

REGULATION 2020-21**B.Sc. Computer & IT****SEMSTER III B.Sc. Computer & IT**

| SL. | COMPONENTS | HOURS | CREDITS |
|-----|---|----------|---------|
| | PART III CORE SUBJECTS | | |
| 1. | Computer Oriented Numerical Methods | 4 | 4 |
| 2. | Object Oriented Programmingwith C++ | 4 | 4 |
| 3. | Object Oriented Programmingwith C++ - LAB | 6 | 3 |
| | ALLIED SUBJECTS - 1 | | |
| 4. | Data Structure | 4 | 4 |
| 5. | Data Structure – LAB | 4 | 2 |
| 6. | Skill Based Core Subject – I DTP | 5(2T+3P) | 4 |
| 7. | Non – Major Elective – I | 2 | 2 |
| 8. | Common Yoga | -- | 2 |
| | TOTAL (5T + 3P = 8 COURSE) | 30* | 25 |

* 1 Hour is allocated for Library/ Mentoring / Association / Club activities

SEMSTER IV B.Sc. Computer & IT

| SL. | COMPONENTS | HOURS | CREDITS |
|-----|--|----------|---------|
| | PART III CORE SUBJECTS | | |
| 1. | Java Programming | 4 | 4 |
| 2. | Java ProgrammingLab | 6 | 3 |
| 3. | Operating System | 4 | 4 |
| | ALLIED SUBJECTS - 1 | | |
| 4. | Relational Data Base Management System | 4 | 4 |
| 5. | ORACLE - LAB | 4 | 2 |
| 6. | Skill Based Core Subject – II (Visual Programming) | 5(2T+3P) | 4 |
| 7. | Non – Major Elective – II | 2 | 2 |
| 8. | Computers for Digital Era | -- | 2 |
| 9. | Extension Activity | -- | 1 |
| | TOTAL (5T + 3P = 8 COURSE) | 30* | 26 |

* 1 Hour is allocated for Library/ Mentoring / Association / Club activities

SEMSTER V B.Sc. Computer & IT

| SL. | COMPONENTS | HOURS | CREDITS |
|-----|---|-------|---------|
| | PART III CORE SUBJECTS | | |
| 1. | Scripting Language | 4 | 4 |
| 2. | Software Engineering and Testing | 4 | 4 |
| 3. | Data Mining and Data Warehousing | 4 | 4 |
| 4. | Scripting Language – LAB | 6 | 3 |
| 5. | Major Elective – I (Group – A) | 4 | 4 |
| 6. | Skill Based Common Subject – Personality Development /EffectiveCommunication/Youth Leadership | 2 | 2 |
| 7. | Mini Project | 5 | 5 |
| | TOTAL (5T + 1P + 1Project = 7 COURSE) | 30* | 26 |

* 1 Hour is allocated for Library/ Mentoring / Association / Club activities

SEMSTER VI B.Sc. Computer & IT

| SL. | COMPONENTS | HOURS | CREDITS |
|-----|---------------------------------------|-------|---------|
| | PART III CORE SUBJECTS | | |
| 1. | Data Communication and Networking | 4 | 4 |
| 2. | Graphics and Multimedia Technology | 4 | 4 |
| 3. | .Net Programming | 4 | 4 |
| 4. | .Net Programming Lab | 6 | 3 |
| 5. | Major Elective – II (Group – B) | 4 | 4 |
| 6. | Major Project | 7 | 7 |
| | TOTAL (4T + 1P + 1Project =68 COURSE) | 30* | 26 |

* 1 Hour is allocated for Library/ Mentoring / Association / Club activities

| Major Elective | |
|---------------------------------|-------------------------|
| Major Elective – I (Group – A) | Cloud Computing |
| | Artificial Intelligence |
| | Cyber Security |
| Major Elective – II (Group – B) | Python Programming |
| | Mobile Computing |
| | Parallel Computing |

ALLIED THEORY IV

Computer Oriented Numerical Methods

Unit I: CURVE FITTING

Introduction, Method of Least squares, Curve Fitting, Fitting a Straight Line

Unit II: SOLUTION OF ALGEBRAIC AND TRANSCEDENTAL EQUATIONS

Bisection method, Regula Falsi method, Newton Raphson Method

Unit III: SOLUTION OF SIMULATANEOUS LINEAR EQUATIONS:

Solution of Simultaneous Linear Equations: Gauss Elimination method, Gauss-Jordan method, Gauss Seidel Method, Jacobi's method

Unit IV: NUMERICAL DIFFERENTIATION & INTEGRATION:

Differentiation: Using Newton's Forward Difference, Newton's Backward Difference, Newton's Divided Difference (First Order Differentiation only) Integration: Using Trapezoidal rule, Simpson's 1/3 & Simpson's 3/8 rules

Unit V: Solution of Ordinary Differential Equations:

Runge-Kutta 2nd Order and 4th Order methods, Predictor-Corrector Methods: Milne and Adam's methods

Programs:

1. Write a C program to fit a straight line by method of least squares
2. Write a C program to implement bisection method
3. Write a C program to implement Newton Raphson method
4. Write a C program to solve simultaneous linear equations using Gauss Elimination method
5. Write a C program to solve simultaneous linear equations using Gauss Jacobi method
6. Write a C program to implement numerical integration using Simpson's one third rule
7. Write a C program to implement numerical integration using trapezoidal rule
8. Write a C program to generate newton's Forward difference table
9. Write a C program to implement numerical integration using trapezoidal rule
10. Write a C program to implement Milne's predictor corrector method

Text Book(s):

Dr. M.K. Venkataraman, Numerical Methods in Science and Engineering, National Publishing Co., 2005

Reference Book(s):

1. S. S. Sastry, Introductory Methods of Numerical Analysis, 4th edition, 2005.
2. E. Balagurusamy, Computer Oriented Statistical and Numerical Methods -Tata McGraw Hill., 2000
3. M.K.Jain, SRK Iyengar and R.L.Jain, Numerical Methods for Scientific and Engineering Computation, Wiley Eastern Ltd., 4th edition, 2003

MAJOR THEORY –

OBJECT ORIENTED PROGRAMMING WITH C++

Unit – I

Introduction to C++ : Evolution of C++ - ANSI Standard – Object Oriented Technology – Disadvantage of Conventional Programming – Programming Paradigms – Preface to Object – Oriented Programming – Key Concepts of Object – Oriented Programming – Advantages of OOP – Object Oriented Languages.

Input and Output in C++: Streams in C++ - Pre-Defined Streams – Buffering – Stream Classes – Formatted and Unformatted Data – Unformatted Console I/O Operations – Typecasting with cout Statement – Member Functions of Istream Class – Formatted Console I/O Operations.

C++ Declarations : Parts of C++ Program – Types of Tokens – Keywords – Identifiers – Dynamic Initialization – Data Types in C++ - Basic Data Type – Derived Data Type – User – Defined Data Type – The void Data Type – Type Modifiers – Wrapping Around – Typecasting – Constants – Constant Pointers – Operators in C and C++ Precedence of Operators in C++.

Unit – II

Control Structures : Decision – Making Statements – The if-else Statements – The jump Statement – The goto Statement – The break Statement – The Continue Statement – The switch case statement – Loops – The for Loop – Nested for Loops – The While Loop – The do-while Loop.

Functions in C++ : The main() Function – Parts of Function – Passing Arguments – L Values and R Values – Return by Reference – Default Arguments – Inline Functions – Function Overloading – Principles of Function Overloading – Library Functions.

Unit – III

Classes and Objects : Classes in C++ Declaring Objects – The Public Keyword – The Private Keyword – The protected keyword – Defining Member Functions – Data Hiding or Encapsulation – Classes, Objects and Memory – Static Member Variables and Functions – Static Object – Array of Objects – Objects as Functions Arguments – Friend

Functions – Recursive Member Function – Local Classes – The main() as a Member Function – Overloading Member Functions – Overloading main() Function.

Constructor and Destructors : Characteristics of Constructors and Destructors – Applications with Constructors – Constructors with Arguments – Overloading Constructors – Constructor with Default Argument – Copy Constructors – The const Object – Destructors – Calling Constructor and Destructors – Qualifier and Nested Classes – Anonymous Objects – Recursive Constructor – Local vs Global Object.

Unit – IV

Operator Overloading and Type Conversion : The Keyword Operator – Overloading Unary Operators – Operator Return Type – Constraint on Increment and Decrement Operators – Overloading Binary Operators – Type Conversion – Rules for Overloading Operators.

Inheritance: Access Specifiers and Simple Inheritance – Types of Inheritances – Single Inheritance – Multilevel Inheritance – Multiple Inheritance – Virtual Base Classes.

Pointers and Arrays: Pointer Declaration - Pointer to Class – Pointer to Object – The this Pointer – Base Classes – Arrays – Characteristics of Arrays – Arrays of Classes.

Unit – V

C++ and Memory: Memory Models – The New and delete Operators – Dynamic Objects.

Binding, Polymorphism and Virtual Functions : Binding in C++ - Virtual Functions – Rules for Virtual Functions – Pure Virtual Functions – Abstract Classes – Working with Virtual Functions.

Applications with Files : File Stream Classes – Steps of File Operations – Finding End of a File – File Opening Modes – File Pointer and Manipulators – Manipulators with Arguments – Sequential Read and Write Operations- Binary and ASCII Files – Random Access Operations.

Text Book:

1. Ashok N.Kamthane, “Object Oriented Programming with ANSI and Turbo C++, Pearson Education, New Delhi.

Reference:

1. Herbert Schildt, “C++ : The Complete Reference” Tata McGraw Hill Publishing Company Limited, New Delhi.

2. E. Balagurusamy, “Object- Oriented Programming C++”, Tata McGraw Hill Publishing Company Limited, New Delhi.

3. D. Ravichandran, “Programming with C++”, Tata McGraw Hill Publishing Company Limited, New Delhi.

MAJOR PRACTICAL – III

OBJECT ORIENTED PROGRAMMING WITH C++ - LAB

1. Write a C++ Program to declare all members of a class as public. Access the element using objects.
2. Write a C++ Program to print sum of sin series.
3. Write a C++ Program to calculate simple interest. Hide the data element of the class using private keyword.
4. Write a C++ Program to show difference between static and non-static member variables.
5. Write a C++ Program to declare array of objects. Initialize and display the contents of array.
6. Write a C++ Program to access private data using non-member function. Use friend function.
7. Write a C++ Program to create a class MAT of size of m x n. Define the matrix operations addition, subtraction, input and output by overloading +,-,>> and << operators respectively.
8. Write a C++ Program to create an abstract class “Queue”. Create two subclasses “StaticQ” and “DynamicQ”. Class “Queue” contains member functions insert, delete, create, isempty, isfull and display functions. DynamicQ overrides insert to change size of queue at runtime if queue is already full.
9. Write a C++ Program to overload member function of class.
10. Write a C++ Program to invoke constructor and destructor.
11. Write a C++ Program that overload + & relational (suitable) operator to perform the following operations.
 - i) Concatenation of two Strings
 - ii) Comparison of two Strings
12. Write a C++ Program to create multilevel inheritance. Create classes A1, A2 and A3.
13. Write a C++ Program to derive a class student from multiple base classes mark and sports. Print the details of the student including percentage.
14. Write a C++ Program to show hierarchical inheritance.
15. Write a C++ Program to declare an object and pointer to the class. Invoke member functions using pointer.
16. Write a C++ Program to create a class employee that contain two functions getdata() &putdata(). Create array of objects for the specified class and read the values using getdata(). Print the values using putdata().

17. Write a C++ Program to print the details vehicle using virtual function. Create a class vehicle and have a virtual function make(). Create another class two wheeler is inherited from vehicle class that invoke the virtual function make(). Print details of two wheeler. Create another class four wheeler is inherited from the two wheeler that invoke virtual function make(). Print details of four wheeler.
18. Write a program to read a line of text and replace one word with another word.
19. Write a C++ Program function template for finding the minimum value contained in an array.
20. Write a C++ Program to perform read and write operations with objects using write() and read() functions.

ALLIED THEORY III

DATA STRUCTURES

Unit – I

Introduction and Overview: Definitions – Concept of Data Structures – Overview of Data Structures – Implementation of Data Structures. One – Dimensional Array – Memory allocation of an Array – Operation on Arrays – Application of Arrays – Multidimensional Arrays – Two – dimensional Array – Spare Matrices – Three Dimensional an n – dimensional arrays – Pointer Arrays.

Unit – II

Linked Lists: Definition – Single Linked List – Representation of a Linked List in memory – Operations on a Single Linked List – Circular Linked List – Double Linked List – Operations on a Double Linked List – Circular Double Linked List – Operations on Circular Double Linked List – Applications of Linked List – Sparse Matrix Manipulation – Polynomial Representation – Dynamic Storage Management – Memory Representation – Fixed Block Storage – Variable Block Storage.

Unit – III

Stacks : Definitions – Representation of a Stack – Array Representation of Stacks – Linked List Representation of Stacks – Operations on Stacks – Application of Stacks – Evolution of Arithmetic Expressions – Implementation of Recursion – Factorial Calculation – Quick Sort.

Queue : Definition – Representation of Queues – Representation of Queues using an Array – Representation of a Queue using a Linked List – Various Queue Structures – Circular Queue – Dequeue – Priority Queue.

Unit – IV

Tables : Hash Tables – Hashing Techniques – Collision Resolution Techniques – Closed Hashing – Open Hashing - Comparison of Collision Resolution Techniques. Representation of Binary Tree – Linear Representation of Binary Tree- Linked Representation of Binary Tree – Physical Implementation

of a Binary Tree in Memory – Operation on a Binary of Binary Tree – Physical Implementation of a Binary Tree in Memory – Operation on a Binary Tree – Insertion – Deletion – Traversals – Merging together Two Binary Trees – Types of Binary Trees – Expression Tree – Binary Search Tree – Heap Tree – Thread Binary Tree.

Unit – V

Sorting: Sorting Techniques – Straight Insertion Sort – Straight Selection Sort – Heap Sort – Bubble Sort – Shell Sort – Quick Sort – Merge Sort. Searching – Linear Search Techniques – Linear Search with Array – Linear Search with Linked List – Linear Search with Ordered List – Binary Search.

Text Book:

1. “Classic Data Structures” Debasis Samanta, PHI Learning Limited, New Delhi, 2009 Second Edition.

ALLIED PRACTICAL – III

DATA STRUCTURES – LAB LIST

1. Search an element in an array using Binary Search.
2. Stack Implementation using Array.
3. Queue implementation using Array.
4. To manipulate a linked list.
5. Infix to postfix expression.
6. Evaluation of Postfix expression
7. Tree Traversal
8. Merge Sort
9. Selection Sort
10. Quick Sort

SEMESTER – IV

MAJOR THEORY – JAVA PROGRAMMING

Unit – I

The Genesis of Java : Overview of Java – Development of Java – JDE – Data Types – Variables – Arrays – Type Conversion and Casting – Operators – Precedence – Control Statements.

Unit – II

Introduction Classes : Objects – OOPs Concepts – Declaring Objects – Introducing Methods – Constructors – Overloading – this keyword – Garbage Collection – finalize () method – More Examples. Objects as parameters – returning objects – recursion – Access Control – Static – Final – Nested and Inner Classes – Command Line Arguments – Sample Programs.

Unit – III

String and String Buffer Class Inheritance : Types of Inheritance – Method Overriding – Dynamic method Dispatch – Abstract Class – Final with Inheritance – More Examples. Packages – Access Protection – Importing Packages – Interfaces – Implement and Applying Interfaces – Sample Programs.

Unit – IV

Exception Handling: Exception Types – Our Own Exception – Handling Exception – Java's Built in Exception – Thread Class and Runnable Interface – Extending Thread – Creating Multiple Threads – isAlive () and join() methods – Synchronization – suspend (), resume () and stop() threads – Example Programs. I/O packages – Input Stream – Output Stream – File Input and Output Stream – Applet Class – An Applet Skeleton – Simple Applet Display Methods – Example Programs.

Unit – V

Event Handling : Delegation Event Model – Event Classes – Sources of Events – Event Listener Interface – AWT Controls – Labels – Buttons – Check Boxes – Check Box Group – Lists – Scroll Bar – Text Area – Menu Bars and Menu – Layout Managers – Examples.

Text Book :

1. Herbert Schildt, "Java 2" Fourth Edition, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

Reference :

1. Peter Norton and William Stanek, "Guide To Java Programming", Techmedia, New Delhi.

2. Martin Rinehart, "Java Database Development" Ed – 1998, Tata McGraw – Hill Publishing Company Ltd, New Delhi.

MAJOR PRACTICAL – IV
JAVA PROGRAMMING – LAB

1. Create a Simple program with your own detail.
2. Use Overload i) Method ii) Constructor
3. Create a Program for object as parameters and returning objects.
4. Create a program with abstract class.
5. Create a program using Multilevel Inheritance.
6. Develop a Program using Interface.
7. Create and Import Package (Minimum Three Classes)
8. Create Our Own Exception for Employees.
(Constraints 1.Age > 18 and < 58 2.Dept No. 10 || 20 || 30 || 40)
9. Suspend, Resume and Stop Threads (Minimum 3 Threads)
10. Read and Write the content of a file using I/O Packages.
11. Display a Simple Banner Applet.
12. Event Handling Mechanism for Keyboard and Mouse .
13. Create a Login form.
14. Simple Web Presentation using HTML Tag (Use 3 Pages)
15. Create a Program for Moving Ball (Start and Stop)
16. Create a Simple Java Database with 4 fields.

MAJOR THEORY

OPERATING SYSTEM

Unit – I

Operating System: What is an Operating System? – Computing System Architecture : Desktop Systems – Multiprocessor Systems – Distributed Processing – Cluster Systems – Hand held Systems – Functions and Structure – Difference services of the Operating System – Users of system Calls – issue of portability – users view of the operating system – Graphical user interface – Operating System Structure – virtual machine – booting.

Unit – II

Information Management: File System – Device Driver – Terminal I/O – CD – ROM. Process Management: Introduction – What is process? Evolution of multiprogramming – Context Switching – Process States – Process State Transitions – Process Control Block – Process hierarchy – Operation on a process – create a process – kill a process – dispatch a process – change the priority of a process – Block a process – dispatch a process – time up a process wake up a process – Suspend/resume operation – Process Scheduling – Multithreading.

Unit – III

InterProcess Communication: the producer/Consumer Problems – solutions to the producer – consumer problems – Classical IPC problems.

Deadlocks: Introduction – Graphical representation of deadlock – deadlock prerequisites – deadlock strategies.

Unit – IV

Memory Management: Introduction – Single Contiguous memory management – fixed partition memory management – variable partitions – non-contiguous allocation – paging – segmentation – combined system – virtual memory management system.

Unit – V

Information Management: File System – Device Driver – Terminal I/O – CD – ROM. Case Study: LINUX – Introduction – UNIX and LINUX: A Comparison – Process Management – Process Scheduling – Memory Management – File Management – Device Drivers – Security.

Text Book:

1. Operating Systems – Achyut S Godbole, Tata McGraw – Hill Publishing Company, New Delhi, 2nd Edition, 2005.
2. Operating System – Harvey M. Deitel, Paul J Deitel. David R. Choftness, Third Edition, Pearson.

Reference:

1. Operating Systems, Internals and Design Principles, William Stallings, PHI, 2008.
2. Operating System Concepts – Silberschatz and Galvin, 6th Edition, John Wiley & Sons, Inc., 2004.
3. An Introduction to Operating Systems – Concepts and Practice, Pramod Chandra P. Bhatt, Prentice Hall of India, 2007.

MAJOR THEORY

RELATIONAL DATA BASE MANAGEMENT SYSTEM

Unit - I

Introduction: Purpose of Database Systems – Data Models – Database Languages – Transaction Management – Storage Management – DBA – Database Users – System Structure. E-R Model – Entities and Entity sets – Relationship Sets – Mapping Constraints – E-R Diagram.

Unit – II

Structure of Relational Databases : Relational Algebra – Tuple Relational Calculus – Domain Relational Calculus – Integrity Constraints – Normalization – Boyce – Codd Normal Form – Third Normal Form – Fourth Normal Form – Domain – Key Normal Form.

Unit – III

Basic SQL Operations : Creating a Table – Insert – Rollback – Commit – Auto commit – Delete – Update – Select, From, Where and Order by – Single value tests – LIKE – Simple tests against a list of values – Combining Logic – Dropping tables – Dropping a Column – Creating a table from a table – Data Functions – Conversation functions – Translate – Decode – Creating a view – Advanced Sub queries – Outer Joins – Natural and Inner Joins – Union, Intersect & Minus – Synonyms – Indexes – Tables space – Clusters – Sequences.

Unit – IV

Basics of Object : Relational Databases : Objects – Abstract Data Types – Nested tables – Varying arrays – Large Objects – References Object Views – Naming conventions for objects – structure of an object – Users, Roles and Privilege : Creating a user – Password management – Three Standard roles – Format for grant command – Revoking privileges – What users can Grant : Moving to another user – Create Synonym – Create a role – Granting privileges to a role – Granting a role to another role – Adding Password to a role – Removing password from a role – Enabling & Disabling Roles – Revoking Privilege from a role – Drop role.

Unit – V

An Introduction to PL/SQL : PL/SQL Overview – Declaration section – Executable commands section – Exception handling Section – Triggers : Syntax – Types of Triggers : Row – Level – Statement – Level – before & after – Instead of Schema – Database – Level Triggers – Enabling & Disabling

Triggers – Replacing & Dropping Triggers – Procedures, Functions & Packages : Syntax – Compile – Replace – Drop Procedure, Functions & Packages – Cursor Management.

Text Books:

1. Abraham Silberschatz, Henry F.Korth, S.Sudarshan “Database System Concepts” McGraw – Hill Education, 2010.
2. Kevin Loney, George Koch and the Experts at TUSC, “ORACLE 9i The Complete Reference”, Tata McGraw – Hill Publishing Company Ltd., New Delhi.
3. Database Systems RamezElmasri, Shankant B. Navathe – 6th Edition – Pearson.

Reference:

1. Rajesh Narang – “Database Management Systems”, PHI Learning Pvt. Ltd., 2006.
2. Raghu Ramakrishnan, Johannes Gehrke, “Database Management Systems”, McGraw – Hill Education, 2002.
3. Michael Abbay, Mike Corey, Ian Abramson, “ORACLE 9i A Biginner”s Guide”, TataMcGraw – Hill Publishing Company Ltd., New Delhi, 2002.
4. The Database Application Book using the MYSQL Database Gehani – Universities Press.

ORACLE LAB

1. Creating, Modifying and Describing Tables
2. Inserting, Modifying and Deleting Rows
3. Dropping, Disabling/Enabling Constraints
4. Retrieving Records/Rows from the Table
5. Retrieving Rows with Character Functions
6. Retrieving Rows with Number & Date Functions
7. Retrieving Rows with Group functions & HAVING
8. Retrieving Rows by Joining Tables.
9. Retrieving Rows with Set Operators.
10. Creating Views ,Sequences and Synonyms
11. Simple PL/SQL Programs.
12. PL/SQL Programs with Control Structures.
13. PL/SQL Programs with Looping Structures.
14. PL/SQL Programs with Cursors.
15. PL/SQL Programs with Cursor for loop.
16. PL/SQL Programs with Pre Defined Exception Handling.
17. PL/SQL Programs with User Defined Exception Handling.

18. Creating and Calling Procedures.
19. Creating and Calling Functions.
20. Creating and Executing Packages.
21. Working with Triggers.

REFERENCES

1. "Database Systems Using Oracle", Nilesh Shah, Second Edition
2. www.w3schools.com – Oracle

SCRIPTING LANGUAGES

UNIT I VB SCRIPT

VB Script's Popularity – VB Script Defined – Platform or Host Dependence – Scripting Languages – Basics Embedding VB Script in HTML – VB Script to Display Information – Hiding VB Script from Older Browsers – Code Documentation and Formatting.

UNIT II

VB SCRIPT ARRAYS AND OPERATORS Variables – Subtypes – Constants – Variables Deformed – Declaring Variables – Naming Variables Variants and Subtype – Data Subtypes Conversion – Numeric and Literal Constants – Arrays Groups of Similar Variables – One Dimensional Arrays – Multi Dimensional Arrays – VB Script Operators Logic Operators – Arithmetic Operator Precedence – Comparison Operators Logic Operators – String Concatenation.

UNIT III JAVA SCRIPT

Introduction to JavaScript: Adding JavaScript to HTML Documents – Event Handlers – Linked Scripts – JavaScript Pseudo-URL – JavaScript Entities – JavaScript Applications – History of JavaScript.

UNIT IV JAVASCRIPT CORE FEATURES

Overview: Basic Definitions – Language Characteristics – Variables – Basic Data Types – Composite Types – Flow Control Statements – Loops – Functions – Input and Output in JavaScript – Regular Expressions – Comments Line.

UNIT V TYPESCRIPT

Basics – Variables – Operators – Decision Variables - Loops – Functions – Numbers – Strings – Arrays – Tuples – Union – Interfaces – Classes – Objects – Namespaces – Modules - Ambients

REFERENCE BOOKS

1. Jusanner Clark and Team, “VB Script Programmer Reference”, Shroff Publications and Distributors Pvt. Ltd., 2000.
2. Adrian Kingsley-Hughes, Kathie Kingsley-Hughes, Daniel Read, "VBScript Programmer's Reference", Third Edition, Wiley Publishing.
3. Thomas Powell and Fritz Schneider, "JavaScript 2.0 The Complete Reference", Second Edition, McGraw-Hill.
4. Yehuda Shiran and Tomer Shirar, “Learn Advanced Java Script Programming”, BPB Publications, New Delhi.
5. TypeScript Tutorial

SEMESTER - V

MAJOR THEORY

Software Engineering and Testing

UNIT I SOFTWARE ENGINEERING

The Nature of Software – The Changing Nature of Software – Software Engineering – Defining the Discipline – The Software Process – Software Engineering Practice – Software Development Myths – Software Process Structure – A Generic Process Model – Defining a Framework Activity – Identifying a Task Set.

Process Patterns – Process Assessment and Improvement – Process Models – Prescriptive Process Models – Specialized Process Models – The Unified Process – Personal and Team Process Models – Process Technology – Product and Process – Agile Development – Agility and the Cost of Change – Extreme Programming – Other Agile Process Models.

UNIT II MODELING

Requirements Engineering – Establishing the Groundwork – Eliciting Requirements – Developing Use Cases – Building the Analysis Model – Negotiating Requirements – Requirements Monitoring – Validating Requirements.

Avoiding Common Mistakes – Requirements Modelling: Scenario – Based Methods – Requirements Analysis – Scenario-Based Modelling – UML Models That Supplement the Use Case.

UNIT III DESIGN CONCEPTS

The Design Process – Design Concepts – The Design Model – Architectural Design – Software Architecture – Architectural Styles – Architectural Design – Agility and Architecture – Component Level Design – Designing Class-Based Components – Conducting Component Level Design – Component Level Design for WebApps – Component-Level Design for Mobile Apps.

Designing Traditional Components – Component-Based Development – User Interface Design – The Golden Rules – User Interface Analysis and Design – Interface Analysis – Interface Design Steps – WebApp and Mobile Interface Design – Design Evaluation.

UNIT IV SOFTWARE TESTING: AN OVERVIEW

Introduction – Software Testing – The Three Step Process to Become a World-Class Testing Organization – Software Testing Guidelines – Software Testing Tools – Selecting and Installing

Software Testing Tools – Integrating Tools into the Tester’s Work Process – Selecting and Using Test Tools – Training Testers in Tool Usage.

UNIT V VERIFICATION AND VALIDATION TESTING

The Seven-step Testing Process – Overview of the Software Testing Process – Verification Testing – Validation Testing – Rapid Application Development Testing – Testing a Multiplatform Environment.

TEXT BOOK

1. Roger S. Pressman, “Software Engineering: A Practitioner Approach”, Eighth Edition, McGraw Hill, 2015.
2. William E. Perry, “Effective Methods for Software Testing”, Third Edition, John Wiley, 2015

REFERENCE BOOKS

1. Somerville, “Software Engineering”, Tenth Edition, Pearson Edition, 2018.
2. Ali Behforroz, Frederick J.Hudson, “Software Engineering Fundamentals”, Oxford Indian Reprint, 2012.
3. Yogesh Singh, “Software Testing” First Edition, Cambridge University Press, 2012.
4. Glenford J. Myres, Tom Badgett, Corey Sandler, “The Art of Software Testing”, Third Edition, Pearson Education, 2011.

DATA MINING AND DATA WAREHOUSING

UNIT I :

DATA MINING - Introduction – What is Data Mining? – Kinds of Data – Data Mining Functionalities – Interestingness of Patterns – Classification of Data Mining Systems – Data Mining Task Primitives – Integration of a Data Mining System with a Data Warehouse – Issues –Data Preprocessing: Why Preprocess the Data?- Data Cleaning-Data Integration and Transformation.

UNIT II

ASSOCIATION RULE MINING AND CLASSIFICATION - Mining Frequent Patterns, Associations and Correlations – Basic Concepts-: Frequent Itemset Mining Methods – The Apriori Algorithm – Mining Various Kinds of Association Rules – Classification and Prediction - What Is Classification? What Is Prediction? - Classification by Decision Tree Induction : Decision Tree Induction - Bayesian Classification : Bayes’ Theorem - Naïve Bayesian Classification – Rule Based Classification : Using IF-THEN Rules for Classification - Rule Extraction from a Decision Tree –Classification by Backpropagation : A Multilayer Feed-Forward Neural Network - Defining a Network Topology – Backpropagation – Prediction : Linear Regression - Nonlinear Regression.

UNIT III :

DATA WAREHOUSING – Data warehousing Components: Overall Architecture - Datawarehouse Database- Sourcing, Acquisition, Cleanup, and Transformation tools – Metadata - Access Tools - Data Marts - Data Warehouse Administration and Management - Information Delivery System – Building a Data warehouse: Business Considerations : Return on Investment - Design Considerations - Benefits of Data Warehousing.

UNIT IV :

BUSINESS ANALYSIS -Tools categories - The Need for Applications - Need of OLAP - Multidimensional Data Model - OLAP Guidelines - Multidimensional versus Multirelational OLAP - Categorization of OLAP Tools - OLAP Tools and the Internet.

UNIT V

CLUSTER ANALYSIS: What Is Cluster Analysis? - Categorization of Major clustering Methods – Partitioning Methods : K means –Hierarchical Methods : Agglomerative and Divisive Hierarchical Clustering— Density-Based Methods-DBSCAN- Data Mining Applications.

TEXT BOOKS

1. Alex Berson and Stephen J. Smith, “ Data Warehousing, Data Mining & OLAP”, Tata McGraw – Hill Edition, Tenth Reprint 2007.
2. Jiawei Han and Micheline Kamber, “Data Mining Concepts and Techniques”, Second Edition, Elsevier, 2007.

REFERENCE BOOKS

1. Introduction to Data Mining by Pang-Ning Tan, Michael Steinbach and Vipin Kumar, Pearson Education 2007.
2. Insight into Data Mining Theory and Practice – K.P.Soman, Shyam Diwakar, V.Ajay, Prentice Hall of India, 2008.
3. Introduction to Data Mining with Case Studies by G.K.Gupta, PHI 3rd Edition, 2015.

Scripting language - Lab

1. Write a script code to show alert message
2. Write script code to add 10 each time you click sum button.
3. Write javascript to display today's date and time.
4. Write script to display week name when week number is entered.
5. Write script to change string to uppercase letters.

6. Write script to display random numbers in a given range.
7. Write script to get sum of natural numbers in a given range.
8. Write a script to validate a form.
9. Write script to print a message after delay of 10 seconds.
10. Write script using for each loop to increment numbers of integer array by 5
11. Write script to enter positive numbers in an array and generate an exception if negative numbers are entered.
12. Write script to calculate number of days between two dates
13. Write script to change text color when button is clicked.
14. Develop a auto refreshing digital clock using Javascript.
15. Develop javascript application to display the visitors page count.

MAJOR THEORY

DATA COMMUNICATIONS AND NETWORKING

Unit – I:

Data Communication: Standard Organizations – Line Configuration – Topology – Transmission Mode – Categories of Networks – Internet Works – The Model – Functions of the Layers. Transmission of **Digital Data:** Interfaces and Modems – Digital Data Transmission – DTE – DCE Interface – other Interface Standards.

Unit – II

Transmission Media: Guided Media – Unguided Media – Multiplexing – Many to one/one to Many, Frequency – Division Multiplexing (FDM), Wave – Division Multiplexing (WDM), Time – Division Multiplexing (TDM).

Unit – III

Error Detection and Correction: Types of Errors – Detection – Redundancy – Vertical Redundancy Check (VRC) – Longitudinal Redundancy Check (LRC) – Cycle Redundancy Check (CRC) – Checksum – Error Correction. Data Link Control – Line Discipline – Flow Control – Error Control.

Unit – IV

Switching: Circuit Switching – Packet Switching – Message Switching – Integrated Services – Digital Network (ISDN) – Services – History – Subscribe Access to the ISDN – The ISDN Layers – Broadband ISDN – Future of ISDN.

Unit – V

Frame Relay: Introduction – Frame Relay Operation – Frame Relay Layers – Congestion Control
Leaky Bucket Algorithm – Traffic Control. Networking and Internetworking devices – Repeaters –
Gateways – Other Devices – Routing Algorithm, Distance Vector Routing – Link State Routing.

Text Book:

1. Data Communications and Networking – “Behrouz A Foruzan”, Tata McGraw Hill Publishing Company Limited, New Delhi. 2nd Edition 2006.
2. Data Communications and Networking – Wayne Tomain – Pearson.

Reference Book:

1. Computer Networks – “Andrew S. Tanenbaum”, - Prentice Hall of India, 4th Edition, 2006.
2. Data and Computer Communications “William Stallings Prentice Hall of India 2007

MAJOR THEORY

Graphics and Multimedia Technology

Unit I: Introduction & Graphics Hardware

Basic elements of Computer graphics, Applications of Computer Graphics. Architecture of Raster and Random scan display devices, input/output devices.

Unit II: Fundamental Techniques in Graphics

Raster scan line, circle and ellipse drawing, thick primitives, Polygon filling, line and polygon clipping algorithms

Unit III: Transformations & Modelling

2D and 3D Geometric Transformations, 2D and 3D Viewing Transformations (Projections- Parallel and Perspective), Vanishing points. Representing curves & Surfaces.

Unit IV: Multimedia Components

Introduction to multimedia, components, uses of multimedia, multimedia applications, virtual reality. Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia & Hypertext.

Unit V: Making Multimedia

Still Images – bitmaps, vector drawing, 3D drawing & rendering, natural light & colors, computerized colors, color palettes, image file formats. Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats. How video works, analog video, digital video, video file formats, video shooting and editing. Stages of a multimedia project

BOOKS

1. J.D.Foley, A.Van Dan, Feiner, Hughes Computer Graphics Principles & Practice 2nd edition Publication Addison Wesley 1990.
2. D.Hearn, Baker: Computer Graphics, Prentice Hall of India 2008.
3. D.F.Rogers Procedural Elements for Computer Graphics, McGraw Hill 1997.
4. Tay Vaughan, —Multimedia: Making it work, TMH, Eighth edition.2011
5. Ralf Steinmetz and KlaraNaharstedt, —Multimedia: Computing, Communications Applications, Pearson.2012
6. K. Andleigh and K. Thakkar, —Multimedia System Design, PHI.2013

MAJOR THEORY

. NET PROGRAMMING

Unit – I

The .NET Frame Work : Learning the .NET Languages – Introduction to ASP.NET and IIS – Types, Objects and Name Spaces – ASP .NET Application – Building ASP.NET Website.

Unit – II

Web Form Fundamentals : HTML Controls – Web Controls – Validation Controls – Navigation Controls – Data Controls – Login Controls – CSS – Working with CSS in Web Developer – More Programs.

Unit - III

State Management : Session – View – Query String – Cookies – Tracing – Logging – Error Handling – User Controls – ASP.NET Ajax – Example Programs.

Unit – IV

ADO.NET : Over View of ADO.NET – ADO.NET Access – Data Binding – Data List – DATA Grid and Repeaters – Working with Data base – Sample Programs.

Unit – V

XML : Using XML – XSD – XSLT – Web Services – Creating Web Services – Using Web Services – Caching – ASP.NET Security.

Text Book :

1. Mathew Mac. Donald, “ASP.NET The complete Reference”, Tata McGraw – Hill Publishing Company Ltd., New Delhi.
2. ImarSpanjaars, ASP.NET 3.5 in C# and V.B. : “Wiley India Pvt Ltd.

Reference :

1. O'REILLY, Jesse Liberty, Dan Hurwitz and Brain Mac Donald, "Learning ASP.NET 3.5", II Edition.

MAJOR PRACTICAL
.NET PROGRAMMING – LAB

1. Arithmetic Operations Using Text Box and Button
2. Adding and Removing Items in runtime using Drop Down List and List Box.
3. Upload and display Image using File Up Load Control.
4. Display Date, Day, Month, Year, Day of Week, Day of the Year using Calendar Control.
5. Create an Advertisement using Ad rotator Control.
6. Create a Registration form and apply ASP.NET validation Controls.
7. Binding data in Grid view using Source.
8. Create small pay roll.
9. Create user control with Source.
10. Create a Login Page using Session Variable.
11. Create Student Mark List using SQL Provider.
12. Grid View, Edit, Update, Cancel and Delete using Source.
13. Create a Crystal Report.
14. Create a Simple Web Page Using CSS.
15. Create a Master Page.

GROUP A (MAJOR ELECTIVE – I)

MAJOR ELECTIVE THEORY :

Cloud Computing

UNIT I:

Introduction Cloud Computing Introduction, From, Collaboration to cloud, Working of Cloud Computing, Pros and Cons, Benefits, Developing Cloud Computing Services, Cloud Service Development, Discovering Cloud Services.

UNIT II:

Cloud Computing For Everyone Centralizing Email Communications, Cloud Computing for Community, Collaborating on Schedules, Collaborating on Group Projects and Events, Cloud Computing for Corporation, Mapping Schedules Managing Projects, Presenting on Road.

UNIT III:

Using Cloud Services Collaborating on Calendars, Schedules and Task Management, Exploring on Line Scheduling and Planning, Collaborating on Event Management, Collaborating on Contact Management, Collaborating on Project Management, Collaborating on Word Processing, Spreadsheets, and Databases.

UNIT IV:

Outside The Cloud Evaluating Web Mail Services, Evaluating Instant Messaging, Evaluating Web Conference Tools, Creating Groups on Social Networks, Evaluating on Line Groupware, Collaborating via Blogs and Wikis.

UNIT V:

Storing And Sharing Understanding Cloud Storage, Evaluating on Line File Storage, Exploring on Line Book Marking Services, Exploring on Line Photo Editing Applications, Exploring Photo Sharing Communities, Controlling it with Web Based Desktops.

TEXT BOOK:

Cloud Computing, Michael Miller, Pearson Education, New Delhi, 2009.

REFERENCE BOOK:

1. Cloud Computing, V. K. Pachghare, PHI Learning Pvt Ltd, 2016
2. Cloud Computing, Anthony T.Velte, Toby J.Velte, Pobert Elsenpeter, TMH, 2010.
3. Cloud Computing Bible, Barrie Sosinsky, Wiley Publishing, Inc.

Artificial Intelligence

Unit I: Introduction

Introduction to Artificial Intelligence, Background and Applications, Turing Test and Rational Agent approaches to AI, Introduction to Intelligent Agents, their structure, behavior and environment.

Unit II: Problem Solving and Searching Techniques

Problem Characteristics, Production Systems, Control Strategies, Breadth First Search, Depth First Search, Hill climbing and its Variations, Heuristics Search Techniques: Best First Search, A* algorithm, Constraint Satisfaction Problem, Means-End Analysis, Introduction to Game Playing, Min-Max and Alpha-Beta pruning algorithms.

Unit III: Knowledge Representation

Introduction to First Order Predicate Logic, Resolution Principle, Unification, Semantic Nets, Conceptual Dependencies, Frames, and Scripts, Production Rules, Conceptual Graphs. Programming in Logic (PROLOG)

Unit IV: Dealing with Uncertainty and Inconsistencies

Truth Maintenance System, Default Reasoning, Probabilistic Reasoning, Bayesian Probabilistic Inference, Possible World Representations.

Unit V: Understanding Natural Languages

Parsing Techniques, Context-Free and Transformational Grammars, Recursive and Augmented Transition Nets.

BOOKS

1. DAN.W. Patterson, Introduction to A.I and Expert Systems – PHI, 2007.
2. Russell &Norvig, Artificial Intelligence-A Modern Approach, LPE, Pearson Prentice Hall, 2 nd edition, 2005.
3. Rich & Knight, Artificial Intelligence – Tata McGraw Hill, 2nd edition, 1991.
4. W.F. Clocksin and Mellish, Programming in PROLOG, Narosa Publishing House, 3rd edition, 2001.
5. Ivan Bratko, Prolog Programming for Artificial Intelligence, Addison-Wesley, Pearson Education, 3rd edition, 2000.

CYBER SECURITY

UNIT I

INTRODUCTION TO CYBER SECURITY

Introduction -Computer Security - Threats -Harm - Vulnerabilities - Controls - Authentication - Access Control and Cryptography - Web—User Side - Browser Attacks - Web Attacks Targeting Users - Obtaining User or Website Data - Email Attacks

UNIT II

SECURITY IN OPERATING SYSTEM & NETWORKS

Security in Operating Systems - Security in the Design of Operating Systems -Rootkit - Network security attack- Threats to Network Communications-Wireless Network Security –Denial of Service - Distributed Denial-of-Service.

UNIT III

DEFENCES: SECURITY COUNTERMEASURES

Cryptography in Network Security - Firewalls - Intrusion Detection and Prevention Systems - Network Management - Databases - Security Requirements of Databases - Reliability and Integrity - Database Disclosure - Data Mining and Big Data.

UNIT IV

PRIVACY IN CYBERSPACE

Privacy Concepts -Privacy Principles and Policies -Authentication and Privacy - Data Mining -Privacy on the Web - Email Security - Privacy Impacts of Emerging Technologies - Where the Field Is Headed.

UNIT V

MANAGEMENT AND INCIDENTS

Security Planning - Business Continuity Planning - Handling Incidents - Risk Analysis - Dealing with Disaster - Emerging Technologies - The Internet of Things - Economics - Electronic Voting - Cyber Warfare- Cyberspace and the Law - International Laws - Cyber crime - Cyber Warfare and Home Land Security.

REFERENCESBOOKS

1. Charles P.Pfleeger Shari Lawrence P fleeger Jonathan Margulies, Security in Computing, 5th Edition , Pearson Education ,2015
2. George K.Kostopoulous, Cyber Space and Cyber Security, CRC Press, 2013.
3. MarttiLehto, PekkaNeittaanmäki, Cyber Security: Analytics, Technology and Automation edited, Springer International Publishing Switzerland 2015
4. Nelson Phillips and EnfingerSteuart, —Computer Forensics and Investigations, Cengage Learning, New Delhi,2009.

Python Programming

UNIT I:

Introduction to Python: Structure of a Python Program¹, Elements of Python. Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators

UNIT II:

Creating Python Programs: Input and Output Statements⁴, Control Statements (Looping while Loop, for Loop, Loop Control, Conditional Statement-if...else, Difference between break, continue and pass).

UNIT III:

Structures & Functions: Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, Defining Functions, Exit function, default arguments

UNIT IV:

Classes, Object-oriented Programming and Exception: Abstract Data Types and Classes, Inheritance, Encapsulation and Information hiding, handling exceptions

Unit V:

Searching, Sorting and Plotting: Linear Search, Binary search, Selection Sort, Plotting using Pylab

Text Book:

1. John V Guttag. —Introduction to Computation and Programming Using Python, Prentice Hall of India

Reference Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. Python Tutorial/Documentation www.python.org 2010
3. Allen Downey, Jeffrey Elkner, Chris Meyers, How to think like a Computer Scientist: Learning with Python, Freely available online. 2012

MOBILE COMPUTING

UNIT I

Introduction: Wireless Transmission: Frequencies for radio transmissions – Signals – Antenna – Signal Propagation – Multiplexing – Modulation – Spread Spectrum – Cellular systems.

UNIT II

Medium Access Control : Motivation for Specialized MAC - SDMA – FDMA – TDMA – CDMA - Comparison of S/T/F/CDMA. Tele communications : GSM – DECT – TETRA

UNIT III

Satellite Systems: Basics- Routing- Localization- Handover- Broadcast Systems: Overview – Cyclic Repetition of Data- Digital Audio Broadcasting –Digital Video Broadcasting. Wireless Networks: Infrared Vs Radio Transmission – Infrastructure and ad-hoc network.

UNIT IV

Wireless LAN: IEEE 802.11 – HIPERLAN – Bluetooth. Mobile Network Layer: MobileIP – Dynamic Host Configuration Protocol (DHCP) – Mobile Ad-hoc Networks

UNIT V

Mobile Transport layer: Traditional TCP- Classical TCP Improvements. Support for Mobility: File Systems – World Wide Web (WWW) – Wireless Application Protocol (WAP).

TEXT BOOK

1. J.Schiller, Mobile Communication, Addison Wesley,2003

REFERENCE BOOKS

1. William C.Y.Lee, Mobile Communication Design Fundamentals, John Wiley,1993.
2. William Stallings, Wireless Communication and Networks, Pearson Education,2003.
3. Singhal, WAP-Wireless Application Protocol, Pearson Education.

PARALLEL COMPUTING

Unit I

Introduction: Parallel Processing – Shared Memory Multiprocessing – Distributed Shared Memory – Message Passing Parallel Computers. Processes & Shared Memory Programming Processes - Shared Memory Programming – General Model Of Shared Memory Programming – Forking-Creating Processes – Joining Processes - Process Model Under UNIX.

Unit II

Basic Parallel Programming Techniques: Loop Splitting – Ideal Speedup – Spin-Locks, Contention And Self- Scheduling. 5 10 4 Scheduling : Loop Scheduling – Variations On Loop Scheduling – Self-Scheduling – Variations On Self-Scheduling – Indirect Scheduling – Block Scheduling. Barriers And Race Conditions The Barrier Calls – Expression Splitting.

Unit III

Thread-Based Implementation Thread Management – The POSIX Thread Application Programmer Interface- Synchronization Primitives in POSIX- Example With Threads – Attributes Of Threads – Mutual Exclusion With Threads – Mutex Usage Of Threads – Thread Implementation – Events And Condition Variables – Deviation Computation With Threads – Java Threads.

Unit IV

Programming Using the Message Passing Paradigm Principles of Message-Passing Programming. The Building Blocks: Send and Receive Operations. MPI: The Message Passing Interface. Topologies and Embedding. Overlapping Communication with Computation. Collective Communication and Computation Operations.

Unit V

Algorithms For Parallel Machines Models Of Computation – Analysis Of Parallel Algorithms – Prefix Computation – Histogram Computation – Parallel Reduction – Sorting Networks - Matrix Multiplication.

Text Books:

- 1 Introduction To Parallel Programming - By Steven Brawer.
- 2 Introduction to Parallel Computing, Ananth Grama, Anshul Gupta, George Karypis, Vipin Kumar, Pearson Publication.
- 3 Introduction To Parallel Processing – By M.Sasikumar, Dinesh Shikhare and P. Ravi Prakash.

SEMESTER III
SKILL BASED SUBJECT SYLLABUS

Subject : DTP

Page Maker

1. Design of ID Card (3" * 2").
2. Design of Visiting Card (3.5" * 2").
3. Design of an attractive invitation Card (5.5" * 8").
4. Design Letter Pad. (7.5" * 9").
5. Preparation of a small booklet with 6 pages (3.5" * 4.5").
6. Design a hand bill (5.5" * 8.5").
7. Create a advertisement for your college.
8. Design your college progress card.
9. Create a receipt bill with counter foil.
10. Create a graph/pie chart.

Photoshop

1. Design of a brochure for an institution.
2. Seasonal Greeting Card.
3. Transporting an image from one background to another.
4. Design a web page poster (1004 * 750)/text book cover page.
5. Crop and image/rotate an image.

CorelDraw

1. Create an object and fill with multiple colours.
2. Design a book cover.
3. Create a frame and enter a paragraph with different formats of text.
4. Export any five image in a single applications.
5. Design page frame by inserting image and objects.

SEMESTER IV
SKILL BASED SUBJECT SYLLABUS
VISUAL PROGRAMMING

Unit I

Getting started with Visual Basic 6.0: Introduction to Visual Basic - Visual Basic 6.0 Programming Environment – Working with Forms – Variables, Data types and Modules – Procedures and Control Structures – Arrays in Visual Basic.

Working with Controls: Creating and using Controls – Working with Control Arrays.

Unit II

Menus, Mouse Events and Dialog Boxes: Introduction – Mouse Events – Dialog Boxes - **Graphics, MDI, and Flex Grid:** Graphics for Applications – Multiple Document Interface (MDI) – Using the Flex Grid Control.

Unit III

ODBC and Data Access Objects : Data Access Options

ODBC using Data Access Objects and Remote Data Objects: Open Database Connectivity (ODBC) – Remote Data Objects (RDO).

Unit IV

Data Environment and Data Report : Introduction – Data Environment Designer - Data Report

Object Linking and Embedding: Introduction - OLE Fundamentals – Using OLE Container Controls – Using OLE Automation Objects - OLE Drag and Drop

Unit V

Built-In ActiveX Controls : Working with Built-In ActiveX Controls – Additional ActiveX Controls

Working with ActiveX Data Objects: An Overview of ADO and OLE DB – ADO Object Model **Files and File System Controls:** File System Controls – Accessing Files.

Text Book:

1. Visual Basic 6.0 Programming – Content Development Group – Tata McGraw-Hill Publishing Company Limited, New Delhi.

Reference Books:

1. VISUAL BASIC 6 in Record Time by Steve Brown, BPB Publications.
2. VISUAL BASIC 6 from the Ground UP – GARY CORNELL – Tata McGraw Hill.

SEMESTER V

Mini Project

Students are to take up sample project development activities with the guidelines given below
Preparing a project- brief proposal including

- Problem Identification
- Developing a model for solving the problem
- A statement of system /process specification proposed to be developed (Data Flow Diagram)
- List of possible solution including alternatives and constraints
- Cost benefit analysis
- Time line activities

A report highlighting the design finalization [Based on functional requirements & standards (if any)]

A presentation including the following Implementation phase (Hardware/Software/both)

- Testing & Validation of the developed system
- Learning in the project Consolidated report preparation

SEMESTER VI

Major project

The objective of the project is to enable the students to work in a project of latest topic/research area/industrial applications. Each project student shall have a guide who is a faculty member.

During this semester the students are expected to do literature survey, formulate the problem and form a methodology of arriving at the solution of the problem. Also during this semester, the students are expected to complete the project and submit a full-fledged report comprising of the complete system developed along with implementation and test results.

The departmental committee shall examine the students and the evaluation is based on continuous internal assessment comprising of two reviews.

After two reviews internal marks is based on seminar, demo and Internal viva-voce will be given by the guide. At the end of the semester, a viva-voce examination will be conducted.

NON – MAJOR ELECTIVE PAPERS – I Other than B.Sc. (IT) & B.Sc. (CIT)

INTRODUCTION TO INFORMATION TECHNOLOGY

Unit – I

Information Technology Basics : Introduction, Information, Technology, Information Technology, Present Scenario, Role of Information Technology, Information Technology and Internet, Careers in IT industry. Computer Organization and Architecture: Central Processing Unit, Inside a Computer, Data representation in Computer, Coding Schemes.

Unit – II

Computer Memory and Storage Introduction: Memory Hierarchy, Random Access Memory (RAM), Read Only Memory (ROM), RAM, ROM and CPU Interaction, Types of Secondary Storage Devices, Magnetic Tape, Magnetic Disk, Types of Magnetic Disk, Optical Disk, type of optical disks.

Unit – III

Input Output Media: Introduction, types of input devices, types of output devices. Multimedia Essentials : Introduction, Multimedia : Definition, Building Blocks of multimedia, multimedia system, multimedia applications, Virtual reality.

Unit – IV

The Internet: Introduction Evolution of Internet – Basic Internet Terms – Getting Connect to Internet – Internet Applications – Data over Internet. Internet Tools : Introduction – Web Browser – Browsing Internet using Internet Explorer – E – Mail – Search Engines – Instant Messaging.

Unit – V

Emerging Trends in IT : Introduction, E-Commerce – Electronic Data Interchange – Mobile Communication – Bluetooth – Global Positioning System – Infrared Communication – Smart Card – Imminent Technologies.

Text Books :

1. Introduction to Computers and Information Technology, D. Glory Ratna Mary, S. Selvanayahi, V. Joseph Peter, Shekina Publications.

Reference Books :

1. Introduction to Information Technology ITL Education Solutions Limited, Pearson Education.
2. Fundamentals of Information Technology By Alexis Leon & Mathews Leon Vikas Publication – New Delhi.

NON – MAJOR ELECTIVE PAPERS – II Other than B.Sc. (IT) & B.Sc. (CIT)

BASIC PROGRAMMING DESIGN

Unit – I

Introduction: Algorithms, Flowcharts, Types of Programming Languages, Selection of Programming Languages, Program Writing Debugging.

Unit – II

Flow Charts: Elementary Concepts – Introduction, Kinds of flow charts, symbols used in flow charts, Advantages of flow charts, examples, constants and variables.

Unit – III

Flow Charting Simple Computation: Introduction, illustrating examples, conclusions.

Unit – IV

Subscripted Variables: Introduction, basic concepts of subscripted variables, one dimensional array, illustrating examples, conclusions.

Unit – V

Multidimensional Arrays: Introductions, definitions, matrix operations, illustrating examples, beyond two dimensions, conclusions – Introduction to File Structure.

Introduction, Concept of data files, Types of Data Files, File Organization methods, File Processing activities, Conclusions.

Text Book:

1. Basic Programming Design, D.S. Arul Selvan & A.A. Regieson Sylum Shalom Publications, Green St, Nagercoil.

Reference :

1. Insight into Flowcharting Raj K. Jain By S. Chand & Company Ltd.