BHARATHIAR UNIVERSITY::COIMBATORE-641 046

B.Sc. INFORMATION TECHNOLOGY WITH COMPULSORY DIPLOMA IN WEB TECHNOLOGY

(For the students admitted from the academic year 2008-2009 and onwards)

SCHEME OF EXAMINATION - CBCS PATTERN

Part	Study Components	Course title	Ins. hrs/ week	Examinations				Credit
				Dur.Hrs	CIA	Marks	Total Marks	
	Semester I							
I	Language – I		6	3	25	75	100	3
II	English – I		6	3	25	75	100	3
III	Core 1: Data Structures and C Programming		4	3	25	75	100	4
	Core 2: Computer Organisation and Architecture		4	3	25	75	100	5
	Core Lab 1: C Programming Using Data Structures		3	3	40	60	100	3
	Allied 1: Mathematical Foundations For Computer Science		5	3	25	75	100	5
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language – II		6	3	25	75	100	3
II	English – II		6	3	25	75	100	3
III	Core 3: Object Oriented Programming with C++		6	3	25	75	100	4
	Core Lab 2: Object Oriented Programming With C++		4	3	40	60	100	3
	Allied 2: Computer Oriented Numerical & Statistical Methods		6	3	25	75	100	5
IV	Value Education – Human Rights #		2	3	-	50	50	2
	Semester III							
	Core 4: System Software and Operating System		6	3	25	75	100	5
III	Core 5: Java Programming		6	3	25	75	100	4
III	Core Lab 3: Programming Lab JAVA		5	3	40	60	100	3
III	Allied 3: Microprocessor and ALP		6	3	25	75	100	5
IV	Skill based Subject I – Diploma Paper - Introduction to Web Design and Applications		5	3	25	75	100	3
IV	Tamil @ / Advanced Tamil# (OR) Non-major elective - I (Yoga for Human Excellence)# / Women's Rights#		2	3	75		75	2

	Semester IV						
III	Core 6: Principles of Data Communications and Networks	6	3	25	75	100	4
	Core 7: Client/ Server Computing	6	3	25	75	100	5
	Core Lab 4: Network Lab	6	3	40	60	100	3
	Allied 4: Embedded Systems	6	3	25	75	100	5
IV	Skill based Subject 2 – Diploma Lab - HTML, XML, JAVA Scripts	4	3	40	60	100	3
IV	Tamil @ /Advanced Tamil # (OR) Non-major elective -II (General Awareness #)	2	3	75		75	2
	Semester V						
III	Core 8: Software Engineering	6	3	25	75	100	5
III	Core 9: Visual Programming	6	3	25	75	100	4
III	Core 10: Relational Database Management System and Oracle	6	3	25	75	100	5
	Core Lab 5: Programming Lab. – V.B. & ORACLE	4	3	40	60	100	3
	Elective I	5	3	25	75	100	5
IV	Skill based Subject 3 - Diploma Paper - Web Technology and Applications	3	3	25	75	100	3
	Semester VI						
	Core 11: Software Testing	5	3	25	75	100	4
	Core 12: Mobile Computing	6	3	25	75	100	5
	Core Lab 6: Testing Tools	6	3	40	60	100	3
	Elective II	5	3	25	75	100	5
	Elective III	5	3	25	75	100	5
IV	Skill Based Subject 4 - Diploma Lab: ASP	3	3	40	60	100	3
V	Extension Activities @	-	-	50	-	50	1
	Total					3600	140

@ No University Examinations. Only Continuous Internal Assessment (CIA)

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List of Elective papers (Colleges can choose any one of the paper as electives)		
Elective – I	**A**	Multimedia Systems
	B	.Net Programming
	C	Object Oriented Analysis and Design
Elective – II	**A**	Network Security and Administration
	B	E-Commerce
	C	Digital Image Processing
Elective - III	**A**	Data Mining
	B	Component Technology
	C	Artificial Inteligence

CORE 1 : DATA STRUCTURES AND C PROGRAMMING

Subject Description: This subject deals with the methods of data structures using C programming language.

Goal: To learn about C programming language using data structural concepts.

Objective: On successful completion of this subject the students should have :

- Writing programming ability on data structures dealing with Stacks, Queues, List, Searching and Sorting algorithms etc.,

UNIT – I:

Programming development methodologies – Programming style – Problem solving techniques: Algorithm, Flowchart, Pseudocode - Structure of a C program – C character set – Delimiters – Keywords – Identifiers – Constants – Variables – Rules for defining variables – Data types – Declaring and initializing variables – Type conversion.

Operators and Expressions – Formatted and Unformatted I/O functions – Decision statements – Loop control statements.

UNIT – II:

Arrays – String and its standard functions.

Pointers – Functions – Preprocessor directives: #define, #include, #ifndef, Predefined macros.

UNIT – III:

Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Pointer to structure, Bit fields, Enumerated data types, Union.

Files: Streams and file types, Steps for file operation, File I/O, Structures read and write, other file functions, Command line arguments, I/O redirection.

UNIT – IV:

Linear data structures: Introduction to data structures – List: Implementations, Traversal, Searching and retrieving an element, Predecessor and Successor, Insertion, Deletion, Sorting, Merging lists – Stack: Representation, Terms, Operations on stack, Implementation.

Single linked list, Linked list with and without header, Insertion, Deletion, Double linked list – Queues: Various positions of queue, Representation

UNIT V:

Searching and Sorting – Searching: Linear, Binary.

Sorting – Insertion, Selection, Bubble, Quick, Tree, Heap.

TEXT BOOK:

Ashok N Kamthane, "PROGRAMMING AND DATA STRUCTURES" – Pearson Education, First Indian Print 2004, ISBN 81-297-0327-0.

REFERENCE BOOK:

1. E Balagurusamy: Programming in ANSI C, Tata McGraw-Hill, 1998.
2. Ellis Horowitz and Sartaj Sahni: Fundamentals of Data Structure, Galgotia Book Source, 1999.
3. Data structure using C – Aaron M Tanenbaum, Yedidyeh langsam, Moshe J Augenstein, PHI Pub

CORE 2 :COMPUTER ORGANISATION AND ARCHITECTURE

Subject Description: This subject deals with fundamentals of digital computers and sytem architecture.

Goal: To learn about computer fundamentals and its organization.

Objective: On successful completion of this subject the students should have :

- Knowledge on digital circuits
- Interfacing of various components

Unit I

Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code.

Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Half subtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

Unit II

Combinational Logic Circuits: Boolean algebra –Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications.

Sequential circuits: Flip-Flops : RS, D, JK, T - Multiplexers – Demultiplexers – Decoder – Encoder - Counters.

Unit III

CENTRAL PROCESSING UNIT: General Register Organization - Control word – Examples of Micro operations - Stack organization - Instruction formats - Addressing modes - Data Transfer and manipulation program control.

Unit IV

Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMA Transfer. Input – Output Processor: CPU-IOP Communication.

Unit V

Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing Into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory Page Table, Page Replacement.

Text Books:

1. Digital Electronics Circuits and Systems, V.K. PURI, TATA McGRAW-HILL Pub. Company
2. Computer System Architecture, M. MORRIS MANO, PHI.

Reference Books:

1. ISRD group – Tata McGrawHill.

Core Lab – 1: **C PROGRAMMING USING DATA STRUCTURES**

1. Write a C program to create two array list of integers. Sort and store the elements of both of them in the third list.
2. Write a C program to experiment the operation of STACK using array implementation.
3. Write a C program to create menu drive program to implement QUEUE to perform the following :
   - (i) Insertion
   - (ii) Deletion
   - (iii) Modification
   - (iv) Listing of elements using pointers

4. Write a C program to create LINKED LIST representation of employee records and do the following operations using pointers:
   a. To add a new record
   b. To delete an existing record
   c. To print the information about an employee
   d. To find the number of employees in the structure

5. Write a C program to count the total nodes of the linked list.
6. Write a C program to insert an element at the end of the linked list.
7. Write a C program to insert an element at the begining of the Double linked list.
8. Write a C program to display the hash table , which is to be prepared by using the Mid-square method.
9. Write a C program to demonstrate Binary search.
10. Write a C program to insert nodes into a Binary tree and to transverse in pre-order.
11. Write a C program to arrange a set of numbers in ascending order using QUICK-SORT.
12. Write a C program to arrange a set of numbers in descending order using EXCHANGE-SORT.

ALLIED PAPER 1 : MATHEMATICAL FOUNDATIONS FOR COMPUTER SCIENCE

Subject Description:

This subject deals with mathematical concepts like matrices, numerical analysis and statistical methods for computer science and applications

Goal:

To learn about the mathematical structures for computer applications.

Objective:

On successful completion of this subject the students should have :

- Understanding the concepts of mathematics
- Learning applications of statistical and numerical methods for computer science

Unit I

Matrices – Introduction – Determination – Inverse of a matrix – Rank of a Matrix - Eigen value Problems

Unit II

Set theory-Introduction-Set & its Elements-Set Description-Types of sets-Venn-Euler Diagrams- Set operations & Laws of set theory-Fundamental products-partitions of sets-minsets-Algebra of sets and Duality-Inclusion and Exclusion principle

Unit III

Mathematical logic – Introduction- prepositional calculus –Basic logical operations-Tautologies-Contradiction-Argument-Method of proof- Predicate calculus.

Unit IV

Relations – Binary Relations – Set operation on relations-Types of Relations – Partial order relation – Equivalence relation – Composition of relations – Functions – Types of functions – Invertible functions – Composition of functions.

Unit V

Graph Theory – Basic terminology – paths, cycle & Connectivity – Sub graphs - Types of graphs – Representation of graphs in compute memory - Trees – Properties of trees – Binary trees – traversing Binary trees – Computer Representation of general trees.

Text Book:

1. Engineering Mathematics Volume II – Dr M.K. Venkataraman – NPC (Unit I)
1. Discrete Mathematics – J.K. Sharma Second Edition – 2005 , Macmillan India Ltd.

Reference Books:

1. Discrete Mathematics Structures with Applications to computer science - J. P Tremblay R Manohar – Mc Graw Hill International Edition.
2. Discrete Mathematics – Dr M. K. Venketaramen, Dr N.Sridharan, N. Chandarasekaran – The National publishing Company Chennai.

CORE 3 :OBJECT ORIENTED PROGRAMMING WITH C++

Subject Description:

This subject deals with the programming concepts of Object Oriented Programming using C++.

Goal: To learn about Object Oriented Programming concepts.

Objective: On successful completion of this subject the students should have :

- Writing programming ability on OOPS concepts like Encapsulation, Data abstraction, Inheritance, Polymorphism and Exception handling etc.,

UNIT – I

Introduction to C++ - Key Concepts of OOP – Advantages – OO Languages – I/O in C++ - C++ Declarations - Control Structures – Decision Making Statements – If…Else – Jump – GOTO – Break – Continue – Switch Case Statements – Loops in C++ - For – While – Do…While loops – Functions in C++, In line Functions – Function Overloading.

UNIT – II

Class and Objects: Declaring objects – Defining member functions – Static member variables and functions – Array of objects – Friend functions – Overloading member functions – Bit fields and Class – Constructor and Destructors – Characteristics – Calling constructor and Destructors – Constructor and Destructor with static member.

UNIT – III

Operator Overloading: Overloading unary, Binary operators – Overloading friend functions – Type conversion - Inheritance: Types of inheritance: Single, Multilevel, Multiple, Hierarchical, Hybrid and Multi path inheritance – Virtual Base classes – Abstract Classes.

UNIT – IV

Pointers: Declaration – Pointer to class, object – THIS pointer – Pointer to derived classes and base classes – Arrays – Characteristics – Arrays of classes – Memory models – New and delete operators – Dynamic objects – Binding, Polymorphisms and Virtual functions.

UNIT – V

Files: File stream classes – File Modes – Sequential read/write operations – Binary and ASCII files – Random access operation – Templates – Exception handling – Strings – Declaring and initializing string objects – String attributes – Miscellaneous functions.

TEXT BOOKS

Ashok N Kamthane: Object Oriented Programming with ANSI and Turbo C++, Pearson Education Publ., 2003.

REFERENCE BOOKS:

1. E. Balagurusamy: Object Oriented Programming with C++, TMH Pub., 1998.
2. Maria Litvin and Gary Litvin: C++ for you++, Vikas Publ, 2002.
3. John R Hubbard: Programming with C++, TMH Publ. II Edition, 2002.
4. Bhushan Trivedi , " Programming with Ansi C++ ", Oxford university Press. 2007

Core Lab – 2: **OBJECT ORIENTED PROGRAMMING WITH C++**

1. Create a class to implement the data structure STACK . Write a constructor to initialize the TOP of the stack to 0 . Write a member function POP( ) to delete an element . Check for overflow and underflow conditions.

2. Create a class ARITH which consists of a FLOAT and an integer Variable . Write member ADD( ) , SUB ( ) , MUL ( ) , DIV ( ) , MOD ( ) to perform addition , multiplication ,division and modulus Respectively . Write member functions to get and display values .

3. Create a class MAT has a 2-d matrix and R&C represents the rows and columns of the matrix . Overload the operators +,-,* to add subtract and multiply two matrices . Write member functions to get and display MAT object values .

4. Create a class STRING . Write member function to initialize , get and display strings .Overload the operator + to concatenate two strings , = = to compare two strings and a member function to find the length of the string.

5. Create a class which consists of EMPLOYEE detail like eno,ename, dept, basic-salary, grade. Write member functions to get and display them. Derive a class PAY from the above class and write a member function to calculate da , hra , pf depending on the grade and Display the Payslip in a neat format using console I/O.

6. Create a class SHAPE which consist of two VIRTUAL FUNCTIONS Cal_Area( ) and Cal_PERI to calculate AREA and PERIMETER of various figures. Derive three classes SQUARE,RECTANGLE and TRIANGLE from the class SHAPE and calculate AREA and PERIMETER of each class separately and Display the result.

7. Create two classes which consists of two private variables, one float And one integer variables in each class. Write member functions to get and display them . Write FRIEND function common to arguments And the integer and float values of both the objects separately and Display the result.
8. Write a user defined function USERFUN( ) which has the formatting commands like setw( ) , showpoint , showpos precision( ). Write a program which prints an multiplication table and uses USERFUN( ) for formatting.
9. Write a program to perform Insertion , Deletion and Updation using files .
10. Write a program which takes a file as argument and copies in to another file with line numbers using Command Line Arguments.

Allied Paper 2: **Computer Oriented Numerical & Statistical Methods**

Subject Description:

This subject deals with various numerical methods and statistical applications for computer science.

Goal: To learn about the computer based numerical and statistical methods.

Objective:

On successful completion of this subject the students should have :

- Understanding various concepts of numerical analysis.
- Learning various applications statistical methods for Computer Science.

Unit I

The Solution of Numerical Algebraic & Transcendental Equations – Bisection method – Newton-Raphson method - The method of false position.

The Solution of Simultaneous Linear Algebraic Equation – Gauss Elimination method – Gauss Jordon Elimination method – Gauss Seidal method of iteration – Gauss – Jacobi method

Unit II

Numerical Differentiation – Newton's Forward Difference formula - Newton's backward difference formula – numerical Integration – Trapezoidal rule - Simpson's One-third rule – Simpson's three - eighths rule.

Unit III

Interpolation – Newton forward interpolation formula – Newton backward interpolation formula – LaGrange's formula – Numerical solution of ordinary differential equations – Taylor method – Euler method – Range kutta method.

Unit IV

Measures of central tendency – Mean, Median and mode – Relation between mean, median and mode. Dispersion – Range – Mean deviation & standard deviation.

Unit V

Correlation – Karl Pearson`s Coefficient of Correlation – Rank correlation regression – Regression Equations- Difference between correlation & Regression

Text Book:

1. Numerical Methods – P. Kandasamy , K. Thilagavathi, K. Gunavathi. S. & company Ltd. New Delhi Revised Edition 2005 (UNIT I, II & III)
2. Statistical – R. S. N. Pillai, V. Bagavathi **Sultan Chand and Sons** & Company Ltd. New Delhi. Reprint 2005. (UNIT IV & V)

Reference Book:

1. Computer oriented numerical methods – V. Rajaraman, PHI Pub.
2. Numerical methods – E. Balagurusamy Tata MC Graw Hill.

Fundamental of Mathematical statistics S C Gupta, V. K. Kapoor **Sultan Chand and Sons**

CORE-4 : SYSTEM SOFTWARE & OPERATING SYSTEM

UNIT I	Introduction –System Software and machine architecture-Assemblers-Basic assembler functions - Machine dependent features-program relocation-Machine independent features – literals - symbol defining statements-expressions-program blocks-control sections and program linking - Assembler design options-one pass assemblers-multi pass assemblers. Loader and Linkers: Basic Loader Functions - Machine dependent loader features – relocation – program – linking - Machine independent loader features - Automatic Library search - Loader options - Loader design options - linkage editor - dynamic linking - Bootstrap loader.
UNIT II	Macroprocessor: Basic macroprocessor functions - Machine independent macroprocessor features - concatenation of macro parameter macro processor design options-recursive macro expansion - general purpose macro processor - macro processing within language translators. Text Editors: Overview of editing process - user interface - editor structure
UNIT III	Machine dependent compiler features - Intermediate form of the program-Machine dependent code optimization-machine independent compiler features-Compiler design options-division into passes-interpreters-p –code compilers-compiler-compilers.
UNIT IV	Introduction: Definition of DOS – History of DOS – Definition Of Process - Process states - process states transition – Interrupt processing – interrupt classes - Storage Management Real Storage: Real storage management strategies – Contiguous versus Non-contiguous storage allocation – Single User Contiguous Storage allocation- Fixed partition multiprogramming – Variable partition multiprogramming. Virtual Storage: Virtual storage management strategies – Page replacement strategies – Working sets – Demand paging – page size.
UNIT V	Processor Management Job and Processor Scheduling: Preemptive Vs Non-preemptive scheduling – Priorities – Deadline scheduling - Device and Information Management Disk Performance Optimization: Operation of moving head disk storage – Need for disk scheduling – Seek Optimization – File and Database Systems: File System – Functions – Organization – Allocating and freeing space – File descriptor – Access control matrix.
Text Book(s)	1. Leland –L-Beck, "System Software-An Introduction to Systems Programming", Pearson Education Publishers, Third Edition-2003. 2. H. M Deitel , " Operating Systems " , 2nd Edition, Perason Education Publication,2003.
Ref. Book(s)	1. Achyut s Godbole , " Operating Systems" , TMH Publications , 2002 2. John J. Donovan , "Systems Programming " , TMH Publications , 1991 3. D.M. Dhamdhrer, "Systems Programming and Operating Systems ", 2nd Revised Edition

Core 5 : JAVA PROGRAMMING

UNIT I	Introduction to Object-Oriented Programming – The Java language – Variable Declarations and Arrays – Operators in Java. Control Statements: An Introduction – Selection Constructs – Iteration Constructs – Jump Constructs . Introduction to Classes: Instance variables – Class variables – Instance Methods – Constructors – Class Methods – Declaring Objects – Garbage Collection.
UNIT II	Classes and Methods in Detail: Method Overloading – Constructor Overloading – The this Reference – Using Objects in Method – Recursion – Access Modifiers – Inner Classes – Command Line Arguments. Inheritance: Basics of Inheritance – Super Class Variable and Subclass Object – The super reference – Constructor chaining – Method Overriding – The final Keyword. Abstract Classes and Interfaces: The abstract Classes and Methods – Defining Interface – Implementing Interfaces – Extending Interface – Interface Reference. Exception Handling: Types of Exceptions-Uncaught Exceptions – Handling Exceptions – User Defined Exceptions
UNIT III	Multithreaded Programming: Concept of Threads – Thread Creation – Thread's Life Cycle – Thread Scheduling – Synchronization and Deadlock – Inter-thread Communication. Packages and Access Modifiers: Packages – An Introduction – The package Declaration – The import Statement – Illustration Package – The Java Language Packages. Handling Strings: Creating Strings – Operations on Strings – Character Extractor Methods – String Comparison Methods
UNIT IV	Input Output Classes: Input and Output Operations – Hierarchy of classes in java.io Package – File class – InputStream and OutputStream Classes – FileInputStream and FilterOutputStream Classes – Reader and Writer Classes – RandomAccessFile Class-StreamTokenizer. Applets: Applet Basics – Applet Life Cycle – Running Applets – Methods of the Applet Class – Font Class – FontMetrics Class
UNIT V	Abstract Windowing Toolkit – AWT classes – Hierarchy of Classes – Control Fundamentals – Component Class – Basic Component Classes – Various Container Classes – Frame Window in an Applet – Menus. Layout Management and Event Handling: Layout Management Policies – Standard Layout Managers – Handling Events – Hierarchy of Event Classes – Event Delegation Model – Event Classes – Event Listener Interfaces – Adapter Classes
Text Book(s)	Instructional Software Research and Development (ISRD) Group, "Introduction to Object Oriented Programming through Java", Tata McGraw-Hill Publishing Company Limited, New Delhi, 2007.
Ref. Book(s)	E.BalaGurusamy, " Programming with JAVA – A Primer", Tata McGraw-Hill Publishing Company Limited, Third Edition, 2007 John R. Hubbard, " Schaum's Outline of Programming with Java", Tata McGraw-Hill Publishing Company Limited, Second Edition, 2007

Core Lab 3: PROGRAMMING LAB JAVA

1.	Program to generate a Pascal Triangle
2.	Program for roots of a Quadratic Equation
3.	Program for merging two sorted arrays
4.	Program for counting letter frequencies in a given string
5.	Program for Multithreading
6.	Program for preparing mark list using inheritance
7.	Program for Multiple inheritance
8.	Program for creating your own package
9.	Program that counts the number of lines, words and characters in a given text file
10.	Program that right-justifies a text file
11.	Program that display a digital clock using applet
12.	Program that generates a human face using applet
13.	Create an applet containing three buttons labeled red, green and blue. Depending on the button pressed, the background color of the applet should change
14.	Create an applet that accepts two numbers in two textfields. Add a button labeled “equals” which when pressed should add the two numbers and display the result in the third text field

Allied Paper 3: MICROPROCESSOR AND ALP

UNIT I	Introduction to microprocessors : Evolution of microprocessors – Single-chip Microcomputer – Embedded Microprocessors – Bit- Slice processors – Microprogramming – RISC and CISC Processors – Scalar and Superscalar Processors – Vector Processors – Array Processors – Symbolic Processors – Digital Signal Processors Intel 8086 – Pin Description of Intel 8086 – Operating modes of 8086 – Register organization of 8086 – BIU and EU – Interrupts – 8086 based computer system – Addressing Modes of 8086
UNIT II	8086 Instruction Set – Instruction Groups – Addressing Mode Byte – Segment Register Selection – Segment Override – 8086 Instructions Assembly Language Programs for 8086: Largest Number, Smallest Number in a Data Array – Numbers in Ascending and Descending order – Block Move or Relocation – Block Move using REP instruction – Sum of a series – Multibyte Addition
UNIT III	Intel 386 and 486 Microprocessors: Intel 386 and 486 Microprocessor – 486DX Architecture – Register Organization of 486 Microprocessor – Memory Organization – Operating Modes of Intel 486 – Virtual Memory – Memory Managament Unit – Gates – Interrupts and Exceptions – Addressing Modes of 80486 – Pin Configuration
UNIT IV	Input devices – Output devices – Memory and I/O addressing – 8086 Addressing and Address Decoding – Programmable I/O Ports – DMA Data Transfer. Other Microprocessors – PowerPC Microprocessors – Pentium Microprocessors – Pentium Pro microprocessor – Alpha Microprocessor – Cyrix Microprocessor – MIPS Microprocessor – AMD Microprocessor
UNIT V	MOTOROLA 68000, MOTOROLA 68020, MOTOROLA 68030, MOTOROLA 68040 Interfacing of A/D Converter and Applications: Introduction – Interfacing of ADC 0808 or ADC 0809 to Intel 8086 – Bipolar to Unipolar Converter – Sample and Hold Circuit, LF 398 – Microprocessor-based Measurement and Control of Physical Quantities
Text Book(s)	Badri Ram, " Advanced Microprocessors and Interfacing", Tata McGraw-Hill Publishing Company Limited, Fourteenth reprint, 2007
Ref. Book(s)	A.K. Ray, K.M. Bhurchandi, " Advanced Microprocessors and Peripherals", Tata McGraw-Hill Publishing Company Limited, Second Edition, 2007

Diploma Paper 1: INTRODUCTION TO WEB DESIGN AND APPLICATIONS

UNIT I	**Fundamentals of Electronic Mail :** Introduction - Email :Advantages and Disadvantages - Userids, Passwords and Email addresses - Message Components - Message Composition - Mailer Features - E mail Inner Workings - Email Management - MIME Types . **Browsing and Publishing** ; Introduction – Browser bare bones – Coast – to – Coast surfing – Hyber Text Markup Languages – Web page installation – Web page set up – HTML formatting and hyper link creation
UNIT II	**The internet** : Introduction – internet defined – internet history – the way the internet works – internet congestion – Inter net culture – Business culture and the internet – collaborative computing and the internet . **World Wide Web** : introduction the web defined – web browser details – web writing styles – web presentation outline, design , and management – registering web pages
UNIT III	**Searching the world wide web** : introduction – directories , search engines and metasearch engines – search fundamentals – search strategies – how does a search engine works. **Telnet and FTP** : introduction – telnet and remote login – File transfer – Computer Viruses
UNIT IV	**Basic HTML** : introduction – semantic versus syntactic – based style types – headers and footers – lists – tables – debugging . **Advanced HTML :** introduction – frames – html forms – CGI scripts – dynamic documents – html tools – next generation html – cascading style sheets
UNIT V	**News groups, Mailing Lists, Chat rooms and MUDs** : introduction – news groups and mailing lists history – mailing list fundamentals – newsgroups and mailing lists availability – chat-rooms – MUDs. **Electronic Publishing :** introduction – electronic publishing advantages and disadvantages – copy right issues – project Gutenberg and on-line books – electronic journals , magazines and news papers – miscellaneous publishing issues.
Text Book(s)	Raymond Greenlaw, Ellen Hepp , Fundamentals of the INTERNET and the World Wide Web, Second Edition , Tata McGRAW –HillEdition, 2005

Core 6: PRINCIPLES OF DATA COMMUNICATIONS AND NETWORKS

UNIT I	Introduction to Data Communications and Networking – Information Encoding – Analog and Digital Transmission Methods – Modes of Data Transmission and Multiplexing – Transmission Errors: Detection and Correction
UNIT II	Transmission Media : Guided Media, Unguided Media – Network Topologies: Mesh, Star, Tree, Ring, Bus – Switching: Circuit switching, Message switching, Packet switching – Routing Algorithms: Routers and Routing – Factors affecting Routing Algorithms – Routing Algorithms – Approaches to Routing – Network Protocols and OSI Model
UNIT III	Local Area Networks (LAN), Metropolitan Area Networks (MAN) and Wide Area Networks (WAN) – Integrated Services Digital Network (ISDN) – X.25 Protocol – Frame Relay – Asynchronous Transfer Mode (ATM)
UNIT IV	Internetworking Concepts, Devices, Internet Basics, History and Architecture – Ways of Accessing the Internet – An Introduction to TCP / IP, IP, ARP, RARP, ICMP
UNIT V	TCP: Features of TCP, Relationship between TCP and IP, Ports and Sockets, TCP connections, What makes TCP Reliable, TCP Packet Format – User Datagram Protocol (UDP): UDP Packet, Difference between UDP and TCP – Domain Name System (DNS) – Electronic Mail (Email) – File Transfer Protocol (FTP) – Web Browser Architecture
Text Book(s)	Achyut S.Godbole, " Data Communications and Networks", Tata McGraw-Hill Publishing Company Limited, Ninth reprint, 2007
Ref. Book(s)	Behrouz A. Forouzan, " Data Communications and Networking – Second Edition Update " Tata McGraw-Hill Publishing Company Limited, Nineteenth reprint, 2007 Andrew S. Tanenbaum, "Computer Networks", III Edition, Prentice Hall of India, 2000

Core 7: CLIENT / SERVER COMPUTING

UNIT I	Client – Server computing – What is Client / Server ? – File servers, Database servers, Transaction servers, Groupware servers, Object servers, Web servers – FAT servers or client / server – Client / Server building blocks
UNIT II	Client / Servers and operating systems – The Anatomy of a server program – Needs of Client / Server from an OS – server scalability – Client anatomy – Client and server OS trends – Client OS and Server OS. NOS: Creating the single system image – Remote Procedure Calls (RPC) – Messaging and Queueing: The MOM Middleware
UNIT III	SQL Database Servers: What does SQL do ? – The ISO standards – What does a database server do ? – Stored procedures, Triggers and Rules. Data warehouses – OLTP (OnLine Transaction Processing) – Decision Support Systems (DSS) – Executive Information System (EIS) – comparing Decision Support and OLTP systems – Production vs Information Databases – The data ware house
UNIT IV	Client / Server Transaction Processing – The ACID properties – Transaction Models – TP monitors – Client / Server groupware – Importance of Groupware – What is Groupware – The components of Groupware. Distributed Objects, CORBA style – Object management architecture – Compound Documents – The compound document frame work
UNIT V	Web client / server – What is URL? – Shortest HTML tutorial – HTTP – 3 tier client / server – HTML web based forms – CGI : The server slide of the web – web security – The internet and the intranets – Compound documents and the object web – The DCOM / OLE Object Web – The CORBA object web.
Text Book(s)	Robert Orfali, Dan Harkey & Jeri Edwards, " The Essential Client / Server Survival Guide", Galgotia Publication Private Limited, Second Edition, 2002

CORE LAB 4: NETWORK LAB

1	Write a program to Detect Errors using Vertical Redundancy Check (VRC).
2	Write a program to Detect Errors using Longitudinal Redundancy Check (LRC).
3	Write a program to Detect Errors using Cyclic Redundancy Check (CRC).
4	Write a Socket program to implement Asynchronous Communication.
5	Write a Socket program to implement Isochronous Communication.
6	Write a program to implement Stop & Wait Protocol.
7	Write a program to implement Sliding Window Protocol.
8	Write a Socket Program to Perform file transfer from Server to the Client.
9	Write a program to implement the Shortest Path Routing using Dijkstra algorithm.
10	Write a Program to implement Remote Procedure call under Client / Server Environment

Allied Paper 4: EMBEDDED SYSTEMS

UNIT I	Introduction to Embedded System: An Embedded System – Processor in the System – Other Hardware units – Software embedded into a system – Exemplary embedded system – Embedded system on chip and in VLSI circuit. Processor and Memory organization: Structural units in a processor – Processor selection – Memory devices – Memory selection - Allocation of memory – DMA – Interfacing processor, memories and I/O devices
UNIT II	Devices and buses for device networks: I/O devices – Timer and counting devices – Serial communication – Host system. Device drivers and Interrupts servicing mechanism: Device drivers – Parallel port device drivers – Serial port device drivers – Device drivers for IPTD – Interrupt servicing mechanism – Context and the periods for context-switching, dead-line and interrupt latency
UNIT III	Programming concepts and embedded programming in C and C++: Software programming in ALP and C – C program elements – Header and source files and processor directives – Macros and functions – Data types – Data structures – Modifiers – Statements – Loops and pointers – Queues – Stacks – Lists and ordered lists – Embedded programming in C++ - Java – C program compiler and cross compiler – Source code for engineering tools for embedded C / C++ - Optimization of memory needs
UNIT IV	Program modeling concepts in single and multi processor systems: Modeling process for software analysis before software implementation – Programming models for event controlled or response time constrained real time programs – Modeling of multiprocessor systems. Software engineering practices: Software algorithm complexity – Software development process life cycle and its models – Software analysis – Software design – Implementation – Testing, Validation and debugging – Software maintenance
UNIT V	Inter-process communication and synchronization of processes, tasks and threads: Multiple processor – Problem of sharing data by multiple tasks and routines – Inter process communication. Real time operating systems: Operating system services – I/O subsystem – Network operating systems – Real time and embedded operating systems – Interrupt routine in RTOS environment – RTOS task scheduling – Performance metric in scheduling
Text Book(s)	Raj Kamal, " Embedded Systems – Architecture, Programming and Design", TMH, 2007

Diploma Paper 2 - Lab : HTML, XML, Java Scripts

Students are required to write code snippets, which covers the following objectives

1	Design Simple Web Pages using standard HTML tags like, HEAD, TITLE, BODY
2	Design HTML web pages, which make use of INPUT, META, SCRIPT, FORM, APPLET, BGSOUND, MAP
3	Working with various attributes of standard HTML elements
4	Using Java Script's Window and document objects and their properties and various methods like alert (), evaI (), Parselnt () etc. methods to give the dynamic functionality to HTML web pages
5	Writing Java Script snippet which make use of Java Script's inbulit as well as user defined objects like navigator, Date Array, Event, Number etc.
6	Write code which does the form validation in various INPUT elements like TextFiled, Text Area, Password, Selection list etc.
7	Writing XML web Documents which make use of XML Declaration, Element Declaration, Attribute Decelaration
8	Usage of Internal DTD, External DTD, Entity Declaration.

Core 8 : SOFTWARE ENGINEERING

UNIT I	Introduction to Software Engineering: Some Definition – Size Factors – Quality and Productivity Factors – Planning a Software Project – Defining the Problem – Developing a Solution Strategy – Planning the Development Process. Software Cost Estimation: Software Cost Factors – Software Cost Estimation Technique – Estimating Software Maintenance Costs – Software Requirements Definition – Formal Specification Techniques
UNIT II	Software Design: Fundamental Design Concepts – Modules and Modularization Criteria – Coupling and Cohesion – Design Notations – Design Techniques: Structured Design – Integrated Top-Down Development – Jackson Structured Programming – Real-Time and Distributed System Design - Design Guidelines
UNIT III	Implementation Issues: Structured Coding Techniques: Single Entry, Single Exit Constructs – Efficiency Considerations – Violations of Single Entry, Single Exit – Data Encapsulation – The Goto Statements – Recursion – Coding Style – Standard and Guidelines – Documentation Guidelines . Verification and Validation Techniques: Quality Assurance – Walkthroughs and Inspections
UNIT IV	Testing for Quality – Functional Testing – System Testing – User Satisfaction Testing – Test Cases and Test Plans. Advanced Topics in Software Engineering: Development of Critical Systems – The Future of Software Engineering
UNIT V	Special Topics in Software Engineering: Web Applications Development Engineering – Component-based software engineering – Class room software engineering – Software system maintenance – Software verification for QA – Software engineering support tools – Overiview of PERT /CPM – Reengineering and software reengineering
Text Book(s)	Richard Fairley, "Software Engineering Concepts", Tata McGraw-Hill Publishing Company Limited,25th reprint, 2007 Waman S.Jawadekar, "Software Engineering-Principles and Practice" Tata McGraw-Hill Publishing Company Limited, Fifth reprint, 2007
Ref. Book(s)	1. Pankaj Jalote, "An Integrated Approach to Software Engineering", Narosa Publishing House, New Delhi, 2000 2. Sommerville, "Software Engineering" Pearson Education, New Delhi, 2000

Core 9 : VISUAL PROGRAMMING

UNIT I	Visual Basic: Getting started – Visual Basic environment: Tool bars – The Tool box and Custom controls and components – using file menu, edit menu, view menu, project menu, format menu, debug menu, adding menu and window menu – customizing a form and writing simple programs
UNIT II	Building the user interface: the tool box – creating controls – properties setting – First steps in programming: Code window – Visual Basic's editing tools – Statements in VB – Data types – Working with variables – Input boxes and Message boxes – displaying information
UNIT III	Controlling program flow – Built-in functions – User defined functions and procedures – Control arrays – List and Combo boxes – the Flex grid control
UNIT IV	Finishing the interface: Frames – Option buttons – Check boxes – Scroll bars – Timers – Common Dialog boxes – The Microsoft windows common controls 6.0 – Menus – MDI forms
UNIT V	Communicating with other window applications – Database development with Visual Basic (DAO, RDO) – Building ActiveX controls
Ref. Book(s)	1. Gary Cornell, "Visual Basic 6.0 from the Ground Up", Tata McGraw Hill Company, 1999 2. Content Development Group, " Visual Basic 6.0 Programming" Tata McGraw-Hill Company, Ninth reprint, 2007 3. Noel Jerke, "The Complete Reference : Visual Basic 6.0", Tata Mc Graw-Hill Company, 24th reprint, 2006

CORE-10: RELATIONAL DATABASE MANAGEMENT SYSTEM AND ORACLE

UNIT I	**Database Concepts: A Relational approach:** Database – Relationships – DBMS – Relational Data Model – Integrity Rules – Theoretical Relational Languages. **Database Design: Data Modeling and Normalization**: Data Modeling – Dependency – Database Design – Normal forms – Dependency Diagrams - Denormalization – Another Example of Normalization.
UNIT II	**Oracle9*i*: Overview:** Personal Databases – Client/Server Databases – Oracle9i an introduction – SQL *Plus Environment – SQL – Logging into SQL *Plus - SQL *Plus Commands – Errors & Help – Alternate Text Editors - SQL *Plus Worksheet - *i*SQL *Plus. Oracle Tables: DDL: Naming Rules and conventions – Data Types – Constraints – Creating Oracle Table – Displaying Table Information – Altering an Existing Table – Dropping, Renaming, Truncating Table – Table Types – Spooling – Error codes.
UNIT III	**Working with Table: Data Management and Retrieval:** DML – adding a new Row/Record – Customized Prompts – Updating and Deleting an Existing Rows/Records – retrieving Data from Table – Arithmetic Operations – restricting Data with WHERE clause – Sorting – Revisiting Substitution Variables – DEFINE command – CASE structure. **Functions and Grouping**: Built-in functions – Grouping Data. **Multiple Tables: Joins and Set operation**s: Join – Set operations.
UNIT IV	**A Programming Language:** History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators. **Control Structures and Embedded SQL**: Control Structures – Nested Blocks – SQ L in PL/SQL – Data Manipulation – Transaction Control statements. **PL/SQL Cursors and Exceptions:** Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions.
UNIT V	**PL/SQL: UNIT-V: PL/SQL Composite Data Types:** Records – Tables – Varrays. **Named Blocks**: Procedures – Functions – Packages –Triggers –Data Dictionary Views.
Text Book(s)	**DATABASE SYSTEMS USING ORCLE – Nilesh Shah,** 2nd edition, PHI.
Ref. Book(s)	**1. DATABASE MANAGEMNET SYSTEMS – Arun Majumdar & Pritimoy Bhattacharya**, 2007, TMH. **2. DATABASE MANAGEMETN SYSTEMS – Gerald V. Post,** 3rd edition, TMH.

CORE LAB 5: VISUAL BASIC & ORACLE PROGRAMMING

	VISUAL BASIC
1	1. Write a simple VB program to accept a number as input and convert them into a. Binary b. Octal c. Hexa-decimal
2	Write a simple VB program to add the items to list box with user input and move the selected item to combo box one by one.
3	Write a simple VB program to develop a calculator with basic operation.
4	Design an form using common dialog control to display the font, save and open dialog box without using the action control property.
5	Write a simple program to prepare a Questionnaire.
6	2. Write a VB Program to develop a menu driven program Add a MDI window in the form and arrange them in the cascading/horizontal style using menus (Create a menu to add form, arrange) (Menu Item 1). Also change the form color using the menu in another menu item (Menu Item 2).
	ORACLE
7	3. Create the following table *(PK - Primary Key, FK – Foreign Key)* **cat_head, route_head, place_head, route_detail, ticket_detail, ticket_head** with the mapping given below: cat_head — route_head *(cat_code PK)* — *(cat_code FK)* route_head — route_detail *(route_id PK)* — *(route_id FK)* ticket_head — ticket_detail *(tick_no PK)* — *(tick_no FK)* place_head — route_detail *(place_id PK)* — *(place_id FK)* (i) Alter the table ticket_header to add a check constraint on ticket_no to accept values between 1 and 500 (ii) Alter table route_header to add a column with data type as long.
8	. (a) Insert values to above tables (b) Display only those routes that originate in madras and terminate at cochin (c) Display only distinct category code from the table route_header in descending manner. Update the table route_header to set the distance between madras and coimbatore as 500

9	a. Select rows from ticket_details such that ticket number greater than any ticket_number in Ticket_header. B. Select rows from route_header such that the route_id are greater than all route_id in route_detail Where place id is "100". C. Create view tick from ticket_header with Ticket_no, Origin, Destination, route_id
10	Generate a report from the table ticket_detail for the particular ticket_no
11	a. Write a PL/SQL block to update the bus_station to be "ERODE" where place_id is '01' or '05' [place_header] b. Write a PL/SQL block to satisfy the following condition by accepting the route_id as user input. If the distance is less than 500 than update the fare to be 200 c. Write a Database trigter before insert for each row on the table route_detail not allowing transaction on Saturday / Sunday Write a Database trigger before delete for each row not allowing deletion and give the appropriate message on the table route_details
12	Develop a Simple Project for Student Database Management System using VB as front end and ORACLE as back end.

Diploma Paper 3 : WEB TECHNOLOGY AND APPLICATIONS

UNIT I	**Networking protocols and OSI model** : protocols in computer communications - the OSI models – OSI layer functions. **Internet working concepts, devices, basics, history and architecture :** Why internetworking – problesms in internetworking – dealing with incompatibility issues – a virtual network – internetworking devices- rpeaters - bridges – routers – gateways - a brief history of the internets -growth of the internets – internet toplogy – internal architecture of an ISP
UNIT II	**TCP/IP Part I** : introduction to TCP /IP , IP , ARP, RARP, ICMP : TCP/IP basics – Why IP address ? – logical address – TCP / IP example – the concepts of IP addresses – Address resolution protocol – Reverse Address Resolution Protocol – Internet Control Message Protocol – Datagram Fragmentation and reassebly. **TCP/IP Part II** : (TCP, UDP) Basics of TCP – Features of TCP – Relationship between TCP and IP – ports and sockets – connections- passive open and active open – TCP connections – What makes TCP reliable ? – TCP packets format – persistent TCP connections – used datagram protocol – UDP packets – difference between UDP and TCP
UNIT III	**TCP/IP part III** – (DNS, E-mail, FTP, TFTP) – domain name system (DNS) – Electronic mail (E-mail) – File Transfer Protocol (FTP) – Trivial File Transfer Protocol (TFTP). **TCP/IP Part IV** – (WWW, HTTP, TELNET) : A brief history of WWW – the basics of WWW and Browsing – locating information on the internet – Hyber Text Markup Language (HTML) – Web – Browser Architecture – Web pages and Multimedia – Remote login – TELNET
UNIT IV	**Introduction to web technology** – features required for enabling e-commerce – web-pages – types and issues - Tiers – the concept of a Tier – a comparison of microsoft and java technologies – web pages – static web pages – plug-ins –

	introduction to frames and forms – frames - forms . **Dynamic Web pages** : the need for dynamic web pages – the magic of dynamic web pages – an overview of dynamic of web page technologies – an overview of dynamic HTML (DHTML) – common gateway interface (GCI) – Microsoft's Active Server Pages (ASP) – Basics of ASP technologies ASP example – modern trends in ASP. Java and the Concepts of a Virtual Machine – Java servlets and jave server pages (JSP) – Jave servlets – Java server pages (JSP)
UNIT V	**Active web pages** – Active web pages is a better solution java applets – Why are active web pages powerful ? when not to use active web pages – lifecycle of Java applets – Active X controls – Java beans . **Extensible Markup Languages(XML**) – Standard generalised Markup language (SGML) - Basics of XML – XML parsers – the need for Standard
Text Book(s)	Achyut S. Godbole, Atul Kahate , Web technologies , Tata McGraw Hill, Sixth reprint, 2007

Core 11 : SOFTWARE TESTING

UNIT I	**Software Development Life Cycle models:** Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. **White-Box Testing**: Static Testing – Structural Testing –Challenges in White-Box Testing.
UNIT II	**Black-Box Testing:** What is Black-Box Testing? - Why Black-Box Testing? – When to do Black-Box Testing? – How to do Black-Box Testing? – Challenges in White Box Testing - **Integration Testing:** Integration Testing as Type of Testing – Integration Testing as a Phase f Testing – Scenario Testing – Defect Bash
UNIT III	**System and Acceptance Testing:** system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Non-functional Testing – Acceptance Testing – Summary of Testing Phases.
UNIT IV	**Performance Testing:** Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. **Regression Testing:** What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.
UNIT V	**Test Planning, Management, Execution and Reporting:** Test Planning – Test Management – Test Process – Test Reporting –Best Practices. **Test Metrics and Measurements:** Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.
Text Book(s)	**SOFTWARE TESTING Principles and Practices – Srinivasan Desikan & Gopalswamy Ramesh,** 2006, Pearson Education.

Ref. Book(s)	**1. EFFECTIVE METHODS OF SOFTWARE TESTING–William E.Perry,** 3rd ed, Wiley India. **2. SOFTWARE TESTING – Renu Rajani, Pradeep Oak,** 2007, TMH

Core 12:Mobile Computing

UNIT I	Introduction: Mobility of Bits and Bytes –Wireless The Beginning – Mobile Computing – Dialogue Control – Networks – Middleware and Gateways – Application and services- Developing Mobile computer Applications – security in mobile computing – Standards _ Why is it necessary – Standard bodies. MOBILE COMPUTTING ARCHITECTURE: History of computers and Internet – Architecture for mobile computing – Three-tier architecture – Design considerations for mobile computing – Mobile computing through Internet – Making exiting applications mobile enabled
UNIT II	MOBILE COMPUTING THROUGH TELEPHONY: Evaluation of telephony – Multiple access procedures – Mobile computing through telephone – IVR Application – Voice XML – TAPI
UNIT III	EMERGING TECHNOLOGIES: Blue Tooth – RFID – WiMAX – Mobile IP – IPv6 – Java Card. GSM : Global System for mobile communications – GSM Architecture – GSM Entities – Call routing in GSM – PLMN Interfaces – GSM Addresses and Identifiers – Network Aspects in GSM – GSM Frequency allocations – Authentications and Security. SMS
UNIT IV	GPRS – GPRS and packet data network – GPRS network architecture – GPRS network operations – Data services in GPRS – Application for GPRS- Limitations – Billing and Charging. WAP : MMS – GPRS Applications
UNIT V	CDMA and 3G: Spread spectrum technology – Is 95 – CDMA vs GSM – Wireless Data – Third generation networks – Applications on 3G WIRELESS LAN: Wireless LAN advantages – IEEE 802.11 standards – Architecture – Mobile in Wireless LAN – Deploying wireless LAN – Mobile adhoc networks and sensor networks – Wireless LAN Security –WiFi vs 3G
Text Book(s)	MOBILE COMPUTING, Asoke K Talukder , Roopa R Yavagal, TMH, 2005

Core Lab 6 : TESTING TOOLS

1.	Perform the Win Runner Testing Tool and Analyze the suitable problem and results.
2.	Perform the Quick Test Professional Testing Tool and Analyze the suitable problem and results.
3.	Perform the Test Director Testing Tool and Analyze the suitable problem and results.
4.	Perform the Load Runner Testing Tool and Analyze the suitable problem and results.
5.	Perform the Silk Test Testing Tool and Analyze the suitable problem and results.

DIPLOMA PAPER 4 - Lab : ASP

1.	Design a personal web page using ASP.
2.	Design a data entry form in ASP.
3.	Write a Program in ASP to get data using a form, validate the data and returns the same data for correction if any using the same form.
4.	Write a program in ASP to display the Session properties.
5.	Write a program in ASP that makes use of Ad Rotator component.
6.	Write a program in ASP that makes use of Browser Capabilities component.
7.	Write a program in ASP that makes use of Content Rotator component.
8.	Write a program in ASP that makes use of page counter component.
9.	Write a program in ASP to get the data of students using forms and stores them in database.
10.	Write a program in ASP to perform record navigation using a form.

Elective I - A : MULTIMEDIA SYSTEMS

UNIT I	Introduction – Branch Overlapping Aspects of Multimedia Content – Global Structure – Multimedia Literature . Multimedia – Media and Data Streams – Medium .
UNIT II	Sound/Audio : Basic Sound Concepts – Music –Speech , Images and Graphics : Basic Concepts – Computer Image Processing – Video and Animation : Basic Concepts – Television – Computer Based Animation .
UNIT III	Data Compression : Storage Space – Coding Requirements – JPEG – MPEG – DVI , Optical Storage Media , Computer Technology – Multimedia Operating System.
UNIT IV	Networking System : Layers , Protocols and Services , Networks , Metropolitan Area Networks , WAN , Multimedia Communication System
UNIT V	User Interfaces, Synchronization , Abstraction for Programming : Abstraction Levels – Libraries – System Software – Toolkit – Higher Programming Languages . Multimedia Application : Introduction – Media Population – Media Compos ion – Media Communication – Trends.
Text Book(s)	Ralf Steinmetz & Klara Nahrstedt – " Multimedia Computing , Communication & Applications " Pearson Education.

Elective I - B : .NET PROGRAMMING

UNIT I

Introduction to .Net: .net framework- difference between VB6 and VB.Net-Object-Oriented programming and VB.Net-Data types-Variables-Operators-Arrays-Conditional logic.

UNIT II

Procedures- Dialog boxes- File IO and System objects- Error handling- Namespaces-Classes and Objects- Multithreading-Message Queue- Programming MSMQ.

UNIT III

VB.Net IDE-Compiling and Debugging-Customizing- Data access: ADO.Net- Visual studio .Net and ADO.Net. Windows Forms: Controls-Specific controls- Irregular forms.

UNIT IV

Vb.Net and web: Introduction to ASP.Net page framework- HTML server controls- Web controls- Validation controls- Events-CSS- State management- Tracing- Security.

UNIT V

Web Services: Introduction- Infrastructure- SOAP-Building web services- Deploying and publishing web services- Finding and consuming web services.

Text Book:

1. Bill Evjen, Jason Beres, et.al, “Visual Basic .Net programming”, Wiley Dreamtech India (p) Ltd. ISBN 81-265-0254-1. (Chapters: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17, 18, 19, 21, 22, 25, 26, 27, 29, 31, 32, 33, 34, 35, 36, 38, 39, 40, 42, 43, 44, 45, 46, 47, 48, 49, 50).

References:

1. Fergal Grimes, “Microsoft .NET for programmers”, shroff publishers & distributors (p) Ltd. ISBN 81-7366-540-0.
2. Thuan Thai & Hoang Q.Lam, “.NET Framework essentials”, shroff publishers & distributors (p) Ltd. ISBN 81-7366-654-7

Elective I - C : OBJECT ORIENTED ANALYSIS AND DESIGN

Subject Description

This Course presents the object oriented analysis and design emphasizing the software engineering aspects, methodologies in object oriented techniques.

Goals

To enable the students to learn the object oriented techniques to system analysis and design.

Objectives

On successful completion of the course the students should have:

- Understood the trends and principles of object oriented methodoloies.
- Gained problem solving skills using developing object based models.

Contents

UNIT I

Object Orientation – System Development – Review of Objects – Inheritance – Object Relationships – Dynamic binding – OOSD life cycle – Process – Analysis- Design - Prototyping – Implementation – Testing – Overview of Methodologies

UNIT II

OMT – Booch methodology, Jacobson – Methodology – patterns – Unified approach– UML –Class Diagrams – Dynamic Modeling

UNIT III

Using Case model – Creation of classes – Noun Phrase approach – responsibilities – Collaborators and relationships – Super – Sub class - Aggregation

UNIT IV

OO Design axioms – Class visibility – refining attributes- Methods – Access layer – OODBMS – Class mapping view layer

UNIT V

Quality Assurance testing – Inheritance and testing - Test Plan – Usability testing – User satisfaction testing

References:

1. Ali Brahmi , " Object Oriented System Development" , *McGraw-Hill International Edition*

2. Object-Oriented Analysis and Design *by* Grady Booch, *Addison – Wesley*

3. Object Oriented Modelling and Design *by James Rumbaugh , Micheal Blaha, Prentice Hall*

ELECTIVE II – A : NETWORK SECURITY & ADMINISTRATION

UNIT I	**Attacks on computers and computer security** : Introduction –Need for security – Security approaches -principles of security –Types of attacks. **Cryptography** : Concepts and techniques - - introduction – plain text and cipher text –substitution techniques - transposition techniques – encryption and decryption – symmetric and asymmetric key cryptography – steagnograpgy – key range and key size – possible types of attacks
UNIT II	**Symmetric Key Algorithms and AES** : Introduction - Algorith Types and modes – An overview of symmetric key cryptography – Data encryption Standard (DES) – International Data Encryption Algorithm (IDEA) – RC4 – RC5 – Blowfish – Advanced Encryption Standard (AES) . **Asymmetric Key Algorithms**: Digital Signature and RSA : Introduction – brief history of Asymmetric Key cryptography – An Overview of Asymmetric Cryptography - The RSA algorithm – Symmetric and asymmetric cryptography together – digital signatures – Knapsack algorithm – Some other algorithms.
UNIT III	**Digital certificate and Public Key Infrastructure (PKI)** : Introduction – digital certificates – private key management- the PKIX model – Public key cryptography standards – XML, PKI and Security – Creating digital certificates using JAVA. **Internet Security Protocols :** Introduction – basic concepts – Secure Socket Layer – (SSL) – Transport Layer Security(TLS) – Secure Hyper Text Transfer Protocol (SHTTP) – Time Stamping Protocol (TSP) – Secure Electronic Transaction (SET) – SSL Versus SET – 3-D secure Protocol – Electronic Money - - Email security – Wireless Application Protocol (WIP) Security - Security in GSM –Security in 3G.
UNIT IV	**User Authentication and Kerberos :** Introduction – Authentication basics - Passwords – Authentication Tokens – Certificate based Authentication – biometric authentication – kerberos – Key distribution cetre – Security handshake Pitfalls – Single sign on (SSO) Approaches . **Cryptography in JAVA, .NET, and Operating System** : Introduction – Cryptographic Solution using JAVA – Cryptographic Solutions using Microsoft .NET Framework – Cryptographic Toolkits – Security and Operating Systems – Database Security .
UNIT V	**Network Security Firewalls and Virtual Private Networks** (VPN) : Introduction – Brief introduction to TCP/IP – Fire walls – IP security – Virtual Private networks (VPN) – Intrusion. **Case Studies on Cryptography and Security** : Introduction – Cryptographic Solutions a Case Study – SSO – Secure inter brange payment Transactions – DOS Attacks – IP Spoofing Attacks – Cross Site Scripting Vulnerability (CSSV) – Contract signing – secret Splitting - virtual elections – secure multiparty calculations – creating a VPN – Cookies and Privacy.
Text Book(s)	ATUL KAHATE, :CRYPTOGRAPY And NETWORK SECURITY, Second Edition , Tata McGraw-Hill publishing , 2003

ELECTIVE II – B : E-COMMERCE

Subject Description: This subject deals with E-commerce concepts like E-Commerce, M-Commerce, E-Security and E-payment.

Goal: Knowledge on E-commerce and Real World and Cyberspace problem awareness.

Objective: To inculcate knowledge on E-Commerce concepts in the present IT world.

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UNIT-I: What is e-commerce? – E-Commerce is not E-Business – the drivers – Myths You should know – Advantages and Issues in E-Commerce – Benefits and Limitations of the Internet – Role of E-Strategy – Integrating E-commerce – E-Commerce Business Models – Management Implications.

UNIT-II: Mobile-Commerce-The Business of Time: What is M-Commerce? – Why wireless? – How wireless Technology is employed? – Wireless LAN – Wireless application Protocol - Implications for Management.

UNIT-III: Business-to-Business E-Commerce: What is B2B E-Commerce? – Supply chain Management and B2B – B2B Models – B2B Tools-EDI.

UNIT-IV: E-Security: Security in Cyberspace – Designing for Security – How much risk you afford? – The VIRUS – Security Protection and Recovery – Role of Biometrics - How to secure your system? – Security and Terrorism.

UNIT-V: Getting the money: Real World Cash – Electronic Money – Requirements for Internet-Based Payments – How would you like to pay? – B2B and E-Payment – M-Commerce and M-Payment – General Guide to E-Payment.

TEXTBOOK:

1. **ELECTRONIC COMMERCE from Vision to Fulfillment – Elias M. Awad**, 3rd edition, PHI.
(Chapters: 1, 6, 11, 13 &15)

REFERENCE BOOKS:

1. E-COMMERCE Strategy, Technologies and Applications – David Whiteley, 2001, TMH.
2. INTRODUCTION TO E-COMMERCE – Jeffrey F. Rayport, Bernard J. Jaworski, TMH.

ELECTIVE II – C : DIGITAL IMAGE PROCESSING

UNIT-1 Digital Image Fundamentals
Image Transforms- Walsh, Hadamard, Discrete cosine, Hotelling Transforms-Image Formation. File Formats.

UNIT-2 Image Enhancement
Histogram Modification Techniques-Image Smoothening-Image Sharpening-Image Restoration-Degradation Model-Diagonalization of Circulant and Black circulant matrices-algebraic approach to restoration.

UBIT-3 Image Compression and Segmentation
Compression Models-Elements of Information Theory-Error free Compression-Inage Segmentation- Detection of Discontinuities-Edge Linking and boundary detection-Thresholding-Regions Oriented Segmentations-Morphology.

UNIT-4 Feature Extraction
Image feature descriptions-Interpretations of Line drawings, Image pattern recognition algorithms.

UNIT-5 Knowledge Representation and Use
Knowledge Representation and Use-Image analysis using Knowledge about scenes-Image Understanding using two dimensional methods.

TEXT BOOK:
1. Gonzalez.R.C & Woods. R.E., "Digital Image Processing", 2nd Edition, Pearson Education, 2002. (Chapters: 1, 2, 3, 4, 5, 8, 9, 10, 11 and 12).
2. Anil Jain.K, "Fundamentals of Digital image processing", Prentice Hall of India, 1989. (Chapters: 5, 7, 8 and 11).

REFERENCES:
1. Sid Ahmed, "Image Processing", McGraw Hill, New York, 1995.
2. Milan Sonka, Vaclav Hlavac and Roger Boyle, "Image processing Analysis and Machine vision", Second Edition, Thomson Brooks/Cole, 1999.

ELECTIVE III – A : DATA MINING

UNIT I	Expanding of Universe of Data – Production Factor – Data Mining – Data Mining versus Query Tools – Data Mining in marketing – Practical Applications. Learning – Self-Learning Computer Systems – Machine Learning and Methodology of Science – Concept Learning
UNIT II	Data Warehouse – Need – Designing Decision Support Systems – Integration with Data Mining – Client / Server and Data Warehousing – Multiprocessing Machine – Cost Justification
UNIT III	Knowledge Discovery process – Data Selection – Cleaning – Enrichment – Coding – Data Mining – Preliminary Analysis of the data set using Relational Query tools – Visualization Techniques – Likelihood and Distance – OLAP tools – K-Nearest Neighbor – Decision Trees – Association Rules – Neural Networks – Genetic Algorithms – Reporting – Different forms of Knowledge – Ten Golden Rules
UNIT IV	Customer Profiling – Predicting Bid Behavior of Pilots – Discovering Foreign Key Relationships – Learning as Compression of data sets – Content of Message – Noise and Redundancy – Significance of Noise – Fuzzy Databases – The traditional theory of the relational database – From Relations to Tables – Denormalization – Data Mining Primitives
UNIT V	Rule Induction: Business Score Card – Where to use Rule Induction – The General Idea – How Rule Induction Works – Strengths and Weaknesses Selecting and Using the Right Technique: Using the Right Technique – Data Mining in the Business Process – The cases for Embedded Data Mining – How to measure Accuracy, Explanation and Integration – What the Future Holds for Embedded Data Mining
Text Book(s)	Pieter Adrians, Dolf Zantinge, "Data Mining", Addison Wesley, 1998 Alex Berson, Stephen J. Smith, " Data Warehousing, Data Mining & OLAP", Tata McGraw-Hill Edition, Tenth Reprint, 2007 (for Unit V)

ELECTIVE III – B : COMPONENT TECHNOLOGY

SUBJECT DESCRIPTION : This course presents the middle ware technologies that are available and explaining how this can be used for real time applications.

GOALS : To enable the students to learn the basic functions and concepts of COM, DCOM and CORBA.

OBJECTIVES :

On successful completion of the course the students should have
Understood the facilities available in component technology
Learnt how this can be used for real time application.

UNIT I

Information system - Analyzing the Scenario challenges - CORBA overview - Concepts - Overview of CORBA IDL - IDL Tutorial Conversion of 00 design to IDL - IDL Guidelines - Overview of CORBA and Standard Object model - Architecture - Clients & Object Implementation interface and implementation.

UNIT II

Language mapping - Portability and inter operability - OLE integration - CCRBA services - Information Management Services - Task Management- System Management - Infrastructure of Services.

UNIT Ill

Facilities and domains - horizontal - Vertical facilities - Leveraging the OMG Process - Relationship with other technologies.

UNIT IV

The CORBA migration process - software Architecture - Applications Design using software Architect ii

UNIT V

Migration case studies - Problem and Objective standard based Profile - Project context - Business objects and Process - Interface migration.

REFERENCE BOOK:

I. Inside CORBA — Distributed Object Standards and Applications Thomas J. owtray, William A. Roh. Addison Wesley 1999.

ELECTIVE III – C : ARTIFICIAL INTELLIGENCE

Subject Description : This Subject deals with the Artificial Intelligence
Goal : : To learn about AI
Objective : On Successful Completion of this subject the students should have:
- Heuristic , Hill Climbing , Planning , Expert System etc.,

UNIT I :

The AI Problems – AI technique – Criteria for success – Define the Problem as a state space search – Production System – Characteristics – Problem Characteristics.

UNIT II :

Heuristic Search Techniques: Generate and Test – Hill climbing –Best First Search – Problem Reduction – Constraints Satisfactions – Means End Analysis.

UNIT III:

Knowledge Representation Issues : Approaches to knowledge Representation – The Frame Problem – Computable Functions & Predicates – Resolution – Procedural versus Declarative Knowledge .

UNIT IV:

Logic Programming – Backward Versus Forward Reasoning – Matching – Control Knowledge . Planning : Overview – Components of Planning System – Gal stal Planning – Hierarchical Planning – Reactive Systems.

UNIT V:

Expert Systems: Representing & Using Domain Knowledge – Expert System Shells - Explanation – Knowledge Requisition .

TEXT BOOK :

Elaine Rich and Kevin Knight – "Artificial Intelligence " Tata Mcgraw Hill 2nd edition 1991.