

BHARATHIAR UNIVERSITY: COIMBATORE-641 046**M.B.A – Software Testing & Quality Management**

(For the CPOP students admitted during the academic year 2012-2013 & onwards)

SCHEME OF EXAMINATIONS – CBCS Pattern

Course / Title	Ins.Hrs Per Week	Examinations				Credits
		Dur.H	CIA	Marks	Total	
Semester I						
1.1 Software Engineering Management	5	3	25	75	100	4
1.2 Management Principles and Practice	5	3	25	75	100	4
1.3 Organizational Behaviour	4	3	25	75		4
1.4 Human Resource Management	5	3	25	75	100	4
1.5 Financial Management	5	3	25	75	100	4
1.6 Software Quality Management	4	3	25	75	100	4
1.7 Quality Assessment in Enterprises- Practical 1*	2	-	-	-	-	-
Semester II						
2.1 International Business Management	5	3	25	75	100	4
2.2 Software Testing Methodology	4	3	25	75	100	4
2.3 Total Quality Service Management	5	3	25	75	100	4
2.4 Quantitative Techniques	4	3	25	75	100	4
2.5 Research Methods for Management	5	3	25	75	100	4
2.6 Marketing Management	5	3	25	75	100	4
2.7 Quality Assessment in Enterprises- Practical II*	2		40	60	100	4
Semester III						
3.1 Software Testing Practices	5	3	25	75	100	4
3.2 Software Test Management	5	3	25	75	100	4
3.3 Database Management Systems	5	3	25	75	100	4
3.4 Customer Relationship Management	5	3	25	75	100	4
3.5 Corporate Communication	5	3	25	75	100	4
3.6 Software Project Management	5	3	25	75	100	4
3.7 Summer Placement Project Report & Viva-Voce	-	-	20	80	100	4
Semester IV						
4.1 Software Test Automation	6	3	25	75	100	4
4.2 Quality Assessments Techniques	6	3	25	75	100	4
4.3 Information Technology Applications	6	3	25	75	100	4
4.4 Electronic Commerce (e-Commerce)	6	3	25	75	100	4
4.5 Knowledge Management and Information Systems	6	3	25	75	100	4
TOTAL					2500	100

* The Course will be taught during I and II Semesters.

1.1. SOFTWARE ENGINEERING MANAGEMENT

Unit: 1

Introduction: Software Characteristics, Software process, Software Engineering, Characteristics of Software Project, Activities covered by Software Project Management, Problems involved, Management function related to Project Management, Feasibility Analysis

Unit: II

Project Planning: Overview, Finalising Project Scope, Infrastructure, Analysing Project Characteristics, Identifying Project goals and activities, Estimating time & effort, allocating resources, Review plan

Unit: III

Project Execution Approach: Choosing Technologies, Structure Vs Speed of Delivery Waterfall Model, V- Process Model, Evolutionary model, Spiral Model, Software Prototyping, Incremental Delivery., Controlling changes during project execution

Unit: IV

Software requirement study and Analysis, Software Requirement Specifications, Software Estimation : Need for Software Estimation, Problems with Over and Under Estimation, Software Estimation techniques, Expert Judgement, Estimating by Analogy, Function Point Analysis, Object points, LOC based COCOMO model. Objectives of activity planning, project scheduling, sequencing and scheduling activities, Network planning models, forward pass, backward pass, identifying critical path, project crashing, Project progress review, Software Design Concepts

Unit: V

Risk Management: Risk and its implication, types of risk, Identifying risks, analyzing risks, prioritizing risks, Risk avoidance, Risk containment, Resource identification, Resource planning Resource allocation, monitoring critical resources. Software Quality, Product versus Process Quality management, techniques to help enhance software quality, Software Validation and Verification and Quality plans

REFERENCES

1. Software Project Management: Bob Hughes and Mike Cotterell- Tata McGraw Hill
2. Software Engineering a Practitioner's approach – Roger S Pressman Tata McGraw Hill
3. Introduction to Software Project Management & Quality Assurance: By Ince, Dorrel, Helen Sharp & Mark Woodman
4. Software Engineering – Ian Sommerville, Addison Wesley, 2004
5. Managing Software Development Projects – A formula for Success by Whitten Neal
6. Mythical Man Month – Essays on Software Engineering
7. Software Project Management – From Concepts to Deployment – Kieron Conway – Dreamtech Publications

1.2. MANAGEMENT PRINCIPLES AND PRACTICE

Unit I

Management: Science, Theory and Practice - The Evolution of Management Thought and the Patterns of Management Analysis - Management and Society: The External Environment, Social Responsibility and Ethics - Global and Comparative Management - The Basis of Global Management.

Unit II

The Nature and Purpose of Planning - Objectives - Strategies, Policies and Planning Premises - Decision Making - Global Planning.

Unit III

The Nature of Organizing and Entrepreneurship - Organizational Structure: Departmentation - Line/Staff Authority and Decentralization - Effective Organizing and Organizational Culture - Global Organizing.

Unit IV

Co-ordination functions in Organisation - Human Factors and Motivation - Leadership - Committees and group Decision Making - Communication - Global Leading.

Unit V

The System and Process of Controlling - Control Techniques and Information Technology - Productivity and Operations Management - Overall Control and toward the Future through Preventive Control - Global Controlling and Global Challenges.

REFERENCES

1. Koontz & Weirich, Essentials of Management, Tata McGraw Hill.
2. VSP Rao, V Hari Krishna – Management: Text and Cases, Excel Books, I Edition, 2004
3. Stoner & Wankai, Management, PHI.
4. Robert Krcitner, Management, ATTBS.
5. Weirich & Koontz, Management - A Global perspective, McGraw Hill.
6. Helliregarl, Management, Thomson Learning, 2002.
7. Robbins.S.P., Fundamentals of Management, Pearson, 2003.

1.3. ORGANISATIONAL BEHAVIOUR

Unit I

Organisational Behaviour: History - evaluation, Challenges & opportunities, contributing disciplines, management functions and relevance to Organisation Behaviour.

Personality - Determinants, structure, behaviour, assessment, psycho-analytical social learning, job-fit, trait theories.

Unit II

Emotions and Emotional Intelligence as a managerial tool. Implications of EI on managers and their performance. Attitudes - relationship with behaviour, sources, types, consistency, work attitudes, values - importance, sources, types, ethics and types of management ethics.

Perception - Process, Selection, Organisation Errors, Managerial implications of perception.

Learning - classical, operant and social cognitive approaches. Implications of learning on managerial performance.

Unit III

Stress - Nature, sources, Effects, influence of personality, managing stress. Conflict - Management, Levels, Sources, bases, conflict resolution strategies, negotiation. Foundations of group behaviour : linking teams and groups, Stages of development Influences on team effectiveness, team decision making. Issues in Managing teams.

Unit IV

Organisational change - Managing planned change. Resistance to change - Approaches to managing organisational change - Organisational Development - values - interventions, change management. Organisational politics - Political behaviour in organisation, Impression management, Self monitoring. Organisational culture - Dynamics, role and types of culture and corporate culture, ethical issues in organisational culture, creating and sustaining culture.

Unit V

Organisational Behaviour responses to Global and Cultural diversity, challenges at international level, Homogeneity and heterogeneity of National cultures, Differences between countries, The Challenges of work force diversity and managing diversity Cases.

REFERENCES

1. Robbins.S. Organisational Behaviour, X edn., Prentice-Hall, India.
2. Hellinegal Slocum, Woodman, Organisational Behaviour, IX edn., Thomson learning.
3. Umasekaran, Organisational Behaviour, Tata McGraw Hill.
4. Robbins S.P., Concepts contrivances and applications, Prentice Hall.
5. Umasekaran, Organisational Behaviour.
6. Helliregal.et.al, Organisational Behaviour, Thomson Learning.
7. McShane & Glinow, Organisational Behaviour, Tata McGraw Hill.
8. Harris & Hartman, Organisational Behaviour, Jaico, 2003.

1.4 HUMAN RESOURCE MANAGEMENT

Unit I

Human Resource Function - Human Resource Philosophy - Changing environments of HRM - Strategic human resource management - Using HRM to attain competitive advantage - Trends in HRM - Organisation of HR departments - Line and staff functions - Role of HR Managers.

Unit II

Recruitment & Placement: Job analysis : Methods - IT and computerised skill inventory - Writing job specification - HR and the responsive organisation. Recruitment and selection process : Employment planning and forecasting - Building employee commitment : Promotion from within - Sources, Developing and Using application forms - IT and recruiting on the internet. Employee Testing & selection : Selection process, basic testing concepts, types of test, work samples & simulation, selection techniques, interview, common interviewing mistakes, Designing & conducting the effective interview, small business applications, computer aided interview.

Unit III

Training & Development, Orientation & Training : Orienting the employees, the training process, need analysis, Training techniques, special purpose training, Training via the internet. Developing Managers : Management Development - The responsive managers - On-the-job and off-the-job Development techniques using HR to build a responsive organisation. Management Developments and CD-ROMs - Key factor for success. Performance appraisal: Methods - Problem and solutions - MBO approach - The appraisal interviews - Performance appraisal in practice. Managing careers: Career planning and development - Managing promotions and transfers.

Unit IV

Compensation & Managing Quality, Establishing Pay plans: Basics of compensation - factors determining pay rate - Current trends in compensation - Job evaluation - pricing managerial and professional jobs - Computerised job evaluation. Pay for performance and Financial incentives: Money and motivation - incentives for operations employees and executives - Organisation wide incentive plans - Practices in Indian organisations. Benefits and services: Statutory benefits - non-statutory (voluntary) benefits - Insurance benefits - retirement benefits and other welfare measures to build employee commitment.

Unit V

Labour relations and employee security, Industrial relation and collective bargaining: Trade unions - Collective bargaining - future of trade unionism. Discipline administration - grievances handling - managing dismissals and separation. Labour Welfare: Importance & Implications of labour legislations - Employee health - Auditing HR functions, Future of HRM function.

REFERENCES

1. Gary Dessler, "Human Resource Management", Seventh edition, Prentice-Hall of India P.Ltd., Pearson.
2. H.John Bernardin & Joyee E.A.Russel, Human Resource Management - An experiential approach, 4th Edition, McGraw-Hill International Edition., 2007
3. David A. DeCenzo & Stephen P.Robbins, Personnel/Human Resource Management, Third edition, PHI/Pearson.
4. VSP Roa, Human Resource Management : Text and cases, First edition, Excel Books, New Delhi - 2000.
5. Dr. R.Venkatapathy & Assissi Menacheri, Industrial Relations & Labour Welfare, Adithya Publications, CBE, 2001.
6. Robert L.Gibson and Marianne H.Mitchell, Introduction to Counseling and Guidance, VI edition, PHI, 2005.

1.5 FINANCIAL MANAGEMENT

UNIT I

Objectives and functions of Financial Management - Role of Financial Management in the organisation - Risk-Return relationship- Time value of money concepts - Indian Financial system - Legal, Regulatory and tax framework. Sources of Long term finance - Features of Capital market development in India - Role of SEBI in Capital Issues.

UNIT II

Capital Budgeting - methods of appraisal - Conflict in criteria for evaluation - Capital Rationing - Problems - Risk analysis in Capital Budgeting.

UNIT III

Cost of Capital - Computation for each source of finance and weighted average cost of capital - EBIT -EPS Analysis - Operating Leverage - Financial Leverage - problems.

UNIT IV

Capital Structure Theory - Net Income Approach - Net Operating Income Approach - MM Approach - Dividend Policy - Types of Dividend Policy - Dividend Policy and share valuation - CAPM.

UNIT V

Working Capital Management - Definition and Objectives - Working Capital Policies - Factors affecting Working Capital requirements - Forecasting Working Capital requirements (problems) - Cash Management - Receivables Management and - Inventory Management - Working Capital Financing - Sources of Working Capital and Implications of various Committee Reports.

REFERENCES

1. Richard A.Brealey, Stevart C.Myers, “Principles of Corporate Finance” McGraw Hill, New York.
2. James C.Van Horns, “Financial Management & Policy” Prentice Hall of India (P) Ltd., New Delhi.
3. John J.Hampton, “Financial Decision Making – Concepts, Problems and Cases” Prentice Hall of India (P) Ltd., New Delhi (1994).
4. Prasanna Chandra, “Financial Management–Theory&Practice”, Tata McGraw Hill, New Delhi (1994).
5. B J Camsey, Eugene F.Brigham, “Introduction to Financial Management”, The Gryden Press.
6. I.M.Pandey, “Financial Management”, Vikash Publishing, New Delhi.

1.6 SOFTWARE QUALITY MANAGEMENT

UNIT I

INTRODUCTION TO SOFTWARE QUALITY: Software Quality – Hierarchical models of Boehm and McCall – Quality measurement – Metrics measurement and analysis – Gilb’s approach – GQM Model

UNIT II

SOFTWARE QUALITY ASSURANCE: Quality tasks – SQA plan – Teams – Characteristics – Implementation – Documentation – Reviews and Audits

UNIT III

QUALITY CONTROL AND RELIABILITY: Tools for Quality – Ishikawa’s basic tools – CASE tools – Defect prevention and removal – Reliability models – Rayleigh model – Reliability growth models for quality assessment

UNIT IV

QUALITY MANAGEMENT SYSTEM: Elements of QMS – Rayleigh model framework – Reliability Growth models for QMS – Complexity metrics and models – Customer satisfaction analysis.

UNIT V

QUALITY STANDARDS: Need for standards – ISO 9000 Series – ISO 9000-3 for software development – CMM and CMMI – Six Sigma concepts.

REFERENCES

1. Software Project Management : Bob Hughes and Mike Cotterell-Tata McGraw Hill
2. Software Engineering a Practitioner’s approach – Roger S Pressman Tata McGraw Hill
3. Introduction to Software Project Management & Quality Assurance : By Ince, Dorrel, Helen Sharp & Mark Woodman
4. Software Engineering – Ian Sommerville, Addison Wesley, 2004
5. Norman E. Fenton and Shari Lawrence Pfleeger, “Software Metrics” Thomson, 2003
6. Mordechai Ben – Menachem and Garry S.Marliss, “Software Quality”, Thomson Asia Pte Ltd, 2003.
7. Mary Beth Chrissis, Mike Konrad and Sandy Shrum, “CMMI”, Pearson Education (Singapore) Pte Ltd, 2003.
8. ISO 9000-3 “Notes for the application of the ISO 9001 Standard to software development”.

2.1 INTERNATIONAL BUSINESS MANAGEMENT

UNIT I

Concept ; Domestic to Transnational Business ; Driving and Restraining Forces ; Characteristics and role of MNCs. Advantages and Disadvantages of Free trade ; The case for protection ; Forms of Restriction ; Effects of protection.

UNIT II

Classical trade theory ; Theory of comparative costs in terms of money ; Evaluation of Comparative costs theory ; General Equilibrium Approach ; Heckscher-Ohlin Factor – Price Equalisation theory ; Influence of factor mobility on volume of trade ; country similarity theory Gains and terms of trade; Balance of trade and Balance of payments.

UNIT III

International business environment – The economic environment; social and cultural environment, political, legal and regulatory environment, natural environment. Technological environment .

UNIT IV

International Institution Systems – IMF, World Bank and WTO(all in brief), / Regional economic integration; impact of integration; European Union; NAFTA;ASEAN; SAARC: ESCROW

UNIT V

Strategy of International Business – Strategy, planning, organisational structure and process of control. Recent developments in international business.

REFERENCES

1. Cherunilam, Francis – International Business(PHI)
2. Misra, S. & Yadav, P.K. – International Business(PHI)
3. Aswathapa, K – International Business (Tata McGraw Hill)
4. Sharan, Vyuptakesh – International Business (Pearson Education)
5. Varshney R.L. and Bhattacharya ,B– International Marketing Management (Sultan Chand & Sons)

2.2 SOFTWARE TESTING METHODOLOGY

UNIT- I

BASICS OF SOFTWARE TESTING: Human Errors and Testing; Software Quality; Requirements, Behaviour and Correctness; Correctness versus, Reliability; Testing and Debugging; Test Metrics. Software and Hardware Testing; Testing and Verification; Defect Management; Execution History; Test-generation Strategies, Static Testing. Model-Based Testing and Model Checking; Control-Flow Graph; Types of Testing; The Saturation Effect.

UNIT -II

TEST GENERATION FROM REQUIREMENTS: Introduction; The Test-Selection Problem; Equivalence Partitioning; Boundary Value Analysis; Category- Partition Method. Cause-Effect Graphing, Test Generation from Predicates.

UNIT - III

STRUCTURAL TESTING: Overview; Statement testing; Branch testing; Condition testing, Path testing; Procedure call testing; Comparing structural testing criteria; The infeasibility problem. Use pairs; Data flow analysis; Classic analyses; From execution to conservative flow analysis; Data flow analysis with arrays and pointers; Inter-procedural analysis; Overview of data flow testing; Definition-Use associations; Data flow testing criteria; Data flow coverage with complex structures; The infeasibility problem.

UNIT - IV

TEST CASE SELECTION AND ADEQUACY, TEST EXECUTION: Overview; Test specification and cases; Adequacy criteria; Comparing criteria; Overview of test execution; From test case specification to test cases; Scaffolding; Generic versus specific scaffolding; Test oracles; Self-checks as oracles; Capture and replay.

UNIT - V

PROCESS: Test and analysis activities within a software process: The quality process; Planning and monitoring; Quality goals; Dependability properties; Analysis; Testing; Improving the process; Organizational factors. Integration and component-based software testing: Overview; Integration testing strategies; Testing components and assemblies. System, Acceptance and Regression Testing: Overview; System testing; Acceptance testing; Usability; Regression testing; Regression test selection techniques; Test case prioritization and selective execution.

REFERENCES

1. Foundations of Software Testing - Aditya P Mathur, Pearson Education, 2008.
2. Software Testing and Analysis Process Principles and Techniques – Mauro Pezze, Michal Young, Wiley India, 2008.
3. Software Testing Principles and Practices - Srinivasan Desikan, Gopalaswamy Ramesh, 2nd Edition, Pearson, 2007.
4. Software Testing - Ron Patton, 2nd edition, Pearson, 2004.
5. The Craft of Software Testing - Brian Marrick, Pearson, 1995.

2.3. TOTAL QUALITY SERVICE MANAGEMENT

UNIT I

ASPECTS OF QUALITY: Quality mission, policy and objectives; concepts, evolution and determinants of quality; interpretation and process of quality audits; cost of quality and economics of quality. Contribution of quality gurus -Shewhart, Juran, Figenbaum, Ishikawa, Deming and Taguchi; SPC, SQC, CWQC, TPM, TQC.

UNIT II

TOTAL QUALITY MANAGEMENT: Definition, underlying concepts, implementation and measurement of TQM, Internal Customer-Supplier relationship, QFD, Quality Circles, Quality improvement teams, team work and motivation in TQM implementation, training and education, role of communication in implementing TQM, policy deployment.

UNIT III

MANAGEMENT OF PROCESS-I: Processes in service organization and their control, simple seven tools of quality control: Check Sheet, Histogram, Scatter diagram, Process Mapping, Cause and Effect diagram, Pareto analysis, control charts and Advanced tools of quality.

MANAGEMENT OF PROCESS-II

SQC: Control Charts for variables – X, Xbar, and R charts and control charts for attributes-p, Np, and c charts. Acceptance sampling plan and occurrence Vendor selection and vendor rating.

UNIT IV

MANAGEMENT OF QUALITY:Facets of quality planning, quality improvement methods, Kaizen, quality audits, medical audit, accreditation, nursing care standards, Six Sigma, JIT and NABL.

UNIT V

SYSTEMS APPROACH TO QUALITY: Introduction to ISO 2000, ISO 14000 and ISO 18000. Documentation of quality systems, quality manual, procedure manuals, work instruction manuals and records for ISO 2000. Bench Marking and Business Process Reengineering Definition, methodology and design, evaluation and analysis.

REFERENCES

1. Sundara Raju, S.M., Total Quality Management: A Primer, Tata McGraw Hill, 1995.
2. Sreenivasan, N.S and V.Narayana, Managing Quality – Concepts and Tasks, New Age International, 1996.
3. Kume, H., Management of Quality, productivity Press, 1996.
4. Dennis, Lock., Handbook of Quality Management, 1992.
5. Hammer, M. and Spect. Business Process Reengineering, 1995.
6. ISQUA Journal
7. MCB journal of Quality Management.

2.4 QUANTITATIVE TECHNIQUES

UNIT I

Mathematical Models – deterministic and probabilistic – simple business examples – OR and optimization models – Linear Programming – formulation – graphical solution –Dual of linear programming problem – Economic interpretation

UNIT II

Transportation model – Initial Basic Feasible solutions – optimum solution for non – degeneracy model – Trans-shipment Model – Assignment Model

UNIT III

Network Model – networking – CPM – critical path – Time estimates – critical path – crashing, Resource levelling, Resources planning. Waiting Line Model – Structure of model – M/M/1 for infinite population.

UNIT IV

Inventory Models – Deterministic – EOQ – EOQ with Price Breaks – Probabilistic Inventory Models - Probabilistic EOQ model

UNIT V

Simulation – types of simulation – Monte Carlo simulation – simulation problems.
Decision Theory – Pay off tables – decision criteria – decision trees.

REFERENCES

1. Operations Research – An Introduction – Hamdy A Tata
2. Operations Research – Kanti Swarup, Gupta And Man Mohan
3. Operations Research – Dr. J.K. Sharma Macmillan Indian Ltd.
4. Operations Research – R. Panneerselvam, 2nd Edition, PHI, 2007
5. Operations Research, Concepts and cases – Fredrick S Hillier and Herald J Lieberman, 8th Edition, TMH, 2003
6. Hamdy A Taha, “An Introduction to Operations Research, Prentice Hall, Sixth edition, 2000
7. Ronald L. Rardin, “Optimization in Operations Research”, Pearson Education
8. J. K. Sharma, “Operations Research: Theory and Applications”, Macmillan , 1997
9. U.K. Srivastava, G.V. Shenoy, S. C. Sharma, “Quantitative Techniques for Managerial Decision”, Second Edition, Prentice Hall of India

2.5 RESEARCH METHODS FOR MANAGEMENT

UNIT I

Research - meaning - scope and significance - Types of research - Research Process - Characteristics of good research - Scientific method - Problems in research - Identifying research problem – concepts, constructs and theoretical framework.

UNIT II

Hypothesis:- meaning - sources - Types - formulation Research design - Types - case study - features of good design - measurement - meaning - need Errors in measurement - Tests of sound measurement Techniques of measurement - scaling Techniques - meaning - Types of scales - scale construction techniques.

UNIT III

Sampling design - meaning - concepts - steps in sampling - criteria for good sample design - Types of sample designs - Probability and non-probability samples. Data collection:- Types of data - sources - Tools for data collection methods of data collection - constructing questionnaire - Pilot study - case study - Data processing:- coding - editing - and tabulation of data - Data analysis.

UNIT IV

Test of Significance:- Assumptions about parametric and non-parametric tests. Parametric Test - T test, F Test and Z test - Non Parametric Test - U Test, Kruskal Wallis, sign test. Multivariate analysis-factor, cluster, MDS, Discriminant analysis. (NO Problems). SPSS and its applications.

UNIT V

Interpretation - meaning - Techniques of interpretation - Report writing:- Significance - Report writing:- Steps in report writing - Layout of report - Types of reports - Oral presentation - executive summary - mechanics of writing research report - Precautions for writing report - Norms for using Tables, charts and diagrams - Appendix:- norms for using Index and Bibliography.

REFERENCES

1. Rao K.V. Research methods for management and commerce - sterling
2. Zigmund, Business Research Methods
3. Donald R. Cooper and Pamela S. Schindler - Business Research Methods - Tata McGraw Hill, 2007
4. Naresh K Malhotra – Marketing Research: An Applied Orientation, Pearson Education, 4th Edition, 2004
5. Wilkinson Bhadarkar - Methodology and Techniques of Social Research - Himalaya.
6. Anderson et al - Assignment and Thesis writing.
7. Uma Sekaran, Research Methods for Business, Wiley Publications.

2.6 MARKETING MANAGEMENT

Unit I

Marketing Concepts and Tasks, Defining and delivering customer value and satisfaction - Value chain - Delivery network, Marketing environment, Adapting marketing to new liberalised economy - Digitalisation, Customisation, Changing marketing practices, e-business - setting up websites; Marketing Information System, Strategic marketing planning and organization.

Unit II

Buyer Behaviour, Market Segmentation and Targeting, Positioning and differentiation strategies, Product life cycle strategies, New product development, Product Mix and Product line decisions, Branding and Packaging, Price setting - objectives, factors and methods, Price adapting policies, Initiating and responding to price changes.

Unit III

Marketing channel system - Functions and flows; Channel design, Channel management - Selection, Training, Motivation and evaluation of channel members; Channel dynamics - VMS, HMS, MMS; Market logistics decisions.

Unit IV

Integrated marketing communication process and Mix; Advertising, Sales promotion and Public relation decisions. Direct marketing - Growth, Benefits and Channels; Telemarketing; Salesforce objectives, structure, size and compensation.

Unit V

Identifying and analysing competitors, Designing competitive strategies for leaders, challengers, followers and nichers : Customer Relationship marketing - Customer database, Data warehousing and mining. Attracting and retaining customers, Customerism in India, Controlling of marketing efforts. Global Target market selection, standardization Vs adoptation, Product, Pricing, Distribution and Promotional Policy.

REFERENCES

1. Marketing Management - Philip Kotler - Pearson Education/PHI 12th Edition, 2006.
2. Marketing Management - Rajan Saxena - Tata McGraw Hill, 2002.
3. Marketing Management: Planning, Implementation and Control: Global Perspective Indian Context – VS Ramasamy & S. Namakumari - Macmilan India, 2007.
4. Marketing Management: A South Asian Perspective – Philip Kotler and Kevin Lane Kotler, Pearson Education, 11th Edition, 2007.
5. Basic Marketing - Perreault and McGarthy - Tata McGraw Hill, 2002.
6. Case and Simulations in Marketing - Ramphal and Gupta - Golgatia, Delhi.
7. Case Studies in Marketing - R.Srinivasan - PHI.
8. Marketing concepts and cases – Michael J Etzel, Bruce J Walker, William J Stanton and Ajay Pandit, TMH 13th Edition, New Delhi, 2007.
9. Marketing Management – S.Jayachandran - TMH, 2003.

3.1 SOFTWARE TEST PRACTICES

UNIT I

Software Development Life Cycle Models: Phases of Software Project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases – Life Cycle models. **White-Box Testing:** Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT II

Black-Box Testing: What is Black-Box Testing? – Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing – **Integration Testing:** Integration Testing as Type of Testing – Integration Testing as a Phase of Testing – Scenario Testing – Defect Bash.

UNIT III

System and Acceptance Testing: System Testing Overview – Why System testing is done? – Functional versus Non-functional Testing – Functional testing – Non-functional Testing – Acceptance Testing – Summary of Testing Phase.

UNIT IV

Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – Tools for Performance Testing – Process for Performance Testing – Challenges. **Regression Testing:** What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT V

Testing Planning, Management, Execution and Reporting: Testing Planning – Testing Management – Test Process – Test Reporting – Best Practices. **Test Metrics and Measurements:** Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

REFERENCES

1. The Web Testing Handbook, Steven Splaine, 2001
2. Testing SAP R/3: A Manager's Step-by-Step Guide, Jose Fajardo; Elfriede Dustin, ISBN: 978-0-470-05573-1
3. Software Testing and Analysis Process Principles and Techniques – Mauro Pezze, Michal Young, Wiley India, 2008.
4. Software Testing, Principles and Practice, Srinivasan Desikan, Gopaldaswamy Ramesh
5. Effective Methods of Software Testing – William E.Perry, 3rd ed, Wiley India.
6. Software Testing – Renu Rajani, Pradeep Oak, 2007, TMH.

3.2 SOFTWARE TEST MANAGEMENT

UNIT- I

Introduction: Test Missions, Policies, Strategies and Goals, Test Strategies, Analytical Strategies Model-based Strategies, Methodical Strategies, Process- or Standard-compliant Strategies, Reactive Strategies, Consultative Strategies, Regression-Averse and Test Automation Strategies, Alignment of Test Policy and Test Strategy with the Organization

UNIT- II

Managing the Test Team: Job Descriptions, Resumes, Interviewing, Assimilating New People, Setting Goals and Objectives, Defining Clear Roles and Responsibilities, Skills Development, Training Opportunities, Mentoring, Performance Reviews and Feedback, Leading the Test Team, Information Sharing and Communication, Team Building, Motivating and Challenging the Test Team, Managing Distributed Teams, Types of External Relationships, Contractual Issues, Communication Strategies, Integrating from External Sources, Merging Test Strategies, Verifying Quality

UNIT- III

Test Management Essentials: Introduction, Project Management Tasks, Test Estimation, Defining the Testing Schedule, Budgeting and Resource Allocation, Managing and Tracking a Project, Dealing with Trade-offs, Change Management, Time Management, Project Risk Management, Quality Management

UNIT- IV

Test Project Evaluation and Reporting: Tracking Information, Evaluating and Using Information - Internal Reporting, Sharing Information - External Reporting, Test Results Reporting and Interpretation, Planning, Monitoring and Control, Analysis and Design, Implementation and Execution, Evaluating Exit Criteria and Reporting, Test Closure Activities, Statistical Quality Control Techniques

UNIT- V

Model based Testing: Test Management Considerations for Lifecycle Models, Comparison of Lifecycle Models, Agile Methods, Managing Partial Lifecycle Projects, Integration Projects, Maintenance Projects, Hardware/Software and Embedded Systems, Safety-critical Systems, Release Considerations, Market Demand, Ease of Maintenance, Ease of Installation, Effectiveness, Efficiency and Satisfaction Metrics for the Test Process: Effectiveness, Efficiency and Satisfaction Metrics for the Test Policy Objectives, Project Retrospectives

REFERENCES

1. Black, Rex, Critical Testing Processes: Plan, Prepare, Perform, Perfect. Addison-Wesley, 2003
2. Rex Black, Managing the Testing Process, Wiley, 2009, ISBN: 0-470-40415-9
3. Boehm, Barry, and Richard Turner, Balancing Agility and Discipline: A Guide for the Perplexed, Addison-Wesley, 2003.
4. Brooks, Fred, The Mythical Man-Month: Essays on Software Engineering, 2e. Addison-Wesley, 1995
5. Craig, Rick David and Stefan P. Jaskiel, Systematic Software Testing, Artech House, 2002, ISBN: 1-580-53508-9
6. DeMarco, Tom, and Timothy Lister, Peopleware: Productive Projects and Teams, 2e. Dorset House, 1999

7. Derby, Esther and Diany Larsen, Agile Retrospectives - Making Good Teams Great, The Pragmatic Bookshelf, 2006, ISBN 0-9776166-4-9
8. Drucker, Peter, The Practice of Management, Harper, 2006
9. Graham, Dorothy and Mark Fewster, Software Test Automation, Addison-Wesley, 1999
10. McConnell, Steve, Software Project Survival Guide, Microsoft Press, 1997
- 11.** Web site of the International Software Testing Qualifications Board. Refer to this website for the latest ISTQB Glossary and syllabi (www.isqtb.org).

3.3. DATABASE MANAGEMENT SYSTEMS

Unit I

Introduction – Data Models – Database languages – Transaction – Storage management – Database administrator – Users – overall system structure – Entity – Relationship Model – Basic concepts – Mapping constraints – keys – E-R Diagram – Weak Entity Sets – reduction of E-R Diagram to tables.

Unit II

Relational Model – structure – relational algebra – extended operations – Modifications on a database – views – SQL – basic structure – set operations – aggregate functions – Nested Sub queries – derived relations, views.

Unit III

Integrity constraints – Domain constraints – referential integrity – assertions – triggers – functional dependencies – relational database design – decomposition – normalization using functional, multi valued, Join dependencies – Domain – Key Normal form – alternative approaches.

Unit IV

Object oriented data Model – Languages – Object Relational databases: Nested Relations – Complex types and object Orientation – Querying with complex types – creation of complex values and objects – comparison.

Unit V

Database System Architectures : Centralized Systems, Client server systems, Distributed systems, Parallel databases – introduction – inter query – intra query, intra-operation – interoperation parallelism –distributed databases – distributed data storage – network transparency – Query processing – Transaction model – Commit protocols – coordinator selection – concurrency control – deadlock handling – multi database systems.

REFERENCES

1. Henry F. Korth and Abraham Silberschatz, S. Sudarshan, Database System Concepts, 3rd edition, McGraw-Hill, 1997.

Reference Books

1. Bipin C. Desai, An Introduction to Database Systems, West Publications, 6th edition, 1995.

2. C.J.Date, An introduction to database systems, Addison Wesley publications, 6th edition 1995.

3. Gary W.Hansen and James V.Hansen, "Database Management and Design" Prentice Hall, 1996.

4. Jeffrey A. Hoffer, Mary B. Prescott, Fred R. Mcfadden, "Modern Database Management", Prentice Hall, 6th edition, 2002, 7th edition.

5. Ronald J.Norman, 'Object Oriented Systems Analysis and Design', Prentice Hall 1996.

3.4. CUSTOMER RELATIONSHIP MANAGEMENT

UNIT I

Introduction and Significance of Customer Relationship Management: CRM Emerging Concepts; Need for CRM; CRM Applications; CRM Decisions; The Myth of Customer Satisfaction; CRM Model; Understanding Principles of Customer Relationship; Relationship Building Strategies; Building Customer Relationship Management by Customer Retention; Stages of Retention; Sequences in Retention Process; Understanding Strategies to Prevent Defection and Recover Customers.

UNIT II

CRM Process: Introduction and Objectives of a CRM Process; an Insight into CRM and e-CRM/online CRM; The CRM cycle i.e. Assessment Phase; Planning Phase; The Executive Phase; Modules in CRM, 4C's (Elements) of CRM Process; CRM Process for Marketing Organization; CRM Affiliation in Retailing Sector; Key e-CRM features.

UNIT III

CRM Architecture: IT Tools in CRM; Data Warehousing Integrating Data from different phases with Data Warehousing Technology; Data Mining: - Learning from Information Using Data Mining Technology like OLAP etc.; Understanding of Data Mining Process; Use of Modeling Tools; Benefits of CRM Architecture in Sales Productivity; Relationship Marketing and Customer Care, CRM Over Internet.

UNIT IV

CRM Implementation: Choosing the right CRM Solution; Framework for Implementing CRM: a Step-by-Step Process: Five Phases of CRM Projects

UNIT V

Development of Customizations; Beta Test and Data Import; Train and Retain; Roll out and System Hand-off; Support, System Optimization and Follow-up; Client/Server CRM Model; Use of CRM in Call Centers using Computer Telephony Integration (CTI); CTI Functionality; Integration of CRM with ERP System. Case Studies

REFERENCES

1. Mohammed, H. Peeru and a Sagadevan (2004). Customer Relationship Management. Vikas Publishing House, Delhi.
2. Paul Greenberge (2005). CRM-Essential Customer Strategies for the 21st Century. Tata McGraw Hill.
3. William, G. Zikmund, Raymund McLeod Jr.; Faye W. Gilbert (2003). Customer Relationships Management. Wiley.
4. Alex Berson, Stephen Smith, Kurt Thearling (2004). Building Data Mining Applications for CRM. Tata McGraw Hill

3.5 CORPORATE COMMUNICATION

UNIT I

Communication basics – Business Communication – components – Types – formal communication network – Work team communication – variables – goal – conflict resolution – non – verbal communication – Cross cultural communication – Business meetings – Business Etiquette.

UNIT II

Understanding Corporate Communication – Employee Communication – Managing Government Relations – Writing for Media and Media Relations

UNIT III

Corporate Communication in Brand Promotion – Financial Communication – Crises Communication.

UNIT IV

Report writing: Characterizing & business reports – Types and forms & reports – Project proposals – collection of data – tables constitution – charts – writing the report – documenting the sources – proof reading.

UNIT V

Business Presentation: Written and oral presentation – work – team presentation – Delivering the business presentation visual aids – slides – electronic presentation – hand-outs – delivering the presentation – career planning – preparing Resume – job applications – preparation for a job interview – employment interviews – follow-up.

REFERENCES

1. Scot Ober, Contemporary business communication, fifth edition, biztantra.
2. Lesiler & Flat lay, Basic Business communication. Tata Mc Graw Hill.

3.6 SOFTWARE PROJECT MANAGEMENT

UNIT I

Project Overview - Traditional Project Management - Scoping the Project - Identifying Project Activities

UNIT II

Estimating Duration, Resource Requirements and Cost - Constructing and Analyzing the Project Network Diagram - Finalizing the Schedule and Cost Based on Resource Availability - Organizing and Conducting the Joint Project Planning Session

UNIT III

Recruiting Organizing and Managing the Project Team - Monitoring and Controlling Progress - Closing out the Projects - Critical Chain Project Management

UNIT IV

Introduction to the Adaptive Project Framework - Version Scope - Cycle Plan - Cycle Build - Client Checkpoint - Post-Version Review - Variations to APF

UNIT V

Organizational Considerations - Project Portfolio Management - Project Support Office

REFERENCES

3. Robert K. Wyzocki, Rudd McGary, *Effective Project Management*, WILEY-Dreamtech India Pvt. Ltd., 2003.
4. 1. Roger S Pressman, “Software Engineering A Practitioner’s approach” , Fourth Edition, McGraw Hill International, 2000.
5. 2. Lan Somerville, “Software Engineering”, Fifth Edition, Addison Wesley publications, 1996.
6. 3. Bob Hughes, Mike Cotterell, *Software and Project Management*, Tata McGraw-Hill Publishing Company Limited, Third Edition, 2004. ISBN: 0-07-709834-X.
7. 4. Walker Royce, *Software Project Management*, Addison-Wesley, 1998. ISBN: 0-20-1309580.

4.1 SOFTWARE TEST AUTOMATION

UNIT- I

Introduction: Test Automation, Automation Test Strategies, Types of Test Automation, Automation Techniques, Test Automation Frameworks, Test Automation ROI (Return on Investment)

UNIT- II

Test Automation Techniques: Generic test automation framework, data driven techniques, keyword driven technique, hybrid automation model, Automation test scenarios, Automation test drivers, Automation Test Scripting, test data, test oracles, integrating automation with test management tools and platforms, execution, automation coverage, reporting, automation analysis, regression test packs

UNIT- III

Test Automation Tools: User Interface based automation, Script based automation, HP Quick Test Pro, Rational Silk Test, Selenium, Test Complete, test data integration tools, test platforms, Browser based automation tools

UNIT- IV

Test Automation Effectiveness: Coverage, cost to quality, test lifecycle, maintenance of test automation, optimizing test automation, reusable components, script libraries, statistical test automation analysis

UNIT- V

Project based Automation, Product Test Automation, Test Automation as a Service, Automation Test factory, Centralized Test Automation, Integrated Test Automation, Automation cost models.

REFERENCES

1. Software Test Automation, Mark Fewster & Dorothy Graham, ISBN-13: 978-0201331400
2. Just Enough Software Test Automation, Daniel J. Mosley; Bruce A. Posey, ISBN-13: 978-0-13-008468-2

4.2 QUALITY ASSESSMENT TECHNIQUES

UNIT- I

Introduction: Organizational quality goals, policy, quality plans, certification, accreditation, process measurements, audits

UNIT- II

Capability Maturity Model: CMM & CMMi, goals, commitment, ability, measurement & verification, maturity levels, key process areas, key process indicators, process monitoring and control

UNIT- III

Test Maturity Model & Six Sigma: Overview, Key Process Areas, TPI framework of test quality, levels of maturity, assessment, analysis, reporting

UNIT- IV

Six Sigma & Lean Process Model: quality criteria, quality metrics, frameworks, process wastages, operational processes, guidelines and templates

UNIT- V

Audits: ISO, CMM, People CMM, TMM, Six Sigma.

REFERENCES

1. Paulk, Mark C.; Weber, Charles V; Curtis, Bill; Chrissis, Mary Beth (1995). The Capability Maturity Model: Guidelines for Improving the Software Process. Boston: Addison Wesley. ISBN 0-201-54664-7.
2. Burnstein, A. Homyen, R. Grom and C.R. Carlson, "A Model to Assess Testing Process Maturity", CROSSTALK 1998, Software Technology Support Center, Hill Air Force Base, Utah
3. I. Burnstein, L. Miller, "Testing Maturity Model (TMM) Certification", CM Crossroads 2002
4. The Six Sigma Handbook, By Thomas Pyzdek

4.3. INFORMATION TECHNOLOGY APPLICATIONS

UNIT I

Business as a System - Business Applications - Accounting - Inventory - Purchase - Sales - Human Resources - Production System Need for On-Line Integrated Computer based system.

UNIT II

Enterprise Resource Planning - Objectives - Need - Advantages & Disadvantages of ERP products over traditional Development products - Migration - resource Planning.

UNIT III

Introduction to Internet - Internet Services - WWW - FTP - E mail - Newsgroup - Telnet. Intranets - Purpose - Users - Planning Development & Implementation of Intranets.

UNIT IV

E-Commerce - Need - Infrastructure requirements - Implementation Issues - security aspects.

UNIT V

Database Management System - Normalisation - Oracle terminology - Database Connection - Creating tables - The Basics of SQL: SQL grammar. Transactions - The Basics of PL/SQL creating and using stored procedures, Functions and Packages - Retrieving Data with cursors. Enforcing Business Rules with Database Triggers.

REFERENCES

1. Richard Hammer, Enterprise Resource Planning, 1998.
2. James O'Brien, Management Information System.
3. Ravi Kalkota, Frontiers of Electronic Commerce, 1998.
4. David Loctman, Developing Personal Oracle for Windows 95 Applications.
5. Ivan Bayross, Commercial Applications Development Using Oracle Developer 2000.
6. Ivan Bayross, Oracle – 7, The Complete Reference.

4.4 ELECTRONIC COMMERCE (E-COMMERCE)

UNIT I

Telecommunication Networks : Introduction - LAN - WAN- Internet - What is Electronic Commerce - Brief history of Electronic Commerce - Advantages and Limitations of Electronic Commerce - Types of Electronic commerce - Integrating Electronic Commerce- Key questions for Management

UNIT II

The Internet and the World Wide Web: The Internet Today - History of the Web - Unique benefits of the Internet - Internet Architecture - World Wide Web - Concepts and Technology - Creating Web pages - Launching a Business on the Internet.

UNIT III

Electronic Payment Systems: Overview of the Electronic payment Technology - Requirements for Internet Based payments - Electronic payment Medias - Electronic commerce and banking.

UNIT IV

E-security: Security in the cyberspace - Designing for security - Virus - Security Protection and Recovery - Encryption - The Basic Algorithm System - Authentication and Trust - Key management - Internet Security Protocols and Standards - Other Encryption issues.

UNIT V

Web based Business: Business-to-Business Electronic Commerce-Intranets and Extranets - Intranets and Supply Chain Management - Legal and Ethical issues - Case studies.

REFERENCES

1. Elias. M. Awad, " Electronic Commerce", Prentice - Hall of India Pvt Ltd, 2002.
2. Ravi Kalakota, Andrew B. Whinston, "Electronic Commerce - A Manager's guide", Addison - Wesley, 2000.
3. Efraim Turban, Jae Lee, David King, H.Michael Chung, "Electronic Commerce – A Managerial Perspective", Addison - Wesley, 2001.
4. Elias M Award, "Electronic Commerce from Vision to Fulfilment", 3rd Edition, PHI, 2006
5. Judy Strauss, Adel El-Ansary, Raymond Frost, "E-Marketing", 3RD Edition, Pearson Education, 2003
6. Ravi Kalakota, Andrew B. Whinston, "Frontiers of Electronic Commerce", Addition – Wesley, 2000.

4.5 KNOWLEDGE MANAGEMENT AND INFORMATION SYSTEMS

UNIT - I

Knowledge society-from data to information to knowledge- Drivers of knowledge management- Intellectual capital- KM and learning organizations- case studies. Strategic alignment- creating awareness- articulation- Evaluation and strategic alignment-Infrastructural development and deployment- Leadership, measurement and refinement- Role of CKO

UNIT - II

Analyzing business environment-knowledge audit and analysis – designing KM team – creating KM system blue print- implementation- capture –store and sharing. Technology components- Intranet and Groupware solutions- tools for collaborative intelligence- package choices- implementing security.

UNIT - III

Definition – Computer based user machine system – Integrated system – Need for a database – Utilization of models – Evolution – Subsystems – Organizational subsystems – Activities subsystems.

UNIT - IV

Operating elements – Physical components – Processing functions – Outputs – MIS support for decision making – Structured programmable decisions – Unstructured non-programmable decisions – MIS structure based on management activity and rganizational functions – Synthesis of MIS structure

UNIT - V

SYSTEM SUPPORT: Data representation – Communication network – Distributed systems – Logical data concepts – Physical storage devices – File organizations – Data base organization – Transaction processing - DEVELOPMENT AND MANAGEMENT : A contingency approach to choosing an application – Developing strategy – Lifecycle definition stage – Lifecycle development stage – Lifecycle installation and operation stage – Project management

REFERENCES

1. Amrit tiwana,'The essential guide to knowledge management,' Pearson education-2001.
2. Ratnaja gogula,'Knowledge management', A new dawn- ICFAI-2002
3. Gordon B. Davis, Margrethe H. Olson, Management Information Systems: Conceptual foundations, Structure and development –2nd Edition – Tata-Mc Graw hill International Book Company, 2000
4. E.Wainright Martin, Carol V. Brown, Danial W. DeHayes, Jeffrey A. Hoffer, William C. Perkins, "Managing Information Technology" 3rd Edition, Prentice Hall International edition 1999.
5. Harold Koontz, Heinz Weihrich, "Essentials of Management", 5th Edition, Tata McGraw Hill 1998.