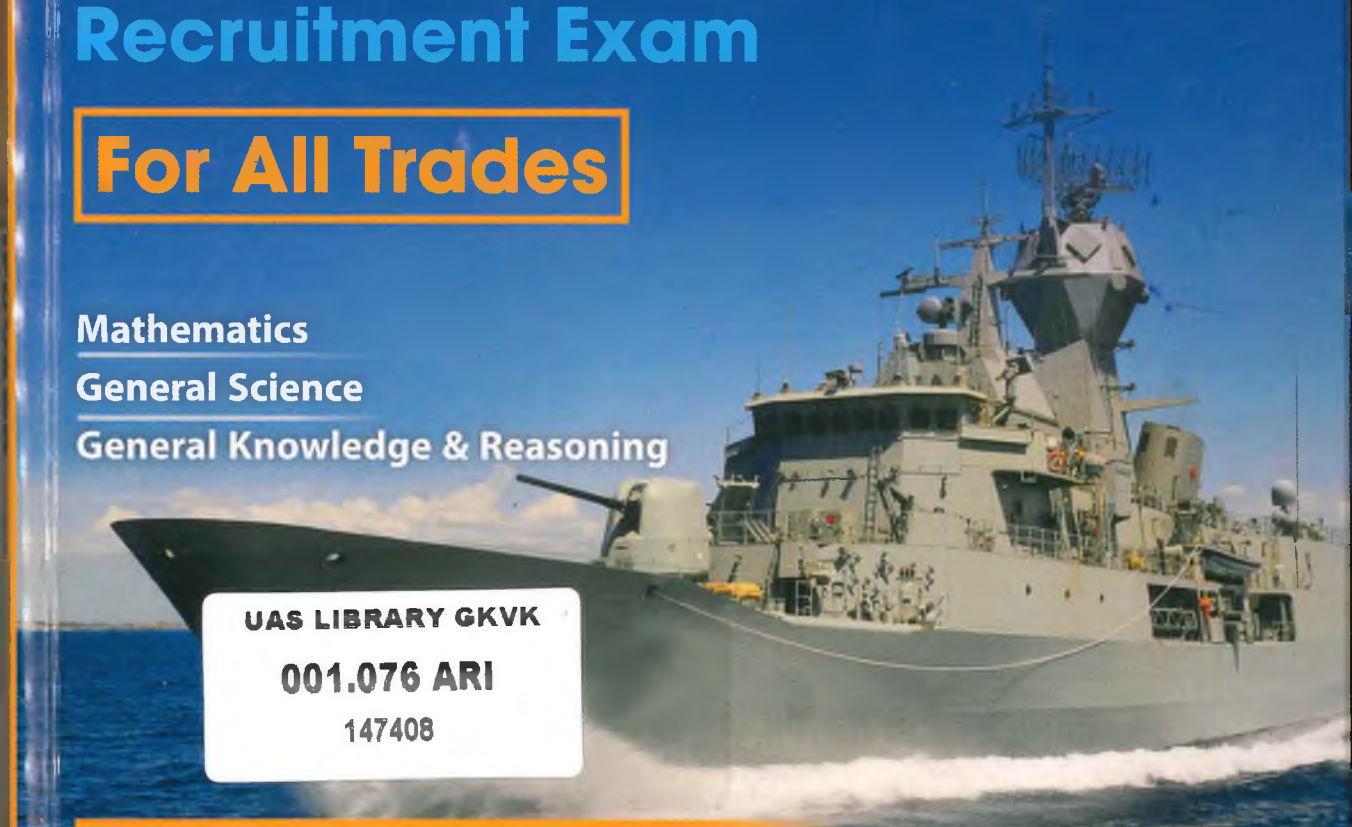
Recruitment Exam

For All Trades

Mathematics

General Science

General Knowledge & Reasoning



UAS LIBRARY GKVK
001.076 ARI
147408

Chapterwise Important Study Notes

Exam Pattern Practice Questions

Exam Pattern Sample Papers (Solved & Unsolved)

CONTENTS

Model Solved Paper 2018 1-12

MATHEMATICS 1-116

1. Number System 3-8
2. Fraction and Decimal 9-13
3. Square Root, Cube Root, Surds and Indices 14-20
4. HCF and LCM 21-26
5. Fundamental Arithmetical Operations 27-29
6. Average 30-34
7. Percentage 35-38
8. Profit, Loss and Discount 39-45
9. Simple and Compound Interests 46-49
10. Ratio and Proportion 50-53
11. Partnership 54-57
12. Mixture and Alligation 58-60
13. Time and Work 61-65
14. Speed and Distance 66-70
15. Geometry 71-83
16. Mensuration 84-92
17. Algebra 93-101
18. Trigonometry 102-107
19. Data Interpretation 108-116

GENERAL SCIENCE 1-84

1. Units and Measurements 3-5
2. Motion and Force 6-10
3. Gravitation 11-15
4. Work, Power and Energy 16-19
5. Waves and Sound 20-23
6. Heat and Temperature 24-27
7. Light 28-23
8. Electricity and Its Applications 34-37

9. Magnetic Effect of Current 38-40
10. Our Universe 41-44
11. Matter Around Us 45-48
12. Atomic Structure, Radioactivity and Chemical Bonding 49-52
13. Acids, Bases and Salts 53-56
14. Metals and Non-Metals 57-61
15. Carbon and its Compounds 62-65
16. Human Body 66-71
17. Health and Diseases 72-84

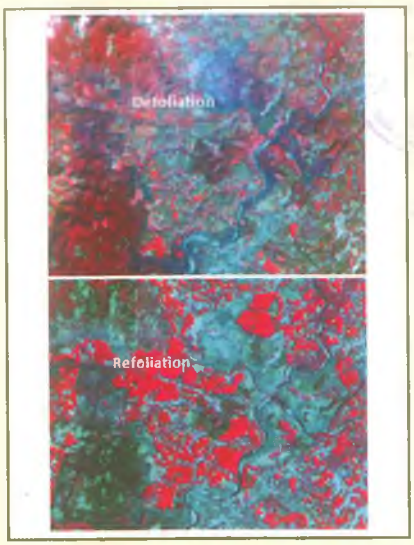
GENERAL KNOWLEDGE AND REASONING

General Knowledge **1-82**
1. History of India 3-22
2. Geography of World and India 23-40
3. Indian Polity 41-52
4. Indian Economy 53-60
5. General Knowledge 61-79
6. Sports 80-82

Reasoning **1-80**
1. Analogy 3-7
2. Classification 8-10
3. Word Formation and Arrangement 11-15
4. Coding-Decoding 16-21
5. Series 22-25
6. Inserting the Missing Character 26-28
7. Ranking and Time Sequence Test 29-34
8. Blood Relation 35-39
9. Mathematical Operations & Reasoning 40-45
10. Direction Sense Test 46-51
11. Venn Diagram 52-55
12. Sitting Arrangement and Puzzle Test 56-61
13. Syllogism and Statement & Conclusion 62-65
14. Non-Verbal Intelligence 66-80

Sample Papers (1-2) **1-14**

Volume 33 • Number 2 • 2020 • Print ISSN 2454-4841 • Online ISSN 2454-485X • CODEN IJNREZ



RUBBER SCIENCE

Continuation of Natural Rubber Research

04 OCT 2020

2
August
2020

CONTENTS

BIOLOGY & CULTIVATION

Crisis due to low price of natural rubber: What price will save the Indian rubber plantation sector?
James Jacob 107

Conserving/improving biodiversity in rubber plantations in India: A review of possibilities and ecological implications
M.D. Jessy and James Jacob 112

Current status and future prospects of mapping rubber plantations in India
B. Pradeep, James Jacob and K. Annamalainathan 127

Water use by natural rubber trees in three different agro-climatic regions of India
K. Annamalainathan, James Jacob, S. Ravichandran and Sandeep Kumar 140

Continued on back cover

RUBBER SCIENCE

VOLUME 33 • NUMBER 2 • 2020

Rubber Research Institute of India

Spatial variability of plant available zinc and boron in the traditional rubber growing regions and Konkan region of India
Annie Philip, A. Ulaganathan, B. Pradeep, P. Prasannakumari, M.D. Jessy, James Jacob, Joshua Abraham, V.K. Syamala, K.K. Ambily, Sherin George, Phebe Joseph, Thomas Eapen, Joyce Cyriac, P.M. Mathews, K.S. Anilkumar and K.M. Nair 152

Availability of nitrogen and phosphorus in the soil and growth of natural rubber plants under integrated nutrient management system
Mercykutty Joseph, Kochuthresiamma Joseph, G. Hareeshbabu and Roshni Susan Elias 164

Response to yield stimulation in elite pipeline clones
Thomson Abraham and Kavitha K. Mydin 177

Optimization of yield through judicious stimulation in new clones in the North eastern region of India
S.K. Dey 186

Performance of new ortet selections of *Hevea brasiliensis* in Meghalaya
Umesh Chandra, R.P. Singh, M.J. Reju, Kavitha K. Mydin and D. Panda 198

Performance of polyclonal seedlings of diverse origin in Northern West Bengal
Gitali Das, Sandep Kumar, Jayanta Sarkar and James Jacob 204

Leaf potassium content as an index of adaptation to drought tolerance in natural rubber
K.K. Ambily, M.A. Mercy, S. Ravichandran and M.D. Jessy 210

CHEMISTRY & TECHNOLOGY

Preparation of quality sheets from ammonia preserved field latex
Joy Joseph and Manoj Kurian Jacob 221

Printed and published by Dr. James Jacob, Director, for and on behalf of the Rubber Research Institute of India, Rubber Board, Kottayam-686 009, Kerala, India, and printed at Alois Graphics, Kottayam, Kerala, India. Editor-in-Chief: Dr. James Jacob

ವಿಶೇಷ ಸಂಚಿಕೆ

ಯೋಜನಾ

ಅಕ್ಟೋಬರ್ 2020 ಅಭಿವೃದ್ಧಿ ಮಾಸಪತ್ರಿಕೆ ₹ 30

ಅಂತಾರಾಷ್ಟ್ರೀಯ ಸಂಬಂಧಗಳು

ಪ್ರಧಾನ ಲೇಖನ

ಸಾಂಕ್ರಾಮಿಕ ಸಂದರ್ಭದಲ್ಲಿ ಭಾರತದ ವಿದೇಶಾಂಗ ನೀತಿ
ಹರ್ಷವರ್ಧನ್ ಶ್ರಿಂಗ್ಲಾ

ವಿಶೇಷ ಲೇಖನ

ಕೊವಿಡ್-19 ; ಜಾಗತಿಕ ಮಟ್ಟದ ರಾಜಕೀಯ-ಆರ್ಥಿಕ ಆಯಾಮಗಳು
ಶ್ಯಾಮ್ ಸರಣ್

ಕೇಂದ್ರ ಪ್ರಜ್ಞೆ

ಭಾರತದ ಪಾಣಿಜ್ಯ ವಿಕಾಸ
ದಮ್ಮು ರವಿ

ಭಾರತ-ಅಮೆರಿಕ ಹೆಚ್-1ಬಿ ವೀಸಾ
ರೂಪಾ ಚಂದ

ಭಾರತ-ರಶಿಯಾ ಸಹಕಾರ
ಡಾ. ಅಮಿತಾಭ್ ಸಿಂಗ್

ಭಾರತೀಯ ಸಮುದಾಯ : ಸಮಸ್ಯೆ-ಸವಾಲುಗಳು
ಪ್ರೊ.ಎಸ್.ಮಣಿವಸಕನ್

ಪ್ರಚಲಿತ ವಿದ್ಯಮಾನ

ರಾಷ್ಟ್ರೀಯ ನೇಮಕಾತಿ ಸಂಸ್ಥೆ
ಅಮಿತಾಭ್ ಏರಿ



ಅಕ್ಟೋಬರ್ 2020 ಸಂಚಿಕೆ–03 ಸಂಪುಟ – 37 ಯೋಜನಾ

ಮುಖ್ಯ ಸಂಪಾದಕ
ಧೀರಜ್ ಸಿಂಗ್

ಹಿರಿಯ ಸಂಪಾದಕರು
ಜಯಂತಿ ಕೆ.ವೈ.
ಬಿ.ಕೆ. ಕಿರಣ್ಮಯಿ

ಮುಖಪುಟ ವಿನ್ಯಾಸ
ಗಜಾನನ ಪಿ. ಧೋಪೆ

ಯೋಜನೆಯ ಸಂದೇಶವನ್ನು ಎಲ್ಲ ಜನರಿಗೆ ಮುಟ್ಟಿಸಲು, ಸಾಮಾಜಿಕ ಹಾಗೂ ಆರ್ಥಿಕ ಅಭಿವೃದ್ಧಿಯ ಎಲ್ಲ ಸಮಸ್ಯೆಗಳ ಬಗ್ಗೆ ಪ್ರಾಮಾಣಿಕ ಚರ್ಚೆ ಕೈಗೊಳ್ಳುವುದನ್ನು ಯೋಜನಾ ಉತ್ತೇಜಿಸುತ್ತದೆ. ಭಾರತ ಸರ್ಕಾರದ ಸಮಾಚಾರ ಮತ್ತು ಪ್ರಸಾರ ಸಚಿವಾಲಯದಿಂದ ಪ್ರಕಟಿತವಾದರೂ, ಯೋಜನಾ ಕೇವಲ ಅಧಿಕೃತ ದೃಷ್ಟಿಕೋನವನ್ನು ಬಿಂಬಿಸುವುದಕ್ಕೆ ಮಾತ್ರ ಸೀಮಿತವಾಗಿಲ್ಲ. ಕನ್ನಡ, ಇಂಗ್ಲೀಷ್, ಹಿಂದಿ, ಅಸ್ಸಾಮಿ, ಗುಜರಾತಿ, ಬಂಗಾಲಿ, ಮಲಯಾಳಂ, ಮರಾಠಿ, ತಮಿಳು, ತೆಲುಗು, ಒರಿಯಾ, ಪಂಜಾಬಿ ಮತ್ತು ಉರ್ದು ಭಾಷೆಯಲ್ಲಿ ಯೋಜನಾ ಪ್ರಕಟವಾಗುತ್ತಿದೆ.

ಲೇಖನಗಳಲ್ಲಿ ವ್ಯಕ್ತವಾದ ಅಭಿಪ್ರಾಯಗಳು ಲೇಖಕರವು. ಅವರು ಪ್ರತಿನಿಧಿಸುವ ಸಂಸ್ಥೆ ಅಥವಾ ಸರ್ಕಾರದ ಅಭಿಪ್ರಾಯವಲ್ಲ. ಯೋಜನಾ ಪತ್ರಿಕೆಯಲ್ಲಿ ಪ್ರಕಟವಾಗುವ ಜಾಹಿರಾತುಗಳ ಯಥಾರ್ಥತೆ ಆಯಾ ಸಂಸ್ಥೆಗಳ ಹೊಣೆಗಾರಿಕೆಯಾಗಿರುತ್ತದೆ. ಚಿತ್ರಗಳು ಸಾಂದರ್ಭಿಕ.

ವಿಳಾಸ
ಯೋಜನಾ – ಕನ್ನಡ,
ಪ್ರಕಾಶನ ವಿಭಾಗ,
ಸಮಾಚಾರ ಮತ್ತು ಪ್ರಸಾರ ಸಚಿವಾಲಯ,
ಭಾರತ ಸರ್ಕಾರ,
ಮೊದಲನೆಯ ಅಂತಸ್ತು, 'ಎಫ್'ವಿಂಗ್,
ಕೇಂದ್ರೀಯ ಸದನ, ಕೋರಮಂಗಲ,
ಬೆಂಗಳೂರು – 560 034.
ದೂರವಾಣಿ : 080 – 25537244.
E-mails : kannada-yojana@gov.in
yojanakannada@yahoo.com
Website: www.publicationsdivision.nic.in
@DPD_India
@publicationsdivision

ಈ ಸಂಚಿಕೆಯಲ್ಲಿ .....

ಸಂಪಾದಕೀಯ	2
ಸಾಂಕ್ರಾಮಿಕ ಸಂದರ್ಭದಲ್ಲಿ ಭಾರತದ ವಿದೇಶಾಂಗ ನೀತಿ * ಹರ್ಷವರ್ಧನ ಶ್ರಿಂಗ್ಲಾ	3
ಕೊವಿಡ್–19 : ಜಾಗತಿಕ ಮಟ್ಟದ ರಾಜಕೀಯ–ಆರ್ಥಿಕ ಆಯಾಮಗಳು * ಶ್ಯಾಮ್ ಸರಣ್	7
ಭಾರತದ ವಾಣಿಜ್ಯ ವಿಕಾಸ * ದಮ್ಮು ರವಿ	10
ಭಾರತ–ಅಮೆರಿಕ ಹೆಚ್–1ಬಿ ವೀಸಾ * ರೂಪಾ ಚಂದ	16
ಪಶ್ಚಿಮ ಏಶಿಯಾದ ಜತೆಗಿನ ಸಂಬಂಧ * ನಿಲೋವ ರಾಯ್ ಚೌಧುರಿ	23
ಭಾರತೀಯ ಸಮುದಾಯ : ಸಮಸ್ಯೆ–ಸವಾಲುಗಳು * ಪ್ರೊ. ಎಸ್. ಮಣಿವಸಕನ್	27
ರಾಷ್ಟ್ರೀಯ ನೇಮಕಾತಿ ಸಂಸ್ಥೆ * ಅಮಿತಾಭ್ ಖರೆ	31
ವಿಶ್ವ ಚಿಂತನೆಗೆ ಗಾಂಧೀಜಿಯವರ ಕೊಡುಗೆ * ಜೆ.ಬಿ. ಕೃಪಲಾನಿ	35
ರಾಷ್ಟ್ರೀಯ ಶಿಕ್ಷಣ ನೀತಿ – 2020 ಸಮಾವೇಶ	36
ವಿಶ್ವ ಸಂಸ್ಥೆ@75	38
ಭಾರತೀಯ ಅಂಚೆ ಮತ್ತು ಅಂತಾರಾಷ್ಟ್ರೀಯ ಸಂಬಂಧ * ಡಾ. ಚಾರ್ಲ್ಸ್ ಲೋಬೊ	39
ವಿಶ್ವ ವ್ಯಾಪಾರ ಸಂಘಟನೆ : ಮುಂದಿನ ಹಾದಿ * ಅಭಿಜಿತ್ ದಾಸ್	42
ಅಂತಾರಾಷ್ಟ್ರೀಯ ವಾಣಿಜ್ಯ * ಅಜಯ್ ಶ್ರೀವಾಸ್ತವ	46
ಉನ್ನತ ಶಿಕ್ಷಣದ ಅಂತಾರಾಷ್ಟ್ರೀಕರಣ * ಡಾ. ವಿದ್ಯಾ ಯರವಾಡ್ಕರ್ ** ಶೋಭಾ ಮಿಶ್ರಾ ಘೋಷ್	52
ಭಾರತ – ರಶಿಯಾ ಸಹಕಾರ * ಡಾ. ಅಮಿತಾಭ್ ಸಿಂಗ್	57
ಚೀನಾ ವಿದ್ಯಮಾನ * ಕಮೋಡರ್ ಆರ್.ಎಸ್. ವಾಸನ್ಸ್ ವಿ.ಕೆ., ಬೆಂಗಳೂರು–560 065	61
ಮನದ ಮಾತು	65
ಸಾಮಾನ್ಯ ಜ್ಞಾನ	71
ವಾರ್ತಾ ವಿಶೇಷ	72

ಕೃಷಿ ವಿಶ್ವವಿದ್ಯಾನಿಲಯ ಗ್ರಂಥಾಲಯ
24 OCT 2020

ಯೋಜನಾ ಚಂದಾ ವಿವರ ನಿ.ಸಂ.

ಒಂದು ವರ್ಷಕ್ಕೆ	230.00
ಎರಡು ವರ್ಷಗಳಿಗೆ	430.00
ಮೂರು ವರ್ಷಗಳಿಗೆ	610.00

ಚಂದಾ ಹಣವನ್ನು ಮನಿಯಾರ್ಡರ್ ಮೂಲಕ ನಮ್ಮ ಬೆಂಗಳೂರು ವಿಳಾಸಕ್ಕೆ ಕಳಿಸಬಹುದಾಗಿದೆ.

ಆನ್‌ಲೈನ್ ಮೂಲಕ ಚಂದಾದಾರರಾಗಲು ಸಂಪರ್ಕಿಸಬೇಕಾದ ವೆಬ್‌ಸೈಟ್
Log on to
http://publicationsdivision.nic.in/,
in collaboration with bharatkosh.gov.in

ಒಂದು ಪಕ್ಷ ಡಿಮಾಂಡ್ ಡ್ರಾಫ್ಟ್ ಕಳಿಸುವುದಾದರೆ ಅದನ್ನು PUBLICATIONS DIVISION, MINISTRY OF I & B, GOVERNMENT OF INDIA ಹೆಸರಿನಲ್ಲಿ CHENNAI ನಲ್ಲಿ ಸಂದಾಯವಾಗುವಂತೆ ಪಡೆದು ಅದನ್ನು ನಮ್ಮ ಬೆಂಗಳೂರು ವಿಳಾಸಕ್ಕೆ ಕಳುಹಿಸಬೇಕು.