

# CONTENTS

---

<b>Chapter 1 Question Analysis - 1979-2011</b>	
On the basis of topics classification	12-29
<b>Chapter 2 Solved papers: 2006 - 2011</b>	
within stipulated word limit	30-54
<b>Chapter 3 Science and Technology: Research and Development</b>	
● A Comprehensive Survey	55
● Science and Engineering Research Council	56
● Council of Scientific and Industrial Research (CSIR)	61
● Ocean Research	65
● Technology Information Forecasting and Assessment Council	73
● Technology Development Board	74
● National S and Tech. Entrepreneurship Development Board	74
● National Accreditation Board for Testing and Calibration Laboratories (NABL)	
● India Meteorological Department (IMD)	75
● Radars System	76
● Gangotri to Maitri and to Bharati	81
● Survey of India (Sol)	82
● National Atlas and Thematic Mapping Organisation (NATMO)	83
● International Centre for Genetic Engineering and Biotechnology (ICGEB)	84
● Science, Technology and Innovation	86
● Indian Ocean Tsunami Warning System	88
● Disaster management: NDMA-INSARAG	91
<b>Chapter 4 : Electronics and Information Technology</b>	
● Electronics in India	94
● Draft National Policy on Electronics – 2011	95
● Draft National Policy on Information Technology, 2011	95
● Electronics Corporation of India Ltd.	95
● Centre for Development of Telematics (C-DOT)	96
● GPON technology transferred	98
● Central Electronics Ltd. (CEL)	100
● Electronics Trade and Technology Development Corporation Limited (ET&T)	100
● Centre for Development of Advanced Computing (C-DAC)	101
● Supercomputer	105
● Videsh Sanchar Nigam Limited (VSNL)	108
● Telecommunication Engineering Centre (TEC)	108
● Technology Development Council (TDC)	109
● Vidya Vahini and Gyan Vahini Programmes	109

---

● ERNET	110
● Software Export Promotion Programme (SEPP)	111
● National Informatics Centre (NIC)	111
● National Software Capability Enhancement Programme	112
● Software Technology Park of India (STPI)	112
● Information Technology (Amendment) Act, 2008	112
● Fibre Optics	113
● National Optical Fibre Network	116
● Media Lab Asia	119
● The National Telecom Policy-2011	121
● Rural Telephony: Village Public Telephone	123
● IT Rural Employment	124
● Major initiatives in IT sector	125
● Measures to Control Cyber Crime	128
● SCTP Technology Mobility Management	130
● Edge Technology	131
● WSIS Summit on ICT	132
● Creation of Digital Solidarity	133
● India Development Gateway (InDG)	133
● Geographical Information System (GIS)	134
● Internet Exchange of India (NIXI)	135
● Indian Computer Emergency Response Team (CERT-In)	136
● Internationalized Domain Names (IDN)	136
● Migration from IPv4 to IPv6	136
● General Packet Radio Service (GPRS)	137
● IT Perspectives in India	138
● Jai-Vigyan National Science and Technology Mission Programme	139
● ERNET India	139
● Technologies in operations	140
● Android	142
● Licensed 3G circles	144
● HSPA: High Speed Packet Access	146
● Cloud Computing	147
● Mobile Virtual Network Operator (MVNOs)	152
● Bioinformatics	153
● Measures taken by the Government to Curb Cyber Crime	156
● INMARSAT	158
● INTELSAT	159
● National PARAM Supercomputing Facility (NPSF)	159
● CDMA Technology	161

---

● Optical computing	161
● GSM vs CDMA	163
● Wi-Fi Technology	164
● Bluetooth Vs Wi-Fi	164
● Enterprise Resource Planning Software	165
● Voice over Internet Protocol (VoIP)	166
● TETRA Digital Mobile Radio System	167
● High Definition Television (HDTV)	168
● Internet Protocol TV (IPTV)	168
● Conditional Access System (CAS)	169
● Direct to Home (DTH)	169
● WLAN Hotspots	170
● International Equipment Mobile Identity	170
● Digital Communication System (DCS)	172
● Virtual Reality	172
● Global Indian Navigation System (GINI)	174
● Broadband Technology	176
● Wireless Local Loop (WLL)	176
● Very Small Aperture Terminals (VSATs)	177
● Extensible Business Reporting Language (XBRL)	178
● Information Superhighways (ISH)	179
● Net Telephony	180
● Satellite Telephones (Sat Phones)	181
● Natural Resources Data Management System	183
● Sampark: Indian Language to Indian	184
● Time Division-Long Term Evolution (TD-LTE)	185
● Parallel Processing Technology	186
● Internet Protocol Version 6 (IPv6)	187
● Headend in the Sky (HITS) Digitised cable content	192
<b>Chapter 5 : E-Governance</b>	
● National e-Governance Plan (NeGP)	199
● State Wide Area Networks (SWANs)	200
● Common Service Centre (CSCs)	202
● National e-Governance Service Delivery Gateway (NSDG)	204
● FIRENET	205
● Digital Library	207
● Draft Electronic Delivery of Services Bill, 2011	207
● Multi Application Smart Cards	208
● E-Governance in Rural Development	212
● Various e-Governance schemes in India	217

---

● National Knowledge Network (NKN)	232
● National Informatics Centre (NIC)	233
<b>Chapter 6 : Energy Conventional and Non-Conventional</b>	
● Power sector reforms	235
● Problems related to power sector in India	238
● Positive signs and initiatives	241
● Power sector reforms due	243
● Ultra Mega Power Projects	244
● Mega Power Policy	246
● Public Sector Units	247
● Rajiv Gandhi Grameen Vidyutikaran Yojana	262
● XII Plan and power sector	263
● Refining Oil India Limited	266
● 9th Licensing Round	268
<b>Chapter 7 : Energy: Nuclear Technology</b>	
● Overall scenario of nuclear energy	276
● 25th nuclear power plant	279
● Nuclear Energy Parks	281
● International supply of fuels and pacts with different countries	281
● Impact of new NSG Guidelines:	285
● N-safety concerns after Fukushima disaster - Jaitapur issue	287
● Department of Atomic Energy (DAE)	293
● Environment Friendly Technologies	307
● BARC's Hydrogen Fuel	311
<b>Chapter 8 : Alternate Source of Energy</b>	
● Ministry of New and Renewable Energy	313
● Jawaharlal Nehru National Solar Mission (JNNSM)	314
● National Biogas Programme	318
● Integrated Rural Energy Programme (IREP)	318
● Specialised Institutions	319
● What is liquefied natural gas (LNG)?	320
● Bio Diesel Policy	321
● Hythane: An Alternate Fuel	323
● Bio-refinery versus Fossil fuels	324
● Small Wind Energy and Hybrid Systems	329
● Solar Thermal Programme	332
● Solar Photovoltaic Programme	333
● Alternate Fuels	334
● Hydrogen	337
● New Technologies	337

● Future Perspectives for Renewable Energy in India	349
<b>Chapter 9 : Health and Family Welfare</b>	
● Tracing the trends of health sector in India	351
● National Vector Borne Disease Control Programme (NVBDCP)	354
● The Transplantation of Human Organs (Amendment) Bill, 2009	355
● National Rural Health Mission (NRHM)	370
● National AIDS Control Programme (NACP)	380
● National Surveillance Programme for Communicable Diseases (NSPCD)	388
● National Family Welfare Programme	390
● Reproductive and Child Health Programme	394
● The Indian Council of Medical Research(ICMR) at 100	400
● Medical Council of India (MCI)	408
● Narco-Analysis Constitutional Legality	413
<b>Chapter 10 : Space Technology</b>	
● Applications of Indian Space Programmes	431
● GPS Aided GEO Augmented Navigation (GAGAN) Project	441
● Indigenously developed payloads/ experiments	442
● Bhuvan-the geoportal of ISRO launched	443
● Satellite Orbits	445
● Indian Regional Navigation Satellite System (IRNSS)	446
● Remote Sensing Applications	447
● Space Bands like Ku and C-band	448
● ISRO-Geosphere Biosphere Programme (ISRO-GBP)	449
● Transponder	451
● Remote Sensing Data Policy 2011	453
● Understanding the difference between the PSLV and GSLV	459
● Cryogenics technology	462
● GSLV Project Operational Flights- F11 to F16	468
● Important Launches RISAT – I launched	471
● Megha-Tropiques launched	473
● GSAT - 12	474
● Indian Remote Sensing Satellite (IRS) System	484
● Indian Space Research Organisation (ISRO)	492
● Space and Institutions	494
● SAGA-2203 is India's one of the fastest	499
● Space X Dragon	509
● Kaveri Engine	510
● Space debris	513
● GLAST telescope	515

**Chapter 11 : Environment, Ecology and National Heritage**

● Ministry of Environment & Forests: Role of the Ministry	520
● Zoological Survey of India (ZSI)	521
● Botanical Survey of India (BSI)	521
● Geological Survey of India (GSI)	523
● Forest Survey of India (FSI)	524
● National Wildlife Action Plan (NWAP)	527
● National Tiger Conservation Authority (NTCA)	529
● Project Elephant	533
● Endangered Species in India	534
● ENVIS Network	536
● Forests Policies and Programmes	539
● Bio-sphere Reserves	540
● National River Conservation Plan	543
● Wasteland management	545
● Wetlands	547
● Coastal Area Ecosystem	549
● Mangroves conservation and management	550
● Coral Reefs	554
● Pollution control measures 2011-12	558
● Management of Coastal Zones	560
● Endosulfan	562
● Hazardous Waste Management	563
● Biodiversity	566
● Waste Water Management	570
● Biological Clean-up Methods	572
● Rain-Water Harvesting	574
● Osmosis and reverse osmosis process	575
● Genetic Engineering Approval Committee (GEAC)	576
● Clean Technology Report	577
● CDM and Carbon trading	580
● National Clean Energy Fund	581
● India and climate change	582
● National Black Carbon Programme	584
● Eco-tourism	585
● Global Warming (GW)	587
● Ozone layer and its depletion	590

**Chapter 12 : Defence and Allied Services**

● Missile Strategy of India after Agni V	596
● Interceptor Missile	600

---

● Training Institutions	602
● Radio Detection and Ranging (Radar) System	604
● Geo-strategic imperatives of Indian defence	606
● Defence ties at the global and regional levels	608
● Defence Intelligence	609
● Defence Research and Development Organization (DRDO)	612
● Missile Development Programme of India	618
● Light Combat Aircraft (LCA) Project	629
● Early Warning suite for Fighter Aircraft	631
● Ground Image Exploitation System	632
● DRONES: Unmanned aerial vehicle	633
● Tejas	645
● Defence Public Sector Undertakings	654
<b>Chapter 13 : Robotics, AI and other Technology</b>	
● Centre for Artificial Intelligence and Robotics (CAIR) at 25	657
● Humanoid AcYut 4	661
● Robotics	664
● Neutrino Observatory	665
● Antimatter	666
● Hydrogen vehicle	669
● Higgs boson	671
● Large Hadron Collider (LHC)	672
● Spintronics	674
● Graphene	675
<b>Chapter 14 : Super Conductivity, Laser and Maser</b>	
● Super Conductivity 100 plus years old	678
● Microwave Amplification by Stimulation Emission of Radiation	680
● Maglev Trains and its proposal in Mumbai	682
● SQUIDS and its applications	682
● Laser Science	683
● New National Map Policy	692
<b>Chapter 15 : Nanotechnology, Fiber Optics</b>	
● Nanotechnology	693
● Nanomaterials Science and Technology Initiative (NSTI)	695
● Fibre Optics and its latest applications	701
● Neutrinos elementary particles	703
● Optical Fibre Life behind IT	704
<b>Chapter 16 : Biotechnology and Genetic Engineering</b>	
● Genetic Engineering and its applications in different fields	706
● DNA Fingerprinting and profiling	711

---

● Tissue Culture	715
● Plant Tissue Culture	715
● Animal Tissue Culture	717
● Bio-Fertilizers	717
● CSIR-IIGB Human genome mapped	724
● International Human Genome Project	727
● Applications of Biotechnology	729
● Terminator Technologies	733
● Biotechnology Information System (BTISnet)	738
● Crop Biotechnology	740
● Plant Biotechnology	741
● Animal Biotechnology	741
● Medical Biotechnology	743
● Food Biotechnology	744
● Microbial and Industrial Biotechnology	744
● Biotechnology and Societietal Development	745
● Food and Nutrition Biotechnology	746
● Biotechnology Parks	747
● Cytomegalovirus or CMV	748
● Bioinformatics	749
● Bt Brinjal: An evaluation	750
● GM Crops: Pros and cons	753
● Stem Cell: Future of medical science	757
<b>Chapter 17 : Bioremediation</b>	
● Bioremediation and its various forms	761
● Oilzapper	763
<b>Chapter 18 : Contributions of Nobel Award Winners</b>	<b>764</b>
● Graphene – the perfect atomic lattice	764
● Palladium-catalyzed cross coupling	765
● In vitro fertilization (IVF)	765
● X-ray crystallography	768
● Imaging semiconductor circuit	769
● Fibers for optical communication	770
● Telomerase	771
● Supernova	773
● Quasicrystal	774
● Immune system	777
<b>Chapter 19 : Short terms related to different spheres of S&amp;T</b>	<b>778</b>