| Annexure No. | 32 G |
|---|---|
| SCAA Dated | 29.02.2008 |

**BHARATHIAR UNIVERSITY, COIMBATORE - 641 046**
**SCHOOL OF DISTANCE EDUCATION**
**BACHELOR OF COMPUTER APPLICATIONS (B C A)**
**(NON-SEMESTER)**

**SCHEME EXAMINATION FOR 2007-2008 BATCH & ONWARDS**

| YEAR | PAPER | SUBJECTS | Duration | Max. Marks |
|---|---|---|---|---|
| I | 1 | **PART-I:** Language-I | 3 | 100 |
| | 2 | **PART-II:** English-I | 3 | 100 |
| | 3 | **CORE-1:** COBOL PROGRAMMING | 3 | 100 |
| | 4 | **CORE-2:** DIGITAL FUNDAMENTALS AND ARCHITECTURE | 3 | 100 |
| | 5 | **ALLIED-1:** COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS | 3 | 100 |
| | | | | |
| II | 1 | **CORE-3** PROGRAMMING WITH C AND C++ | 3 | 100 |
| | 2 | **CORE-4:** DATA STRUCTURES AND ALGORITHMS | 3 | 100 |
| | 3 | **CORE-5:** SOFTWARE ENGINEERING | 3 | 100 |
| | 4 | **CORE-6:** OPERATING SYSTEMS | 3 | 100 |
| | 5 | **CORE LAB-1:** PROGRAMMING LAB : C AND C++ | 3 | 100 |
| | | | | |
| III | 1 | **CORE-7:** COMPUTER NETWORKS | 3 | 100 |
| | 2 | **CORE-8:** JAVA PROGRAMMING | 3 | 100 |
| | 3 | **CORE-9:** DATABASE CONCEPTS AND VISUAL PROGRAMMING | 3 | 100 |
| | 4 | **CORE-10:** E-COMMERCE | 3 | 100 |
| | 5 | **CORE LAB-2:** PROGRAMMING LAB : JAVA & VB | 3 | 100 |
| | | **TOTAL** | | **1500 marks** |

| **B.C.A.** **(Distance Education)** | **YEAR - I** | Effective from 2007-08 onwards |
|---|---|---|
| **CORE-1** | | **COBOL PROGRAMMING** |

**Subject Description:**
This subject deals with the programming concepts on business applications using COBOL language.

**Goal:**
To learn about COBOL programming language for business problems
**Objective:**
On successful completion of this subject the students should have:
- Writing programs for business applications
- Concepts of file handling in programming languages

Unit I
Introduction to COBOL: COBOL words - Literals - Structure of COBOL Program - COBOL Coding Sheet-IDENTIFICATION DIVISION- ENVIRONMENT DIVISION – DATA DIVISION – Editing and Non-editing Picture Clauses – Level Numbers – VALUE and FILLER Clause.

Unit II
PROCEDURE DIVISION – Data Movement Verb – Arithmetic Verbs : Add, Subtract, Multiply, Divide, Compute – Input/Output Statement: Accept, Display Control Verbs: GOTO – GOTO Depending on – Stop Run – CORRESPONDING Option - ROUNDED option - ON SIZE ERROR option - Simple Programs Using Above Verbs.

Unit III
Conditional Statements: If Statement – Nested if statement – Sign Condition – Class Condition-Condition Name – Compound Condition- PERFORM Statements, More about DATA Division: RENAMES-REDEFINES – Simple Programs Using the above Verbs.

Unit IV
Files in COBOL: Sequential – Relative – Indexed Sequential - Random files – File description and Record description entries - Input/Output Verbs: Open, read, write, rewrite, Close, Delete – Sort Verb – Simple Programs using above Verbs.

Unit V
Table Handling: Occurs Clause – Two and Multi-Dimensional Tables – Occurs. Indexed By Clause – SET Verb – START and SEARCH Verb – Random Files-Keys & Their Importance – INVALID KEY Clause – SCREEN SECTION - Simple Programs using above Verbs.

*TEXT BOOK:*
COBOL PROGRAMMING, M.K. ROY & D.GHOSH DASTIDAR,TATA Mc.GRAW HILL, SECOND EDITION - 1998.
*REFERENCE BOOKS:*
1. COBOL programming – V. Rajaraman, PHI Pub.
2. Introduction To Cobol Programming – Author Dr. R. Krishnamoorthy, JJ Publications.
3. Structured COBOL – Welburn, Tata McGrawhill, 4th Edition.

| **B.C.A.** **(Distance Education)** | **YEAR - I** | Effective from 2007-08 onwards |
|---|---|---|
| **CORE-2** | **DIGITAL FUNDAMENTALS AND ARCHITECTURE** ||

**Subject Description:**

This subject deals with fundamentals of digital computers, Microprocessors 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
- Microprocessor architecture
- 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

**MICROPROCESSOR**: Architecture – Bus Organization – Functional diagram and pin out diagram of 8085 - Addressing modes of 8085 – Instruction set of 8085 – I/O Schemes – Peripherals and Interfaces.

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, Pearson Education Pub,III Edition.

*REFERENCE BOOKS:*
1. Digital principles and applications, Albert paul malvino, Donald P Leach, McGrawHill, 1996.
2. Computer Architecture, Carter, Schaums outline series, TMH.

| **B.C.A.**<br>**(Distance Education)** | **YEAR - I** | Effective from<br>2007-08 onwards |
|---|---|---|
| **ALLIED-1** | **COMPUTER ORIENTED NUMERICAL AND 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 BOOKS:***
1. Numerical Methods – P. Kandasamy , K. Thilagavathi, K. Gunavathi. S. Chand & 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 BOOKS:***
1. Computer oriented numerical methods – V. Rajaraman, PHI Pub.
2. Numerical methods – E. Balagurusamy Tata MC Graw Hill.
3. Fundamental of Mathematical statistics S C Gupta, V. K. Kapoor **Sultan Chand and Sons**

| **B.C.A.** **(Distance Education)** | **YEAR - II** | Effective from 2007-08 onwards |
|---|---|---|
| **CORE-3** | **PROGRAMMING WITH C AND C++** | |

**Subject Description:**
This subject deals various methods programming using the C and C++ languages.
**Goal:**
To learn the C and C++ programming languages.
**Objective:**
On successful completion the students should have programming ability on C & C++.

**UNIT – I:** 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 – Loops – for, while, do…while statements.

**UNIT – II:**
Arrays – String and its standard functions. Pointers – Functions – Structure and Union: Features of structure, Declaration and initialization of structure, Structure within structure, Array of structure, Union.

**UNIT-III:** C++ Declarations. Control Structures: - Decision Making and Statements: If..else, jump, goto, break, continue, switch case statements -  Do -  Functions in C++ - Inline functions – Function Overloading. Classes and Objects: Declaring Objects – Defining Member Functions – Static Member variables and functions – array of objects –friend functions – Overloading member functions – Bit fields and classes – Constructor and destructor with static members.

**UNIT-IV:** Operator Overloading: Overloading unary, binary operators – Overloading Friend functions – type conversion – Inheritance: Types of Inheritance – Single, Multilevel, Multiple, Hierarchal, Hybrid, Multi path inheritance – Virtual base Classes – Abstract Classes. Pointers – Declaration – Pointer to Class , Object – this pointer – Pointers to derived classes and Base classes – Arrays – Characteristics – array of classes – Memory models – new and delete operators – dynamic object – Binding , Polymorphism 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 - String – Declaring and Initializing string objects – String Attributes – Miscellaneous functions .

*TEXT BOOKS:*
**1.  PROGRAMMING IN ANSI C, E. Balagurusamy**, TMH, 1998
**2. OBJECT-ORIENTED PROGRAMMING WITH C++, E. Balagurusamy**, TMH, 1998

*REFERENCE BOOKS:*
1. **The Sprit of C – Mullish Cooper,** Jaico Publications.
2. **OBJECT-ORIENTED PROGRAMMING WITH C++,** D.Ravichandran, 2<sup>nd</sup> ed, TMH.

| B.C.A.<br>(Distance Education) | YEAR - II | Effective from<br>2007-08 onwards |
|---|---|---|
| CORE-4 | DATA STRUCTURES AND ALGORITHMS | |

**Subject Description:**

This subject deals various data structures and algorithms for handling the data.

**Goal:**

To learn the data structures and method of data processing from data storages.

**Objective:**

On successful completion the students should know data structures and algorithms.

**- - - - -**

**UNIT – I: Introduction:** Overview – How to create programs and analyze them. Arrays – Structures - Ordered List – Representation of arrays – Simple Applications.

**UNIT – II: Stacks and Queues:** Fundamentals – Structures – Operations – Multiple stacks and queues – Applications - Evaluation of Expressions.

**UNIT-III: Linked Lists:** Singly Linked List – Linked Stacks and Queues -  The Storage Pool – Applications – Polynomial addition , Sparse Matrices – Doubly Linked List – Dynamic Storage Management – Garbage Collection and Compaction

**UNIT-IV:   Searching and Sorting:** Binary, Sequential and Fibonacci Searching – Internal Sorting: Insertion, Quick,  Merge, Heap, Radix sorts – External Sorting: Sorting with Disks – K-way Merging – Sorting with Tapes – Balanced Merge – Poly-phase Merge – Symbol Tables – Static tree – Dynamic Tree – Hash Tables.

**UNIT-V:   Files:** Files, Queries and Sequential organization – Indexed Techniques – File Organization: Sequential, Random, Linked Organization – Inverted Files – Cellular Partitions.

*TEXT BOOK:*
**1. FUNDAMENTALS OF DATA STRUCTURE**S **- Ellis Horowitz and Sartaj Sahni**:, Galgotia Book Source, 1999.

*REFERENCE BOOK:*
1. **PROGRAMMING AND DATA STRUCTURES - Askok N Kamthane**, Perason Education, 2004.

| B.C.A.<br>(Distance Education) | YEAR - II | Effective from<br>2007-08 onwards |
|---|---|---|
| CORE-5 | SOFTWARE ENGINEERING ||

**Subject Description:** This subject deals with Software Engineering concepts like Analysis, Design, Implementation, Testing and Maintenance.

**Goal:** Knowledge on how to do a software project with in-depth analysis.

**Objective:** To inculcate knowledge on Software engineering concepts in turn gives a roadmap to design a new software project.

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**UNIT-I: Introduction to Software Engineering:** Some Definitions – Some Size Factors – Quality and Productivity Factors. **Planning a Software Project:** Planning the Development Process – Planning an Organizational Structure.

**UNIT-II: Software Cost Estimation:** Software cost Factors – Software Cost Estimation Techniques – Staffing-Level Estimation – Estimating Software Estimation Costs.

**UNIT-III: Software Requirements Definition:** The Software Requirements specification – Formal Specification Techniques. **Software Design:** Fundamental Design Concepts – Modules and Modularization Criteria.

**UNIT-IV:** Design Notations – Design Techniques. **Implementation Issues**: Structured Coding Techniques – Coding Style – Standards and Guidelines – Documentation Guidelines.

**UNIT-V: Verification and Validation Techniques:** Quality Assurance – Walkthroughs and Inspections – Unit Testing and Debugging – System Testing. **Software Maintenance:** Enhancing Maintainability during Development – Managerial Aspects of Software Maintenance – Configuration Management.

*TEXTBOOK:*
1. **SOFTWARE ENGINEERING CONCEPTS – Richard Fairley, 1997, TMH.**
*(UNIT-I:  1.1-1.3,2.3-2.4        UNIT-II: 3.1-3.4        UNIT III: 4.1-4.2,5.1-5.2*
*UNIT-IV: 5.3-5.4,6.1-6.4        UNIT-V: 8.1-8.2, 8.5-8.6, 9.1-9.3)*

*REFERENCE BOOKS:*
*REFERENCE BOOKS:*
**1. SOFTWARE ENGINEERING FOR INTERNET APPLICATIONS – Eve Anderson, Philip Greenspun, Andrew Grumet,** 2006, PHI.
**2. SOFTWARE ENGINEERING PROJECT MANAGEMENT –** 2nd Edition**,** Wiley India.
**3. SOFTWARE QUALITY ENGINEERING – Jeff Tian,** Student edition, 2006, Wiley India.
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| B.C.A. (Distance Education) | YEAR - II | Effective from 2007-08 onwards |
|---|---|---|
| **CORE-6** | **OPERATING SYSTEMS** ||

**Subject Description:** This subject deals Operating Systems concepts and Information, Process and Memory Managements. Also it deals with advanced topics like Distributed processing, Remote Procedure call and Clusters.

**Goal:** Knowledge on Operating system and how it controls the information and hardware.

**Objective:** To inculcate knowledge on OS concepts and functioning of modern OS.

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**UNIT-I: Operating System Overview:** Operating System Objectives and Functions – The Evolution of Operating Systems – Major Achievements – Developments Leading to Modern Operating Systems – Microsoft Windows Overview – Traditional UNIX Systems – Modern UNIX Systems – Linux 95.

**UNIT-II: OS-Functions and Structure:** Different Services of Operating System – Operating System Structure – Booting. **Information Management:** The File System - Device Driver.

**UNIT-III: Process Management:** What Is A Process? – Evolution of Multiprogramming – Context Switching – Process States – Process State Transitions – Operations on a Process.

**UNIT-IV: Memory Management:** Introduction – Single Contiguous Memory Management – Fixed Partition Memory Management – Variable Partitions – Non-contiguous Allocation – Paging – Segmentation – Combined Systems – Virtual Memory Management Systems.

**UNIT-V: Distributed Processing, Client/Server and Clusters:** Client/Server Computing – Distributed Message Passing- Remote Procedure Calls – Clusters –Windows Cluster – Sun Cluster – Beowulf And Linux Clusters.

*TEXTBOOKS:*
1. **OPERATING SYSTEMS Internals and Design Principles – William Stallings**, 5$^{th}$ edition,PHI.
*(UNIT-I:  2.1-2.8        UNIT-V: 14.1-14.7)*
2. **OPERATING SYSTEMS – Achyut Godbole** , 2$^{nd}$ edition, TMH.
*(UNIT II: 3.2, 3.7, 3.9, 4.2, 4.3    UNIT-III: 5.2-5.6, 5.9    UNIT-IV: 8.1-8.9)*

*REFERENCE BOOKS:*
**1. OPERATING SYSTEMS Concepts and Design – Milan Milankovic,** 2$^{nd}$ edition, TMH.
**2. MODERN OPERATIING SYSTEMS – Andrew S. Tanenbaum,** 2$^{nd}$ edition, PHI.
**3. OPERATING SYSTEM PRINCIPLES – Abraham Silberschatz, Peter Baer Galvin, Greg Gagne,**
7$^{th}$ Edition, Wiley India.

| B.C.A. (Distance Education) | YEAR - II | Effective from 2007-08 onwards |
|---|---|---|
| CORE LAB-1 | PROGRAMMING LAB : C AND C++ | |

1. Write a C program to find factorial of a given number.

2. Write a C program to display the Fibonacci series.

3. Write a C program to sort given set of numbers.

4. Write a C Program to check whether the given string is a palindrome or not using Pointers.

5. Write a C Program to create a File and to display the contents of that file with line numbers.

6. Write a C Program to merge two files into a single file.

7. Write a C++ Program to create a class to implement the Data Structure STACK. Write a constructor to initialize the TOP of the STACK. Write a member function PUSH() to insert an element and member function POP() to delete an element check for overflow and underflow conditions..

8. Write a C++ Program to read an integer number and find the sum of all the digits until it reduces to a single digit using constructors, destructors and inline member functions.

9. Write a C++ Program to create a class FLOAT that contains one float data member. Overload all the four Arithmetic operators so that they operate on the object FLOAT.

10. Write a C++ Program to create a class STRING. Write a Member Function to initialize, get and display stings. Overload the Operator "+" to Concatenate two Strings, "= =" to Compare two strings

11. Write a C++ Program to create two classes each class consists of two private variables, a integer and a float variable. Write member functions to get and display them. Write a FRIEND Function common to both classes, which takes the object of above two classes as arguments and the integer and float values of both objects separately and display the result.

12. Write a C++ Program using Function Overloading to read two Matrices of different Data Types such as integers and floating point numbers. Find out the sum of the above two matrices separately and display the sum of these arrays individually.

| **B.C.A.** **(Distance Education)** | **YEAR - III** | Effective from 2007-08 onwards |
|---|---|---|
| **CORE-7** | **COMPUTER NETWORKS** | |

**Subject Description:** This subject deals different Network concepts like Layers, Wireless Concepts, Transmission and Security.

**Goal:** Knowledge on Computer Networks and technologies like broadband and Bluetooth.

**Objective:** To inculcate knowledge on Networking concepts and technologies like wireless, broadband and Bluetooth.

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**UNIT-I: Network Hardware:** LAN – WAN – MAN – Wireless – Home Networks. **Network Software:** Protocol Hierarchies – Design Issues for the Layers – Connection-oriented and connectionless services – Service Primitives – The Relationship of services to Protocols. **Reference Models:** OSI Reference Model – TCP/IP reference Model – Comparison of OSI and TCP/IP -Critique of OSI and protocols – Critique of the TCP/IP Reference model.

**UNIT-II: PHYSICAL LAYER - Guided Transmission Media:** Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics. **Wireless Transmission**: Electromagnetic Spectrum – Radio Transmission – Microwave Transmission – Infrared and Millimeter Waves – Light Waves. **Communication Satellites:** Geostationary, Medium-Earth Orbit, Low Earth-orbit Satellites – Satellites versus Fiber.

**UNIT-III: DATA-LINK LAYER:** Error Detection and correction – Elementary Data-link Protocols – Sliding Window Protocols. **MEDIUM-ACCESS CONTROL SUB LAYER:** Multiple Access Protocols – Ethernet – Wireless LANs - Broadband Wireless – Bluetooth.

**UNIT-IV: NETWORK LAYER:** Routing algorithms – Congestion Control Algorithms. TRANSPORT LAYER: Elements of Transport Protocols – Internet Transport Protocols: TCP.

**UNIT-V: APPLICATION LAYER:** DNS – E-mail. **NETWORK SECURITY**: Cryptography – Symmetric Key Algorithms – Public Key Algorithms – Digital Signatures.

**TEXTBOOKS:**
1. **COMPUTER NETWORKS – Andrew S. Tanenbaum,** 4th edition, PHI.
*(UNIT-I:1.2-1.4  UNIT-II:2.2-2.4  UNIT-III:4.2-4.6 UNIT-IV:5.2,5.3,6.2,6.5 UNIT-V:7.1,7.2,8.1-8.4)*

**REFERENCE BOOKS:**
1. **DATA COMMUNICATION AND NETWORKS – Achyut Godbole, 2007**, TMH.
2. **COMPUTER NETWORKS Protocols, Standards, and Interfaces – Uyless Black,** 2nd ed, PHI.

| B.C.A. (Distance Education) | | YEAR - III | Effective from 2007-08 onwards |
|---|---|---|---|
| **CORE-8** | | **JAVA PROGRAMMING** | |

**Subject Description:** This subject deals with Java Programming concepts.

**Goal:** Enable to create wide range of Applications and Applets using Java.

**Objective:** To inculcate knowledge on Java Programming concepts.

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**UNIT-I: Fundamentals of Object-Oriented Programming**: Object-Oriented Paradigm – Basic Concepts of Object-Oriented Programming – Benefits of Object-Oriented Programming – Application of Object-Oriented Programming. **Java Evolution**: History – Features – How Java differs from C and C++ – Java and Internet – Java and www –Web Browsers. Overview of Java: simple Java program – Structure – Java Tokens – Statements – Java Virtual Machine.

**UNIT-II:** Constants, Variables, Data Types - Operators and Expressions – Decision Making and Branching: *if, if ..else,* nested *if, switch, ?:* operator - Decision Making and Looping: *while, do, for* – Jumps in Loops - Labeled Loops – Classes, Objects and Methods.

**UNIT-III:** Arrays, Strings and Vectors – Interfaces: Multiple Inheritance – Packages: Putting Classes together – Multithreaded Programming.

**UNIT-IV:** Managing Errors and Exceptions – Applet Programming – Graphics Programming.

**UNIT-V: Managing Input/Output Files in Java** : Concepts of Streams- Stream Classes – Byte Stream classes – Character stream classes – Using streams – I/O Classes – File Class – I/O exceptions – Creation of files – Reading / Writing characters, Byte-Handling Primitive data Types – Random Access Files.

*TEXTBOOK:*
1. **PROGRAMMING WITH JAVA – A PRIMER** - **E. Balagurusamy,** 3 $^{rd}$ Edition, TMH.

*REFERENCE BOOKS:*
1. **THE COMPLETE REFERENCE JAVA 2** - **Patrick Naughton** & **Hebert Schildt,** 3$^{rd}$ ed,TMH
2. **PROGRAMMING WITH JAVA – John R. Hubbard,** 2$^{nd}$ Edition, TMH.
3. **JAVA and Object-Oriented Programming Paradigm – Debasish Jana**, 2005, PHI.

| B.C.A. (Distance Education) | | YEAR - III | Effective from 2007-08 onwards |
|---|---|---|---|
| **CORE-9** | | **DATABASE CONCEPTS AND VISUAL PROGRAMMING** | |

**Subject Description:** This subject deals with Database concepts and Visual Programming concepts.

**Goal:** Knowledge on Data base concepts and Visual Programming techniques using Visual Basic.

**Objective:** To inculcate Database concepts and Visual Programming using Visual Basic.

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**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: Visual Basic Fundamentals:** Numeric, String constants – Variables – Data Types and Declarations – Operators and Expressions –Hierarchy of Operations – Inserting Parentheses – Special Rules concerning Numeric Expressions – String Expressions  - Assigning Values to Variables – Displaying out – Library Functions  - Program Comments. **Branching and Looping:** Relational operators and Logical Expressions – Branching with If-Then, If-Then-Else blocks – Selection Select Case – Looping with For-Next, Do-Loop, While-Wend – Stop statement.

**UNIT-III: Visual Basic control Fundamentals:** Control tools – Control tool Categories – Working with Controls – Naming Forms and Controls – Assigning Property values to Forms and Controls – Executing commands – Displaying Output – Entering Input Data – Selecting Multiple Features, Exclusive Alternatives, Form from a List -  Assigning Properties collectively – Generating Error Messages – Creating timed Events – Scroll Bars.

**UNIT-IV: Menus and Dialog Boxes:** Building Drop-Down Menus – Accessing Menu from Keyboard – Menu Enhancements – Submenus – Pop-Up Menus – Dialog Boxes – more about MsgBox Function – The Input Box function**.**

**UNIT-V: Procedures:** Modules and Procedures – Sub Procedures – Event Procedures – Function Procedures – Scope – Optional Arguments. **Arays:** Characteristics – Declarations – Processing – Passing Arrays to Procedures – Dynamic Arrays – Array-related Functions – Control Arrays – Looping with for Each-Next. **Data Files:** Characteristics – Accessing and Saving a File in VB: The Common Dialog Control – Processing a Data file – Sequential Data Files – Random-Access Data files – Binary files.

**TEXTBOOK:**
1. **VISUAL BASIC – Byron S. Gottfried**, Schaum's Outline series, TMH.
2. **DATABASE SYSTEMS USING ORCLE – Nilesh Shah,** 2nd edition, PHI.

**REFERENCE BOOKS:**
1. **The Complete reference VISUAL BASIC – Noel Jerke**, TMH.
2. **DATABASE MANAGEMETN SYSTEMS – Gerald V. Post,** 3rd edition, TMH.

| B.C.A.<br>(Distance Education) | YEAR - III | Effective from<br>2007-08 onwards |
|---|---|---|
| CORE-10 | 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.

- - - - -

**UNIT-I:** What is e-commerce? – E-Commerce is not E-Business – the drivers – Myths You hould 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.

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

*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.

| B.C.A.<br>(Distance Education) | YEAR – III | Effective from<br>2007-08 onwards |
|---|---|---|
| CORE   LAB-2 | PROGRAMMING LAB  : JAVA AND VB | |

## JAVA

1. Write a Java Applications to extract a portion of a character string and print the extracted string.

2. Write a Java Program to implement the concept of multiple inheritance using Interfaces.

3. Write a Java Program to create an Exception called payout-of-bounds and throw the exception.

4. Write a Java Program to implement the concept of multithreading with the use of any three multiplication tables and assign three different priorities to them.

5. Write a Java Program to draw several shapes in the created windows.

6. Write a Java Program to create a frame with four text fields as name, street, city and pin code with suitable tables. Also add a button called "my details", When the button is clicked its corresponding values are to be appeared in the text fields.

## VISUAL BASIC

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. 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).

*REFERENCE BOOKS:*
1. **J AVA 6 PROGRAMMING BLACK BOOK, 2007 edition, dreamtech press.**
2. **VISUAL BASIC – Byron S.Gottfried,** Schaum's Outline Series, 2002, TMH.