

Annexure No.	31 L
SCAA Dated	29.02.2008

BHARATHIAR UNIVERSITY: COIMBATORE - 641 046.
MCA (MASTER OF COMPUTER APPLICATIONS)
For School of Distance Education (Effective from 2007-2008)
Scheme of Examinations

Year	Paper	SUBJECT AND PAPER	UNIVERSITY EXAMINATION	
			Duration in Hrs.	Max. Marks
I	I	Computer Organization and Architecture	3	100
	II	Problem solving in C and Data Structures	3	100
	II	Relational Database Management System	3	100
	IV	Analysis & Design of Information systems	3	100
	V	Operating System	3	100
		Practical I - Problem solving in C & Data Structure Lab	3	100
		Practical II - RDBMS Lab	3	100
II	VI	OOPS using C++ & Java Programming	3	100
	VII	Computer Networks	3	100
	VIII	Software Engineering	3	100
	IX	Visual Programming	3	100
		Elective – I	3	100
		Practical III - C++ & Java Programming Lab	3	100
		Practical IV - Visual Programming Lab	3	100
III	X	Software Testing	3	100
	XI	Data Mining & Warehousing	3	100
		Elective - II	3	100
		Practical V - Software Testing Lab	3	100
		Project Work and Viva Voce (150 + 50)	--	200
		Total		2000

ELECTIVES FOR SECOND YEAR**ELECTIVE – I**

- E.1.1. E-Commerce
- E.1.2. Client /Server Technology
- E.1.3. Multimedia and its applications

ELECTIVES FOR THIRD YEAR**ELECTIVE – II**

- E.2.1 Software Project Management
- E.2.2 WAP & XML
- E.2.3. Digital Image Processing

**FIRST YEAR
PAPER I**

Subject Title : COMPUTER ORGANIZATION AND ARCHITECTURE

Subject Description :

This Course presents the Number systems, Boolean algebra and digital logic, Combinational and sequential circuits. Representations of data and instructions. Major components of computer systems and memory organization.

Goals :

To enable the students to learn the basic functions of computer organization and architecture.

Objectives :

On successful completion of the course the students have

- Learn the number systems.
- Learn the design of combinational and sequential circuits.
- Learn the representation of and operations on basic data types.
- Learn the architecture and organization of digital computing systems.

Contents

UNIT-I

Number systems: Binary, Decimal, Octal, and Hexadecimal -Conversion from one to another – Complements – Binary codes.

Basic Logic Gates – Basic Theorems and Properties of Boolean algebra NAND, NOR implementation – Sum of products- Product of Sums – Karnaugh map – Tabulation Method – Don't Care conditions.

UNIT-II

Combinational Logic Circuits Design: Multiplexers – Demultiplexers – Decoders – Encoders – Half Adder – Full Adder – Subtractor – Parallel Adders.

Flip-flops: RS, D, JK Flip-flops – Registers – Shift Registers – Ripple Counters – Synchronous counters.

UNIT-III

Register Transfer and Micro Operations: Arithmetic circuits – Logic Circuit – Shift Circuits – Arithmetic logic shift unit – Stack organization – Instruction formats – Addressing modes – Data transfer, Manipulation and program control instructions.

UNIT-IV

Input – Output organization: Peripheral Devices – Input – Output interface – Asynchronous Data Transfer (Strobe & Handshaking Method) – Modes of Transfer – Priority interrupt – DMA – IOP.

UNIT-V

Memory organization: Memory Hierarchy – Main memory – Auxiliary memory – Associative memory – Cache Memory – Virtual Memory.

REFERENCE BOOK

1. Morris Mano, "Digital Logic and Computer Design", PHI.
2. Morris Mano, "Computer system architecture", Third Edition, Pearson education.
3. Albert Paul Malvino, Donald P. Leach, "Digital Principles and applications", Tata Mc Graw Hill Pub, Company Ltd.
4. J.P. Hayes "Computer Architecture and organization" Tata Mc Graw Hill Pub, Company Ltd.,
5. William Stallings, "Computer Organization & Architecture – Designing for performance", Pearson Education, Sixth edition.

PAPER II

Subject Title : PROBLEM SOLVING IN C AND DATA STRUCTURES

Subject Description :

This course presents the Introduction to C Programming, operators, and expressions; Program Control, Functions, Arrays, Pointers, Characters and Strings, Formatted Input/Output, Structures, Unions, Bit Manipulations, Enumerations, File Processing. Introduction to Data Structures, Stack and Queue algorithms, algorithms for searching, sorting, and manipulation of data structures.

Goals :

To enable the to write their own data structures and access methods using a variety of design techniques, in C programming.

Objectives :

On successful completion of the course the students should have

- To gain experience in the C programming language
- Compile and execute a C program in a programming environment
- Debug C programs
- To be able to apply the concepts data structures in C programming

Contents :

UNIT-I

An overview of C - data types and sizes - declarations - variables - constants - Operators - Expressions - Storage classes - Program control structures - Loop control structures - C formatted Input/Output - Arrays - Strings.

Function - Function Arguments - Function prototype - Recursion - Structure - Unions - Bit Manipulations and Enumerations - Self-Referential Structures - Dynamic Memory Allocation.

UNIT - II

Pointers - Introduction - Pointer and Arrays - Pointers and Strings - Pointer and Structures - Pointers and Data structures- File processing.

UNIT-III

Introduction: Introduction of algorithms, Analyzing Algorithms. **Arrays:** Sparse Matrices - Representation of arrays. Stacks and Queues. Fundamentals - Evaluation of expression Infix to Postfix Conversion - Multiple Stacks and Queues - Perform Analyze the algorithms.

UNIT - IV

Linked List: Singly Linked List - Linked Stacks and Queues - Polynomial Addition - More on Linked List - Sparse Matrices - Doubly Linked List and Dynamic - Storage Management - Garbage Collection and Compaction. **Trees:** Basic Terminology - Binary Trees - Binary Tree Representations - Binary Trees - Traversal - More on Binary trees - Threaded Binary Trees - Binary Tree Representation of Trees - Council Binary Trees. **Graphs:** Terminology and Representation - Traversals, Connected Components and Spanning Trees - Shortest Paths and Transitive Closure -Perform Analyze the Algorithms.

UNIT - V

Internal Sorting: Insertion Sort – Quick Sort – 2 Way Merge Sort – Heap Sort – Shell Sort – Sorting on Several Keys. **External Sorting:** Storage Devices – Sorting with Disks : K-Way Merging – Sorting with Tapes – Perform Analyses the Algorithms.

REFERENCE BOOK

1. Yeswanth Kanetkar, “Let us C”
2. Yeswanth Kanetkar, “Pointers in C”
3. Ellis Horowitz & Sartaj Shani, "Data and File Structures", Galgotia Publication.
4. Ashok N.Kamthane, “Programming with ANSI and Turbo C”. Pearson Education Asia, 2003.
5. E. Balagurusamy, 'Programming in ANSI C',Tata McGraw Hill.
6. Deitel & Deitel, “C How to program”, Third Edition, Pearson Education Asia.
7. Mark Allen Weiss, “Data Structure and Algorithm Analysis in C”, Pearson Education Asia, Second Edition.
8. Robert Kruse, C.L.Jondo, Bruce Leung, “Data Structure and Program Design in C”, Pearson Education Asia, Second Edition.
9. Data Structures Using C ,ISRD Groups, Tata McGraw-Hill Publishing Company Limited

PAPER III**Subject Title : RELATIONAL DATABASE MANAGEMENT SYSTEM****Subject Description :**

The Course presents the overview of database systems, relational model, SQL, Schema Refinement and Normal forms and parallel & Distributed databases.

Goals :

To enable the students to learn the architecture of Relational Database Management system

Objectives :

- On success understand management and implementation issues pertinent to databases in public and private organizations
- Understand the database development process and technology
- Understand structured query languages (SQL)
- To design data models for database applications using the entity- relationship (ER) diagrams (conceptual design)
- To translate/map ER diagrams to relational models (logical design)
- Understand the database security
- Understand the architecture of parallel and distributed database.

Contents :**UNIT- I**

Overview of database systems: Managing data – A historical perspective file systems versus a DBMS – Advantages of a DBMS – Describing and storing data in a DBMS – Queries in a DBMS – Transaction management – Structure of a DBMS.

Database design & ER diagrams – Entities attributes and entity sets – Relationships and Relationship sets – Additional features of the ER model – conceptual database design with the ER model.

UNIT-II

Relational Model: Integrity constrains over relations – Enforcing integrity constraints – Querying relational data – Logical database design; ER to relational introduction to views – Destroying / Altering Tables & Views.

Relational algebra and calculus: Relational Algebra – Relational Calculus.

UNIT-III

SQL: Queries, Programming Triggers: The form of a basic SQL Query – UNION, INTERSECT and EXCEPT – Nested Queries – Aggregate operators – Null values – Complex integrity constraints in SQL – Triggers & Active data bases.

Transaction Management Overview: The ACID properties – Transactions & Schedules – Concurrent execution of transactions – Lock-based concurrency control – performance of locking – Transaction support in SQL.

UNIT-IV

Schema Refinement and normal forms: Introduction to schema refinement – Functional dependencies – Reasoning about functional dependencies – Normal forms – Properties of Decompositions – Normalization – Schema refinement in database design – Other kinds of dependencies.

Security: Introduction to database security – Access control – Discretionary access control – Mandatory access control – Additional issues to security.

Concurrency control: 2PL, serializability and Recoverability – Introduction to lock Management – Lock conversions – Specialized Locking techniques- Concurrency control without locking.

UNIT-V

Parallel & Distributed databases: Introduction – Architecture for parallel databases – Parallel Query evaluation – Parallel zing individual operations – Parallel query optimization – Introduction to distributed databases – Distributed DBMS architecture sorting data in a distributed DBMS. **Object Database Systems:** Motivation Example – Structured data types – Operation on structured data types – Encapsulation & ADTS – Inheritance – Objects, OIDS and reference Types – Database design for and ORDBMS – OODBMS – comparing RDBMS OODBMS and ORDBMS.

REFERENCE BOOK

1. Raghu Ramakrishnan, Johannes Gehrke – “Database Management Systems”, Third edition, McGraw-Hill Higher Education.
2. Silberschatry, Korth, Sundarshan, “Database System Concepts”, Fourth Edition, McGraw-Hill Higher Education.
3. Elmasti Navathe, “Fundamentals of Database Systems”, Third Edition, Pearson Education Asia.

PAPER IV

Subject Title : ANALYSIS & DESIGN OF INFORMATION SYSTEMS

Subject Description : This course teaches the Information systems analysis overview, System Requirement Specification, process specification and data input methods.

Goals : To enable the students to learn the system analysis and design of systems

Objectives :

The student who completes this course should know:

- Become familiar with the modern approaches to systems analysis and design;
- Learn how to use a variety of tools and techniques for analyzing business problems and designing information systems.

Contents :

UNIT-I

Information and management: Type of information – why do we need a computer based information system – management structure – management and information requirements – qualities of information – example of information systems.

UNIT-II

Information systems analysis overview: overview of design of an information system – the role and task of a system analyst – attributes of a systems analyst – tools used by systems analyst – information gathering: Strategy to gather information – information sources – methods of searching for information – interviewing techniques – questionnaires – other methods of information search – Case study.

UNIT-III

System requirements specification: Data dictionary – steps in systems analysis – modularizing requirements specification – feasibility analysis: deciding on project goals – examining alternative solutions – evaluating proposed system – cost-benefit analysis – payback period – feasibility report-system proposal – data flow diagram: symbol used in DFDs – describing a system with a DFD – good conventions in developing DFDs – logical and physical DFDs.

UNIT-IV

Process specification: Process specification methods-structured English-Decision tables: Decision tables terminology and Development-Extended Entry Decision table – Establishing the logical correctness of decision table-use of Karnaugh maps to detect logical errors in Decision tables-Eliminating redundant Specifications.

UNIT -V

Data input methods: Data input – Coding Techniques- Detection of error in codes – Validating input data-Interactive data input-Designing outputs: output Device-Objectives of output design-Design of output Report-Design of screens-Use of business Graphics-Control Audit, Testing and Security of information system – System Design Example.

REFERENCE BOOK

1. V. Rajaraman ,”Analysis and Design of information system”-2nd Edition-prentice-hall of India 2004.
2. James A Senn , “Analysis and Design of information system”-2nd Edition MCH international Edition.

PAPER V
Subject Title : OPERATING SYSTEMS

Subject Description : This course presents the Introduction to OS, Process Management, Memory Management, I/O systems, File systems and Case Studies

Goals : To enable the students to learn the operating systems concept.

Objectives : On successful completion of the course the students have

- Develop an understanding of the function, the structure, and operation of modern operating systems.
- Understand the interaction between (system) software and hardware, as well as between the operating system and applications.

Contents :

Unit-I

Introduction _ What is an OS – Mainframe systems – Desktop systems – Multiprocessor systems – Distributed systems – Clustered systems – Real Time systems.

Operating system structures: Systems components – OS services – System calls – System Programs – system structure – Virtual machines – System Design & Implementation – system Generation.

Unit -II

Process Management: Process concept – Process scheduling – Operations on process – Cooperating process – Inter process communication.

CPU Scheduling: Scheduling Criteria – Scheduling algorithms – Multiple – processor Scheduling – Real Time scheduling.

Deadlocks: Deadlock characterization – methods for handling Deadlocks – Deadlock prevention – Deadlock avoidance – Deadlock detection – Recovery from Deadlock.

Unit - III

Memory Management: Background – Swapping – Contiguous memory allocation – Paging – Segmentation – Segmentation with paging.

Virtual Memory: Demand Paging – Process creation – Page replacement – Allocation of Frames – Thrashing.

Unit - IV

I/O Systems: Disk structure – Disk scheduling – Disk Management – Swap – space management

File Systems: File concept – Access methods Directory structure – File system structure – File system implementation – Directory implementation – Allocation Methods – Free space Management – Efficiency & Performance – Recovery.

Unit - V

CASE STUDIES: Linux: Design Principles – Kernel modules – Process Management, scheduling – Memory Management – File systems – Input & Output – Interprocess Communication – Network structure – Security.

Windows 2000: Design principles – system components – Environmental subsystems – File systems- Networking – Programmer Interface.

REFERENCE BOOK

1. Siferschatz, Galvin, Gagne, Operating Systems Concepts, Sixth Edition, John Wiley & Sons.
2. Tanenburn, "Operating Systems: Design & Implementation", PHI, Second Edition
3. Deital, "Operating systems", Pearson Education Asia, Second Edition.

PRACTICAL I
PROBLEM SOLVING IN C & DATA STRUCTURES LAB

1. Arrays Creation and Operations
2. Stack and Queue Operations.
3. Recursion, Infix to Postfix Conversion.
4. Polynomial Addition using Singly Linked List.
5. Doubly Linked List Operations.
6. Tree Traversals.
7. Graph – Shortest Path.
8. Searching – Linear, binary
9. Sorting – Radix, shell, Quick, Heap, Merge.

PRACTICAL II
RDBMS LAB

Study features of commercial RDBMS packages such as Oracle and Developer 2000. Laboratory exercises should include defining scheme of applications, creation of a database, writing SQL queries to retrieve information from database. Use of host language interface with embedded SQL. Use of forms and report writer packages. Some sample applications, which may be programmed, are given below.

- Banking system various schemes.
- Online reservation system.
- Personal information.
- Student mark processing system (Internal & External marks)
- Hotel Management
- Stock Maintenance.
- College admission system. (both, UG & PG)

SECOND YEAR

PAPER VI

Subject Title : OOPS USING C++ & JAVA PROGRAMMING

Subject Description :

The course presents the OOPS using C++ and Methods, String constructors and the basics of Java exception handling in Java Programming

Goals :

To enable the students to learn the basic concept of OOPS using C++ and Java programming

Objectives :

On successful completion of the course the students should have

- Understood the concept of Introduction to OOPs and constructors and destructors, writing simple objects in C++.
- Inheritance in C++, Function and operator over load in C++, Virtual functions and Concept of polymorphism

UNIT-I

Classes and Object: Nature of class – Relationship among classes – The interplay of classes and objects. Classification: The importance of proper classification - identifying classes and objects – key abstractions and mechanism.

UNIT-II

Classes and Objects – Constructors and Destructors – operators overloading – Type conversion – Inheritance – Arrays.

UNIT -III

Polymorphism – Virtual functions – Files – Exception handling – string handling.

Java programming – Class scope – Controlling access to members – creating packages – constructors – overloaded constructors – set and get methods – final instance variables – package access – using this reference – finalizers – static class members – data abstraction and information hiding – super classes and subclasses – protected members – Constructors and finalizers in subclass – inner class definitions – type wrapper class for primitive types.

Unit-IV

String constructors – String methods: length, charAt, getChars, hashCode, value of intern and miscellaneous string methods – sub strings and concatenating strings – stringBuffer class – string Tokenizer class – graphics contexts and graphics objects – color and font control – drawing lines, rectangles, Ovals, arcs, polygons and polylines – The JAVA2D API – swing overview – JLabel – event handling model – JTextField, JPasswordField, JButton, JCheckBox, JRadioButton, JComboBox, JList, JTextArea, JSlider – Mouse event handling, Adapter classes – Layout managers – panels – Using menus with frames – Box layout manager.

Unit-V

The basics of JAVA exception handling – Try blocks – Throwing catching and rethrowing an exception – Throws clause – finally block – Class thread an overview – Thread states – Thread priorities and scheduling – Thread synchronization – Runnable interface – Thread groups – Loading displaying and scaling images – Files and streams – Creating, reading and updating a sequential access file – Creating, writing and reading a random access file – Class file – reading, inserting and updating a database (Use JDBC to a MS Access)

REFERENCE BOOKS

1. “Object Oriented Analysis and Design with applications”, - Grady Booch, Second edition, Pearson education.
2. “Object Oriented Programming with ANSI & Turbo C++”, Ashok N.Kamthane, First Indian print-2003, Pearson Education.
3. Deitel and Deitel, “Java How to Program”, Third Edition Pearson Education Asia.
4. Samanta “Object Oriented Programming with C++ and Java” , PHI.
5. Balagurusamy “ Object Oriented Programming with C++”, TMCH, Second Edition
6. Keyur shab, “Java 2 Programming”, Tata McGraw Hill pub. Company Ltd.,
7. C. Xavier, “Programming with Java2”, Scitech Pub.(India) Pvt. Ltd.
8. Cays S. Horstmann, Gary Cornell, “Core Java2 Volume I–Fundamentals”, Pearson Edi., 2001.
9. Cays S. Horstmann, Gary Cornell, “Core Java2 Volume II–Fundamentals”, Pearson Edi., 2003.

PAPER VII
Subject Title : COMPUTER NETWORKS

Subject Description :

This course presents the introduction to Computer Networks, the Physical Layer, Data Link Layer, Network Layer and session layer.

Goals : The primary goal of the course lies in understanding the fundamental networking concepts and their applications.

Objectives : On successful completion of this course a student will:

- Understand the relationship between network layers, network services and functions.
- Understand the function of each of the layers

Contents :

UNIT-I

Introduction: Use of computer networks – Network Hardware – Network software - Reference Models – Example of Networks.

UNIT-II

The Physical Layer: The Theoretical basic for data communication Guided transmission media – Wireless transmission – Communication satellites – the Public switched Telephone network – Cable Television – Mobile telephone system.

UNIT-III

Data Link Layer: Data link layer design issues – Error detection and correction – elementary data link protocols – Sliding windows protocols – Protocol verification – Example data link protocols.

UNIT-IV

Network layer: Network layer design issues - Routing algorithms - Congestion, control algorithms – Quality of service - Internetworking - Network layer in the Internet. **Transport Layer:** The transport service – Elements of Transport protocol – A simple transport protocol – The Internet transport Protocols: UDP – The Internet Transport Protocols: TCP-Performance issues

UNIT-V

Session layer: Design issues, synchronization – presentation layer: design issues, cryptography – application layer: Design issues, file transfer, E-mail.

REFERENCE BOOKS

1. Andrew S. Tanenbaum “Computer Networks”, IV Edition, Pearson Education.
2. P. Green – Computer Network Architectures and protocols, Plenum Press, 1982.
3. Harry Katzan – An Introduction to “Distributed Data Processing”, A Petrocelli Book, New York / Princeton.
4. Tittel – Theory and problem of Computer Networking, Schaum’s outline series. TMH.
5. Godbole – Data Communication & Networking, TMH.
6. Lean Garcia – Communication Networks : Fundamental Concepts & Key Architecture, TMH.
7. Hari & Barani, “Projects in Networking”, 2005, SCITECH Publications.

PAPER VIII

Subject Title : SOFTWARE ENGINEERING

Subject Description :

This Course presents analysis concepts, design concepts, user interface design concepts and software testing techniques and strategies

Goals :

This course aims to give a theoretical foundation in software engineering. In the theoretical part, students will learn about the principles and methods of software engineering.

Objectives :

On successful completion of the course the students should have

- Understood analysis and principals.
- Understood design concepts and principals.
- Understood software testing techniques.

Contents :

UNIT-I

The evolving role of software – Software – Software Crises and Myths – **Software Engineering**: Layered Technology – The software process model – Evaluating Software process models – Component Based development – The formal methods model – 4GT – Software project planning: Project planning objectives – Software Scope – resource – Software Project estimation – Decomposition Techniques – Empirical estimation models.

UNIT-II

Analysis concepts & Principles: Requirement Analysis – Analysis Principles – Software Prototyping – Specification. **Analysis modeling**: Data modeling – Functional modeling & information flow – Behavioral modeling.

UNIT-III

Design concepts & Principles: The design process - Design principles – Design concepts – Effective modular design. **Architectural design**: Software architecture – Data design – Analyzing alternative architectural design – Mapping requirements into software architecture – Transform mapping – Transaction mapping.

UNIT-IV

User interface design: The Golden Rules – User interface design – Task Analyzing and modeling – interface design activities – implementation tools – Design evaluation. **Component level design**: Structured programming – Comparison of design notations. **Object-Oriented design**: Design for object – Oriented systems – the system design process – The object design process.

UNIT-V

Software Testing Techniques: Software testing fundamentals – Test case design – While box testing – Basic path testing – Control structure testing – Black box testing.

Software Testing strategies: A strategic approach to software testing – Strategic issues – Unix testing – integration testing – Validation testing – System testing.

REFERENCE BOOKS

1. R.S. Pressman, "Software Engineering a Practioner's Approach", (5th edition) Tata McGraw Hill Higher education.
2. Rajib Mall "Fundamentals of Software Engineering", PHI, Second Edition.
3. Sommerville, "Software Engineering", Pearson Education, Sixth edition.
4. Richard Fairpy. "Software Engineering Concepts", Tata McGraw Hill, 1997.
5. Carlo Ghezzi, Mehdi Jazayeri, Dino Mandrioli, "Fundamentals of Software Engineering", second edition, pearson education asia.

PAPER IX

Subject Title : VISUAL PROGRAMMING

Subject Description :

This course presents the Introduction to VB.Net, Variables, Import statement, Arrays and Visual C++ programming.

Goals : To enable the students to learn tVB.Net and Visual C++ programming.

Objectives :

On successful completion of this course the students should have

- Learnt the necessary skills to create software solutions using VB.Net
- Understood the software solutions using Visual C++ programming.

Contents :

UNIT-I

Introduction to VB.Net- Welcome to VB.Net-opening & closing windows toolbars – Existing project-Auto Hide- Customizing windows placing control on a form- Selecting & resizing control- Relocating control properties windows & setting properties of form & control (using properties window & using event procedure).

UNIT-II

VB.Net variables-Data type constant –Building project –Displaying output –Operators – Conditional statement –If-then, Select-Case- Looping Do, For Next ,Nested loops.

Import statement –Msg box –Function-input Box()-Function-user defined &built functions-controls.

UNIT-III

Array-Menus & dialog boxes, structures programming –Object oriented programming. Files classification –Handling files using function & classes- Directory class-File class- File processing.

UNIT-IV

Visual C++: Programming: MFC & windows –MFC Fundamentals-MFS class Hierarchy-MFC Member &Global Functions-Variou Object properties - CObject, CArchive, CWinApp, CWnd,CFile,CGD,Object, CExcept, CDialog, CString, CEdit, CList-Resources:Menus- Accelerators, Dialog, Icon, Bitmaps, versions-Message Maps- Document/View Architecture.

UNIT-V

VC++ (contd): connecting to data source-DAO-ODBC-Thread-Based Multitasking Visual C++ APPWIZARD and class wizard.

REFERENCE BOOK

1. Shirish Chavan, "Visual Basic.Net". Pearson edition,2004
2. Herbert Schildt, "MFC Programming from the Ground up" 2nd edition,Tata McGraw Hill.
3. MSDN Visual studio Library.
4. Schneider,"An introduction to programming using Visual Basic .Net, 5th Edition ,PHI
5. Kant,Visual Basic.Net A beginners guide, TMCH
6. Mveller, "Visual C++ form the Ground up", TMCH
7. Viktor Toth. "Visual C++6 Unleashed", Second edition Techmedia.

PRACTICAL III C ++ & JAVA PROGRAMMING LAB

OOPS using C++

1. C++ Program using operator overloading functions.
2. C++ Program using Type conversion.
3. C++ Program using String manipulation functions.
4. C++ Program using friend functions.
5. C++ Program using inheritance.
6. C++ Program using Polymorphism.
7. C++ Program using files.

Java Programming

1. Create a employee package to maintain the information about the employee. Use constructors to initialize the employee number and use overloading method to set the basic pay of the employee. By using this package create a java program.
2. Program to implement polymorphism, inheritance and inner classes.
3. Create a frame with user specific size and position it at user specific position (use commend line argument) Then different shapes with different colors (use menus)
4. Java Program to handle different mouse events.
5. Create an applet for a calculator application.
6. Java program to maintain the student information in text file.
7. Animate images at different intervals by using multi threading concepts.
8. Program to sent a text message to another system and receive the text message from the system (use socket programming)
9. Java program by using JDBC concepts to access a database.
10. Java Program by using to implement the tree viewer.
11. Java Program that prohibit to reading of text files that containing bad words.

**PRACTICAL IV
VISUAL PROGRAMMING LAB****VB .NET PROGRAM LIST**

1. Program for a various font application.
2. Program for a notepad application
3. Program to employee details
4. Program for supplier details
5. Program for hospital management
6. Program for newspaper vendor
7. Program for simple calculator
8. Program for create and reading text file

VC++ PRACTICAL LIST

1. Program to create a Window Using MFC
2. Program to implement Message Maps
3. Program to build Arithmetic Calculator
4. Program to perform Car application
5. Program for List Box Application
6. Program to implement Threads
7. Program to create Circle & Rectangle.
8. Program to Draw Circles on Mouse Click Point.
9. Program to Payroll Application using ODBC
10. Program to Students Details using DAO.

**THIRD YEAR
PAPER X**

Subject Title : SOFTWARE TESTING

Subject Description :

This course provides principles of Software Testing and about tools.

Goal : To enable the students to learn about the principle and tools of Software testing.

Objectives :

On successful completion of the course the students must have

- understood the concepts of Software testing
- got the skill of software testing
- exposed to software testing tools.

Content

UNIT I

Purpose of Software testing – Some Dichotomies – a model for testing – Playing pool and consulting oracles – Is complete testing possible – The Consequence of bugs – Taxonomy of Bugs.

UNIT II

Software testing Fundamentals – Test case Design – Introduction of Black Box Testing and White Box testing – Flow Graphs and Path testing – Path testing Basics - Predicates, Path Predicates and Achievable Paths - Path Sensitizing – Path Instrumentation – Implementation and Application of Path Testing.

UNIT III

Transaction Flow testing – Transaction Flows – techniques – Implementation Comments – Data Flow Testing – Basics – Strategies – Applications, Tools and effectiveness – Syntax Testing – Why, What, How – Grammar for formats – Implementation – Tips.

UNIT IV

Logic Based Testing – Motivational Overview – Decision tables – Path Expressions – KV Charts – Specifications – States, State Graphs and transition Testing – State Graphs – Good & bad states – state testing Metrics and Complexity.

UNIT V

Testing GUIs – Testing Client – Server Architecture – Testing for Real-time System – A Strategic Approach to Software testing – issues – unit testing – Integration Testing – Validation testing – System testing – The art of Debugging.

REFERENCES :

1. Boris Beizer, Software testing techniques, Dreamtech Press, Second Edition – 2003.
2. Myers and Glenford.J., The Art of Software Testing, John-Wiley & Sons,1979
3. Roger.S.Pressman, Software Engineering – A Practitioner’s Approach ,Mc-Graw Hill, 5th edition, 2001
4. Marnie.L. Hutcheson, Software Testing Fundamentals, Wiley-India,2007

PAPER XI

Subject Title : DATA MINING AND WAREHOUSEING

Subject Description :

The Course presents the Basic data mining tasks data mining techniques, classification, Clustering and Association rules In Data ware housing Introduction about data warehousing and applications of data warehousing.

Goals : To enable the students to learn the concept of Data mining and data warehousing

Objectives :

On successful completion of the course the students have

- Understood the Data mining Techniques
- Learnt the Algorithms and Association rules
- Learnt the concept of the OLTP & OLAP
- Learnt the applications of Data mining and Data warehousing

Contents :

Unit –I

Basic data mining tasks – data mining versus knowledge discovery in databases – Data mining issues – data mining metrics – social implications of data mining – data mining from a database perspective.

Data mining techniques: Introduction – a statistical perspective on data mining – similarity measures – decision trees – neural networks – genetic algorithms.

Unit- II

Classification: Introduction – statistical – based algorithms- distance- based algorithms – decision tree- based algorithms- neural network – based algorithms – rule-based algorithms – combining techniques.

Unit -III

Clustering: Introduction – Similarity and distance Measures – Outliers – Hierarchical Algorithms – Partitional Algorithms.

Association rules: Introduction-large item sets – basic algorithms – parallel & distributed algorithms – comparing approaches – incremental rules – advanced association rules techniques – measuring the quality of rules.

Unit –IV

Data warehousing: An introduction- characteristic of a data warehouse – data marts – other aspects of data mart. Online analytical processing: introduction- OLTP & OLAP systems – data modeling – star schema for multidimensional view- data modeling – multifact star schema or snow flake schema – OLAP TOOLS – state of the market – OLAP TOOLS and the internet.

Unit-V

Developing a data WAREHOUSE: why and how to build a data warehouse architectural strategies and organization issues-design consideration- data content-metadata distribution of

data-tools for data warehousing-performance consideration-crucial decision in designing a data warehouse.

Applications of data warehousing and data mining in government: Introduction -National data warehouses- other areas for data warehousing and data mining.

REFERANCE BOOKS

1. Margaret H.Dunham,"data mining introductory and advanced topics", pearson education,2003
2. C.S.R. Prabhu, "data warehousing-concepts,techniques,product and applications ,PHI,Second Edtion.
3. Aler Berson,Stephen J.Smith,"data warehousing,data mininig,& OLAP, TMCH,2001.
4. Arun.K.Pujari,"Tecniques",University Press(India) Pvt.Ltd.,2003

PRACTICAL V

Subject Title : SOFTWARE TESTING LAB

Subject Description

This course provides hand on experience of Software Testing tools.

Goal : To enable the students to learn about the usage of tools of Software testing.

Objectives :

On successful completion of the course the students must have

- understood the concepts of Software testing
- got the skill of software testing tools
- expertise in using software testing tools.

Running and testing in any one of the following Testing tools :

- WinRunner
- Silk Test
- SQA Robot
- LoadRunner
- JMeter
- TestDirector
- GNU Tools (Source Code Testing Utilities in Unix / Linux)
- Quick Test Professional

REFERENCE :

Dr.K.V.K.K.Prasad, Software Testing Tools, Dreamtech Press, 2007

ELECTIVE-I

Subject Title : E 1.1 E-COMMERCE

Subject Description :

This course presents the introduction about E-Commerce, Architectural framework, Types of E-payment systems, Internal information systems and the new age of Information based marketing.

Goals : To enable the students to learn the E-Commerce Concepts to all types of business systems

Objectives :

- To obtain knowledge of Internet hardware associated with E-commerce systems.
- Gain knowledge of selected Standard application commonly used in business
- Ability to design, a fundamental E-Business concept.
- Gain knowledge of the issues of network security and business-tech protocols.
- Introduction to Business graphics – with focus on advertising philosophy.

Contents :

UNIT-I

Electronic Commerce Framework - Electronic Commerce and Media Convergence - The anatomy of E-Commerce Applications - Electronic Commerce Consumer Applications - Electronic Commerce Organization Applications. Market forces influencing the I-Way - Components of the I-Way - Net work Access Equipment - The Last Mile: Local Roads and Access Ramps - Global Information Distribution Networks - Public Policy issues shaping the I-Way.

UNIT-II

Architectural Framework for Electronic Commerce - World Wide Web (WWW) as the Architecture- Web Background: Hypertext Publishing - Technology behind the Web Security and the Web. - Consumer-Oriented Applications – Mercantile models from the consumer's perspective – Mercantile models from the merchant's perspective.

UNIT-III

Types of Electronic Payment systems - Digital token based electronic payment systems - Smart Cards and Electronic Payment Systems - Credit card based electronic Payment Systems - Risk and Electronic Payment Systems - Risk and Electronic Payment Systems - Designing Electronic Payment Systems. Electronic Data Interchange - EDI Applications in business - EDI: Legal, Security and Privacy issues - EDI and electronic Commerce.

UNIT-IV

Internet information systems - Macroforces and internal commerce - Works flows automation and Co-ordination - Customization and internal commerce - Supply chain commerce system - Making a business case for a document library - Types of digital documents - Issues behind Document infrastructure - Corporate data warehouse.

UNIT-V

The new age of information - based marketing - Advertising on the internet - Charting the On-Line Marketing process - Market research - search and resource Discovery Paradigms - Information Search and Retrieval - Electronic Commerce Catalogs or directories - Information Filtering - Consumer Data Internet Emerging Tools.

REFERANCE BOOKS

- 1.Ravi Kalakota, Andrew Winston, "Frontiers of Electronic Commerce", Pearson Edu., 2003.
- 2.Jeffery F.Rayport, Bernard J.Jaworski, "E-Commerce", TMCH, 2002.
- 3.P.T. Joseph, "E-commerce – A Managerial Perspective", PHI, 2003.

ELECTIVE-I

Subject Title : E.1.2 CLIENT/SERVER TECHNOLOGY

Subject Description :

This course presents the Introduction about the Client/Server computing, operating systems database servers, Client/Server Transaction server and Web Client/Server

Goals : To enable the students to learn the Client/Server Technologies

Objectives :

On successful completion of the course the students should have

- Understood the Client/Server Operating systems
- Understood the Client/Server Transaction Processing
- Understood the Web Client/Server

Contents :

UNIT-I

Client Server computing – What is Client / Server – File Servers, Database servers, Transaction servers, Group war servers, Object servers, Web servers – FAT servers or client/Server/Server Building blocks.

UNIT-II

Client/Server and operating systems-the Anatomy of a server program- Needs of Client/Server from an OS – Server scalability – Client Anatomy – Client server hybrids.

NOS: Creating the single system image – peer-to-peer communications-remote procedure calls(RPC) – messaging and Queuing :The MOM Middleware – MOM vs RPC

UNIT-III

SQL Database Servers- Fundamentals of SQL and Relational Databases- What does a database server do- Stored procedures, Triggers and rules.

Data warehouses – OTP(Online Transaction Processing) Decision Support systems(DSS)-Executive Information System(EIS) – The Data warehouse – EIS/DSS: From Queries, to OLAP(On Line Analytical processing),Data mining.

UNIT-IV

Client/Server Transaction Processing – the ACID properties – transaction Models – TP Monitors – Transaction Management standards. Client/server groupware –importance of groupware – What is groupware- The components of groupware. Distributed objects and components – what distributed objects promise – From distributed objects to component- 3-tier Client/Server, Object style – Distributed objects, CORBA style Object Management Architecture-CORBA 2.0 CORBA object services – CORBA common facilities – CORBA Business objects –Compound documents.

UNIT-V

Web client server – What is URL? – Shortest HTML tutorial – HTTP-3 tier client/server, web style – HTML web based forms – CGI The server side of the Web – Web Security – The Internet and the Intranets-JAVA and HOT JAVA – Applets Components JAVA style – The JAVA Libraries, JDBC –JAVA meets CORBA – Compound Documents and the object WEB – The DCOM/OLE object WEB- The CORBA Object Web.

REFERANCE BOOKS

1. Robert Orfali, Dan Harkey, Jeru Edwards, “The Essential Client/Server Survival Guide”, Galgotia Publications Pvt. Ltd. - 1997

ELECTIVE-I

Subject Title : E.1.3 MULTIMEDIA & ITS APPLICATIONS

Subject Description :

This course presents the introduction to Multimedia, tools, Animation and Multimedia & the Internet

Goals : To enable the students to learn the multimedia functions and its Applications.

Objectives :

On successful completion of the course the students should have

- Making multimedia presentation.
- Learnt the animation .
- Learnt the multimedia and Internet
- Learnt the Knowledge based Multimedia.

Contents :

UNIT-I

What is Multimedia - Introduction to making multimedia – Macintosh and Windows production platforms – Basic Software tools.

UNIT-II

Making Instant Multimedia – Multimedia authoring tools – Multimedia building blocks – Text – Sound.

UNIT-III

Images – Animation – Video

UNIT-IV

Multimedia and the Internet – The internet and how it works – Tools for World Wide Web – Designing – Designing for the World Wide Web.

UNIT-V

High Definition Television and Desktop Computing – Knowledge based Multimedia systems.

REFERANCE BOOKS

1. The Vaughan, “Multimedia making it work”, Fifth Edition, Tata McGraw Hill.
2. John F. Koegel Bufford, “Multimedia Systems”, Pearson Education, 2003.
3. Multimedia in Practice (Technology and Applications) – Judith Jeffloat – PHI, 2003.

ELECTIVE-II**Subject Title : E.2.1 SOFTWARE PROJECT MANAGEMENT****Subject Description :**

This course presents the Product Life Cycle, Software Configuration Management, Software requirements gathering, Estimation, Design and development phase, testing phase and maintenance phase.

Goals : To enable the students to learn the Software project Management

Objectives :

On successful completion of this course the students should have

- Understood the product life cycle
- Understood the software configuration management and Estimation
- Understood the Design and development phases
- Understood the project management in the testing and maintenance phase

Contents :**Unit-I**

Product Life Cycle: Introduction – idea generation – Prototype development phase – Alpha phase – Beta phase – Protection phase – Maintenance and obsolescence phase. Project Life Cycle models. What is project life cycle model-A framework for studying different life cycle models – The waterfall model – The prototype model – The repaid application development model – The spiral model and its variants. Metrics: Introduction – The metrics roadmap – A typical metrics strategy – What should you measure – Set targets and track them – Understanding and trying to minimize variability – Act on data people and organizational issues in metrics programmes – common pitfalls to watch out for in metrics programmes – Metrics implementation checklists and tools.

Unit -II

Software configuration management: Introduction – Basic definitions and terminology – The process and activities of software configuration audit – software configuration management in geographically distributed teams-metrics in software configuration management – software configuration management tools and automation.

Software quality assurance: How do you define quality important in software – quality control and quality assurance – cost and benefits of quality – software quality analyst's functions – some popular misconceptions about the SQA's role-software quality assurance tools – organizational structures – profile of a successful SQA-measures of SQA success – pitfalls to watch out for in the SQA's role.

Risk Management: Introduction-what is risk management and why is it important – Risk management cycle- Risk identification: common tools and techniques – Risk quantification – Risk monitoring-Risk mitigation- Risk and mitigation in the context of global project – Teams – some practical techniques in risk management – metrics in risk management.

Unit –III

Software requirements gathering: Inputs and start criteria for requirements gathering – Dimensions of requirements gathering to be followed during requirements gathering –outputs and quality records from the requirements phase – skills sets required during the requirements

phase- Differences for a shrink-wrapped software- challenges during the requirements management phase- metrics for the requirements phase.

Estimation: What is estimation when & why is estimation done – The three phases of estimation-estimation methodology – formal models for size estimation – translation effort estimated into schedule estimates - common challenges during estimation – Metrics for the estimation processes.

Unit –IV

Design and development phase: some difference in our chosen approach – salient features of design – evolving in architecture / Blueprint – design for reusability – Technology choices /constrains – design to standards – design for portability – user interface issues – design for testability design for diagnosability – design for maintainability – design for installability-inter –operability design- challenges during design and development phases-skill sets for design and development metrics for design and development phases.

Project Management in the testing phase: Introduction – what is testing – what are the activities that male up testing- test scheduling and types of tests-people issues in testing-management structures for testing in global teams – metrics for testing phase.

Unit -V

Project management in the maintenance phase: Introduction – activities during the maintenance phase-management issues during the maintenance phase- configuration management during the maintenance phase – skill sets for people in the maintenance phase-estimating size, effort and people resources for the maintenance phase- advantages of using geographically distributed teams for the maintenance phase-matrices for the maintenance phase.

Globalization issues in project management: Evolution of globalization- challenges in building global teams-models for the execution of some effective management techniques for managing global teams.

Impact of the internet on project management: Introduction – the effect of internet on project management – managing projects for the internet – effect on project management activities.

REFERANCE BOOKS

1. Gobalswamy Ramesh, “Managing Global Software Projects”, Tata McGraw Hill Publishing Company, 2003.
2. S.A. Kelkar, “Software Project Management – A Concise study”, PHI, 2003.
3. Milk Cotterel, Bob Hughes, “Software project Management”, Inclination/Thomas Computer press, 1955.
4. Derrel Ince, H. Sharp and M. Woodman, “Introduction to software project management and quality assurance”, Tata McGraw Hill, 1995.
5. Stephen H. Kan, “Metrics and Models in Software Quality Engineering”, Pearson Education Asia, 2nd edition.

ELECTIVE-II

Subject Title : E.2.2 WAP & XML

Subject Description :

This course presents the overview of Wireless Application Protocol, WML, User Interface Design and Wireless Telephony Applications

Goals :To enable the students to learn the current and emerging technology in Wireless technology

Objectives :

On successful completion of the course the students should have

- Understood fundamental trends of technological evolution of Wireless technology.
- Understood the knowledge in WML contents.
- Be able to plan, design, and develop WAP pages and contents.

Contents :

UNIT -I

The Rise of mobile data: Market convergence Enabling convergence – Key services the mobile internet: Overview of the wireless application protocol: The origins of WAP – overview of the WAP architecture – components of the WAP standard – network infrastructure services supporting WAP clients – WAP architecture design principles – relationship to other standards.

UNIT -II

The wireless markup language : overview – the WML documents model – WML authoring – URL's identity content – Markup basics - WML – basics – basics content – events, trash and bindings.

UNIT-III

Variables – other content you can include – controls – miscellaneous markup – sending information – application security – other data: The meta element – document type declarations – error and browser limitations – content generation – WML version negotiation.

UNIT-IV

User interface design: Making wireless applications, easy to use web site design computer terminals Vs mobile terminals – designing a usable WAP site – structured usability methods – User interface design guidelines – design guidelines for selected WML elements.

UNIT-V

Wireless telephony applications: Overview of the WTA Architecture – WTA Client Framework – WTA Server & Security – Design Considerations – Application Creation Toolbox – Further WTA Enhancements.

The Mobile internet Future: Better Content, Easier Access – Beyond Browsing – Beyond Cellular – Mobile Data Unleashed.

REFERANCE BOOKS

1. Sandeep Singhal, Thomas Bridgram, Lalitha Suryanarayana, Daniel Mauney, Jari Aluinen, David Bevis, Jim Chan, Stefan Hild, "The WAP", Pearson Education 2003.

ELECTIVE-II
Subject Title : E 2.3 DIGITAL IMAGE PROCESSING

Subject Description :

This subject presents the Introduction about Digital Image processing, Image Enhancement, Image Restoration, Image Compression and Image Segmentation.

Goals : To enable the students to learn the Digital Image Processing.

Objectives :

On successful completion of the students should have

- Students will gain understanding of algorithm design, mathematical tools, and practical implementations of various digital image applications

Contents :**UNIT-I**

Introduction: What is digital image processing – the origin of DIP – example of fields that use DIP – Fundamentals steps in DIP – Components of an image processing system.

Digital Image Fundamentals: Elements of visual perception-Light and the electromagnetic spectrum – Image sensing and acquisition – Image sampling and quantization – basic relationship between pixels – Linear & Nonlinear operations.

UNIT-II

Image enhancement in the spatial domain: Background – some basic Gray level transformations – Histogram processing – enhancement using arithmetic / logic operations – basic of spatial filtering – smoothing spatial filters – sharpening spatial filters – combining spatial enhancement methods.

UNIT-III

Image restoration: A model of the image degradation / Restoration process – Noise models – Restoration is the process of noise only – Spatial filtering – periodic noise reduction by frequency domain filtering – Linear, portion invariant degradations – estimating the degradation function – inverse filtering – minimum mean square error filtering – constrained least squares filtering – geometric transformations.

UNIT-IV

Image compression fundamentals – Image compression models – elements of information theory – error free compression – Lossy compression – image compression standards.

UNIT-V

Image segmentation: Detection and discontinuities – edge linking and boundary deduction – thresholding – region-based segmentation – segmentation by morphological watersheds – the use of motion in segmentation.

REFERANCE BOOKS

1. Rafael C. Gonzalez, Richard E. Woods, “Digital Image Processing”, Second edition Pearson education.
2. Anil K. Jain “Fundamentals of Digital Image processing “, Pearson Education
3. B.Chandra and D.Dutta Majumder , “Digital Image Processing and Analysis ” prentice-Hall of India private limited New delhi.

MODEL QUESTION PAPERS

COMPUTER ORGANIZATION AND ARCHITECTURE

YEAR: I

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Reduce the following expression using K-map

$$\overline{A}\overline{B}\overline{C} + \overline{A}B + C + \overline{B}\overline{C} + \overline{D}\overline{B}$$

2. Explain the operation of a synchronous counter?
3. Explain about stack organization?
4. Describe in detail the I/O processors (IOP)
5. Discuss briefly about Auxiliary Memory?
6. Explain the all logic gates with diagram and truth table?
7. Write in detail about Virtual Memory?
8. Explain in detail different addressing modes with examples?

PROBLEM SOLVING IN C AND DATA STRUCTURES

YEAR: I

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Explain any Five String manipulation functions in **String.h**?
2. Write a function using **pointers** to **exchange values** stored in two locations in the memory.?
3. With an example explain the procedure of Infix to postfix conversion?
4. In detail explain queues with an example and discuss the insertion and deletion Procedures?
5. Explain dijkstra's shortest path algorithm with an example?
6. Explain the three representations of graphs?
7. Explain Merge sort with an example?
8. Discuss on Sorting with disks?

OPERATING SYSTEM

YEAR: I

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Explain in detail about system calls.
2. Explain in detail communication client/server systems.
3. Describe the different processor scheduling algorithms in detail
4. Describe the different page replacement principles in detail.
5. Describe in detail the concept of segmentation with paging.
6. Discuss the file allocation methods in detail.
7. Explain various aspects of disk management in detail.
8. Explain Linux Memory Management in detail.

OOPS USING C++ AND JAVA PROGRAMMING

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Discuss about the evolution of the object model.
2. Write a C++ program to overload the '+' operator to add two complex numbers.
3. Explain in detail about the following :
 - i) Exception handling.
 - ii) Templates.
4. Write a java program for overload functions
5. Explain the graphics contexts and graphics objects with an example program?
6. Explain the swing concepts in details
7. Explain the throwing catching and rethrowing an exception with an example?
8. How to create, reading and updating a sequential file with an exam

COMPUTER NETWORKS

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Explain in detail OSI reference model.
2. Explain in detail the characteristics of transmission media.
3. Describe in detail Sliding window protocol.
4. Explain in detail the HDLC protocol.
5. Explain in detail the different Congestion control techniques.
6. With example, explain any three Routing algorithms in detail.
7. Explain the connection establishment process of transport layer.
8. Discuss in detail - TCP.

SOFTWARE ENGINEERING

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. With neat diagram explain the evolutionary process models.
2. Distinguish between data modeling and functional modeling.
3. Explain in detail about analysis concepts and principles.
4. With suitable example explain the transform mapping and transaction mapping in detail.
5. Discuss in detail about component level design.
6. Explain the system design process in OOD.
7. Explain in detail about the Integration testing.
8. Explain the black box testing in detail.

VISUAL PROGRAMMING

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Give a detailed introduction to VB.NET.
2. Discuss the following:
 - i) Setting properties of forms and controls.
 - ii) Relocating controls.
3. Explain the following:
 - i) Building project.
 - ii) Built in functions.
4. Discuss the following :
 - i) Input BOX()
 - ii) Msg Bob
5. Explain how to handle files using functions and classes.
6. Describe the following in detail
 - i) CArchive
 - ii) CWin APP
 - iii) Object
 - iv) CGD
 - v) CDialog
7. write a detailed description on connecting to a data source.
8. Discuss the following:
 - i) DAO
 - ii) ODBC

Elective –I

E1.1 E-COMMERCE

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Describe in detail global information distribution networks.?
2. Describe in detail the architectural frame work for electronic commerce?
3. Describe in detail credit card based electronic payment systems?
4. Explain the Layered architecture of EDI?
5. Describe the various types of Digital documents?
6. Define corporate data warehouses. How you build and manage data warehouse?
7. Describe the information search and retrieve paradigm in detail?
8. Discuss in detail the three phases of market research?

Elective –I
E1.2 CLIENT/SERVER TECHNOLOGY

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Explain the following
 - i) File Servers,
 - ii) Database servers
 - iii) Transaction servers
 - iv) Group war servers
 - v) Object servers
2. Explain the difference between GUI versus OOUI
3. Explain the Remote procedure call?
4. Explain the SQL Database Server Architecture
5. Write short notes on Data warehouse? And explain the elements of Data warehousing?
6. Explain the ACID properties and transaction models?
7. How the HTTP work and method discuss in detail?
8. Explain the compound Documents and the object web

Elective-I
E.1.3 MULTIMEDIA & ITS APPLICATIONS

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only
Each question carries 20 marks

1. Briefly explain about the Basic Software Tools.?
2. Discuss the different types of Multimedia Authoring Tools?
3. How to make still images? Explain.
4. Write short notes on Animation.?
5. Explain in detail about the Internet and how it works. ?
6. Write about HTML and Multimedia.?
7. Describe HDTV in detail. ?
8. Explain about Knowledge-based Multimedia System.?

SOFTWARE TESTING

YEAR: III

TIME: 3 Hrs

MAX. MARKS: 100

Answer any five questions only

Each question carries 20 marks

1. Explain in details about purpose of software testing ?
2. Explain the Black box Testing and white box testing?
3. Explain the transaction Flow testing?
4. Explain the data flow testing?
5. Explain the Logic based testing?
6. Explain the testing metrics and complexity?
7. Write an example for testing Real time systems
8. Explain the following
 - i) Unit Testing
 - ii) Integration Testing
 - iii) Validation Testing
 - iv) System Testing

DATA MINING & WAREHOUSING

YEAR: III

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only

Each question carries 20 marks

1. Discuss in detail on statistical perspective of data mining.
2. Discuss in detail on Decision Tree Based Algorithms.
3. Discuss in detail on Partitional Algorithms of Clustering
4. Discuss in detail on Parallel and Distributed Algorithms of Association Mining.
5. Discuss in detail on other aspects of data marts.
6. Discuss in detail on OLAP tools.
7. Discuss in detail about developing a data warehousing for departmental store
8. Discuss in detail on other areas of data warehousing and data mining.

ELEVTIVE – II

E.2.1 SOFTWARE PROJECT MANAGEMENT

YEAR: III

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only - Each question carries 20 marks

1. Explain the various project life cycle models.
2. Explain software configuration management in detail.
3. Discuss the features of software quality assurance.
4. Discuss about software estimation in detail.
5. Explain software requirements gathering in detail.
6. Give a brief account on testing.
7. Discuss the maintenance phase in detail.
8. Explain the globalization issues in project management.

Elective-II

E2.2 WAP & XML

YEAR: III

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only - Each question carries 20 marks

1. Describe in detail -WAP architecture.
2. Write an essay on the Rise of Mobile Data.
3. Discuss in detail WML document model.
4. Explain in detail - WML authoring.
5. Describe in detail Errors and Browser Limitation.
6. Explain in detail - Application security in WML.
7. Explain the design guidelines for Selecting WML elements.
8. Write an essay on future of Mobile Internet

Elective-II

E2.3 DIGITAL IMAGE PROCESSING

YEAR: II

TIME : 3 Hrs

MAX. MARKS: 100

Answer any five questions only - Each question carries 20 marks

1. Explain with examples of fields that use digital image processing?
2. Explain all elements of Visual perception?
3. Explain in detail about Histogram Processing?
4. Explain the Noise models?
5. How to estimating the Degradation function
6. Write short notes on
 - i) Variable length coding
 - ii) LZW coding
 - iii) Bit plane coding
 - iv) Lossless predictive coding?
7. Explain the thresholding?
8. Explain the segmentation by morphological watersheds?