VII SEMESTER

TOTAL QUALITY MANAGEMENT

Subject Code	:	10IP/IM 71	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART – A

UNIT - 1

OVERVIEW OF TOTAL QUALITY MANAGEMENT: History of TQM. Axioms of TQM, contributions of Quality Gurus – Deming's approach, Juran,s quality trilogy, Crosby and quality treatment, Imai's Kaizen, Ishikawa;s company wide quality control, and Fegenbaum;s theory of TQC, QFD.

7 Hours

UNIT - 2

EVOLUTION OF QUALITY CONCEPTS AND METHODS: Quality concepts. Development of four fatnesses, evolution of methodology, evolution of company integration, quality of conformance versus quality of design from deviations to weaknesses to opportunities. Future fitness's, four revolutions in management thinking, and four levels of practice

7 Hours

UNIT - 3

FOUR REVOLUTIONS IN MANAGEMENT THINKING: Customer focus, Continuous Improvement, Total participation, and Societal Networking. FOCUS ON CUSTOMERS; Change in work concept marketing, and customers.

6 Hours

UNIT - 4

CONTINUOUS IMPROVEMENT: Improvement as problem solving process; Management by process, WV model of continuous improvement, process control, process control and process improvement, process versus creativity. Reactive Improvement; Identifying the problem, standard steps and tools, seven steps case study, seven QC tools.

6 Hours

PART - B

UNIT - 5

PROACTIVE IMPROVEMENT: Management diagnosis of seven steps of reactive improvement. General guidelines for management diagnosis of a QI story, Discussion on case study for diagnosis of the seven steps. Proactive Improvement; Introduction to proactive improvement, standard steps for proactive improvement, semantics, example-customer visitation, Applying proactive improvement to develop new products- three stages and nine steps.

6 Hours

UNIT - 6

TOTAL PARTICIPATION: Teamwork skill. Dual function of work, teams and teamwork, principles for activating teamwork, creativity in team processes, Initiation strategies, CEO involvement Example strategies for TQM introduction. Infrastructure for mobilization. Goal setting (Vision/ Mission), organization setting, training and E education, promotional activities, diffusion of success stories, awards and incentives monitoring and diagnosis, phase-in, orientation phase, alignment phase, evolution of the parallel organization.

6 Hours

UNIT - 7

HOSHIN MANAGEMENT: Definition, phases in hoshin management-strategic planning (proactive), hoshin deployment, controlling with metiers (control), check and act (reactive). Hoshin management versus management by objective, hoshin management and conventional business planning, an alternative hoshin deployment system, hoshin management as "systems Engineering" for alignment.

6 Hours

UNIT - 8

SOCIETAL NETWORKING: Networking and societal diffusion – Regional and nationwide networking, infrastructure for networking, openness with real cases, change agents, Center for quality Management case study, dynamics of a societal learning system. TQM as learning system, keeping pace with the need for skill, a TQM model for skill development, summary of skill development.

8 Hours

TEXT BOOKS:

1. **"A New American TQM Four Practical Revolutions in Management**" -Shoji Shiba, Alan Graham and David Walden,– Productivity Press, Portlans (USA) , 1993
2. **"Management for Total Quality"** -N Logothetis- Prentice Hall of India, New Delhi, 1994.

REFERENCE BOOK:

1. **The Quality Improvement Hand Book,** -Roger C Swanson, Publisher Vanity Books International, New Delhi, 1995.
2. **Total Quality Management** - Kesavan R - I K International Publishing house Pvt. Ltd, 2008

OPERATIONS MANAGEMENT

Subject Code	:	10IP/IM 72	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

OPERATIONS MANAGEMENT CONCEPTS: Introduction, Historical development, The trend: Information and Non-manufacturing systems, Operations management, Factors affecting productivity, International dimensions of productivity, The environment of operations, Production systems decisions- a look ahead.

6 Hours

UNIT - 2

OPERATIONS DECISION MAKING:

Introduction, Management as a science, Characteristics of decisions, Framework for decision making, Decision methodology, Decision support systems, Economic models, Statistical models.

SYSTEM DESIGN AND CAPACITY:

Introduction, Manufacturing and service systems, Design and systems capacity, Capacity planning.

7 Hours

UNIT - 3

FORECASTING DEMAND:

Forecasting objectives and uses, Forecasting variables, Opinion and Judgmental methods, Time series methods, Exponential smoothing, Regression and correlation methods, Application and control of forecasts.

7 Hours

UNIT - 4

AGGREGATE PLANNING AND MASTER SCHEDULING:

Introduction- planning and scheduling, Objectives of aggregate planning, Aggregate planning methods, Master scheduling objectives, Master scheduling methods.

6 Hours

PART -B

UNIT-5

MATERIAL AND CAPACITY REQUIREMENTS PLANNING:

Overview: MRP and CRP, MRP: Underlying concepts, System parameters, MRP logic, System refinements, Capacity management, CRP activities.

6 Hours

UNIT - 6

SCHEDULING AND CONTROLLING PRODUCTION ACTIVITIES:

Introduction, PAC, Objectives and Data requirements, Scheduling strategy and guide lines, Scheduling methodology, priority control, capacity control.

6 Hours

UNIT - 7

SINGLE MACHINE SCHEDULING: Concept, measures of performance, SPT rule, Weighted SPT rule, EDD rule, minimizing the number of tardy jobs.

FLOW -SHOP SCHEDULING: Introduction, Johnson's rule for V jobs on 2 and 3 machines, CDS heuristic.

JOB-SHOP SHEDULING: Types of schedules, Heuristic procedure, scheduling 2 jobs on 'm' machines.

7 Hours

UNIT - 8

LEAN SYSTEMS: Characteristics of Just-in-Time operations, Pull method of materials flow, consistently high quality, small lot sizes, Uniform workstation loads, Standardized components and work methods, close supplier Ties, Flexible workforce, Line flows, Automated production, Prevention maintenance, continuous improvement, Kaizen.

7 Hours

TEXT BOOKS:

Operations Management- Monks, J.G., McGraw-Hill International Editions, 1987.
Production and Operations Management- Pannerselvam. R, 2nd edition PHI.

REFERENCE BOOKS:

Modern Production/Operations Management- Buffa, Wiely Eastern Ltd., 4th edition

Production and Operations Management- Chary, S.N, Tata- McGraw Hill., 3rd edition

FINANCIAL ACCOUNTING AND COSTING

Subject Code	:	10 IM 73	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

FINANCIAL ACCOUNTING: Introduction to Book keeping: double-entry accounting, journal & ledger posting.

6 Hours

UNIT - 2

FINANCIAL STATEMENTS & ANALYSIS: Trial balance, preparation of Trading and Profit & Loss account, and Balance sheet.

8 Hours

UNIT - 3

RATIO ANALYSIS: Balance sheet ratio's, profit – loss account ratio's, and combined ratio's.

6 Hours

UNIT - 4

COSTING: Objectives of costing, Elements of costing, methods of costing preparation of cost sheet (job costing)

6 Hours

PART - B

UNIT - 5

Process costing, Marginal costing and absorption costing.

7 Hours

UNIT - 6

STANDARD COSTING: Material, labour, overhead cost variance.

ACTIVITY BASED COSTING: Target Costing, Activity Based Costing and management

7 Hours

UNIT - 7

WORKING CAPITAL MANAGEMENT: Factors influencing working capital requirement, determination of operating cycle and working capital.

6 Hours

UNIT - 8

BUDGETING: Sales budget, production budget, raw materials purchasing budget, selling and administrative expense budget, cash budget, Flexible Budget & Master budget.

6 Hours

TEXT BOOKS:

Cost Accounting - Khan M Y and Jain P K, Tata McGraw-Hill, 4th Edition.

Financial Management - Prasanna Chandra;; Tata McGraw-Hill, 4th Edition. 1998.

Management Accounting & Costing - PRASAD .N.K

Financial Management and Policy - James. C Vanhorne , Peerason education, 12th edition.

REFERENCE BOOKS:

Elements of Accountancy - B.S Raman,

Practical Costing - Ahuja, Pandey, Khanna and Arora, , S. Chand & Co. Ltd 2005

Financial Management & Costing - KHAN & JAIN, TMH - 2000

MANAGEMENT INFORMATION SYSTEM

Subject Code	:	10IM 74	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

FUNDAMENTALS OF INFORMATION SYSTEMS: Information systems in business, fundamentals of information systems solving business problems with information systems.

6 Hours

UNIT - 2

INFORMATION SYSTEMS FOR BUSINESS OPERATIONS: Business information systems, Transaction processing systems, management, information systems and decision support systems. Artificial intelligence technologies in business, information system for strategic applications and issues in information technology.

8 Hours

UNIT - 3

ISSUES IN MANAGING INFORMATION TECHNOLOGY: Managing information resources and technologies global information technology, management, planning and implementing change, integrating business change with IT, security and ethical challenges in managing IT, social challenges of information technology.

8 Hours

UNIT - 4

INTRODUCTION TO E-BUSINESS: E-commerce frame work, Media convergence, Consumer applications, Organization applications.

6 Hours

PART - B

UNIT - 5

E-BUSINESS MODEL: Architectural frame work for E-commerce, Application services and transaction

Models – B2C Transactions, B2B Transactions, Intra-Organisational Transactions.

6 Hours

UNIT - 6

E-BUSINESS MODEL: WWW Architecture: Client server structure of the web, e-Commerce architecture, Technology behind the web.

6 Hours

UNIT - 7

CONSUMER-ORIENTED E-COMMERCE: Consumer oriented Application: Finance and Home Banking, Home shopping, Home Entertainment, Mercantile Process Models, Consumers perspective, Merchants perspective.

6 Hours

UNIT - 8

ELECTRONICS DATA INTERCHANGE (EDI): EDI Concepts, Applications in business – components of international trade, Customs Financial EDI, Electronic fund transfer, Manufacturing using EDI, Digital Signatures and EDI.

6 Hours

TEXT BOOKS:

- **Management Information systems**- managing information technology in the internet worked enterprise- jams. A O'Brien - Tata McGraw Hill publishing company limited, 2002.
- **Management Information Systems** - Laaudon & Laudon PHI ISBN 81-203-1282-1.1998.

REFERENCE BOOKS:

- **Management Information systems**- S. Sadogopan.PHI 1998Edn. ISBN 81-203-1180-9
- **Information systems for modern management** - G.R. Murdick PHI, 2nd Edition.

ENTERPRISE RESOURCE PLANNING LAB

Subject Code	:	10IML 77	IA Marks	:	25
No. of Lecture Hrs./ Week	:	03	Exam Hours	:	03
Total No. of Lecture Hrs.	:	42	Exam Marks	:	50

PART - A

1. Process of customer orders under seasonal / unseasonable and Blanket orders.
2. Generating Bill of Materials for Various Engineering Designs
3. Creating Item Master for various Engineering Designs
4. Conduction of vendor Evaluation exercise
5. Creating Make Master for Items
6. Creating Purchase order for Items
7. Creating Work order for Items
8. Perform inventory transaction

PART - B

1. Creating quotation process for Items
2. Creating Dispatch Instruction for Items
3. Creating Payment reconciliation.
4. MRP - II Generating of Various reports for confirmed orders
5. Functional evaluation of business processes
6. Analyse of existing capacity and defining routes optimizing the resources along routes.
7. Optimization problems using OR packages (two exercises only).
8. Scheduling of activities

Suggested Software Packages

Statistical Packages : SYSTAT / MINITAB / SPSS and such others

ERP Packages : SIXTH SENSE / RAMCO / MAARSMAN / CIMAS / UNISOFT / OPTIMIIZER 10.6 and such others.

Preactor – Scheduling Software OR Packages : Lindo / Lingo / STORM / such others

QUALITY ENGINEERING LAB

Subject Code	:	10IML 78	IA Marks	:	25
No. of Lecture Hrs./ Week	:	03	Exam Hours	:	03
Total No. of Lecture Hrs.	:	42	Exam Marks	:	50

PART - A

To test the Goodness of fit for the given quality characteristic using: Uniform distribution, Binomial distribution, Poisson distribution & Normal distribution.

Conduction of Repeatability and Reproducibility studies for appraiser and instrument using R&R Software

Assessing Process Capability of the given manufacturing process using Normal Probability paper method and process capability indices

Assessing Process Capability of the given manufacturing process using Digital Motorized Multifunctional Height Gauge and SQC Display unit

PART – B

1. Experiments on Application of 7 QC Tools as applied to Manufacturing and Service Operations.
2. Construction of control chart for variable quality characteristic using
3. Digital Motorized Multifunctional Height Gauge
4. SQC Display unit
5. SQC/SPC software
6. Construction of control chart for attribute quality characteristic
7. Construction of control charts using SYSTAT Software
8. Attribute sampling Plans – Single, Double and Multiple sampling plans.
9. Experiments on correlation and Simple linear regressions
10. Experiments on multiple linear regressions
11. Conduction of Design of Experiments – Full Factorial approach for the given quality characteristic for machining operations.
12. Exercises to demonstrate Taguchi's Orthogonal Array technique through DOE software.

13. Exercises on FMEA and Reliability
14. Exercises on QFD

Note: Minimum 14 Exercises to be conducted in this lab.

REFERENCE BOOKS:

Introduction to statistical Quality Control D C Montgomery - 3rd Edition, John Wiley and Sons.

Quality Planning & Analysis- J M Juran, Frank M Gryna; Tata McGraw Hill, 3rd edn.,

Statistical Quality Control - Grant and Leavenworth, McGraw Hill

ELECTIVE-II (GROUP B)

ENTERPRISE RESOURCE PLANNING

Subject Code	:	10IP / IM 751	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION TO ERP: Introduction, Evolution of ERP, What is ERP, Reasons for the growth of the ERP market, The advantages of ERP, Why do Man ERP Implementations Fail? Why are ERP packages being used now?

ENTERPRISE – AN OVERVIEW: Introduction, Integrated Management Information, Business modelling, Integrated Data Model.

7 Hours

UNIT - 2

ERP AND RELATED TECHNOLOGIES: Introduction, Business Process Reengineering, Management Information System, Decision Support System, Executive Information Systems, Data Warehousing, Data Mining, On-line Analytical Processing, Supply Chain Management.

7 Hours

UNIT - 3

ERP- MANUFACTURING PERSPECTIVE: Introduction, ERP. CAD/CAM, Materials Requirements Planning, Bill of Material, Closed Loop MRP. Manufacturing Resource Planning, Distribution Requirements Planning.

6 Hours

UNIT - 4

KANBAN: JIT and Kanban, Product Data Management, Benefits of PDM, Make-to-order, and Make-to Stock, Assemble to order, Engineer to order, Configure-to order.

6 Hours

PART - B

UNIT - 5

ERP MODULES: Introduction, Finance, Plant Maintenance, Quality Management, Materials Management.

6 Hours

UNIT - 6

BENEFITS OF ERP: Introduction, Reduction of Lead time, On-time shipment, Reduction in Cycle Time, Improved Resource Utilisation, Better Customer Satisfaction, Improved Suppler Performance, Increased Flexibility, Reduced Quality Costs, Improved Information Accuracy and Decision – making capability.

6 Hours

UNIT – 7

ERP MARKET: Introduction, SAP AG, Baan Company, Oracle Corporation, PeopleSoft, JD Edwards World Solutions Company, System Software Associates, Inc. QAD

6 Hours

UNIT – 8

ERP Implementation Life Cycle: Pre-Evaluations Screening, Package Evaluation, Project Planning Phase, Gap Analysis, Reengineering, Configuration, Implementation of Team Training, Testing, Going Live, end user Training, Post Implementation

VENDOR, CONSULTANTS AND USERS: Introduction, In-house implementation – Pros and Cons, Vendors, Consultants, End-users.

FUTURE DIRECTION IN ERP: Introductions, New Markets, New Channels, Faster Implementation Methodologies, Business models and BAPIs, Convergence on Windows NT, Application Platforms, New business segments, web enabling, market snapshot

ERP- Case studies

8 Hours

TEXT BOOKS:

1. Enterprise Resource Planning -Alexis Leon, , 1999, Tata Mc Graw Hill Publishing Company Ltd.,
2. Enterprise Resource Planning Concept and Practice -Vinod Kumar Garg and Venkitakrishnan, 2nd Edition, Prentice-Hall India.

REFERENCE TEXT BOOK:

1. Manufacturing Planning & Controls -Thomas Volloman, etal.

CONCURRENT ENGINEERING

Subject Code	:	10IP/IM 752	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

MANUFACTURING COMPETITIVENESS: Review, Product and Services, Process and Methodologies, performance, the need for change, Sequential versus concurrent Engg.

7 Hours

UNIT - 2

PROCESS REENGINEERING: Managing change, Reengineering approaches, Enterprise models, concurrent process reengineering.

7 Hours

UNIT - 3

CONCURRENT ENGINEERING: Introduction, Basic principles, components of CE models.

6 Hours

UNIT - 4

CONCURRENT ENGINEERING ORGANIZATIONS: Benefits, co-operative concurrent teams, Types of CE organisations.

6 Hours

PART - B

UNIT - 5

SYSTEM ENGINEERING*:* Introduction, System thinking, System complexity, System Integration, Angle virtual company**.**

6 Hours

UNIT - 6

INFORMATION MODELLING: Methodology, foundation of information modelling.

6 Hours

UNIT - 7

C. E. PROCESS: Concurrent engineering process invariant enterprise model class, product mode class, cognitive models.

6 Hours

UNIT - 8

CE METRICS FOR IT: Based manufacturing – process efficiency metrics, Process effectiveness metrics.

8 Hours

TEXT BOOK:

1. **Concurrent Engineering Fundamentals** - Prasad.B, - Integrated Product and process organization Vol. 1 & 2, Prentice Hall Englewood, Cliffs, New Jersey 1996.
2. **Concurrent Engineering -** Hartely R John– Shortening lead times, raising quality & Lowering costs, Productivity press, Portland, Oregon 1992.

REFERENCE BOOKS:

1. **Concurrent Engineering -** Carter DE & Baker BS, - The product development environment for the 1990's. Addison – Wesley Publishing company, Reading MA 1992.

MARKETING MANAGEMENT

Subject Code	:	10IP/IM 753	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION: Historical development of marketing management, Definition of Marketing, Core marketing concepts, Marketing Management philosophies, Micro and Macro Environment, importance of marketing in the India Socio – economics system.

6 Hours

UNIT - 2

CONSUMER MARKETS AND BUYING BEHAVIOR: Characteristics affecting consumer behaviour, Types of buying decisions, Buying decision process, Classification of consumer products, Market segmentation.

6 Hours

UNIT - 3

MARKETING INFORMATION SYSTEMS AND RESEARCH: Components of marketing information system–benefits & uses marketing research system, marketing research procedure, measurement of market demand.

6 Hours

UNIT - 4

MARKETING OF INDUSTRIAL GOODS: Nature and importance of the Industrial market, classification of industrial products, participants in the industrial buying process, major factors influencing industrial buying behaviour, characteristics of industrial market demand. Determinants of industrial market demand Buying power of Industrial users, buying motives of Industrials users, the industrial buying process, buying patterns of industrial users

6 Hours

PART - B

UNIT - 5

PRODUCT PLANNING AND DEVELOPMENT: The concept of a product, features of a product, classification of products, product policies – product planning and development, product line, product mix – factors influencing change in product mix, product mix strategies, meaning of New – product; major stages in new – product development, product life cycle.

8 Hours

UNIT - 6

BRANDING, LABELLING AND PACKAGING: Branding, Reasons for branding, functions of branding, features and types of brands, kinds of brand name.

LABELLING: Types, functions, advantages and disadvantages

PACKAGING: Meaning, growth of packaging, function of packaging, kinds of packaging.

6 Hours

UNIT - 7

PRICING: Importance of Price, pricing objectives, factors affecting pricing decisions, procedure for price determination, kinds of pricing, pricing strategies and decisions.

DISTRIBUTION: Marketing channels – functions, types of channels of distribution, number of channel levels. Physical distribution – importance, total systems concept, strategy, use of physical distribution.

8 Hours

UNIT - 8

ADVERTISING AND SALES PROMOTION: Objectives of advertisement function of advertising, classification of advertisement copy, advertisement media – kinds of media, advantages of advertising. Objectives of sales promotion, advantages sales promotion.

PERSONAL SELLING: Objectives of personal selling, establishing the Sales force objectives, sales – force strategy, sales force structure and size, salesmanship, qualities of good salesman, types of salesman, major steps in effective selling.

6 Hours

TEXT BOOKS:

Principles of Marketing - Philip Kotler , Prentice – Hall. 11th Edn.

Marketing Management - Philip Kotler , Prentice – Hall. 12th Edn.

Marketing Management - Michael R Czinkota, , 2nd Edition, Vikas Publishing House, ISBN 981-240-366-3

REFERENCE BOOKS:

1. **Fundamentals of Marketing -** Wiliam J Stanton, McGraw Hill, 1994
2. **Marketing Management** - S.A Sherlaker,", 1999.
3. **Rajagopal, Marketing Management Text & Cases -** Vikas Publishing House, ISBN 81-259-0773-4

TECHNOLOGY MANAGEMENT

Subject Code	:	10IP/IM 754	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

THE CONCEPT OF TECHNOLOGY: Introduction, The nature of knowledge, Aspects of classification, Concept and Meaning of technology, The character of a specific technology, Scope of technology, Examples of classification of technology, Scale of technology information, Levels of technology, Technology portfolios, Technology as an environment.

6 Hours

UNIT - 2

THE NATURE OF TECHNOLOGICAL CHANGE: Introduction, Meaning of technological change, Concept of invention, Nature of innovation, Emergence of new technologies, Life cycle of a technology, Motivation for technological change, Nature of technological progress, Nature of mature technology, Nature of diffusion, Technological convergence.

7 Hours

UNIT - 3

THE ECONOMICS OF TECHNOLOGY: Introduction, Meaning of technological economics, Examples of technological economics, Scope of technological economics, Engineering economics, Production economics, Concept of economy of scale, Concept of optimum size, Technology as a commodity, Technology at the macro-economic level.

7 Hours

UNIT – 4

CORPORATE TECHNOLOGY STRATEGY: Introduction, The Business Mission, Where Is The Business? Concept Of Business Strategy, Capability For Strategic

Planning, Corporate Technology Strategy, Competitive Technology, Focus Of Strategy, Technological Alliances, Realization Of Strategy, Technology Crisis.

6 Hours

PART - B

UNIT - 5

ANALYSIS FOR TECHNOLOGY STRATEGY: Introduction, Technology assessment, Technology forecasting, Main techniques of technology forecasting, Technology forecasting system, Yield of technology forecasting.

7 Hours

UNIT - 6

THE REALIZATION OF NEW TECHNOLOGY: Introduction, Concept of R&D policy, Stimuli for innovation, Sources of innovation, Intelligence function of R&D, Management of R&D, R&D team, Effectiveness of R&D, Marketing aspects of R&D, Finance for Design, Development, Manufacture and Marketing, reduction of development lead time, Patterns for new technology development, Remaining a going concern.

7 Hours

UNIT - 7

THE ADOPTION OF NEW MANUFACTURING TECHNOLOGY: Introduction, manufacturing strategy, Introduction of new technology, Challenges of factory automation, Stages of factory automation, Manufacturing FMS, CIM, CAD/CAM, Intelligent manufacturing systems, operation of new technology, Change management, People and technology at work, Work structures.

6 Hours

UNIT - 8

TECHNOLOGY- AN INSTRUMENT OF COMPETITION: Introduction, securing competitive advantage, Technological competition analysis, Technological leadership, Adoption of new technology, marketing a new technology product, Retention of competitive advantages.

6 Hours

TEXT BOOK:

1. **The Management of Technology** - Paul Lowe,: Perceptions & Opportunities, Chapman & Hall, London, 1995.

REFERENCE BOOKS:

1. **Strategic Management of Technology** -Frederick Betz, McGraw- Hill Inc 1993.
2. **Management of Technology & Innovation**: competing Through Technological Excellence, -Rastogi, P.N., Sage Publications, 1995

DESIGN AND DEVELOPMENT OF ENTERPRISES

Subject Code	:	10IM 755	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

DEFINITION AND CONCEPT OF ENTERPRISE: Profile of an entrepreneur-need scope and characteristics of entrepreneurs.

6 Hours

UNIT - 2

DEFINITION AND CONCEPT OF ENTERPRISE: Attitude development, creativity–stress management-positive reinforcement.

7 Hours

UNIT - 3

METHODOLOGY OF PROJECT IDENTIFICATION: Short listing and zeroing on to product/service-project in outline project planning- technical and feasibility analysis-evaluation of project report.

6 Hours

UNIT - 4

METHODOLOGY OF PROJECT IDENTIFICATION: Project appraisal technical, commercial and financial appraisal - problems in project equation - legal, financial and environmental aspects.

6 Hours

PART - B

UNIT - 5

MARKETING: Market share-distribution-sale strategies-certification agencies-term finance-source and management working capital-coating and cost control (basic principles only) need analysis-product design (basic principles only)- developing operational expertise- innovation and change.

6 Hours

UNIT - 6

SMALL INDUSTRIES DEVELOPMENT: Small Industries development in India and its concepts- ancillary industries-starting a small scale industry-steps involved-role of financing and other institutions providing assistance to small industries- preparation of project (case study).

7 Hours

UNIT - 7

ACCOUNTING PRINCIPLES: Conventions and concepts-balance sheet-profit and loss account.

7 Hours

UNIT - 8

ACCOUNTING PRINCIPLES: Accounting rate of return, pay back period, SSI duty practice.

7 Hours

TEXT BOOK:

1. **Developing Entrepreneurship -**Udai Pareek and T.V. Venkateswara Rao, – A Hand Book Learning systems, ND. 1978.

REFERENCE BOOKS:

1. **EDI - 1** Faculty and External Experts, A handbook for new entrepreneurs, Entrepreneurship development institute of India 1986.
2. **Entrepreneurship Development -**P. Saravanavel, Ess Pee Kay publishing house. 1st Edition
3. **Entrepreneurship and Small Business** - Anil Kumar- I K International Publishing house Pvt. Ltd, 1st Edition.

ELECTIVE III (GROUP C)

FINANCIAL MANAGEMENT

Subject Code	:	10IP/IM 761	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION: Evolution of Financial Management, Goals, Forms of Business.

RISK AND REQUIRED RETURN: Risk and return relationship, Business risk, financial risk, and risk in portfolio context, expected rate of return, Capital asset pricing model.

7 Hours

UNIT - 2

CAPITAL BUDGETING: Risk analysis in Capital Budgeting, Cost of Capital – Debt, Preference Equity forms of capital.

WORKING CAPITAL MANAGEMENT: Factors influencing working capital requirement, determination of operating cycle and working capital.

7 Hours

UNIT - 3

LONG TERM FINANCING: Raising of finance form primary and secondary markets, Valuation of securities, features of convertibility securities and warrants, SEBI guide lines on capital issues, stock market in India, Venture capital, Initial Public Offering.

6 Hours

UNIT - 4

CAPITAL STRUCTURE AND FIRM VALUE: Assumption, Definition and approaches, Modigliani and Miller Mode, Capital Structure decisions – EBIT, EPS analysis, ROI, REI analysis and Cash Flow comparative Analysis

DIVIDEND VALUE AND FIRM VALUE: Models, Reasons for payment of dividends, Dividend Policy, Bonus shares and stock splits, Dividend policies in practice.

6 Hours

PART - B

UNIT - 5

SECURITIES AND PORTFOLIO ANALYSIS: Derivatives, Futures Trading,

6 Hours

UNIT - 6

MERGER ACQUISITION AND RESTRUCTURING: Reasons, Mechanics, Cost and benefits of a merger, Evolution, terms and purchase of a division, Takeovers, Acquisitions, Portfolio and financial restructuring.

6 Hours

UNIT - 7

INTERNATIONAL FINANCIAL MANAGEMENT: World Monitoring system, Foreign Exchange Markets, International Parity Relationships, International Capital budgeting, Financing Foreign Operations, Raising Foreign Currency Finance, Financing Exports, Documents in International Trade, Foreign Exchange Exposure, Management of Foreign Exchange Exposure.

6 Hours

UNIT - 8

FINANCIAL MANAGEMENT IN PUBLIC SECTOR ENTERPRISES: Capital Budgeting, Long-term Financing, Working capital Management, Memorandum of Understanding, Financial Controls, Privatization.

8 Hours

TEXT BOOKS:

- **Financial Management** -Theory and practice, Prasanna Chandra TMH ISBN– 0-07-044501-X, 5th edn.
- **Financial accounting** - B.S. Raman, United publication VoI II

REFERENCE BOOKS:

- **Financial Management** - Tex t& Problems Khan & Jain TMH .ISBN 0—07-460208-X
- **Financial management** - IM Pandey. Vikas Pub. House ISBN 0-7069-5435-1.

PROJECT MANAGEMENT

Subject Code	:	10IP/IM 762	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

CONCEPTS OF PROJECT MANAGEMENT: Concepts of a Project, Categories of projects, Phases of project life cycle, Roles and responsibility of project leader, tools and techniques for project management.

6 Hours

UNIT - 2

PROJECT PLANNING AND ESTIMATING: Feasibility report, phased planning, Project planning steps, Objective and goals of the project, preparation of cost estimation, evaluation of the project profitability.

7 Hours

UNIT - 3

ORGANIZING AND STAFFING THE PROJECT TEAM: Skills / abilities required for project manger, Authorities and responsibilities of project manager, Project organization and types accountability in project execution, controls, tendering and selection of contractors.

7 Hours

UNIT - 4

PROJECT SCHEDULING: Project implementation scheduling, effective time management, different scheduling techniques, resources allocation method.

6 Hours

PART - B

UNIT - 5

TOOLS & TECHNIQUES OF PROJECT MANAGEMENT: Bar (GANTT) chart, bar chart for combined activities, logic diagrams and networks, Project evaluation and review Techniques (PERT) Planning, Computerized project management

8 Hours

UNIT - 6

CO-ORDINATION AND CONTROL: Project direction communication in a project, MIS project co-ordination, project control requirement for better control of project or role of MIS in project control, performance, control, schedule control, cost Control

6 Hours

UNIT - 7

PERFORMANCE MEASURES IN PROJECT MANAGEMENT: Performance indicators, Performance improvement for the CM & DM companies for better project management, project management and environment, Software Project Management, Construction Project Management.

6 Hours

UNIT - 8

CASE STUDIES ON PROJECT MANAGEMENT: Case studies covering project planning, scheduling, use of tools & techniques, performance measurement.

6 Hours

TEXT BOOKS:

- **Project Management a System approach to Planning Scheduling & Controlling** - Harold Kerzner, CBS Publishers and Distributors. 2002.
- **Project Execution Plan: Plan for project Execution interaction 2001 -** Chaudhry S.

REFERENCES BOOKS:

- **Project Management** – Beningston Lawrence McGraw Hill 1970.
- **A Management Guide to PERT and CPM**, WEIST & LeVY Eastern Economy of PH 2002.
- **PERT & CPM**.-L.S.Srinnath, Affiliated East West Press Pvt. Ltd. 2002.
- **Project Management with PERT and CPM**- Moder Joseph and Philips cerel R., 2nd edition, New York VAN Norstrand, Reinhold - 1976.
- **Project planning analysis selection implementation & review** prasanna chandra, ISBNO-07-462049-5 2002.
- **Performing and Controlling Project,-**Angus, Planning, 3rd End, Person Education, ISBN:812970020.2001

Project planning scheduling & control, james P.Lawis, Meo Publishing company 2001.

Project Management -Bhavesh M.Patel, Vikas Publishing House, ISBN 81-259-0777-7 2002.

COMPOSITE MATERIALS

Subject Code	:	10IP/IM 763	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION TO COMPOSITE MATERIALS: Definition, classification and characteristics of composite materials – fibrous composites, laminated composites, particulate composites. Properties and types of reinforcement and matrix materials.

6 Hours

UNIT - 2

FIBRE REINFORCEMENT PLASTIC PROCESSING: Lay up and curing, fabricating process – open and closed mould process – hand lay up techniques – structural laminate bag molding, production procedures for bag molding – filament winding, pultrusion, pulforming, thermo – forming, injection, injection molding, liquid molding, blow molding.

7 Hours

UNIT - 3

FABRICATION OF COMPOSITES: Cutting, machining, drilling, mechanical fasteners and adhesive bonding, joining, computer aided design and manufacturing, tooling, fabrication equipment.

7 Hours

UNIT - 4

Ceramic Matrix composites and their fabrication technologies.

6 Hours

PART - B

UNIT - 5

Application of composites Characterisation of composites, computer aided design and analysis of composites

7 Hours

UNIT - 6

Application of industrial experimentation for fabrication and testing of composites

6 Hours

UNIT - 7

STUDY PROPERTIES OF MMC'S: Physical Mechanical, wear, machinability and other properties. Effect of size, shape and distribution of particulate on properties.

6 Hours

UNIT - 8

Advanced composites such as Polymer based Sandwich structures of nano composites.

5 Hours

Introduction to shape memory alloys.

2 Hours

TEXT BOOKS:

1. **Composite Science and Engineering** - K.K.Chawla Springer Verlag 1998.
2. **Introduction to composite materials** - Hull and Clyne, Cambridge University Press, 2nd Edition, 1990.

REFERENCE BOOKS:

1. **Composite Materials hand book** - Meing Schwaitz,, McGraw Hill Book Company, 1984.
2. **Mechanics of Composite Materials** - Robert. M. Jones, McGraw Hill Kogakusha Ltd., 1998.
3. **Forming Metal hand book** - 9th edition, ASM handbook, V15, 1988, P327-338.
4. **Mechanics of composites** - Autar K kaw, CRC Press, 2002.
5. **Composite Materials** - S.C. Sharma Narora publishing house, 2000
6. **Principles of Composite Material mechanics** - Ronald. F. Gibron, McGraw Hill International, 1994.

WORLD CLASS MANAGEMENT PRACTICES

Subject Code	:	10IP/IM 764	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION TO WORLD CLASS MANUFACTURING:

Manufacturing Excellence and Competitiveness, What is world-Class Manufacturing?- Hall's framework of world-Class Manufacturing (WCM), Gunn's Model of World-Class Manufacturing , Maskell's Model of World-Class Manufacturing, America's Best Plants Model of World Class Manufacturing.

6 Hours

UNIT - 2

WORLD CLASS MANUFACTURING: The philosophy of world-class Manufacturing-The First Principles of World-Class Manufacturing, The practices of World-Class Manufacturing-The customers Interface ,The Supplier Interface, World-Class Practices in the factory, Quality Management, Shingo's.

7 Hours

UNIT - 3

PRINCIPLES AND PRACTICIES OF WCM: Data collection plan, research-internal public domain sources, outside experts etc. original research, site visits, and code of conduct. Analyzing the gap: Top displaying data, deciding and combining best work practices, Balance Score Card Technique, Value Stream Mapping, validation, recommendations etc

6 Hours

UNIT - 4

BENCHMARKING:

Definition, mission and objectives, managing benchmarking process, training and code of conduct, future scope and benchmarking process. What to benchmark: concept of step zero, priorities, business processes – linking to goals etc, investigation, documentation, performance measures, improving business processes. Whom to benchmarks: Developing candidate list, systematic search, refining the initial list.

7 Hours

PART - B

UNIT - 5

DEFINITION OF REENGINEERING: Importance of 3Cs-customers takes charges, competition intensifies, and change becomes constant. Definition of Business Process Reengineering – fundamentals rethinking, radical redesign, and dramatic improvement.

6 Hours

UNIT - 6

Rethinking business process, new world of and enabling role of information technology.

QUALITY SYSTEMS:

ISO 9000-2000, IS 14000, Frame Work for Business Excellence - Malcolm Baldridge Award, Deming's Award

8 Hours

UNIT - 7

SIX SIGMA: The Basics, The core of Six Sigma(DMAIC), design for Six Sigma, DFSS and the customer, Quality time and the Bottom line , core of DFSS-IDOV method , DFSS Metrics, DFSS Infrastructure –People and resources, Implementing DFSS

7 Hours

UNIT - 8

ACTIVITY BASED MANAGEMENT (ABM):

Introduction, Traditional Cost Systems, Activity Based activity Based Costing, Activity Based Management, ABM Implementation, Case Study.

Theory Of Constraints (TOC)

Theory of Inventive Problem Solving

5 Hours

TEXT BOOKS:

1. Hammer, Michael and James Champy. Reengineering the corporation-A Manifesto for Business revolution, Nicholas Brealey Publishing ,London.- 1993
2. **finding and Implementing Best Practices-** Business Process Benchmarking, Champ ,Robert C. Vision Books , New Delhi – 2008

3. **World Class Manufacturing- A Strategic Perspective-**Sahay B S, Saxena K B C, Ashish Kumar,: MacMillan – India Ltd, ISBN 0333-93-4741.
4. **Six sigma for Managers**- TMH 2002,Greg Brue**,,** ISBN- 0-07-048639-5

REFERENCE BOOKS:

1. **Design for Six Sigma -**Grege, TMh 2003,ISBN 0-07-058120
2. **Creveling, Design for Six Sigmain Technology and Product Development** - Pearson Education – 2008.
3. **Total Quality Management** -Dale H. Besterfield,carol Besterfield-Minchna,glen H Besterfield and Mary Besterfield –scare, ,3rd edition Pearson education, ISBN 81-297-0260-6
4. **Total Quality Management** - Kesavan R - I K International Publishing house Pvt. Ltd - 2008

COMBINATORIAL OPTIMIZATION

Subject Code	:	10 IM 765	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART – A

UNIT - 1

CLASSIFICATION OF OPTIMIZATION THEORY: Unconstrained Problems – Necessary and Sufficient Conditions, The Newton – Raphson Method, Constrain Problems – Equality Constraints, Inequality Constraints.

6 Hours

UNIT - 2

NP HARD AND NP COMPLETE PROBLEMS: Basic concepts, Non deterministic Algorithms, The classes NP Hard and NP Complete, NP Hard Scheduling Problems – Scheduling Identical Processors, Flow Shop Scheduling, Job Shop Scheduling.

6 Hours

UNIT - 3

Review of graphs and network, review of computational complexity

6 Hours

UNIT - 4

Spanning Trees

6 Hours

PART - B

UNIT - 5

Shortest Path Algorithm, Minimum Cost Network Flows, Maximum Flow Algorithm

7 Hours

UNIT - 6

MATCHING ALGORITHM: Travelling Salesmen Problem, Postman Problems, Machine Scheduling Problem.

7 Hours

UNIT - 7

META HEURISTICS: Simulated Annealing, Tabu Search

7 Hours

UNIT - 8

GENETIC ALGORITHMS: What are Genetic Algorithms?, Robustness of Traditional Optimization and Search Methods, The Goals of Optimization, How are Genetic Algorithms Different from Traditional Methods? A Simple Genetic Algorithm, Genetic Algorithms at Work – a simulation by hand, Grist for the Search Mill – Important similarities, Similarity Templates (Schemata)

7 Hours

TEXT BOOKS:

1. **Optimization Algorithms for Networks and Graphs** – Jrevans and E Mineika, 1st Edition
2. **Genetic Algorithm** -David E Goldberg, -Pearson Education Asia. 2nd Edition
3. **Operations Research** -Hamdy A Taha – 7th Edn, Pearson Education.
4. **Fundamentals of Computer Algorithms** -Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran – Galgotia Publications. 1st Edition

REFERENCE BOOKS

1. **Operations Research** -Ravindran, Phillips and Solberg, Wiley International, 2nd edition
2. **Operation Research** -Hiller Leiberman — Holdenday / CBS Publishers 1994 Edn.
3. **Operations Research** -S.D. Sharma – Kedarnatth Ramanth & Co.2000

VIII SEMESTER

SUPPLY CHAIN MANAGEMENT

Subject Code	:	10IP/IM81	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

BUILDING A STRATEGIC FRAME WORK TO ANALYSE SUPPLY CHAINS: Supply chain stages and decision phases process view of a supply chain. Supply chain flows. Examples of supply chains. Competitive and supply chain strategies. Achieving strategic fit. Expanding strategic scope. Drivers of supply chain performance. Framework for structuring drivers – Inventory, Transportation, Facilities, Information. Obstacles to achieving fit. Case discussions.

7 Hours

UNIT - 2

DESIGNING THE SUPPLY CHAIN NETWORK: Distribution Networking – Role, Design. Supply Chain Network (SCN) – Role, Factors, Framework for Design Decisions.

6 Hours

UNIT - 3

FACILITY LOCATION AND NETWORK DESIGN: Models for facility location and capacity allocation. Impact of uncertainty on SCN – discounted cash flow analysis,

evaluating network design decisions using decision using decision trees. Analytical problems.

6 Hours

UNIT - 4

PLANNING AND MANAGING INVENTORIES IN A SUPPLY CHAIN: Review of inventory concepts. Trade promotions, Managing multi-echelon cycle inventory, safety inventory determination. Impact of supply uncertainty aggregation and replenishment policies on safety inventory. Optimum level of product availability; importance factors. Managerial levers to improve supply chain profitability.

7 Hours

PART - B

UNIT - 5

SOURCING, TRANSPORTATION AND PRICING PRODUCTS: Role of sourcing, supplier – scoring & assessment, selection and contracts. Design collaboration.

6 Hours

UNIT - 6

SOURCING, TRANSPORTATION AND PRICING PRODUCTS: Role of transportation, Factors affecting transportation decisions. Modes of transportation and their performance characteristics. Designing transportation network. Trade-off in transportation design. Tailored transportation, Routing and scheduling in transportation. International transportation. Analytical problems. Role Revenue Management in the supply chain, Revenue management for: Multiple customer segments, perishable assets, seasonal demand, bulk and spot contracts.

7 Hours

UNIT - 7

COORDINATION AND TECHNOLOGY IN THE SUPPLY CHAIN: Co-ordination in a supply chain: Bullwhip effect. Obstacles to coordination. Managerial levers to achieve co-ordination, Building strategic partnerships.

6 Hours

UNIT - 8

COORDINATION AND TECHNOLOGY IN THE SUPPLY CHAIN: The role of IT supply Chain, The Supply Chain IT framework, CRM, Internal SCM, SRM. The role of E-business in a supply chain, The E-business framework, E-business in practice. Case discussion.

4 Hours

EMERGING CONCEPTS: Reverse Logistics; Reasons, Activities, Role. RFID Systems; Components, applications, implementation. Lean supply chains, Implementation of Six Sigma in Supply Chains.

3 Hours

SUGGESTED TEXT BOOK:

Supply Chain Management – 2001, Strategy, Planning & Operation. Sunil Chopra & Peter Meindl; Pearson Education Asia, ISBN: 81-7808-272-1.

REFERENCE BOOKS:

Supply Chain Redesign – Transforming Supply Chains into Integrated Value Systems -Robert B Handfield, Ernest L Nichols, Jr., 2002, Pearson Education Inc, ISBN: 81-297-0113-8

Modelling the Supply Chain -Jeremy F Shapiro, Duxbury;, 2002, Thomson Learning, ISBN 0-534-37363

Designing & Managing the Supply Chain -David Simchi Levi, Philip Kaminsky & Edith Simchi Levi;; Mc Graw Hill

FACILITIES PLANNING AND DESIGN

Subject Code	:	10IP/IM82	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

PLANT LOCATION: Factors influencing plant location, Theories of plant location and location economics. **plant layout**-Objectives of plant layout, Principles of plant layout, types of plant layout, their merits and demerits facilities design function: Objectives, Types of Layout Problems.

7 Hours

UNIT - 2

MATERIAL HANDLING: Objectives and principles of Material handling, Unit load concept, classification of material handling equipment basic systems, different types of material handling equipments

6 Hours

UNIT - 3

PLANT DESIGN: Layout procedures: Immer, Nadler, Muther, Apple James and Reed's approaches, systematic layout planning, activity relationship chart, relationship Diagram, Space relationship diagram to plant layout

7 Hours

UNIT - 4

COMPUTERIZED LAYOUT PLANNING: CRAFT, COFAD, PLANET, CORELAP, ALDEP

6 Hours

PART - B

UNIT - 5

SPACE DETERMINATION AND AREA ALLOCATION: Factors for consideration in space planning, receiving, storage, production, shipping, tool room and tool crib, other auxiliary service actions, Establishing total space requirement, area allocation factors to be considered, expansion, flexibility, aisles column, area allocation procedure, the plot plan. Sequence demand Straight line and non directional methods

7 Hours

UNIT - 6

CONSTRUCTION OF THE LAYOUT: Methods of constructing the layout, evaluation of layout, efficiency indices, presenting layout to management

3 Hours

LOCATION MODELS: Single and Multi facility location models, Location allocation problems – quadratic assignment problems.

3 Hours

UNIT - 7

QUANTITATIVE APPROACHES TO FACILITIES PLANNING: Deterministic models single and multi facility location models, Location allocation problems – quadratic assignment problem, Warehouse layout models, plant location problems.

6 Hours

UNIT - 8

LAYOUT MODELS: Warehouse Layout Models, Waiting line models, Storage models – simple problems, Evaluation, selection and implementation of facilities plan

6 Hours

TEXT BOOKS:

- **Plant Layout and Material handling** -James M Apple, 2nd Edition, John, Wiely and Sons
- **Facility layout and Location** - Francies,R.L. and White,J.A., Mc Graw Hill 2nd edition

REFERENCE BOOKS:

- **Facilities Design** -Sunderesh Heragu, PWS Publishing Company, ISBN-0-534-95183.
- **Plant Layout Design** -James M Moore, Mac Millon Co.1962 LCCCN61- 5204

Elective IV (Group D)

ORGANIZATIONAL BEHAVIOUR

Subject Code	:	10IP/IM 831	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION: Definition of Organisation Behaviour and Historical development, Environmental context (Information Technology and Globalization, Diversity and Ethics, Design and Cultural, Reward Systems.

4 Hours

THE INDIVIDUAL: Foundation of individual behaviour, Ability

2 Hours

UNIT - 2

LEARNING: Definition, Theories of Learning, Individual Decision Making, classical conditioning, operant conditioning, social Making, learning theory, continuous and intermittent reinforcement.

6 Hours

UNIT - 3

PERCEPTION: Definition, Factors influencing perception, attribution theory, selective perception, projection, stereotyping, Halo effect.

6 Hours

UNIT - 4

VALUES AND ATTITUDES: Definitions – values, Attitudes: Types of values, job satisfaction, job involvement, professional Ethics, Organizational commitment, cognitive dissonance.

6 Hours

PART - B

UNIT - 5

MOTIVATION: Maslow's Hierarchy of Needs, Mc. Gregor's theory X and Y, Herzberg's motivation Hygiene theory, David Mc Cleland three needs theory, Victor vroom's expectancy theory of motivation.

7 Hours

UNIT - 6

THE GROUP: Definition and classification of groups, Factors affecting group formation, stages of group development, Norms, Hawthorne studies, group processes, group tasks, group decision making.

CONFLICT MANAGEMENT: Definition of conflict, functional and dysfunctional conflict, stages of conflict process.

7 Hours

UNIT - 7

LEADER SHIP: Definition, Behavioural theories – Blake and Mounton managerial grid, Contingency theories – hersey - Blanchard's situational theory, Leadership styles – characteristics, Transactional, transformation leaders.

8 Hours

UNIT - 8

THE ORGANIZATION: Mechanistic and Organic structures, Minitberg's basic elements of organization, Organizational Desings and Employee behaviour, organization development – quality of work life (QWL), Team building.

6 Hours

TEXT BOOKS:

1. **Organizational Behaviour**, Stephen P Robbins, 9th Edn, Pearson Education Publications, ISBN–81–7808–561-5
2. **Management of Organizational Behavious**, Paul Henry and Kenneth H. Blanchard, Prentice Hall of India, 1996.
3. **Organizational Behaviour** – Fred Luthans, 9th Edn, Mc Graw Hill International Edition, ISBN–0–07– 20412–1

REFERENCE BOOKS:

1. **Organisation Behaviour** – Hellriegel, Srocum and woodman, Thompson Learning, 9th Edition, Prentice Hall India, 2001
2. **Organizational Behaviour** – VSP Rao and others, Konark Publishers 2002.

KNOWLEDGE MANAGEMENT

Subject Code	:	10IP/IM 832	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

ESSENTIALS OF COMPUTING: Birth of Computing, Evolution of Modern Computing, What is data?, formation Processing, Information Technologies, Evolution of Information Systems, Evolution of Information Systems, Implementation of Organization, Organizational Learning, Traditional Organizational Information Systems, Moderns Organizational Information System, Deployment of Information System.

6 Hours

UNIT - 2

QUALITY, RE-ENGINEERING METHODOLOGIES AND BUSINESS PARADIGMS: Introduction, Industrial Evolution, Quality Methodologies, Control charts, Lot sampling, Process Capability, Value Analysis, Key Characteristics, Total Quality Management – Basic Principles, TQM Structure, Hoshin, TQM Tools, Six Sigma, Re-engineering Methodologies, Business Process Re-engineering, Artificial Intelligence – beginning, Advancements, Approaches, Neural Networks, Expert Systems, Branches of AI, Emerging Business Paradigms – e-business, classification, system, anwedungen, Produkte in der Datenverbeitung, e-business and knowledge Management, Knowledge Management – The information processing paradigm, Knowledge organization.

8 Hours

UNIT - 3

KNOWLEDGE MANAGEMENT – AN INSIGHT: Knowledge Management – Evolution, why now, Limitation of Existing initiatives, value of knowledge, Minimize effort duplication, sharing of best practices, enhanced innovation, imperatives,

Organizational knowledge management – The need, key benefits, key benefits parameters, Organizational benefits, core implementation areas, organizational performance, implementation responsibilities, core groups involved, organization barriers, key elements, Organizational knowledge management.

6 Hours

UNIT - 4

KNOWLEDGE MANAGEMENT – AN INSIGHT: The Drivers, Knowledge based driver, technology drivers, Intra – organizational drivers, process drivers, economic drivers, Knowledge Management – Future, Global knowledge economy – characteristics of the knowledge economy, policy implications, business implications, What is knowledge Management, Organizational Knowledge Management Approaches – management structure, funding, Organizational culture and enablers, Technology infrastructure, Organizational knowledge management strategies, Components and function, Learning organization – Knowledge sources, focus on products and processes, Documentation, knowledge dissemination, Organisational learning, value-chaining, skill development.

6 Hours

PART - B

UNIT - 5

ESSENTIALS OF KNOWLEDGE MANAGEMENT: Introduction, What is Knowledge? – Data, Information and Knowledge, Wisdom, basic Types of Knowledge, Organizational Knowledge management – types, Capital, classification, Knowledge life cycle, Sources, processes, Knowledge Conversion – Organizational knowledge progression, Organizational knowledge management – technology enablers, organizational intellectual / human capital organizational meta knowledge.

6 Hours

UNIT - 6

KNOWLEDGE MANAGEMENT TECHNIQUES, SYSTEMS AND TOOLS: Introduction, Organizational Knowledge creation – Knowledge networks, Organizational knowledge mapping techniques, core implementation issues, usage, Organizational knowledge spiral, Organizational Knowledge / capture – Implementation methodology, Knowledge Acquisition Tools, Organizational Knowledge indexing, processing, Document Management System, Database Management Systems Data warehouse, Knowledge Analysis – Data mining, On-line analytical processing, Organizational knowledge dissemination.

6 Hours

UNIT - 7

ORGANIZATION KNOWLEDGE MANAGEMENT ARCHITECTURE AND IMPLEMENTATION STRATEGIES: Introduction, Developing a KM Framework, Implementation Phases, Architectural Components, KM Systems Requirements, Tools, KM Systems Components – Implementation Strategies – Awakening phase, Actionable phase, Implementation phase, maintenance and measurement phase, Organizational Organic capabilities architecture – business, Information, Data, Systems, Computer,

Layered Knowledge. Organizational knowledge management architecture – key considerations, Organizational knowledge Repositories – structure, Life cycle, Organizational knowledge refineries, KM applications – Integrative application Interactive application, knowledge processing applicants management, composite application, organizational KM context, Organizational platforms – Enterprises information portals, competitive advantages, enterprise knowledge portal, characteristics, Organizational knowledge measurement framework - Awakening stage, actionable phase, implementation phase, Support phase, Organizational deployment, Organisational knowledge Measurement Techniques – Intangible Assets measurement, intangible Assets Monitor, balanced Scorecard, organizational implementation barriers.

8 Hours

UNIT - 8

K-CAREERS: Introduction, Knowledge Management roles, New organizational roles, Organisational k-role classification, Knowledge management job opportunities – knowledge job approach, generic role requirements, role description, Knowledge architect, Knowledge strategist, Knowledge manager, Research analyst / manager, knowledge management consultant, media specialist, senior market intelligence librarian, ontologies / knowledge engineer, knowledge management specialist, intranet developer / knowledge management content developer, knowledge management director, director of ontologies, ontologist (biological domain), natural language processing specialist (medical/biomedical), knowledge development manager.

6 Hours

TEXT BOOK:

1. **Knowledge Management -**Sudhir Warier, Vikas Publishing House, ISBN: 81-259-1363-7.

REFERENCE BOOK:

1. **Hand book on Knowledge Management -**C W Holsapple, Springer, 2003 Porter M
2. **Management Toolkit**: Practical Techniques for Building a Knowledge Management System, Prentice Hall, 1999
3. **An investigation of Knowledge Management characteristics-** Joshi K exington, KY, 1998

DESIGN OF EXPERIMENTS

Subject Code	:	10IP/IM 833	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION: History of quality engineering: Japan versus U.S. track records. Taguchi Approach to Quality: Definition of quality. Loss function. Off-line and on-line quality control. Taguchi's quality philosophy.

6 Hours

UNIT - 2

BASIC DESIGNS: Completely Randomised Design, Randomised Block Design, Latin Square Designs, one way analysis of variance and two way analysis of variance.

6 Hours

UNIT - 3

FACTORIAL EXPERIMENTATION -TWO LEVELS: Full Factorial Designs: Experimentation as a learning process. Traditional scientific experiments. Two-factor design. Four-factor design, Replicating experiments. Factor interactions.

6 Hours

UNIT - 4

FACTORIAL EXPERIMENTATION-EIGHT AND SIXTEEN RUN EXPERIMENTS: Fractional factorial designs based on eight-run experiments, Folding over an eight run and sixteen – run experiment

6 Hours

PART - B

UNIT - 5

CONSTRUCTING ORTHOGONAL ARRAYS: Counting degrees or freedom, selecting a standard orthogonal array, dummy level technique, and compound factor method. Linear graphs and interaction assignment. Modification of linear graphs, column merging method, branching design. Strategy for constructing an orthogonal array. Comparison with the classical statistical experiment design.

7 Hours

UNIT - 6

STEPS IN ROBUST DESIGN: Case study discussion. Noise factors and testing conditions. Quality characteristics and objective functions. Control factors and their levels. Matrix experiment and data analysis plan. Conducting the matrix experiment, data analysis, verification experiment and future plan.

7 Hours

UNIT - 7

SIGNAL-TO-NOISE RATIO FOR STATIC PROBLEMS: Evaluation of sensitivity to noise. S/N ratios for Smaller-the-better, Larger-the-better, Nominal-the-best and Asymmetric Cases

7 Hours

UNIT -8

SIGNAL-TO-NOISE RATIO FOR DYNAMIC PROBLEMS: S/N ratios for Continuous-continuous, continuous-digital, digital-continuous, digital-digital cases. Introduction to Taguchi Inner and Outer Arrays

7 Hours

TEXTBOOKS:

Quality Engineering Using Robust Design - Madhav S. Phadke, Prentice Hall PTR, Englewood Cliffs, New Jersey 07632.

Design of Experiments - D.C. Montgomery, John Wiley and Sons, 2002.

REFERENCE BOOK:

1. **Designing for Quality** - Robert H. Lochner and Joseph E. Matar, - an Introduction Best of Taghuchi and Western Methods or Statistical Experimental Design", Chapman and Hall Madras, 2nd edition.

ADVANCED OPERATIONS RESEARCH

Subject Code	:	10IP/IM 834	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

LINEAR PROGRAMMING: Two phase simplex method, Revised simplex algorithm and its applications.

6 Hours

UNIT - 2

ADVANCED LINEAR PROGRAMMING: Sensitivity analysis, Integer Programming –graphical technique and Gomory's technique.

7 Hours

UNIT - 3

SPECIAL TYPE OF LPP: Solutions of Assignment and Travelling salesman problems using Branch and Bound Approach.

GOAL PROGRAMMING: Introduction and simple formulation.

6 Hours

UNIT - 4

NON-LINEAR PROGRAMMING: Kuhn – Tucker conditions, QPP - solution using Wolfes algorithm

6 Hours

PART - B

UNIT - 5

DYNAMIC PROGRAMMING: Characteristics and DP model, Computational procedure -Simple problems only

6 Hours

UNIT - 6

ADVANCED CPM TECHNIQUES: CPM - Elements of crashing, least cost project scheduling. Flow in networks; Determination of shortest route, Determination of Maximum flow through the networks, Minimal Spanning Tree. Resource Allocation for optimal utilisation of resources

8 Hours

UNIT - 7

QUEING THEORY: M/Ek/1, M/D/1, M/M/C and MG1

6 Hours

UNIT - 8

MARKOV CHAINS: Discrete Stochastic Process, Markovian process, Stationary Markov chains, Markov diagrams, Ergodic and Absorbing Markov chains, Steady State probabilities, stochastic matrix, transition m, matrix and their applications.

7 Hours

TEXT BOOKS:

Introduction to Operation Research -Taha H A, Prentice Hall of India, 6th edition, 1999

Principles of Operations Research theory and Practice -Philips, Ravindram and Soleberg-– Theory and Practice, PHI, 2nd Edition, 2007

REFERENCE BOOKS:

Introduction to Operation Research -Hiller and Libermann, McGraw Hill 5th edn.

Operations Research -S.D. Sharma – Kedarnath, Ramnath &Co, 1996

DATA BASE MANAGEMENT SYSTEM

Subject Code	:	10IP/IM 835	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

DATABASES AND DATABASE USERS: Introduction, characteristics of data base approach, intended uses of a DBMS, advantages and implication of database approach.

2 Hours

DATABASE SYSTEMS CONCEPTS AND ARCHITECTURE: Data models, Schemas and instances, DBMS architecture and data independence, database languages and interfaces, database system environment, classification of data base management systems.

5 Hours

UNIT - 2

DATA MODELING: High level conceptual data models for database design. Entity types, entity sets, attributes, and keys. Relationships, relationship types, roles, and structural constraints. Weak entity types. ER diagrams

6 Hours

UNIT - 3

RECORD STORAGE AND PRIMARY FILE ORGANIZATIONS: Secondary storage devices, buffering of blocks, placing file records on disk, operations on files, heap files and sorted files, hashing techniques.

6 Hours

UNIT - 4

INDEX STRUCTURE OF FILES: Single-level and multilevel ordered indexes, dynamic multi level indexes using B-trees and B+trees.

6 Hours

PART - B

UNIT - 5

RELATIONAL DATA MODEL AND RELATIONAL ALGEBRA: Brief discussion on **Codd** rules, relational model concepts, constraints, and schemas. Update operation on relations, basic and additional relational algebra operations, and queries in relational algebra.

Structured Query Language (SQL): Data definition etc. in SQL2. Basic and complex queries in SQL. Insert, delete, update statements, and views in SQL, embedded SQL.

9 Hours

UNIT - 6

DATABASE DESIGN: Design guidelines for relational schemes, functional Dependencies, normalization -1st, 2nd, 3rd, 4th, and 5th normal forms. Database design process, factors influencing physical database design guidelines, and guidelines for relational systems.

6 Hours

UNIT - 7

SYSTEM IMPLEMENTATION: System catalog for RDBMSs, transaction processing and system concepts, properties of transactions, brief discussion on concurrency, control and recovery techniques, database security and authorization.

6 Hours

UNIT - 8

BRIEF DISCUSSION ON: Distributed databases, Objected oriented databases, next generation databases, and interfacing with other technologies.

6 Hours

TEXT BOOKS:

1. **"Fundamentals of database systems"-**Ramez Elmasri and Shamkanth B. Navathe, , 6th Edition, Addison Wesley Publishing Company.

2. **"Database Management System",** -Raghu Ramakrishnan and Johannes Gehrke, 3rd Edition, TATA McGraw Hill, ISBN 0-07-1231511

REFERENCE BOOKS:

1. **Modern Data base management** - Mc Lfadden, hoffer, Prescott
2. **Database Management Design -** Gary W. Hansen and James V. Hanesn, "and" 2nd Edition, PHI Pvt. Ltd.

STRATEGIC MANAGEMENT

Subject Code	:	10IM 836	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

STRATEGIC MANAGEMENT INTRODUCTION: Definition- Levels of strategy- Roles of Strategist- Strategic Management Process benefits and limitations. Mission- Objectives -Social responsibilities.

6 Hours

UNIT - 2

STRATEGY FORMULATION: Strategic Thinking, SWOT analysis- Techniques for environmental analysis- TOWS matrix, Balanced Score Card, Steps in strategy implementation -formulation of SBU strategy.

6 Hours

UNIT - 3

STRATEGY FORMULATION: Leadership implementation communicating the strategy- Annual and Functional objectives- Development of policies- Organisational Implementation- Evaluation and control. reward system.

7 Hours

UNIT - 4

STRATEGY AND STRUCTURE: Strategy- Structure relationship. Organizational restructuring and Transformation, Principles of Organization.

6 Hours

PART - B

UNIT - 5

STRATEGY EVALUATION AND CONTROL: Strategic control- Premise and Implementation control strategic Surveillance special alert control- Operational control- Steps in Operational Control, Types of Operational control.

7 Hours

UNIT - 6

PORTFOLIO STRATEGY: Business portfolio analysis- BGC matrix, GE multi matrix, an evaluation of Portfolio models - factors influencing portfolio strategy.

6 Hours

UNIT - 7

COMPETITIVE ANALYSIS AND STRATEGIES: Structural analysis of industries threat of entry rivalry among existing competitors, threat of substitutes; Bargaining power of suppliers; structural analysis and competitive strategy -competitor analysis value chain.

7 Hours

UNIT - 8

BUSINESS GROWTH: Reasons, Risks and indicators of Business growth- Mergers and acquisitions. Management of M& A, determination of strategic purpose; screening, evaluation and choice, pitfalls in M&A, Defence strategies.

GLOBALIZATION: Meaning and Dimensions, Globalization of Indian business, Barriers to change, Implementation of marketing and change.

7 Hours

TEXT BOOKS:

1. **Strategic Management** - Francis Cherunilam, Himalya Publishers,
2. **Business Policy and Strategic Management** - Azhar Kazmi, 2nd Edn, Tata McGraw Hill
3. **Strategic Management**, Michael Porter, Prentice-Hall, 1984

REFERENCE BOOKS:

1. **Business Policy and Strategic Management** -P Subba Rao, Himalya Publishers 1st Edition
2. **Corporate Strategic Management** -R.M.Srivastava, Pragati Prakashan , Meerut 1st Edition
3. **Strategic Management** – Robert A Pitts and David Lei, Vikas Publishing House 1st Edition
4. **Business Environment for Strategic Management** - K.Aswantappa, Himalaya Publishers 1st Edition

Elective V (Group E)

ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS

Subject Code	:	10IP/IM841	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

ARTIFICIAL INTELLIGENCE: Introduction, definition, underlying assumption, important of AI, AI & related fields State space representations, defining a problem, production systems and its characteristic, search and control strategies – Introduction, preliminary concepts, examples of Search problems.

6 Hours

UNIT - 2

UNIFORMED OR PRELIMINARY CONCEPTS: Examples of search problems, Uniformed or Blind Serach, Informed Search, Or Graphs, Heuristic Search techniques – Generate and Test, Hill climbing, best first search, problem reduction, constraint satisfaction, Means – Ends Analysis.

8 Hours

UNIT - 3

KNOWLEDGE REPRESENTATION ISSUES: Representations and Mapping, Approaches, Issues in Kr, Types of Knowledge procedural Vs Declarative, Logic

programming, Forward Vs Backward reasoning, Matching, Non monotonic reasoning and it logic.

6 Hours

UNIT - 4

USE OF PREDICATE LOGIC: Representing simple facts, Instance and is a relationships, Syntax and Semantics for Propositional logic, FOPL, and properties of Wffs, conversion to causal form, Resolution, Natural deduction

6 Hours

PART - B

UNIT - 5

STATISTICAL AND PROBABILISTIC REASONING: Symbolic reasoning under uncertainly, Probability and Bayes' theorem, Certainty factors and Rule based systems, Bayesian Networks, Dempster – Shafer Theory, Fuzzy Logic

8 Hours

UNIT - 6

EXPERT SYSTEMS: Introduction, Structure and uses, Representing and using domain knowledge, Expert system shells. Pattern recognition, Introduction, Recognition and classification process, Learning classification Patterns, Recognizing and Understanding Speech.

6 Hours

UNIT - 7

INTRODUCTION TO KNOWLEDGE ACUQISTION: Types of learning, General learning model, and performance measures.

6 Hours

UNIT - 8

TYPICAL EXPERT SYSTEMS: MYCIN, Variants of MYCIN, PROSPECTOR, DENDRAL, PUFF etc.

INTRODUCTION TO MACHINE LEARNING: Perceptons, Checker Playing examples, Learning, Automata, Genertic Algorithms, Intelligent Editors.

6 Hours

TEXT BOOKS:

1. **Artificial intelligence** – Elaine Rich & Kevin Knight, M/H 1983.
2. **Artificial intelligence in business, Science & Industry** – Wendry B.Ranch, Vol II application, Ph 1985.
3. **A.guide to expert sysems** – waterman, D.A., Addison – wesley inc. 1986.

4. **Building expert systems** – Hayes, Roth, Waterman, D.A (ed), AW 1983.
5. **Designing expert sysems** – weis, S.M. and Kulliknowske, London Champion Hull 1984.

JUST IN TIME MANUFACTURING

Subject Code	:	10IP/IM 842	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART – A

UNIT - 1

JIT-AN INTRODUCTION: Speed of JIT movement, the new production system research association of Japan, some definitions of JIT, core Japanese practices of JIT, creating continuous manufacture, enabling JIT to occur, basic element of JIT, benefits of JIT.

6 Hours

UNIT - 2

MODERN PRODUCTION SYSTEM: Key feature of Toyota's production system, basic framework of Toyota production system. **KANBAN SYSTEM –** other types of kanban's, kanban rules, adapting to fluctuations in demand through kanban, whirligig, determining the number of kanban's in Toyota production system, detailed kanban system example, supplier kanban and the sequence schedule for use by suppliers.

6 Hours

UNIT - 3

PRODUCTION SMOOTHING IN TOYOTA PRODUCTION SYSTEM: production planning, production smoothing, adaptability to demand fluctuations, sequencing method for the mixed model assembly line to realize smoothed production, Criticism of Toyota

production system by the communist party of Japan. EDP system for support of the Toyota Production system. Shortening lead time in Toyota Production system – reducing the setup time. Automation in Toyota production system, some comparisons with other manufacturers.

6 Hours

UNIT - 4

GLOBAL IMPLEMENTATION OF JIT: JIT in automotive industry, JIT in electronics, computer, telecommunication and instrumentation, JIT in process type industry, JIT in seasonal demand industry, other manufacturing industries, JIT in service and administrative operations, conclusion.

6 Hours

PART - B

UNIT - 5

JIT IMPLIMENTATION SURVEYS: JIT implementation in US manufacturing firms-analysis of survey results, just in time manufacturing industries, just in time production in West Germany, just in time production in Hong Kong electronics indu8stry, conclusion.

6 Hours

UNIT - 6

DESIGN, DEVELOPMENT AND MANAGEMENT OF JIT MANUFACTURING SYSTEMS: plant configurations and flow analysis for JIT manufacturing, comparison of JIT's "demand pull" system with conventional "push type" planning and control systems, quality management system for JIT, product design for JIT human resource management in JIT, flexible workforce system at Toyota, creation and maintenance of teams for JIT, union organization and conduct of industrial relations in JIT, interface of JIT with advanced manufacturing technology, assessing performance in JIT manufacturing systems, product costing information systems in JIT manufacturing, an example of overhead allocation in JIT, potential for developing countries, potential for small manufacturing.

9 Hours

UNIT - 7

SUPPLY MANAGEMENT FOR JIT: JIT purchasing-the Japanese way, some studies in JIT purchasing, experience of implementation organizations, surveys of JIT purchasing, buyer-seller relationship in JIT purchasing, Quality certification of suppliers in JIT purchasing, some problems in implementation of JIT purchasing, reduction freight costs in JIT purchasing, monitoring supplier performance for JIT purchasing, audit in JIT purchasing, implementation of JIT to international sourcing, frequency of shipments, inventory policy, supplier reaction capability, quality, communication sole sourcing, delivery performance and supplier flexibility, conclusion.

7 Hours

UNIT - 8

FRAMEWORK FOR IMPLEMENTATION OF JIT: Implementation risk, risks Due to inappropriate understanding of JIT, risks due to technical, operational and people problems, risks associated with kanban system, some important activities to be performed during implementation, steps in implementation, a project work to approach to implementation, conclusion.

6 Hours

TEXT BOOKS:

1. **Just In Time Manufacturing** - M.G. Korgaonker,", Macmillan India Ltd.- 1992,
2. **Japanese Manufacturing Techniques -** Richard J. Schonberger," The Free Press – Macmillan Pub. Co., Inc. New York - 1988.

AUTOMATION IN MANUFACTURE

Subject Code	:	10IP/IM843	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

Unit 1

Introduction: Definition of Automation, Reasons for Automation, Arguments for and against Automation, Manufacturing industries, Types of Productions, Functions in Manufacturing, Organization & Information processing in Manufacturing.

6 Hours

Unit 2

Production concepts & Mathematical Models: MLT, Components of operation time, Capacity, Utilization, Availability, WIP, Automation Strategies. (Including numerical)

7 Hours

Unit 3

Production Cost Analysis, Methods of Evaluating Investment Alternatives: Costs in Manufacturing, Break-even Analysis, Unit Cost of Production, Cost of Manufacturing Lead Time & Work-in-process, Other Difficult-to-quantify Factors.

7 Hours

Unit 4

Detroit-type of Automation: Automated Flow Lines, Methods of Work part Transport, Transfer Mechanism, Buffer Storage, Control Functions, Automation for Machining Operations, Design & Fabrication Considerations.

6 Hours

PART - B

Unit 5

Analysis of automated flow lines: General Terminology & Analysis, Analysis of Transfer Lines without storage, Partial Automation, Automated Flow Lines with storage buffers, Computer simulation of Automated Flow Lines.

7 Hours

Unit 6

Analysis of assembly systems & Line Balancing: The assembly process, Assembly Systems, Manual Assembly Lines, Line balancing problem, Methods of line balancing, Computerized Line Balancing Methods, Other ways to improve line balancing, Flexible Manual Assembly Lines, Design for automated assembly, Types of automated assembly systems, Parts feeding devices, Analysis of multi station assembly machines, Analysis of single station assembly machine.

7Hours

Unit 7

Automated Material Handling and Storage Systems: The Materials Handling Function, Types of material handling equipments, Analysis for Material Handling Systems, Design of systems, Conveyor systems, Automated guided vehicle systems, Storage system performance, Automated storage & retrieval system, Carousal storage system, Work in process storage, Interfacing handling & storage with manufacturing.

6 Hours

Unit 8

Automated inspection and Testing, Inspection & Testing: Statistical quality control, Automated inspection principles & methods, Sensor technologies for automated inspection, Co-ordinate measuring machines, other contact inspection methods, Machine vision, Optical inspection methods, Non-Contact inspection methods.

6 Hours

TEXT BOOKS:

Mikell P. Groover – **Automation Production Systems and Computer Integrated Manufacturing**, PHI, New Delhi - 2003.

REFERENCE BOOKS:

1. Mikell P. Groover and Emory W. Zimmers - **CAD/CAM**, PHI, New Delhi - 2003.
2. Pressman and Williams **- Numerical Control and Computer aided Manufacture**,
PHI – 1991.

DECISION SUPPORT SYSTEMS

Subject Code	:	10IM844	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

DECISION SUPPORT SYSTEMS: An Overview, Opening Vignette: Evaluating the Quality of Journals in Hong Kong, DSS Configuration, What is a DSS? Characteristics and Capabilities, Components of DSS, The Data Management Subsystem.

6 Hours

UNIT - 2

DECISION SUPPORT SYSTEMS: The Model Management Subsystem, The Knowledge-Based Management Subsystem, The User Interface (Dialog) Subsystem, The User, DSS Hardware, Distinguishing DSS from Management Science and MIS, DSS Classifications.

7 Hours

UNIT - 3

DATA WAREHOUSING, ACCESS, ANALYSIS, MINING AND VISUALIZATION: Opening Vignette: OBI Makes the best out of the Data Warehouse,

Data Warehousing, Access, Analysis and Visualization, The Nature and Sources of Data, Data Collection, Problems and Quality, The Internet and Commercial Database Services.

6 Hours

UNIT - 4

DATA WAREHOUSING, ACCESS, ANALYSIS, MINING AND VISUALIZATION: Database management Systems in DSS, Database Organization and Structures, Data Warehousing, OLAP: Data Access, Querying and Analysis, Data Mining, Data Visualization and Multidimensionality, Geographic Information Systems and Virtual Reality, business Intelligence and the Web.

7 Hours

PART - B

UNIT - 5

MODELING AND ANALYSIS: Opening Vignette: Dupont Simulates Rail Transportation System and Avoids Costly Capital Expense, Modeling for MSS, Static and Dynamic Models, Treating Certainty, Uncertainty and Risk, Influence Diagrams, MSS Modeling in Spreadsheets.

6 Hours

UNIT - 6

MODELING AND ANALYSIS*:* Decision analysis of a few alternatives (decision tables and decision trees), Optimization via Mathematical Programming, Heuristic Programming, Simulation, Multidimensional Modelling – OLAP, Visual Interactive Modeling And Visual Interactive Simulation, Quantitative Software Package – OLAP,. Model Base Management.

7 Hours

UNIT - 7

DECISION SUPPORT SYSTEM DEVELOPMENT: Opening Vignette: Osram Sylvania Thinks Small, Strategizes Big Develops the Info Net HR Portal System, Introduction to DSS Development, The Traditional System Development Life Cycle, Alternate Development Methodologies, Prototyping:

6 Hours

UNIT - 8

DECISION SUPPORT SYSTEM DEVELOPMENT: The DSS Development Methodology, DSS Technology Levels and Tools, DSS Development Platforms, DSS Development Tool Selection, Team – Developed DSS, End User-Developed DSS, Developing DSS: Putting the System Together, DSS Research Directions and the DSS of the Future.

7 Hours

TEXT BOOK:

1. **Decision Support Systems and Artificial Intelligence, -** Efraim Turban, Jay E Aronson, 6th Edn, Pearson Education, ISBN – 81-7808-367-1

RELIABILITY ENGINEERING

Subject Code	:	10IM845	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

INTRODUCTION: Concepts, terms, and definitions of reliability and related performance measure, Terminology in reliability, Failure rate, MTBF, Life test, importance of reliability, definition, meaning of adequate performance, reliability-engineering Programme and its scope, Typical applications.

6 Hours

UNIT - 2

RELIABILITY MANAGEMENT: Reliability goals & policies, economics of reliability, reliability data Collection.

COMPONENT LIFE: Failure distribution function, reliability function and hazard rate function, interrelationships, MTTF, MTBF, bath tub curve (Mortality curve), conditional reliability function, constant and time dependant failure models.

PRACTICAL FAILURE PATTERNS: Failure behaviour of mechanical, electrical, electronic parts, common failure distribution.

7 Hours

UNIT - 3

COMBINATORIAL RELIABILITY (RELIABILITY OF SYSTEMS): Reliability analysis of systems: (Success-Failure models only) Analysis of Series, parallel, series parallel and parallel series configurations. R out of n configurations, redundancy improvement factor, stand by systems.

7 Hours

UNIT - 4

TECHNIQUES FOR COMPLEX SYSTEMS RELIABILITY EVALUATION: Inspection methods, event space methods, path tracing methods, decomposition methods, cut set methods, tie set methods.

6 Hours

PART - B

UNIT - 5

DESIGN FOR RELIABILITY: System effectiveness measures and life cycle cost analysis, reliability allocation, methods for reliability in design, failure analysis, systems safety and fault tree analysis, multistate model. Failure mode effect and criticality analysis.

6 Hours

UNIT - 6

MARKOV MODELS FOR SYSTEM RELIABILITY: Reliability analysis of state dependent systems, Markov analysis, stand by system analysis, Load sharing systems.

6 Hours

UNIT - 7

MAINTENABILITY AND AVAILABILITY: Analysis of Down time, Repair Time distributions, maintainability, Maintenance increment, Design for maintainability. Availability analysis, Different forms of availability, system availability analysis, mission availability, Availability of stand by system.

6 Hours

UNIT - 8

ANALYSIS FAILURE DATA: Types of life testing, data collection, Empirical methods, Estimation of Static life, types of life testing: Development of confidence intervals, acceptance test procedures for life estimation using exponential, weibull and Gamma distribution models. Sequential life tests and acceptance criteria.

APPLICATION AND CASE STUDIES: Case example involving redundancy, burning tests, preventive maintenance analysis. Repairable system analysis, Software reliability.

8 Hours

TEXT BOOKS:

Concepts of Reliability Engineering -L. S. Srinath,.-Affiliated East West Press Pvt Ltd,2nd edn

Reliability Engineering -Dr. Balaguru Swamy - –Tata McGraw Hilll, Fourth Edition 2003

An introduction to Reliability and Maintainability -Charles E Ebeling –TMH, Edition 2000.ISBN 0-07-042138-2

REFERENCES BOOKS:

Reliability Hand Book – Ireson and Grant -1995

Mathematical Theory of Reliability and Mathematics – Barlow and Proschan, 1st edition.

Probability Reliability & Engineering approach-Shooman-1976.

Practical Reliability Engineering – Patrick D.T.O – John Wiley and Sons – 2002.

Introduction to Reliability Engineering – E E Lewis – John Wiley & Sons, 2nd edition.

Reliability Technology - J S Gurjar- I K International Publishing house Pvt. Ltd, 1991

DATA WAREHOUSING AND MINING

Subject Code	:	10IM 846	IA Marks	:	25
No. of Lecture Hrs./ Week	:	04	Exam Hours	:	03
Total No. of Lecture Hrs.	:	52	Exam Marks	:	100

PART - A

UNIT - 1

OVERVIEW AND CONCEPTS: Need for Data Warehousing, Basic Elements of Data Warehousing, Trends in Data Warehousing**.**

Planning and Requirements

Project planning and management, collecting the requirements.

7 Hours

UNIT - 2

ARCHITECTURE AND INFRASTRUCTURE: Architectural components, Infrastructure and metadata.

6 Hours

UNIT - 3

DATA DESIGN AND DATA REPRESENTATION: Principles of dimensional modeling. Dimensional modelling advanced topics, data extraction, transformation and loading, data quality.

8 Hours

UNIT - 4

INFORMATION ACCESS AND DELIVERY: Matching information to classes of users, OLAP in data warehouse, Data warehousing and web.

Implementation and Maintenance

Physical design process, data warehouse deployment, growth and maintenance.

7 Hours

DATA MINING
PART - B

UNIT - 5

INTRODUCTION: Basics of data mining, related concepts, Data mining techniques.

6 Hours

UNIT - 6

DATA MINING ALGORITHMS: Classification, Clustering.

6 Hours

UNIT - 7

DATA MINING ALGORITHMS: Association rules.

6 Hours

UNIT - 8

KNOWLEDGE DISCOVERY: KDD process.

Web Mining

Web content mining, Web structure mining and Web usage mining.

6 Hours

TEXT BOOKS:

1. **Data Warehousing Fundamentals -** Paulraj Ponnian, John Wiley.- 1st edition
2. **Data Mining Introductory and advanced Topics -** M.H. Dunham, Pearson education – 2002.
3. **Data mining concepts and techniques -** Han, Kamber, 2nd edition

REFERENCES BOOKS:

1. **The Data Warehouse Lifecycle Toolkit -** Ralph Kimball, John Wiley, 2nd edition.
2. **Mastering Data Mining** - M Barry and G. Linoff, John Wiley., 1st edition.
3. **Building the Data warehouses** - W. H. Inmon, Wiley Dreamtech., 1st
4. **The Data Warehouse Toolkit -** R. Kimball, John Wiley., 2nd edition.
5. **Decision Support and Data warehouse systems -** E.G. Mallach, TMH.- 2000.