BHARATHIDASAN UNIVERSITY, TIRUCHIRAPPALLI – 620 024
M.A. Economics – Revised Course Structure under CBCS
(For the candidate admitted from the academic year 2008-2009 onwards)

Semester	Course	Course Title	Ins. Hrs / Week	Credit	Exam Hrs	Marks		Total
						Int.	Ext.	
I	Core Course – I (CC)	Micro Economics – I	6	5	3	25	75	100
	Core Course – II (CC)	Macro Economics I	6	5	3	25	75	100
	Core Course – III (CC)	Monetary Economics	6	5	3	25	75	100
	Core Course – IV (CC)	Mathematical Methods for Economic Analysis	6	5	3	25	75	100
	Core Course – V (CC)	Financial Economics	6	4	3	25	75	100
		Total	30	24				
II	Core Course – VI (CC)	Micro Economics II	6	4	3	25	75	100
	Core Course – VII (CC)	Macro Economics II	6	4	3	25	75	100
	Core Course – VIII (CC)	Statistics	6	4	3	25	75	100
	Core Course – IX (CC)	Indian Economy	6	4	3	25	75	100
	Elective Course – I (EC)	Environmental Economics	6	4	3	25	75	100
		Total	30	20				
III	Core Course – X (CC)	International Business	6	4	3	25	75	100
	Core Course – XI (CC)	Industrial Economics	6	4	3	25	75	100
	Core Course – XII (CC)	Fiscal Economics	6	4	3	25	75	100
	Elective Course – II (EC)	Research Methodology	6	4	3	25	75	100
	Elective Course – III (EC)	Project Appraisal	6	4	3	25	75	100
		Total	30	20				
IV	Core Course – XIII (CC)	Economics of Development	6	4	3	25	75	100
	Core Course – XIV (CC)	Economics of Natural Resources	6	4	3	25	75	100
	Core Course – XV (CC)	Project Work Viva voce 20 marks Dissertation 80 marks	6	10	-	-	-	100
	Elective Course - IV (EC)	Management Information System	6	4	3	25	75	100
	Elective Course - V (EC)	Computer Applications in Economics	6	4	3	25	75	100
		Total	30	26				
			120	90				2000

CORE COURSE I - MICRO ECONOMICS – I

Module I: Demand Analysis

Utility theory – Ordinal approach – Indifference curve (income and substitution effects, Slutsky theorem, compensated demand curve) and their applications, Revealed preference theory, Revision of demand theory by Hicks; Characteristics of goods approach (Lancaster), consumer's choice involving risk (N-M hypothesis) – Friedman-Savage, Markowitz hypotheses; indirect utility functions (duality theory); Recent developments in demand analysis (pragmatic approach and linear expenditure systems); Inter-temporal consumption; Recent developments in demand; Elementary theory of price formation – demand and supply equilibrium; Cobweb theorem; lagged adjustment in interrelated markets.

Module II: Theory of Production and Costs

Production function – short period and long period; law of variable proportions and returns to scale; Isoquants – Least cost combination of inputs; Returns to factors: Economics of Scale; Multi-product firm; Elasticity of substitution; Euler's theorem; Technical program and production function; Cobb – Douglas, CES,VES and Translog production functions and their properties; Empirical work on production functions; Traditional and modern theories of costs – Empirical evidence; Derivation of cost functions from production functions; derived demand for factors.

Module III: Price and Output Determination – Perfect competition and Monopoly

Marginal analysis as an approach to price and output determination: perfect competition – short run and long run equilibrium of the firm and industry, price and output determination, supply curve; Monopoly – short run and long run equilibrium, price discrimination, welfare aspects, monopoly control and regulation.

Module IV: Monopolistic Competition and Oligopoly Models

Monopolistic competition – general and Chamberlin approaches to equilibrium, equilibrium of the firm and the group with product differentiation and selling costs, excess capacity under monopolistic and imperfect competition, criticism of monopolistic competition; Oligopoly – Non-collusive (Cournot, Bertrand, Edgeworth, Chamberlin, kinked demand curve and Stackelberg's solution) and collusive (Cartels and mergers, price leadership and basing point price system) models; Price and output determination under monopsony and bilateral monopoly; Workable competition – Structure, conduct and performance norms – Concept of Contestable Market and global competition (Baumol)

Module V: Alternative Theories of the Firm

Critical evaluation of marginal analysis; Baumol's sales revenue maximization model; Williamson's model of managerial discretion; Marris model of managerial enterprise, Full cost pricing rule; Bain's limit pricing theory and its recent developments including Sylos-Labini's model; Behaviours model of the firm; Game theoretic models.

Reference:

1. Kreps, David M (1990) A Course in Microeconomic Theory, Princeton University Press, Princeton
2. Koutsoyiannis, A (1979), Modern Microeconomics (2nd Edition) Macmillan Press, London.
3. Layard P.R.G and A.W. Walters (1978) Microeconomic Theory, McGraw Hill, New York
4. Sen A. (1999) Microeconomics: Theory and Applications, Oxford University Press, New Delhi
5. Stigler, G (1996), Theory of Price, (4th Edition), Prentice Hall of India, New Delhi
6. Varian,H. (2000) Microeconomic Analysis, W.W. Norton, New York
7. Baumol, W.J. (1982) Economic Theory and Operations Analysis, Prentice Hall of India, New Delhi
8. Hirshleifer, J. and A Glazer (1997), Price Theory and Applications, Prentice Hall of India, New Delhi
9. Da Costa, G.C. (1980), Production, Prices and Distribution, Tata McGraw Hill, New Delhi
10. Salvatore, Domonick (1991), Micro Economic Theory, 3rd Edition, McGraw Hill, New Delhi
11. www. Google.com. and www. wikipedia.com

CORE COURSE II – MACRO ECONOMICS – i

Module I: Basic Concepts

Macro Economics – meaning and scope – macro static and dynamics – macro economic goals – national income – employment and unemployment - price – inflation – GDP and GNP concepts and measurements – trade cycle – trade balance – aggregate demand and supply.

Module II: National Income and Accounts

Circular Flow of Income in two – three and four – sector economy; different forms of national income accounting –social accounting, input – output accounting, flow of funds accounting and balance of payments accounting.

Module III: Consumption Function

Keyne's psychological law of consumption-implications of the law; short-run and long-run consumption function; Empirical evidence on consumption function; Income-

consumption relationship-absolute income, relative income, life cycle and permanent income hypotheses

Module IV: Investment function

Marginal efficiency of investment and level of investment; Marginal efficiency of capital and investment – long run and short run; The Multiplier – accelerator and investment behaviour –impact of inflation; Influence of policy measure on investment – empirical evidence.

Module V: Neo – Classical and Keynesian Synthesis

Neo – Classical and Keynesian views on interest; the IS – LM model; Slopes of IS and LM; Extension of IS-LM model with government sector; Relative effectiveness of monetary and fiscal policies; extension of IS-LM models with labour market and flexible prices.

Reference:

1. Ackley, G (1978) Macroeconomics: Theory and Policy, Macmillan, New York
2. Blackhouse, R. and A Salansi (Eds.) (2000), Macroeconomics and the Real World (2 Vols.), Oxford University Press, London
3. Branson, W.A. (1989) Macroeconomics Theory and Policy (3rd Edition), Harper and Row, New York
4. Bornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York
5. Hall, R.E. and J.B. Taylor (1986) Macroeconomics W.W. Norton, New York
6. Heijdra, B.J. and V.P. Frederick (2001), Foundations of Modern Macroeconomics, Oxford University Press, New Delhi
7. Jha, R. (1991) Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd., New Delhi.
8. Romer, D.L. (1996), Advanced Macroeconomics, McGraw Hill Company Ltd, New York
9. Scarfe, B.L. (1977) Cycles, Growth and Inflation, McGraw Hill, New York
10. Shapiro, E. (1996), Macroeconomic Analysis, Galgotia Publications, New Delhi
11. Surrey, M.J.C. (Ed.) (1976), Macroeconomic Theories, Oxford University Press, Oxford.
12. Google.com and wikipedia.com.

CORE COURSE III – MONETARY ECONOMICS

Module I: Supply of Money

Financial intermediation a mechanistic model of bank deposit determination; A behavioural model of money supply determination, a demand determined money supply

process – Inside and outside money (Gurley and Shaw) – RBI approach to money supply; High powered money and money multiplier; Budget deficits and money supply; money supply and open economy; control of money supply – Instruments of credit control.

Module II: Demand for Money

Classical approach to demand for money-Quantity theory approach, Fisher's equation, Cambridge quantity theory – Neutrality of money, Classical dichotomy –Keynes's liquidity preference approach, transaction, precautionary and speculative demand for money-aggregate demand for money, derivation of LM curve

Module III: Theory of Inflation

Classical, Keynesian and Monetarist approaches to inflation; Structuralist theory of inflation; Philips curve analysis-Short run and long run Philips curve; Samuelson and Solow – the natural rate of unemployment hypothesis; Tobin's modified Philips curve, Adaptive expectations and rational expectations; policies to control inflation

Module IV: Post-Keynesian Demand for Money

Post – Keynesian approaches to demand for money-Patinkin and the Real Balance Effect, Approaches of Baumol and Tobin; Friedman and the modern quantity theory; Crisis in Keynesian economics and the revival of monetarism; Mundell – Fleming model-Asset markets, expectations and exchange rates; Monetary approach to balance of payments

Module V: Financial Market

Nature and functions of financial market – Money market – Meaning, Characteristics and constituents, functions, structure and institutions of money market – Bankers – Weakness of Indian money market – measures for improvement – recent concepts and instruments of financial market – capital market – Sensex and Nifty – SEBI and its role

Reference:

1. Ackley, G (1978) Macroeconomics: Theory and Policy, Macmillan, New York
2. Blackhouse, R. and A Salansi (Eds.) (2000), Macroeconomics and the Real World (2 Vols.), Oxford University Press, London
3. Branson, W.A. (1989) Macroeconomics Theory and Policy (3rd Edition), Harper and Row, New York
4. Bornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York
5. Hall, R.E. and J.B. Taylor (1986) Macroeconomics W.W. Norton, New York
6. Heijdra, B.J. and V.P. Frederick (2001), Foundations of Modern Macroeconomics, Oxford University Press, New Delhi

7. Jha, R. (1991) Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd., New Delhi.
8. Romer, D.L. (1996), Advanced Macroeconomics, McGraw Hill Company Ltd, New York
9. Scarfe, B.L. (1977) Cycles, Growth and Inflation, McGraw Hill, New York
10. Shapiro, E. (1996), Macroeconomic Analysis, Galgotia Publications, New Delhi
11. Surrey, M.J.C. (Ed.) (1976), Macroeconomic Theories, Oxford University Press, Oxford.
12. Google.com and wikipedia.com.

CORE COURSE IV - MATHEMATICAL METHODS FOR ECONOMIC ANALYSIS

Module I: Terminology, Concepts and tools

Addition, subtraction, multiplication and division of fractions and decimals – Constants, variables, parameters, intercepts Coefficients – Functions – inverse, general and specific functions – Equations – Applications – Demand and supply functions – Cost and revenue functions – Consumption function –IS & LM functions – Multivariable functions – Market equilibria.

Module II: Differential Calculus

Rules of differentiation – slopes – linear and non linear functions – partial derivatives – higher order derivatives – Young's Theorem – Constrained & unconstrained optimization – Lagrangian Multiplier – Interpretation – Use of derivatives in economics – Maximization, minimization, elasticities - Utility function – production function – revenue, cost and profit functions (simple problems)

Module III: Integration

Concept-simple rules of integration-application to Consumer's surplus & producer's surplus-Costs & revenues

Module IV: Matrices

Fundamentals of linear algebra-martix, solving equations – Crammer's rule-Uses-Input-Output analysis – Open and closed models

Module V: Linear Programming

Basic Concepts, formulation of an LP problem-feasible, basic and optimal solution – graphic and simplex methods-formulation of the dual of a programme and its interpretation – Applications of LP technique.

Reference:

1. Allen, R.G.D. (1974) Mathematical Analysis of Economists, Macmillan Pressand ELBS, London
2. Chiang, A.C. (1986) Fundamental Methods of Mathematical Economics, McGraw Hill, New York
3. Yamane, Taro (1975) Mathematics of Economists, Prentice Hall of India, New Delhi
4. Baumol, W.J. (1984) Economic Theory and Operations Analysis, Prentice Hall. Englewood Cliffs, New Jersey
5. Monga, G.S. (1972), Mathematics and Statistics for Economists, Vikas Publishing House, New Delhi
6. Salvatore Dominick (1992) Mathematics for Economists, Schaum Series

CORE COURSE V – FINANCIAL ECONOMICS

Module I : Introduction to Financial Economics

Objectives – Functions – Scope – Evolution – Interface of financial economics with other areas – Corporate finance

Module II: Time Value of Money

Future value of single cash flow, Multiple cash flow, annuity, sinking fund factor – Present value of single cash flow – Multiple cash flow, annuity, annuity dues, perpetuities, comparison rates.

Module III: Sources of Long –term Finance

Equity capital, retained earnings, preference capital, term loans, debentures, pattern of corporate financing in India.

Module IV: Financial Statement Analysis

Introduction, meaning of financial analysis – Types and devices of financial analysis – Understanding financial statements: Balance sheet, Income statement. Common size analysis, trend analysis, ratio analysis, industry average, comparison with competitors.
Financial ratios as perceived by commercial banks, corporate controllers, forecasting financial failure – Ratio analysis in special industries: Banks, utilities, transportation, insurance, real estate business.

Module V: Fund Flow and Cash Flow Analysis

Working capital – Basics of working capital – Working capital finance – Sources of working capital

Reference:

1.www.wikipedia.com. and www.google.com.
2.Rose et.al, 1999, Fundamentals of Corporate Finance, Tata McGrawHill, New Delhi
3.Prasanna Chandra, 2001, Financial Management: Theory and Practice, Tata McGraw-Hill, New Delhi
4. Charles H. Gibson, 2001, Financial Reporting and Analysis, South Western College, Publication
5. Wild et al, 2001, Financial Statement Analysis, McGraw-Hill International.

CORE COURSE VI – MICRO ECONOMICS – II

Module I: Distribution

Neo-classical approach – Marginal productivity theory, Product exhaustion theorem, Elasticity of technical substitution, technical progress and factor shares: Theory of distribution in imperfect product and factor markets; Macro theories of distribution – Ricardian, Marxian, Kalecki and Kaldor's

Module II: Welfare Economics

Pigovian welfare economics: Pareto optional conditions; Value judgement; Social welfare function; Compensation principle, Inability to obtain optimum welfare – Imperfections, market failure, decreasing costs, uncertainty and non-existent and incomplete markets; Theory of Second Best – Arrow's impossibility theorem; Rawl's theory of justice, equity – efficiency trade off.

Module III: General Equilibrium

Partial and general equilibrium, Walrasian excess demand and input-output approaches to general equilibrium, existence, stability and uniquencess of equilibrium and general equilibrium, ccoalitions and monopolies; Production without consumption – one sector model, homogeneous functions, income distribution; Production without consumption – two sector model, relationship between relative commodity and factor prices (Stopler-Samuelson theorem), relationship between output mix and real factor prices, effect of changes in factor supply in closed economy (Rybczynski theorem), production and consumption – Introduction of contributions of Arrow and Debreu to general equilibrium analysis

Module IV: Economics of Uncertainty

Individual behaviour towards risk, expected utility and certainty equivalence approaches, risk and risk aversion – sensitivity analysis, gambling and insurance, the economics of insurance, cost and risk, risk pooling and risk spreading, mean-variance analysis and portfolio selection, optional consumption under uncertainty.

Module V: Competitive Firm under Uncertainty

Factor demand under price uncertainty, the economics of search – different models, the efficient market hypothesis, stochastic models of inventory demand; Market with incomplete information, search and transaction costs, the economics of information.

Reference:

1. Kreps, David M (1990) A Course in Microeconomic Theory, Princeton University Press, Princeton
2. Koutsoyiannis, A (1979), Modern Microeconomics (2nd Edition) Macmillan Press, London.
3. Layard P.R.G and A.W. Walters (1978) Microeconomic Theory, McGraw Hill, New York
4. Sen A. (1999) Microeconomics: Theory and Applications, Oxford University Press, New Delhi
5. Stigler, G (1996), Theory of Price, (4th Edition), Prentice Hall of India, New Delhi
6. Varian,H. (2000) Microeconomic Analysis, W.W. Norton, New York
7. Baumol, W.J. (1982) Economic Theory and Operations Analysis, Prentice Hall of India, New Delhi
8. Hirshleifer, J. and A Glazer (1997), Price Theory and Applications, Prentice Hall of India, New Delhi
9. Da Costa, G.C. (1980), Production, Prices and Distribution, Tata McGraw Hill, New Delhi
10. Salvatore, Domonick (1991), Micro Economic Theory, 3rd Edition, McGraw Hill, New Delhi
11. www. Google.com. and www. wikipedia.com

CORE COURSE VII – MACRO ECONOMICS II

Module I: New Classical macro economics

The new classical critique of micro foundations, micro foundations of micro economics – the new classical approach, Policy implications of new classical approach empirical evidence.

Module II: Problem of stabilization policy I

Lags in the effects of policy – role of expectations –uncertainty and economic policy – rules versus discretion – Phillips curve and the aggregate supply curve – expectations and short run Phillips curves – Friedman – Phelps argument – shifting short-run Phillips curve – trade off between inflation and employment – natural rate of unemployment.

Module III: Problems of stabilization policy II

Okun's law –budget deficit and inflation – mechanics of financing the budget – income policies –monetarists and Keynesian models – portfolio approach – crowding out – government budget constraint – Rational expectations and short run ineffectiveness of stabilization policy – criticisms of the rational expectations hypothesis

Module IV: Equilibrium and disequilibrium analysis

Walrasian general equilibrium models – problem of consistency and invalid dichotomy – real balance effect – assessment of the significance of real balance effect – effective demand, notional demand and involuntary unemployment – price and quality flexibility – source of non instantaneous price adjustment – new Keynesianism and the theory of unemployment.

Module V: Macro economics in the open economy

Application of fiscal and monetary policies in an open economy – fiscal policy and monetary policy with fixed exchange rates and flexible exchange rates – global co-operation and coordination in macro economic policy – internal and external balances – monetary approach to the balance of payment and sterilization.

Reference:

1. Ackley, G (1978) Macroeconomics: Theory and Policy, Macmillan, New York
2. Blackhouse, R. and A Salansi (Eds.) (2000), Macroeconomics and the Real World (2 Vols.), Oxford University Press, London
3. Branson, W.A. (1989) Macroeconomics Theory and Policy (3rd Edition), Harper and Row, New York
4. Bornbusch, R. and F. Stanley (1997), Macroeconomics, McGraw Hill, Inc., New York
5. Hall, R.E. and J.B. Taylor (1986) Macroeconomics W.W. Norton, New York
6. Heijdra, B.J. and V.P. Frederick (2001), Foundations of Modern Macroeconomics, Oxford University Press, New Delhi
7. Jha, R. (1991) Contemporary Macroeconomic Theory and Policy, Wiley Eastern Ltd., New Delhi.
8. Leijonhufvud, A (1968) On Keynesian Economics of Keynes, OUP, Oxford
9. Romer, D.L. (1996), Advanced Macroeconomics, McGraw Hill Company Ltd, New York
10. Scarfe, B.L. (1977) Cycles, Growth and Inflation, McGraw Hill, New York
11. Shapiro, E. (1996), Macroeconomic Analysis, Galgotia Publications, New Delhi
12. Surrey, M.J.C. (Ed.) (1976), Macroeconomic Theories, Oxford University Press, Oxford.
13. Google.com and wikipedia.com.

CORE COURSE VIII – STATISTICS

Module I: Univariate Analysis

Measures of central tendency, dispersion – standard deviation co-efficient of variation, Lorenz curve, Gini concentration ratio – Skewness (simple problems)

Module II: Bivariate Analysis

Correlation, regression, simple, multiple, l (simple problems) – OLS – assumptions – violation of assumptions – heteroscedasticity, autocorrelation and multicollinearity (concepts only) Interpretation of Co-efficients – Introduction to multiple and non-linear regression – relation between regression and correlation coefficients – relation between b_{yx} and b_{xy} –relation between intercept and slope.

Module III: Probability and distributions

Elementary probability theory, concepts, binomial – expansion, coefficient – Poisson and normal distribution – application in economics.

Module IV: Sampling Distribution

Sampling distribution, standard error-testing of hypothesis – one tailed and two tailed tests – testing of means, proportions, standard deviations : $x^{2,}$ F- ANOVA testing correlation and regression coefficients.

Module 5: Index numbers and Time Series

Uses, selection of number of items, base year price relatives-Fisher's ideal index-Factor reversal test-Time reversal test-Chain index-Bas shifting –conversion of current price data into constant price data – price index numbers in India – WPI & CPI – applications – Components of time series – Moving averages-Straight line trend – Deseasonalisation of data – Seasonal Index

Reference:

1. Gupta, S.C. (1993), Fundamentals of Applied Statistics, S.Chand & Sons, New Delhi.
2. Speigal, M.R. (1992), Theory and Problems of Statistics, McGraw Hill Book Co., London
3. Chou, Y. (1975), Statistics Analysis, Holt, Reinhart and Winston, New York
4. Croxton, Crowden and Klein (1971), Applied General Statistics, Prentice Hall of India, New Delhi.
5. Nagar, A.L. and R.K. Das (1993), Basic Statistics, Oxford University Press, New Delhi

6. Salvatore, Dominick (1982), Statistics and Econometrics, McGraw Hill, New Delhi

CORE COURSE - IX – INDIAN ECONOMY

Module I: Natural Resource s and Population

Natural Resource – Meaning and Importance - Forest resources – Energy resources – Mineral resources – Water resources – Environmental degradation – Indian population size, density and distribution – urbanization – National population policy – Human capital and its development

Module II: Poverty and Unemployment

Poverty – its dimensions, nature and causes – Poverty line: definition – Poverty alleviation programmes – Unemployment and its types – New Employment Policy in XI Plan – RLEGP – inequalities in distribution – programmes and measures – causes of income inequalities – suggested measures to redress inequalities – parallel economy: meaning, magnitude and consequences – causes and remedies.

Module III: Foreign Trade and WTO

Direction and composition of foreign Trade – Balance of trade and payments – The New Economic Reforms – Partial convertibility – Foreign Direct Investment – Foreign exchange rate – Foreign exchange reserve – India's foreign Trade Policy – WTO – Features and assessment – Globalization: Features and problems – Sect oral contribution trade

Module IV: Agricultural and Industrial Sectors

Technological change in agriculture – Pricing of agricultural inputs and outputs – Agricultural marketing – New agricultural policy – Issues in food security, availability – Farmers suicide – Policies for sustainable irrigation – Government's investment on irrigation – Disincentive to agricultural sector – New industrial policy – Problems of corporate sector – Subsidies to corporate sector – Privatization and disinvestments – Labour market reform

Module V: Planning in India

Objectives – Achievements since 1950 – Agriculture, industry and social sectors – X Plan performance to tackle poverty, inequality and unemployment – XI Plan Proposal – Allocation to agriculture, education and health.

Reference:

1. Agrawal, A.N. (2004) Indian Economy, Wishwa Prakashan, New Delhi
2. Ahluwalia, J.J. and I.M.D. Little (Eds.) (1999), India's Economic Reforms and Development (Essays I honour of Manmohan Singh), Oxford University Press, New Delhi.
3. Bardhan, P.K. (9th Edition) (1999), The Political Economy of Development in India, Oxford University Press, New Delhi
4. Bawa, R.S. and P.S. RAikhy (Ed.) (1997), Structural Changes in India Economy, Guru Nanak Dev University Press, Amritsar
5. Brahmananda P.R. and V.R. Panchmukhi (Eds.) (2001), Development Experience in the Indian Economy: Inter – State Perspectives, Bookwell, Delhi
6. Chakravarrty, S. (1987), Development Planning: The Indian Experience, Oxford University Press, New Delhi
7. Dantwala, M.L. (1996), Dilemmas of Growth : The Indian Experience, Saga Publications, New Delhi
8. Datt and Sundaram (2002), Indian Economy, S. Chand & Co, New Delhi
9. Dhingra C. (2003), The Indian Economy, Sultan Chand & Sons, New Delhi
10. Government of India, Economic Survey, (Annual), Ministry of Finance, New Delhi
11. Jalan,B. (1992) The Indian Economy – Problems and Prospects, Viking, New Delhi
12. Parkh, K.S. (1999), India Development Report (Annual), Oxford University Press, New Delhi
13. Reserve Bank of India, Report of Currency and Fiance (Annual)
14. Dreze, Jean and Amarta Sen (1999), India: Economic Development and Social Opportunity, OUP, New Delhi
15. Datt Ruddar and K.P.M. Sundaram (2001), Indian Economy, S.Chand & Co., New Delhi
16. Alagh, Y.K. (1995), Indian Development Planning and Policy, Vikas, New Delhi
17. www.google.com.com and www.wikipedia.com.

ELECTIVE COURSE I – ENVIRONMENTAL ECONOMICS

Module I: Concepts

Environment – Eco-system – Nexus between Economics and Environment – The principle of material balance – Private versus Social Cost – Entropy – Ecological balance – Sustainable development – Externalities.

Module II: Environmental Issues

Environmental quality – Non-marketed goods – Regulatory – Command and Control Method – Environmentalism – Trade off between Environmental Protection and Economic Growth – Institutional Approach to Environmental Problems – Environmental Education.

Module III: Measurement of Environmental Values

User values: Option values and non-use values; Valuation methods – Methods based on observed market behaviour; Hedonic property values and household production models (travel cost methods and household health production function), Methods based on response to hypothetical markets contingent valuation methods.

Module IV: Environment and Society

Pollution and Environment – Impact of population growth (Trends, Sex ratio, Rural and Urban) on environment – Urbanisation and environment – Poverty and Environment – Culture and Environment – People Participation in Environmental movement.

Module V: Policy

Ministry of Environment and Forest – Water Pollution and Prevention Control Act 1974 – Air Pollution and Prevention Control Act 1981 – Comprehensive Environment Bill 1986 – Policy thrust – WTO and Environment

Reference:

1. Agarwal S.K. (1997) "Environmental Issues and Themes", APH Publishing Corporation, 5 – Ansari Road, New Delhi
2. Pravin Sheth (1997), Environmentalism Policies, Ecology and Development", Rawat Publications, Jaipur and New Delhi
3. Neela Mukaherjee (1997) "Participatory appraisal of Natural Resources",Concept Publications, company New Delhi.
4. Pashupathi Nath and Siddha Nath (1990), Environmental Pollution Conservation and Planning" Chugu Publication, Alahabad, India.
5. Sumi Krishna (1996), "Environmental Politics People's lives and Development Choices" Saga Publications, New Delhi.
6. Ajit Kumar Singh (1997), "Land use Environment and Economic Growth in India", MD Publications PVT, LTD, New Delhi
7. Baumol, W.J. and W.E. Oates (1988), "The Theory of Environmental Policy" (2nd Edition) Cambridge University Press, Cambridge
8. Bromley, D.W. (Ed.,) (1995)"Handbook of Environmental Economics" Cambridge University Press Cambridge
9. Fisher, AC (1981), "Resource and Environmental Economics" Cambridge University Press Cambridge
10. Hanley, N.J.F., Shorgen and B. White (197), "Environmental Economics in Theory and Practice", Macmillan
11. Hussen, A.M. (1999), "Principles of Environmental Economics", Routledge, London.
12. Jeroen, C.J.M. Van Den Bergh (1999), "Handbook of Environmental and Resource Economics", Edward Elgar Publication Ltd, UK.

13. Kolstad, C.D. (1999), "Environmental Economics", Oxford University Press, New Delhi
14. D.W. and R.Turner (1991), "Economics of Natural Resource use and Environment", John Hopkins University Press, Baltimore
15. Perman, R. Ma and J.Mc. Mivary (1996), "Natural Resource and Environmental Economics", Longman, London.
16. Sankar,U. (Ed.) (2001), "Environmental Economics", Oxford University Press, New Delhi
17. Rabindra N. Battacharya (2001), "Environmental Economics", (Ed.), Oxford University Press, New Delhi.
18. Google.com. and Wikipedia.com.

CORE COURSE X – INTERNATIONAL BUSINESS

Module I: General Concepts

Special features of international business (IB) – reasons for IB – difference in endowments, cultures, currencies, technologies, wages, tastes, language – understanding world map – location of countries, their capital, currencies.

Module II: Economic Concepts

Free trade versus protection – arguments for and against Laissez faire – Terms of trade – tariffs – quotas – non-tariff barriers – phyto-sanitary measures – dumping – exchange rate –foreign exchange reserves – IMF –SDR –WB –GATT-WTO – UNCTAD – FERA – FEMA – SAARC – SAAPTA – ASSFTA – NAFTA – ASEAN – MNCs – TNCs – BOP – BOT – FDI - Brain-drain.

Module III: Foreign Trade Documents I

Need, rationale and type of documents – export & import licenses – processing of export order – pre-shipment inspection and quality control – foreign exchange formalities – excise and customs clearance – port procedures

Module IV: Foreign Trade Procedure

Claiming duty drawbacks and other benefits – determination of freight – containerization – booking of cargo space – packing and marking for exports – forwarding and clearing agents and their operations – cargo insurance

Module V: Exports

Role of export – selection of export products – selection of export markets – role of export houses – appointment of agents – payment of agency commission - promotion abroad – participation in trade fairs – export contracts – arbitration and dispute

settlements – pre-shipment and post-shipment finance – letters of credit – EXIM bank – international capital markets foreign exchange rates.

Reference:

1. w.w.w. google.com
2. w.w.w.wikipedia .com.
3. T.A.S. Balgopal, Export Management
4. Handbook of export and import procedure
5. S.R. Ullal, Export Management
6. Paras Ram, Export, what, where and how
7. Keshkamat, Finance of foreign trade
8. G.S. Lall, Finance of foreign trade
9. Ministry of Commerce, Government of India, India's trade agreement, latest number
10. R.S. Rathore, Export Marketing
11. Government of India, Economic Survey, latest issue

CORE COURSE XI – INDUSTRIAL ECONOMICS

Module I: Patterns and Structure

Process and pattern of industrialization – Industrial structure and change – Alternate patterns – Hoffman's Hypothesis of Market Economics –Simon Kuznets' Interpretation of secular changes in industrial development – Industrialization in Planned Economics – Key Role of Capital Goods Sector – HB Chenery's pattern of industrial change

Module II: Market Structure

Sellers' concentration; Production differentiation; Entry conditions; Economics of scale; Market structure and profitability; Market structure and innovation; Theories of industrial location – Weber, Losch and Sargent Florence; Factors affecting location.

Module III: Industrial Finance

Owned, external and other components of funds; Role, nature, volume and types of institutional finance – IDBI, IFCI, SFCs, SIDC, commercial banks, etc., Financial statement – Balance Sheet, Profit and loss account; assessment of financial soundness, ration analysis

Module IV: Industrial Labour

Structure of industrial labour; employment dimensions of Indian industry; industrial legislations; industrial relations; Exit policy and Social security; Wages and problems of bonus – labour market reforms.

Module V: Project Planning and Appraisal

Cost-benefit analysis – Net Present Value (NPV) and internal rate of return (IRR) criteria – balancing private and social returns.

Reference:

1. Barthwal, R.R. (1985), Industrial Economics, Wiley Eastern Ltd, New Delhi
2. Cherunilam, F (1994), Industrial Economics; Indian Perspective (3rd Edition) Himalaya Publishing House, Mumbai
3. Divine, P.J. and R.M.. Jones et.al. (1976), An Introduction to Industrial Economics, George Allen and Unwin Ltd, London.
4. Hay, D. and D.J. Morris (1979), Industrial Economics : Theory and Evidence, Oxford University Press, New Delhi
5. Kuchhal, S.C. (1980), Industrial Economy of India (5th Edition), Chaitanya Publishing House, Allahabad
6. Singh, A. and A.N. Sadhu (1988), Industrial Economics, Himalaya Publishing Home, Bombay
7. Mamoria and Mamoria (2000) Dynamics of Industrial Relations in India (15th Edition), Himalaya Pub. House, Mumbai
8. www.google,com and www.wikipedia.com.

CORE COURSE XII – FISCAL ECONOMICS

Module I: Theory of public Goods and Public Choice

The economic role of government – Allocation, Growth and Stabilisation – Private goods, public goods and merit goods, Market failure-imperfections, decreasing costs, externalities, public goods; Uncertainty and non-existence of futures markets; Informational asymmetry – Theory of second best – Private and public mechanism for allocating resources; Problems of allocating resources; Problems of preference revelation and aggregation of preferences; Voting systems; Arrow impossibility theorem; An economic theory of democracy, Politico-eco-bureaucracy; Rent seeking and directly unproductive profit seeking (DUP) activities.

Module II; Public Expenditure

Wagner's law of increasing state activities,; Wiesman-Peacock hypothesis, Pure theory of public expenditure; Structure and growth of public expenditures; Criteria for public investment; Social cost-benefit analysis-Project evaluation, estimation of costs, discount rate; Reforms in expenditure budgeting; Programme budgeting and zero base budgeting.

Module III: Taxation and Public Debt

Theory of incidence; Alternative concepts on incidence – Allocate and equity aspects of individual taxes; Benefit and ability to pay approaches; theory of optional taxations; Excess burden of taxes Trade off between equity and efficiency – Laffer curve – Theory of measurement of dead weight losses; the problem of double taxation – The rationale behind VAT – Indian tax structure and trends

Public debt – Classical view of public debt; Compensatory aspect of debt policy; Burden of public debt; Sources of public debt; Debt through created money; Public borrowings and price level; Crowding out of private investment and activity; principles of debt management and repayment

Module IV: Fiscal Policy

Objectives of fiscal policy –full employment, anti-inflation, economic growth, redistribution of income and wealth; interdependence of fiscal and monetary policies; Budgetary deficit and its implication; fiscal policy for stabilization-automatic vs. discretionary stabilization; Alternative measures of resource mobilization and their impact on growth, distribution and prices; Balanced budget multiplier-Meaning and significance of budgetary terms; revenue account, capital account, fiscal deficit and other types of deficit; Budget Estimate, and Revised Estimate – Plan and non-plan expenditures

Module V: Fiscal Federalism

Principles of multi-unit finance; Fiscal federalism in India; Vertical and horizontal imbalance; Assignment of function and sources of revenue; Constitutional provisions; finance Commission and Planning Commission; Devolution of resources and grants; Theory of grants; resource transfer from Union to States – Criteria for transfer of resources; Centre-State financial relations in India; Problems of state's resources and indebtedness; Transfer of resources from union and State to local bodies.

Reference:

1. Atkinson, A.B. and J.E. Siglitz (1980), Lectures on Public Economics, Tata McGraw Hill, New York
2. Auerbach, A.J. and M. Feldstern (Edn.) (1985), Handbook of Public Economics, Vol. I, North Holland, Amsterdam.
3. Buchanan, J.M. (1970), The Public Finances, Richard D, Irwin, Homewood
4. Goode,R. (1986), Government Finance in Developing Countries, Tata McGraw Hill, New Delhi
5. Houghton, J.M. (1970), The Public Finance; Selected Readings, Penguin, Harmondsworth
6. Jha,R. (1998), Modern Public Economics, Routledge, London
7. Menutt,P. (1996), The Economics of Public Choice, Edward Elgar, U.K.

8. Musgrave, R.A. (1959), The Theory of Public Finance, McGraw Hill, Kogakusha, Tokyo
9. Musgrave, R.A. and P.B. Musgrave (1976), Public Finance in Theory and Practice, McGraw Hill, Kogakusha, Tokyo
10. Shoup, C.S. (1970), Public Finance, Aldine, Chicago
11. Shome,P. (Ed.) (1995), Tax Policy; Handbook, Tax Division, Fiscal Affairs Department, International Monetary Fund, Washington D.C.
12. Srivastava, D.K. (Ed.) (2000), Fiscal Federalismin India, Har Anand Publishers, New Delhi
13. Reports of various Finance Commissions
14. www.google.com. And www.wilipedia.com.

ELECTIVE COURSE II – RESEARCH METHODOLOGY

Module I

Science –its meaning and characteristics – The meaning of 'research' – Specific features of research in Social Sciences as opposed to Physical and Natural Sciences – Objectivity in research Sources of bias – Good evidence and true evidence – Basic categories in scientific method –Facts –Concepts – Causality – Uncertainty - Probability – Dialectical and Historical Materialism.

Module II

Methods of Research – Falsification and verification criteria (Karl Popper) –Paradigm Shift (Kuhn) – Deductive and inductive Reasoning –Steps of Scientific Method – Historical Method – Case study – Scaling Techniques – Sample surveys – Various sampling methods – Importance of proper sampling design.

Module III

Steps in Research - Formulation of a Research problem – Guiding principles in the choice of a research topic – Role of Review of Literature – Formulation of Research Design –Model building – Hypothesis: concept, definition, formulation and testing

Module IV:

Secondary data – some important sources: NSSO, CSO, Economic Survey, Season & Crop Report, Agricultural Census, Livestock Census, Annual survey of Industries, RBI Reports, WDR, HDR, IDR; Primary Data collection – Tools – observation, schedule, questionnaire, projective techniques – Principles underlying construction of a questionnaire – Preparation of master table – Data processing – Analytical Tables.

Module V:

Report writing – Structure and General format – Style – Language punctuation, grammar, symbols – Use of footnotes, references –citations – Presentation of tables, diagrams, charts and maps – Bibliography.

Reference:

1. Ghose, B.N. Scientific Method and Social Research, New Delhi, Sterling Publishers, 1982
2. Goode, W.J. & Hatt,P.K. Methods in Social Research, New York, McGraw Hill, 1952
3. Kate Turabina, Manual of style for writing dissertations, thesis and reports, University of Chicago Press, Chicago
4. Myrdal,G. Objectivity in Social Research
5. C.T. Kurien (Ed.) A Guide to Research in Economics (Sangam Publishers)
6. Wilson Gee, Social Science Research Methods (N.Y. Appleton Century Croft 1950)
7. Pauline V, Young, Scientific Social Surveys and Research
8. Parson,C.J., Thesis and Project Work
9. Karl Popper, The Logic of Scientific Discovery, (Lond, Hutchinson, 1934)
10. T.S.Kuhn, The Structure of Scientific Revolutions, (Chicago 1962)
11. www.google.com. And wikipedia.com.

ELECTIVE COURSE III – PROJECT APPRAISAL

Module I: Introduction

Capital expenditure – importance and difficulties – objectives, resource allocation – Criteria – Investment strategic– Generation and screening of investment ideas.

Module II: Project Analysis

Market and demand analysis – Technical analysis – Financial analysis – Economic viability – Technical feasibility – Social acceptability.

Module III: Selection of Project

Project cash flows – Appraisal criteria – Pay back period – Rate of Return – Discount cash flow methods – NPV, IRR – Calculation of IRR for two years and more – Risk analysis – Types and measures of risk – Sensitivity analysis – Scenario analysis – Decision tree analysis – Uncertainty – Stochastic dominance

Module IV: Special Decision Situations

Choice between mutually exclusive projects of unequal life – Optional timing – determination of economic life – Interrelationship between investment and financing

aspects – Price index numbers and capital budgeting comparison of time series data – Deflating.

Module V: Implementation

Project organization – Project planning – Project control – Pre-requisites for successful project implementation – Network techniques – Development of Project net work – Time estimation – Scheduling – PERT –CPM – Network cost system – Project evaluation – Accounting, Economic and Social costs and benefits – Abandonment analysis – Administrative aspects in capital budgeting.

Reference:

1. www.wikipedia.com. and www.google.com.
2. Prasanna Chandra, Projects; Planning, Analysis, Selection, Implementation and Review, Tata McGraw Hill.
3. Clark J.C. et al., Capital Budgeting: Planning and Control of Capital Expenditure, Prentice Hall.
4. Little I M D and S A Mirlees, Project Appraisal and Planning for Developing Countries, Heimann, London
5. Marghin E. and A.K. Sen, Guideline for Project Evaluation, UNIDO, New York
6. Bhavesh M Patel, Project Management, Vikas Publishing House New Delhi

CORE COURSE XIII – ECONOMICS OF DEVELOPMENT

Module I: Economic Growth I

Economic Growth and development – Factors affecting economic growth: Growth models-Harrod and Domar, Neoclassical growth models – Solow and Meade, Mrs. Joan Robinson's growth model; criticism of Neo-classical analysis of growth, the capital controversy.

Module II: Economic Growth – II

Technical Progress – embodied and disembodied technical progress; Hicks, Harrod, learning by doing, production function approach to the economic growth; Growth models of Kaldor and Pasinetti, optimal savings and Ramsay's rule, golden rule accumulation, Tobin, Patinkin and Johnson endogenous growth; Intellectual capital of learning, education and research.

Module III: Social and Institutional Aspects of development

Development and underdevelopment – Poverty – Absolute and relative measure development and development gap – inequality of income, human development index and other indices of development and quality of life – Food security, education, health

and nutrition; Human resource development; Theory of demographic transition, Population as limits to growth and as ultimate source – Population, poverty and environment; economic development and institutions

Module IV: Theories of Development

Classical theory of development – contributions of Adam smith, Ricardo, Malthus and James Mill Karl Marx and development of capitalist economy – theory of social change, surplus value and profit; immutable laws of capitalist development; crisis in capitalism – Schumpeter and capitalist development; innovation-role of credit, profit and degeneration of capitalism

Module V: Approaches to development

Partial theories of growth and development –vicious circle of poverty, circular causation, unlimited supply of labour, big push, balanced growth, unbalanced growth, critical minimum effort thesis, low income equilibrium trap; Dualism-technical, behavioural and social; Ranis and Fei model

Reference:

1. Adelman, I. (1961), Theories of Economic Growth and Development, Stanford University Press, Stanford
2. Behrman, S. and T.N. Srinivasan (1995), Handbook of Development Economics Vol.3, Elsevier, Amsterdam
3. Chenery, H. and T.N. Srinivasan (Eds.) (1989) Handbook of Development Economics, Vols. 1 & 2, Elsevier, Amsterdam
4. Ghatak, S. (1986), An Introduction of Development Economics, Allen and Unwin, London
5. Gimmell, N. (1987), Surveys in Development Economics, Blackwell, Oxford
6. Kindleberger, C.P. (1977), Economic Development, (3rd Edition), Mc Graw Hill, New York
7. Meier, G.M. (1995), Leading Issues in Economic Development, (6th Edition), Oxford University Press, New Delhi
8. Myint, Hla (1965), The Economics of Underdeveloped Countries, Preager, New York
9. Todaro, M.P. (1996) (6th Edition), Economic Development, Longman, London
10. Thirwal, A.P. (1999), (6th Edition), Growth and Development, Macmillan, U.K.
11. www.google.com. and www.wikipedia.com.

CORE COURSE XIV: ECONOMICS OF NATURAL RESOURCES

Module I: Natural Resources, uses and misuses

Land, Water, air – Mining, petroleum extraction, fishing, hunting, forestry – Energy: Renewable and non-renewable energy resources – Access to Common Property Resources (CPR) – Pollution:1, Domestic, Solid Waste, Health and Sanitation and Unsafe Drinking Water, 2. Industrial: Air Pollution, Water Pollution, Soil Pollution, Acid rain, Noise Pollution, 3. Agricultural Soil erosion, Decreasing fertility rate – Deforestation and 4. Automobile Pollution.

Module II: Nexus between Economics and Natural Resources

Material balance principle – resilience and carrying capacity – Externalities and market inefficiency – externalities as missing markets; Property rights and externalities, non-convexities and externalities; Pareto optimal provision of public goods – Lindahl's equilibrium, preference revelation problem and impure and mixed public goods, common property resources.

Module III: Economics of Natural Resource Management and Sustainable Development

Theories of optimal use of exhaustible and renewable resources; Issues in biodiversity – Environment and development trade off and the concept of sustainable development; Integrated environmental and economic accounting and the measurement of environmentally corrected GDP; Macroeconomic policies on natural resources – water, air, land, copper, gold, silver, diamond, iron, lead, limestone, oil, salt, tin and uranium

Module IV: Natural Resource Problems in India

Mechanism for environment regulation in India; Environmental laws and their implementation; Policy instruments for controlling water and air pollution and forestry policy; People's participation in the management of common and forest lands; The institutions of joint forest management and the joint protected area management; Social forestry – rationale and benefits

Module V: The Theory of Environmental Policy

Environmental externalities – Pigouvian taxes and subsidies marketable pollution permits and mixed instruments (the charges and standards approach), Coase's bargaining solution and collective action; Informal regulation and the new model of pollution control, Monitoring and enforcement of environmental regulation, Environmental institutions and grass root movements; Global environmental externalities and climatic change – Tradable pollution permits and international carbon tax, Trade and environment in WTO regime.

Reference:

1. Baumol, W.J. and W.E. Oates (1988), "The Theory of Environmental Policy" (2nd Edition) Cambridge University Press, Cambridge

2. Bromley, D.W. (Ed.,) (1995)"Handbook of Environmental Economics" Cambridge University Press Cambridge
3. Fisher, AC (1981), "Resource and Environmental Economics" Cambridge University Press Cambridge
4. Hanley, N.J.F., Shorgen and B. White (197), "Environmental Economics in Theory and Practice", Macmillan
5. Hussen, A.M. (1999), "Principles of Environmental Economics", Routledge, London.
6. Jeroen, C.J.M. Van Den Bergh (1999), "Handbook of Environmental and Resource Economics", Edward Elgar Publication Ltd, UK.
7. Kolstad, C.D. (1999), "Environmental Economics", Oxford University Press, New Delhi, D.W. and R.Turner (1991), "Economics of Natural Resource use and Environment", John Hopkins University Press, Baltimore
8. Perman, R. Ma and J.Mc. Mivary (1996), "Natural Resource and Environmental Economics", Longman, London.
9. Sankar,U. (Ed.) (2001), "Environmental Economics", Oxford University Press, New Delhi
10. Adiseshaiah, Malcom,S. (Ed)(1987), Economics of Environment, Lancer International, New Delhi.
11. Google.com. and Wikipedia.com.
12. E.F. Schumachar, (1974), Small is beautiful, ABACUS, London
13. Joseph Pearce (2001), Small is still Beautiful, Harper Collins, London

ELECTIVE COURSE IV – MANAGEMENT INFORMATION SYSTEMS

Module I: Foundation Concepts

Information system (IS) and technologies – Importance of IS – System concepts – Feedback and control – Components of an IS – IS resources: people, hardware, software, data, network – IS activities: processing, storage, control – Roles of IS application – Trends in IS – Types of IS – Managerial challenges – Real world cases.

Module II: Competing with Information Technologies

Strategic IT – Strategic links in the supply chain – Competitive strategy concepts – Strategic uses of IT – Value chain and strategic IS – Using IT for strategic advantage – improving business quality – Real world cases.

Module III: Information Technologies

Managing data resources – Types of data bases (db):operational, distributed, external, hypermedia db – data warehouses – data mining – db management software – db interrogation – db maintenance – data resource management – challenges – db structures – hierarchical, network, relational, multidimensional, object oriented – Telecommunication and networks – Trends; industry, technology, business application – Internet applications – Business use of interest Real world cases.

Module IV: Business Applications

Functional business systems – Target marketing – IT in business – Marketing systems: interactive marketing, targeted marketing – sales for automation – Manufacturing systems: integrated manufacturing, process control, machine control – Human Resource Systems: HRM and internet, HRM and corporate sector – staffing and training – Real world cases.

Module V: Management Challenges

Security and ethical challenges – ethical responsibility of business professionals: business ethics technology ethics, ethical guidelines – computer crime: hacking, cyber theft, unauthorized use at work, software privacy, piracy of intellectual property, viruses and worms – privacy issues – Other challenges: employment, monitoring, working conditions – Health issues – Ergonomics Real world cases

Reference:

1. www.wikipedia.com. and www.google.com.
2. James A.O'brien, 2006, Management Information Systems, Tata McGraw Hill Edition, New Delhi
3. Gerald V. Post & David L. Anderson, 1999, Management Information Systems, Tata McGraw Hill Edition, New Delhi
4. C.S.V. Murthy, 2000, Management Information Systems, Himalaya Publication, Mumbai
5. D.P. Goyal 2000, Management Information Systems, Macmillan Delhi

ELECTIVE COURSE V – COMPUTER APPLICATIONS IN ECONOMICS
(THEORY ONLY)

Module I: Introduction to Computers

Evolution, Generations and classification of computers – Hardware and Software – CPU and its functions – Input and Output devices – Application of computers in Economics and Business.

Module II: Operating Systems

Simple DOS commands – fundamentals of window operating

Module III: Word Processing

Word basics – formatting text and document – working with headers, footers and footnotes – Tabs, tables and sorting – working with graphics – Templates and wizards – creating macros and menus – mail merge

Module IV: Spreadsheets and Statistical Packages

Excel basic – Arranging worksheets – functions – chart and its features – graphics - command macros – worksheet as database – what if projects. 8PSS – operation – regressions – ANOVA

Module V: World Wide Web

Internet basics – Browsing, Internet using search engines – opening E-mail ID, sending and checking E-mail – downloading text from Internet.

Basic Reading List

1. Sanders, D.H. (1988) Computers Today, McGraw Hill (3 rd Edition) New York
2. Sinha, (1992), Computer Fundamentals, BPB Publications, New Delhi
3. Rajaraman, V. (1996), Fundamentals of Computers, (Prentice Hall of India, New Delhi)
4. Lipschutz, M.M. and S. Lipschultz (1982), Theory and Problems of Data Processing, Schaum's Outline Series, McGraw Hill, New Delhi.
5. Leon and Leon, Internet Basics

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