



PhD Admission Test - I Semester 2011- 12: Brochure

TEST DETAILS

(I) Candidates shortlisted for Test in any of the following disciplines:

Biological Science/Chemistry/Mathematics/Physics will have to write two tests. Test-I will be common to all disciplines and Test-II will be discipline specific. The details of the tests are as follows:

Test-I question paper consists of **30** multiple-choice type questions pertaining to General Science, Quantitative Reasoning & Analysis and Research Aptitude. The candidate is required to answer all the questions in allotted 1 hr time. Each correct answer will awarded two marks. 0.5 mark will be deducted for every wrong answer.

Test-II will be subject-based and will consist of 70 multiple-choice type questions covering the prescribed syllabus as given below. The candidate is required to answer all the questions in allotted 2 hr time. Each correct answer will awarded two marks. 0.5 mark will be deducted for every wrong answer.

(II) Candidates shortlisted for Test in any of the following disciplines:

Languages/Humanistic Studies/Economics will have to write two tests. Test-I will be common to all disciplines and Test-II will be discipline specific. The details of the tests are as follows:

Test-I will comprise of the following components:

1. Reading Comprehension: 2 Passages (5Qs each=10 Qs)	20 mts
2. Logical Reasoning	10 question
3. Analytical Reasoning	15 question
4. General Awareness	10 question
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50 Qs.	60 mts

Test-II will be discipline specific (60 questions)

(III) Candidates shortlisted for Test in Pharmacy:

The Pharmacy test would be a 2 Hours test consisting of two parts. Part-A would be common to all and would consist of questions in general Pharmacy subjects and Part-B will be based on subject taken by students in their MPharm Degree Program.

SYLLABUS FOR TEST

Biological Sciences

<p>Genetics : Laws of inheritance and genetic interaction, Genetic mapping in Virus, Bacteria, & Eukaryotes, Gene expression in prokaryotes and eukaryotes, Control of gene expression in prokaryotes eukaryotes and Viruses., Population and evolutionary genetics Reference books: Principles of Genetics –Robert H. Tamarin, 7th edition, Tata McGraw –Hill,2002.</p>
<p>Molecular Technique: Restriction endonucleases, Vectors and cloning, Blotting technique, PCR, Sequencing Reference books: Principles of Gene Manipulation- R.W.Old & S.B.Primrose, 7th Edition</p>
<p>Biological Chemistry: Chemistry of Biomolecules, Enzymes, Vitamins & Coenzymes, Bioenergetics and biological oxidation, Metabolism of Biomolecules, Photosynthesis Reference books: Principle of Biochemistry-Lehninger, Macmillan Worth Publication, 3rd edition</p>
<p>Microbiology: Fundamentals of Microbiology, A survey of the microbial world, Host-Microbe interaction, Microbes and Human disease, Environmental and applied microbiology Reference books : Microbiology-An introduction (8th edition)- Tartora,Funk & Cane-Pearson publishing house.</p>
<p>Ecology : Abiotic factors, Ecosystem ecology and energy flow, Community ecology and population ecology, Regional Ecology (Terrestrial and Aquatic), Regional Ecology (Terrestrial and Aquatic) Reference books : Concepts of Ecology by E J Kormondy Fundamentals of ecology by E. P. Odum .</p>
<p>Plant Physiology : Transport and translocation of water and solutes, Essential elements and their function, Plant development and PGRs, Ascent of sap and translocation in phloem, Movement in plants Reference books: Plant physiology, 3rd edition by Salisbury & Ross- CBS Publisher and Distributor.</p>
<p>Biophysics : Chemical properties of basic unit of life, energy forces, bonds., Conformation of Biomolecules, Biological membranes and Biomechaniques, Physiochemical techniques to study biomolecules, X-ray crystallography, NMR, molecular modeling. Reference books : Biophysical chemistry by Cantor and Schimmel. Biophysics by Rodney Cotteril.</p>
<p>Developmental Biology : Model systems- Vertebrates, Invertebrates and Plants, Axis and germ layers, The mesoderm and early nervous system, Morphogenesis and cell differentiation, Organogenesis, germ cells and sex. Reference books: Principles of Development –Lewis Wolpert-Oxford University Press, 2nd edition</p>
<p>Cell Biology: Preview of cell, cellular membranous systems, Transport, Mitochondria, Chloroplast, energy transducing organelle, Golgi, Nucleus, Cytoskeletal network, Cell growth & proliferation, Cell Immunity Reference books: Cell and Molecular Biology-Philip Sheeler & Donald E. Bianchi. 3rd edition, John Wiley Publication.</p>
<p>Animal physiology: Digestive and Respiratory system, Circulatory system, Excretory system, Nervous and Endocrine system, Body Immune system Reference books : Animal Physiology by Sherwood et al, 1st edition- Thomson Publication. Animal Physiology by Sherwood et al, 1st edition- Thomson Publication.</p>

Chemistry

Chemical Kinetics: Integrated rate laws for simple and complex reactions. Integrated rate laws in terms of properties dependent on concentrations of reactants and/or products. Effect of temperature on reaction rates, Theories of reaction rates: Collision theory and transition state theory, Rate laws and reaction mechanism. Unimolecular, bimolecular and trimolecular reactions. RRK theory of unimolecular reaction, Reactions in solution. Reactions in excited state. Fast reaction kinetics, Homogeneous and heterogeneous catalysis Reference books: Principles of Kinetics –Robert H. Tamarin, 7 th edition, Tata McGraw –Hill, 2002.
Chemical Thermodynamics: Concept and laws of thermodynamic, Thermodynamics of gases, Thermodynamics of non-ideal and electrolyte solutions, Statistical thermodynamics, Non-equilibrium thermodynamics Reference books: Ira N. Levine, Physical Chemistry, Tata McGraw Hill, 2002, 5 th edition Donal A. McQuarrie & J. D. Simon, Molecular Thermodynamics Viva Book Pvt Ltd., New Delhi, 2004 R. C. Srivastava, S K Saha, A K Jain, Thermodynamics, 2004
Quantum chemistry and atomic and molecular structure: Mathematical and Physical Foundations of Quantum Chemistry, Simple potential problems in one, two and three dimension including particle in a box, harmonic oscillator, potential barrier, rigid rotator hydrogen atom, He-atom, effective nuclear charge, Slater orbitals, electron spin, Solution of Hartree-Fock equation for He-atom, self-consistent field, Two electron system, Slater determinants, Hartree-Fock method, Approximation methods, variation, perturbation theory angular momentum, Atomic structure, Molecular structure, Reference books : 'Quantum Chemistry', Donald A. McQuarrie, University Science Books (First Indian Edition 2003, Viva Books Private Limited). 'Quantum Chemistry', Ira N. Levine, Pearson Education Inc. (2000) (First Indian Reprint, 20033. Molecular Quantum Mechanics", P.W. Atkins and R.S. Friedman, 3 rd Ed. OUP (1997). [4 th ed. Has come out]. Elementary Quantum Chemistry" F.L. Pilar, 2 nd ed., McGraw Hill (1990). Quantum Chemistry", John P. Lowe, 2 nd ed., Pearson Education Inc.
Structure and Reactivity of Organic Compounds : Aliphatic & Aromatic Nucleophilic Substitutions, Aromatic Electrophilic Substitution, Addition to carbon-carbon multiple and carbon-heteromultiple bonds, Eliminations, Orbital symmetry in organic reactions Reference books: March Jerry, Advanced Organic Chemistry, John Wiley & Sons, 4 th edition, 1992 Morrison and Boyd, Organic Chemistry, Prentice & Hall, 6 th edition, 1992
Instrumental methods of analysis: Magnetic Resonance Spectroscopy (¹ H NMR, ¹³ C NMR, EPR), IR Spectroscopy, Mass Spectrometry, Ultraviolet and visible spectroscopy, fluorescence spectroscopy, chromatography and other separation techniques, Structure Resolution by combination of techniques. Reference books : William Kemp, "Organic Spectroscopy", Macmillan, 3 rd ed. , 1991
Bonding in inorganic compounds: Point Groups and Molecular Symmetry, Character Tables and applications of point group symmetry, Ionic bond; Polarization, Covalent bond; VB and MO theories, Coordination Compounds bonding and spectra. Reference books : Huheey, J. E. and others, "Inorganic Chemistry", Pearson Edu., 4 th ed., 1993
Chemical experimentation : Acid base titrations, Complexometric titrations, Synthesis of organic compounds and functional group identification, Study of kinetics of chemical reactions, Determination of partition function, Adsorption isotherm, Synthesis and characterization of nanomaterials, Qualitative analysis of salts/mixture of salts Reference books: Vogel's textbook of practical organic chemistry 5 th edition Vogel's textbook of quantitative inorganic analysis Vogel's qualitative inorganic analysis, 7 th edition
Synthetic organic Chemistry: One Group C-X Disconnections, Two Group C-X Disconnections, One Group C-C Disconnections, Two Group C-C Disconnections, Ring Synthesis and Synthesis of Heterocyclic Compounds. Reference books : R.O.C.Norman, Principles of Organic Synthesis, 2 nd edition., Chapman & Hall, 1978.

W.A.Smit, A.F.Bochkov and R.Caple, Organic Synthesis: The Science Behind the art, 1 st edition, The Royal society of chemistry, 1998. Stuart Warren, Designing Organic Syntheses: A Programmed Introduction to the Synthons Approach, John Wiley and sons Ltd., 1978.
Basic organic and inorganic chemistry :
Stereochemistry (Isomerism, chirality, origin of optical activity, stereochemistry of cyclic compounds, resolution), Conformations (Rotation around sigma bonds, conformational analysis of butane, cyclohexane, and substituted cyclohexanes.), Name reactions (Diels Alder reaction; Friedel-Crafts(acylation and alkylation) reaction; Clemmensen reduction; Wittig reaction; Claisen condensation; Hofmann and Cope eliminations), Co-ordination chemistry, Chemistry of main group elements. Reference books: W. Graham Solomons and Craig B. Fryhle, 'Organic Chemistry', 8 th Edition, John Wiley & Sons, Inc. New York, 2004. J.D. Lee, 'Concise Inorganic Chemistry', 5 th edition, Blackwell Science, Oxford, 1999.
Chemistry of Organic Compounds :
Carboxylic acid and carboxylic acid derivatives, Chemistry of aliphatic and aromatic amines, Structure, property and reactions of five and six membered heterocyclic compounds containing O, N and S., Organometallic compounds in organic synthesis: Organolithium, Organomagnesium, Organozinc and Organocopper, Carbohydrates Reference books: F A Carey, Organic Chemistry, 5 th Edition, Tata McGraw-Hill Publications Company Ltd., 2003. P A Bruice, Organic Chemistry, 3 rd Edition, Reason Edution, Inc. 2001. Wade, Organic Chemistry, 5 th Edition, Reason Edution, Inc. 2003

Economics

Principles of Economics :
Demand, Supply, Elasticity, Consumer Behavior, Analysis of Production and Cost Analysis, Markets, Basics of Macro economics, Economics of Public Goods Reference books: Lipsey R G & Chrystal K A Economics OUP, 10 th ed. 2004
Fundamentals of Finance & Accounting:
Basics of Accounting, Financial Statements and Analysis, Introduction to Securities, markets and analysis, Banking System, RBI, Non-bank financial intermediaries, Markets for Future, Options & Derivatives; Foreign Exchange Markets Reference books : Horngren, Sundem, and Elliott, Introduction to Financial Accounting, Pearson Education India Ltd. 8 th ed. 2004 Bhole L.M, Financial Institution & Market Structure: Growth & Innovation, Tata McGraw Hill, 4 th ed. 2004.
Microeconomics :
Theory of Consumer Behaviour, Topics in Consumer Theory, Theory of Firm, Theory of Market Structure, General Equilibrium, Welfare Economics, Externalities, Common & Public Goods Reference books Henderson J M and Quandt R E , Microeconomic Theory : A Mathematical Approach , McGraw Hill 3rd ed. 1980.
Macroeconomics:
Macroeconomic System- Measurement, I-O System, Flow of Funds, Keynesian System – Demand, Money, Interest , Income, Output, Inflation & Unemployment, Money Supply, Consumption and Investment, Consumption and Investment Reference books : Froyen, Richard T Macroeconomics: Theories & Policies Pearson Education, 8 th ed. 2005.
Econometrics :
Basics of Statistics, OLS, k-variable Linear Equation, General Linear Model, Violation of classical Assumptions, Heteroscedasticity, Autocorrelation, Multi co linearity, ARIMA Model, Time Series Analysis, Simultaneous Equation System Reference books : Johnston J and John Dinardo, Econometric Methods McGraw Hill International, 4 th ed. 1997.
Money Banking & Financial Markets :
Money and its Functions, Money Markets, Financial Markets and Financial Institutions, Foreign Exchange Markets, International Monetary Financial System, Banking Business, Bank Management , Financial Derivatives, Money, prices, economic activity; IMF Reference books : Mishkin, Frederic S The Economics of Money, Banking and Financial Markets: A Global Perspective Addison Wesley, 7 th ed. 2004.
Public Finance – Theory and Practice :
Scope of Public Finance, Allocation, Distribution & Public Choices, Equity in Distribution, Public Choice & Fiscal Policy,

Public Expenditure – Structure, Growth & Evaluation, Public Revenue, Principles of Taxation, Role of Fiscal Policy in India, Budgeting in India Reference books: Musgrave, R.A and Musgrave, P.B Public Finance : Theory and Practice McGraw Hill Book Co. 1999.
Economics of Growth and Planning : Economic Growth Models – Harrod-Domar, Neo-classical, Two sector Models, The Fel'dman Model of Economic Growth, Samuelson Model of Economic Growth, Kaldor's Model of Income, Population, Environment, Inequality and Development, Planning in India Reference books : Jones H.G.An Introduction to Modern Theories of Economic Growth, McGraw Hill, Kogakusha Ltd. 1976., Devraj Ray Development Economics OUP, Delhi 1998
International Trade and Balance of Payments: International Economics, Trade Theories, International Trade – Comparative Advantage, Heckscher –Ohlin (H-O) Model, Modern Theories of International Trade, Tariffs, Quotas, FDI, BOP, GATT, WTO, International Monetary System Reference books: Salvatore.D. International Economics WSE 8 th ed. 2004
Issues in Indian Economy: India's Economic Growth & Development, Significant Aspects of Indian Economy – Agriculture, Infrastructure, Private & Public Sector, Industrial Growth, Import- Exports, Unemployment, Commercial Banking & Finance, Inflation& Income Growth, Money Supply, Monetary Control, India's Trade, External Aid, Public Debt Reference books: Agarwal.A.N, Indian Economy – Problems of Development & Planning Wishwa Prakashan, A division of New Age International(P) Ltd.,2005

Mathematics

Algebra I Groups, Subgroups, Normal Subgroups, & Quotient Groups, Homomorphisms & Automorphism, Permutation groups, Cauchy Theorem & Sylow Theorem, Rings, Ring Homomorphisms, Ideals & Quotient Rings, Euclidean Rings, Unique Factorization domain, Polynomial Rings. Reference books: Topics in Algebra by I.N. Herstein ,Vikas Publishing House Pvt Ltd.
Algebra II Fields, Extension of Fields & Roots of Polynomial, The Elements of Galois Theory, The Algebra of linear Transformations, Minimal polynomials & characteristic roots, Triangular, Nilpotent & Jordan Canonical Forms Reference books: Topics in Algebra by I.N. Herstein ,Vikas Publishing House Pvt Ltd
Elementary Real Analysis Countable & Uncountable sets, Sequence of real numbers, Limsup & liminf., Metric space, Open & closed sets, limit point, compact sets in R^n , Metric space, Open & closed sets, limit point, compact sets in R^n , Continuous Functions, continuity and compactness, functions, Riemann Integral & Riemann Stieltjes Integral, Sequence & Series of Functions Reference books : Principle of Mathematical Analysis by Rudin, Mc-graw hill Publishers
Measure and Integration Lebesgue measure, measurable sets, Measurable function, Riemann and Lebesgue , integral and its properties, Differentiation, Function of Bounded variations, L_p – spaces, Different modes of convergent Reference books : Lebesgue Measure and Integration by P.K.Jain &V.P. Gupta, New Age International Ltd,1986
Introduction to Topology Topological spaces; Special topologies, Subspaces; Product spaces & Quotient spaces, Continuity & homeomorphisms, Connectedness & Compactness, Fundamental Groups of Surfaces Reference books : J. R. Munkres: Topology, Pearson Publication.
Introduction to Functional Analysis Vector spaces, dimension, infinite dimensional vector, faces, Normed linear spaces, Riesz Lemma, Banach spaces, Normed linear spaces l_p , C_0 , $C[a,c]$, Continuous linear transformations on normed linear spaces, Inter product spaces, Hilbert spaces, orthogonal sets direct sum, Bessels Inequality, Riesz Representation theorem, uniform

bounded ness, principle, open mapping theorem, closed graph theorem. Reference books: Limaye : Introduction to Functional Analysis , New Age international Publishers 2000.
Differential Geometry
Plane curves, Space Curves, Surfaces and Curvatures, First & Second Fundamental Forms, Geodesics Reference books : Pressly: Elementary Differential Geometry, Springer –Verlag
Optimization
Modeling with linear programming, General L.P.Solution, The simplex method, Duality and post optimal analysis, Transportation model and its variants, Goal Programming and Integer linear programming, Non linear programming Algorithms, Reference books: Operations Research: An Introduction by Hamdy A Taha 8/E, Prentice Hall India/Pearson Education
Operations Research
Queuing Systems: Poisson Queueing Systems, Reliability: Reliability & hazard rate function of series and parallel systems, Inventory Systems: Single item Inventory models, Simulation & Game Theory, Network Models and Deterministic Dynamic Programming. Reference books: Operations Research Vol.III, EDD Notes; S.Venkateswaran & B. Singh Operations Research: An Introduction by Hamdy A Tah
Numerical Analysis
Computer arithmetic and errors, solving nonlinear equations, Solving set of Equations, Interpolation, Numerical differentiation and numerical integration, Numerical solution of ordinary differential equations Reference books : Applied Numerical Analysis by Gerald and Wheatley 6/E, Pearson Education

Physics

Modern Physics
Special Theory of Relativity, Particle-like Properties of Waves, Wave-like Properties of Particles, Heisenberg Uncertainty Relation, Bohr's Model of Hydrogen-like Atoms, Schrodinger Equation, Particle in One-dimensional Potential, Particle in One-dimensional Potential, Many Electrons Atoms, Physics of Molecules, Nuclear Transformations Reference books : R. Eisberg & R. Resnick, Quantum Physics of Atoms, Molecules & Solids, WSE, 2 nd ed., 1985 Arthur Beiser, Concepts of Modern Physics, Tata McGraw-Hill, 6 th ed., 2005
Thermodynamics & Properties of Matter
Thermometry, Thermal Expansion, Heat, Work and the First Law of Thermodynamics, Second Law of Thermodynamics, Heat Engines and Entropy, Kinetic Theory, Phase Transformations, General Properties of Matter Reference books : Zemansky & Dittman, Heat & Thermodynamics, 6 th ed., McGraw-Hill, 1981
Classical Mechanics
Constraints, Generalized Coordinates, De-Alembert's principle, Lagranges Equations of Motion, Two-body Central force motion, Rigid Body Kinematics, Rigid Body Dynamics, Hamilton's Equations of Motion Reference books : H Goldstein, Classical Mechanics, Pearson Education, 3 rd ed., 2002
Electromagnetic Theory
Electrostatics in Free Space, Electrostatics in Matter, Magnetostatics in Free Space, Magnetostatics in Matter, Faraday's Law of Electromagnetic Induction, Maxwell's Equations, Conservation Laws, Electromagnetic Waves, Electromagnetic Potentials, Fields and Radiations Reference books : D. J. Griffiths, Introduction to Electrodynamics, Pearson Education, 3 rd ed., 1999
Quantum Mechanics
Schrodinger Equation, Eigenvalues, Eigenfunctions, Eigenfunction Expansion, Dirac Notation, Operator Methods, Harmonic Oscillator, Angular Momentum, Central Force Problem, The Hydrogen Atom, Spin, Identical Particles, Time Independent Perturbation Theory Reference books : Richard L. Liboff, Introductory Quantum Mechanics, Pearson Education, 4 th ed., 2003 Stephen Gsiorowicz, Quantum Physics, John Wiley & Sons Inc., 3 rd ed., 2003
Methods of Mathematical Physics
Vector Analysis, Curvilinear Coordinates, Matrices and Vector Spaces, Functions of Complex Variables, Ordinary

Differential Equations, Sturm-Liouville Theory and Special Functions, Elements of Partial Differential Equations Reference books : Mathew Jon & R. Walker, Mathematical Methods of Physics, Pearson Education, 2 nd ed., 1970 Arfken & Weber, Mathematical Methods for Physicists, Academic Press, 6 th ed., 2005
Statistical Physics Elements of Probability Theory, Elementary Kinetic Theory, Microcanonical, Canonical & Grand Canonical Ensembles and Their Applications, Quantum Statistics of Ideal Bose Gases, Quantum Statistics of Ideal Fermi Gases Reference books : Pathria R K, Statistical Mechanics, Elsevier, 2 nd ed., 1996
Solid State Physics X-ray Diffraction and Crystal Structure, Lattice Dynamics, Free Electron Theory of Metal, Electron in Periodic potential, Energy Bands, Semiconductors, Superconductivity Reference books: Kittel C., Introduction to Solid State Physics, WSE, 7 th ed., 1995
Optics & Spectroscopy Geometrical Optics, Interference, Diffraction, Polarization, Crystal Optics & Lasers, Atomic & Molecular Spectroscopy Reference books: Ghatak, A K, Optics, Tata McGraw-Hill, 3 rd ed., 2005 Banwell C N, Fundamentals of Molecular Spectroscopy, Tata Mc-Graw-Hill, 4 th ed., 1994
Nuclear & Particle Physics Nuclear Properties and Nuclear Models, Fission & Fusion, The Quark Model, Elementary Particles, their Classification and Interactions, Particle Accelerators, Conservation Laws of Elementary Particles and Fundamental Interactions Reference books : Krane K, Introductory Nuclear Physics, John Wiley & Sons, 1 st ed., 1988 Griffiths, D J, Introduction to Elementary Particles, WIE, 1 st ed., 1987

Languages

Modern English Usage, Phonetics and Language, English Literature : Elizabethans and Augustan, Pre-romantics and Romantics, Victorian Literature, Twentieth Century Literature : Poetry and Drama, Twentieth Century Literature : Prose and Fiction, Indian Writing in English, Applied Linguistics, American Literature, Women's Writing, Postcolonial Literature, Canadian Literature
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Management

The Management Aptitude Test will consist of sections related to <i>Mathematics and Data Interpretation, Logical Reasoning, Data Sufficiency and Verbal Ability</i> . Mathematics and Data Interpretation: It tests the quantitative reasoning ability. Problem-solving questions present multiple-choice problems in arithmetic, basic algebra, and elementary geometry. The task is to solve the problems and choose the correct answer from among five answer choices. Logical Reasoning: It tests the student's competency on deductive logic and whether he can deduct logically conclusion based on the premise/s. Data Sufficiency: This tests the quantitative reasoning ability using a peculiar set of directions. The student is given a question with two associated statements that provide information that might be useful in answering the question. The student then must determine whether either statement alone is sufficient to answer the question; whether both are needed to answer the question; or whether there is not enough information given to answer the question. Verbal Ability: It tests the students on their competence in English language both in terms of vocabulary, grammar and verbal reasoning.

Humanities

Dynamics of social change Method, Theories and Movements. Pioneers, Socialization and its theories. Social Group: concept and organization, community and association, institution, Sociology of religion: aspect, origin, Hinduism, Sociology of Education, Family & Marriage: Concept, Origin, theories, Characteristic, types functions, their changing pattern, Culture, social norms, folkways, mores, social roles, culture and personality, social responsibility, Social stratification: caste, class, function and their changing pattern, Social change: Concept, theories and process of social change, factors, resistance, progress, social development, Industry and social change: modernization and urbanization, Social
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disorganization and delinquency

Reference books :

.Gisbert, Fundamentals of Sociology, Orient Longman, 3rd ed., 1994

Steve Bruce, Sociology: A very short Introduction, New York: Oxford University Press. 1999

Conflict Management

Introductions to conflict Management: An Overview, Characteristics and dynamics of conflict, Reasons for conflict, the value of conflict in social change, The different approaches to addressing and managing conflict. Conflict analysis: Examining the history and impacts of a conflict, identifying the causes of conflict, Identifying who the stakeholder are and their interest, Exploring stakeholder power and relationships. Developing a strategy for Managing conflict, Assessment of options to address conflict, Tools for determining the best strategy, Incentives and methods in getting stakeholder to collaborate, Communication, Mediation and Facilitation, Active listenin, Skills in mediation and facilitation, Roles of mediator and facilitator in conflict management ,Dealing with emotions and difficult situations, Negotiating Agreements, Planning and preparing for negotiations, Improving negotiation skill to enhance the negotiated result, Joint problem solving approaches, Building agreements, Conflict Anticipation and Prevention, Building conflict management mechanisms, Consensus-building strategies

Reference books :

, The Dynamics of Conflict Resolution, San Francisco: Wiley Company, 2000

Contemporary India

Society, tradition and autonomy, Changing Social Structure in contemporary India, the explosion of middle class, women: From equality to empowerment, development policy in India, Agriculture and Industry, Democracy: From consolidation to fluidity:: Fundamental rights and duties; Civil service; continuity and change; India's foreign Policy, Salient features of Indian constitution

Reference books :

Contemporary India: Economy, Society, Politics, ed. Neera Chandoke and Praveen Priyadershi, Pearson Education, 2009, Delhi

Independent India : The First Fifty Years, edited by Hiranmay Kalekar, New delhi, Oxford University Press, 1995