



# **St. PETER'S UNIVERSITY**

**St. Peter's Institute of Higher Education and Research**

**(Declared Under Section 3 of the UGC Act, 1956)**

**AVADI, CHENNAI – 600 054**

**TAMIL NADU**

**B.Sc. (INFORMATION TECHNOLOGY)**

**Code No. - 317**

**(Effective From 2009 – 2010)**

**(Distance Education)**

**Regulations and Syllabi**

**(I & II & III Year)**

**St. PETER'S INSTITUTE OF DISTANCE EDUCATION**

**Recognized by Distance Education Council and**

**Joint Committee of UGC – AICTE - DEC, New Delhi**

**(Ref. F. No. DEC/SPU/CHN/TN/Recog/09/14 dated 02.04.2009 and**

**Ref.F.No.DEC/Recog/2009/3169 dated 09.09.2009)**

**St. PETER'S UNIVERSITY**  
**St. PETER'S INSTITUTE OF DISTANCE EDUCATION**  
Chennai – 600 054.

**Code No. – 317**  
**B.Sc. (INFORMATION TECHNOLOGY)**  
(Distance Education)

**Regulations and Syllabi**  
(Effective from 2009 – 2010)

- 1. Eligibility:** Candidates who have passed the Higher Secondary Examination conducted by the Government of Tamilnadu with Mathematics (Academic stream or Vocational stream) as one of the subjects, or any other examination recognized as equivalent thereto are eligible for admission to Three Year B.Sc. Programme in Information Technology.
- 2. Duration:** Three Years.
- 3. Medium:** English is the medium of instruction and examination.
- 4. Methodology:** The methodology of distance education includes supply of self-instructional study materials in print format and in CD, face-to-face instruction for theory and practicals for a limited period during week ends and on holidays, provision of virtual class in phased manner, dissemination of information over e-mail, Student - Support Service at various Centres of the University, Continuous Assessment and End Assessment conducted by the University at various parts of India.
- 5. Weightage for Continuous and End Assessment:** There is no weightage for Continuous Assessment unless the ratio is specifically mentioned in the scheme of Examinations. The End Assessment (EA) has 100% weightage.

**6. Credit System:** Credit system be followed with 36 credits for each Year and each credit is equivalent to 25 hours of effective study provided in the Time Table of the formal system.

**7. Scheme of Examinations**

**First Year**

Code No.	Course Title	Credit	Marks	
			EA	Total
<b>Theory</b>				
109UTMT01 109UHIT01	Tamil - I Hindi - I	6	100	100
109UEHT02	English - I	6	100	100
109UITT03	Digital Computer Fundamentals and GUI Applications	6	100	100
109UITT04	Programming Language VISUAL BASIC	6	100	100
109UITT05	Allied – I: Mathematics	6	100	100
109UITP01	Practical – I: GUI Applications and VISUAL BASIC Record	6	90 10	100
<b>Total</b>		<b>36</b>	<b>600</b>	<b>600</b>

**Second Year**

Code No.	Course Title	Credit	Marks	
			EA	Total
<b>Theory</b>				
209UITT01	Object Oriented Programming with C++	6	100	100
209UITT02	Data Structures and Algorithms using C++	6	100	100
209UITT03	Data Communication and Network	6	100	100
209UITT04	Client/Server Technology and RDBMS	6	100	100
209UITT05	Allied – II: Management Accounting	6	90 10	100
209UITP01	Practical – II: Programming in C++ and RDBMS (ORACLE) Record	6	90 10	100
<b>Total</b>		<b>36</b>	<b>600</b>	<b>600</b>

### Third Year

Code No.	Course Title	Credit	Marks	
			EA	Total
<b>Theory</b>				
309UITT01	Modern Communication Technology	6	100	100
309UITT02	E-Commerce	6	100	100
309UITT03	Internet and Programming Language JAVA	6	100	100
309UITT04	Application Oriented Subject: Multimedia System	6	100	100
309UITP01	Practical – III: Programming in JAVA Record	6	90 10	100
309UITP02	Practical – IV Multimedia Record	6	90 10	100
<b>Total</b>		<b>36</b>	<b>600</b>	<b>600</b>

**8. Passing Requirements:** The minimum pass mark (raw score) be 40% in End Assessment.

**9. Grading System:** Grading System on a 10 Point Scale be followed with 1 mark = 0.1 and the conversion of the Grade point as given below.

$$\begin{aligned} \text{Overall Grade Point Average (OGPA)} &= \frac{\text{Sum of Weighted Grade Points}}{\text{Total Credits}} \\ &= \frac{\sum (EA)C}{\sum C} \end{aligned}$$

**The Overall Grade:** The Overall Grade and Classification of all successful candidates be arrived at from the Overall Grade Point Average as stipulated in the following conversion Table.

Grade	Over all Grade Point Average(OGPA)	Over all weighted Average marks	Classification
0	9.0 to 10.0	90 to 100	First Class
A	8.0 to 8.9	80 to 89	First Class
B	7.0 to 7.9	70 to 79	First Class
C	6.0 to 6.9	60 to 69	First Class
D	5.0 to 5.9	50 to 59	Second Class
E	4.0 to 4.9	40 to 49	Third Class
<b>F</b>	0.0 to 3.9	0 to 39	<b>Reappearance</b>

The Grade Sheets of successful candidates provide particulars such as (1) Overall weighted Average Marks and (2) Overall Grade.

**10. Pattern of the Question Paper:** The question paper for the End Assessment will be set for three hours and for a maximum of 100 marks with following divisions and details.

**Part A:** 10 questions (with equal distribution to all units in the syllabus). Each question carries 2 marks.

**Part B:** 5 questions with either or type (with equal distribution to all the units in the syllabus). Each question carries 16 marks.

The total marks scored by the candidates will be reduced to the maximum prescribed in the Regulations.

## **11. Syllabus**

# **109UITT03: DIGITAL COMPUTER FUNDAMENTALS AND GUI APPLICATIONS**

## **UNIT – I:**

Introduction to computers: Introduction – Types of computers-Characteristics of Computers – Word Length – Speed – Storage – Accuracy – Versatility – Automation – Diligence. Five generations of Modern computers: First Generation computers – Second generation computers – Third Generation computers – Fourth generation computers – Fifth Generation computers. Classifications of digital computer system: Introduction – Microcomputers – Personal computers – Workstations – Portable computers – Minicomputers – Mainframes – Supercomputers – Network computers. Number system: Introduction – Decimal Number system – Binary number system – Binary to decimal conversion – Decimal to Binary conversion – Binary Addition – Binary Subtraction – Complements – 9's Complement – 10's Complement – 1's Complement – 2's Complement – Signed and unsigned number representation – Fixed – Point representation of Numbers – Floating – Point representation of Numbers – Binary Coded Decimal – Gray Code – Excess – 3 code – ASCII – 8 code – EBCDIC Code – Bits, Bytes and Words – Octal Number system – Hexadecimal Number System.

## **UNIT – II:**

Boolean Algebra and Gate Networks: Fundamental concepts of Boolean Algebra – Logical Multiplication – AND Gates and OR Gates – Complementation and Inverters – Evaluation of Logical Expressions – Evaluation of an Expression containing parentheses – Basic Laws of Boolean Algebra – Simplification of expressions – De Morgan's theorems – Basic Duality of Boolean Algebra – Derivation of a Boolean Expression – Interconnecting Gates – Sum of products and products of sums – Derivation of products of sums expression – Derivation of three Input variable expressions – NAND gates and NOR gates – The Map method for simplifying expressions – Sub cubes and covering – Product of sums. Expressions – Don't cares.

### **UNIT – III:**

Anatomy of a Digital Computer: Functions and Components of a Computer – Central Processing Unit – Control Unit – Arithmetic Logic Unit – Memory – Registers – Addresses – How the CPU and Memory Work. Memory Units: Introduction – RAM – ROM – PROM – EPROM – EEPROM – Flash memory. Input Devices: Introduction – Keyboard – Mouse – Types of Mice – Connections – Mouse Pad – Trackball – Joystick – Digitizing Tablet – Scanners – Digital camera – MICR – OCR – OMR – Barcode Reader – Speech Input Devices – Continuous Speech – Discrete Word – Touch screen – Touch Pad – Light Pen. Output Devices: Introduction – Monitor – Video Standards – Printer – Plotter – Sound Cards and Speakers – Auxiliary storage Devices: Introduction – Magnetic Tape – Hard Disk – Floppy Disk – CD – ROM – CD – R Drive – CD – RW Disks.

### **UNIT – IV:**

Dos – WordStar – Database Management System – Dbase III Plus – Electronic Spreadsheets – LOTUS 1-2-3 – Internet – Electronic Mail.

### **UNIT – V:**

MS – WINDOWS – MS-WORD – MS-EXCEL – Introduction to Desktop Publishing – Overview of Powerpoint.

### **TEXTBOOKS:**

1. "Fundamentals of Computer Science and Communication Engineering" Alexis Leon, Mathews Leon, Vikas Publishing House, New Delhi, 1998 (UNIT I & III)
2. "Digital Computer Fundamentals", Thomas C. Bartee, T.M.H, New Delhi, 6<sup>th</sup> Edition 1991 (Unit – II)
3. "PC software for WINDOWS Made Simple", R.K. Taxali, T.M.H, New Delhi, 1998 (Unit – IV & V)

## **109UITT04: PROGRAMMING LANGUAGE VISUAL BASIC**

### **UNIT – I:**

Welcome to VB: What is Visual Basic? – Features of Visual basic – Visual Basic Editions – The Visual Basic Philosophy – Developing an Application. Creating an Application: Objectives – The Tool Box – Project Explorer – The Properties Window – The Form Window – Understanding Projects – What Does Visual Basic 6 have for you to create Applications. 2<sup>nd</sup> Look at IDE, Forms and controls: Objectives – The Form – The working with a control – Opening the Code Window. Variables in Visual Basic: Objectives – What is a Variable?

### **UNIT – II:**

Writing Code in VB: Objectives – The Code Window – The Anatomy of Procedure – Editor Features – The For ...Next Statement – The Decision Maker ...IF-Loop – The While Loop – Selective case ... End Select. Working with Files: Objectives – Visual Basic File System Controls – Types of Files – Working with Files.

### **UNIT – III:**

Menus: Objectives – Building the User Interface. The first step – All about Menus. MDI Applications: Why MDI Forms – Features of an MDI Form – Loading MDI Forms and Child Forms – The Active Form property. Debugging Tips: Objectives – The Debugging Methods. The Common Dialog Control: Working with the Common Dialog control – The file open Dialog Box – Saving a file – Changing the color. Introduction to Databases: Why Databases – What is a Database – Which Database. Working with the Data Control: The Data control – The Bound controls – Caution – Coding.



## **UNIT – IV:**

DAO: The Jet Database Engine – Functions of the Jet Database Engine – SQL – The DAO Object Model. Additional Controls Available in VB 6.0 – Objectives – SSTab Control. ActiveX Data Objects – Objectives – Why ADO – Establishing a Reference.

## **UNIT – V:**

Crystal and Data Reports: Crystal Reports – Data Report. Distributing your application: Objectives – Working with the Packaging and Deployment Wizard. ActiveX: Objectives – What is ActiveX – Why ActiveX. ActiveX and Web Pages: Objectives – ActiveX and Internet. ActiveX Documents: The Application Form Document. Sample Application in VB Like Inventory Control.

## **TEXT BOOK:**

1. “ Programming with Visual Basic 6.0” – Mohammed Azam. – Vikas Publishing House Pvt. Ltd.

## 109UITT05: ALLIED – I MATHEMATICS

### UNIT – I:

Characteristics Equation – Eigen values and Eigen Vectors – Properties – Problems – Rank of a Matrix – Problems – Solutions of simultaneous equations using matrices – Consistency condition. Polynomial equations – Relations between roots and coefficients – Imaginary roots and irrational roots – Solving equations under given conditions – Transformation of equations.

### UNIT – II:

Definition of a derivative, different types of differentiation – standard formulae – Successive differentiation –  $n^{\text{th}}$  derivatives – Leibnitz formula – problems. Partial differentiation – Euler's theorem – Curvature – Radius of curvature in Cartesian co-ordinates.

### UNIT – III:

Integration by parts:  $\int_0^{\pi/2} \sin^n x dx$ ,  $\int_0^{\pi/2} \cos^n x dx$ ,  $\int_0^{\pi/4} \tan^n x dx$ ,  $\int_0^{\infty} x^n e^{-ax} dx$ ,  $\int x^n e^{-x} dx$  Definite integrals – Properties – Reduction formulae – Problems. Second order differential equations with constant coefficients – Particular integrals of the type  $e^{ax} V$  – Where  $V$  is  $x$  or  $x^2$  or  $\cos ax$  or  $\sin ax$ .

### UNIT – IV:

Definition – complete. + - Singular and general integrals solutions of standard types  $f(p,q) = 0$ ,  $f(x,p,q) = 0$ ,  $f(z,p,q) = 0$ ,  $f_1(x,p) = f_2(x,p)$  – Clairant's form – Lagrange's equation  $Pp + Qq = R$  – Problems.

### UNIT – V:

Definition – Laplace transform of standard function simple theorems – Problems – Inverse Laplace transform – Fourier coefficients – Periodic functions with period  $2p$  – half range series – cosine series – sine series – problems.

### TEXT BOOKS:

1. T.K. Manickavasagam pillai – ALLIED MATHEMATICS, S. Viswanathan & Co, Chennai
2. P.R. Vittal – ALLIED MATHEMATICS, Margham Publications, Chennai
3. A. Singaravelu – ALLIED MATHEMATICS, Meenakshi Traders, Chennai.

# 109UITP01: PRACTICAL – I: GUI APPLICATIONS AND VISUAL BASIC

## GUI Applications:

### I. MS- WORD:

1. a. Starting MS-WORD, Creating, Saving, Printing (with options) Closing and Exiting.  
b. Study of Word-Menu / Toolbars.
2. a. Create a document, Save it and edit the document as follows:
  - i) Find and Replace options.
  - ii) Cut, Copy and Past options.
  - iii) Undo and Redo options.  
b. Format the document:
  - i) Using Bold, Underline and Italic. Change Character size using the font dialog box.
  - ii) Formatting paragraph: Centre, Left aligns & Right aligns.
  - iii) Changing paragraph and line spacing, Using Bullets and Numbering in paragraphs.
  - iv) Creating Hanging paragraphs.
3. Using tab settings enhancing the documents (Header, Footer, Page Setup, Border, Opening and Closing toolbars, Print Preview).
4. Creating Tables in a document, Selecting rows & Columns sort the record by using tables, format painter and Auto format.
5. Drawing flow chart using drawing toolbar, inserting picture and setting frames.
6. Mail Merge in word (Creating main document, data source, inserting merge fields and viewing merge data, viewing and printing merged letter, using mail merge to print envelope creating mailing labels).

## II. MS-EXCEL:

1. a. Create a work sheet, moving/copying/inserting/deleting row and columns. (usage of cut, paste commands, copying a single cell, Copying a range of data, filling up a cell. Undo command, Inserting a row, column, Deleting rows and coloumns).
  
- b. Formatting work sheets
  1. Bold style
  2. Italic style
  3. Font size changing
  4. Formatting numbers (Auto fill, selection command, currency format, currency syllabus)
  5. Specifying percentage (%) scientific notations.
  6. Drawing border around cells.
  7. Printing a work sheet (Print preview, Margin setting, Header, Footer)
  
2. a. Data base concept: Database, Record field and field name creating and sorting a database and maintaining a database (Data form)
  
- b. Using auto filter, advanced filter.
- c. Creating subtotals and grand totals – Using data base functions.
  
3. Creating chart
  - i) Using chart wizard (five steps)
  - ii) Changing the chart type (Pie, Bar, Line)
  - iii) Inserting titles for the Axes x,y
  - iv) Changing colors
  - v) Printing charts.

4. a. Using data, time and math functions:
  - i) Entering current date
  - ii) Using date arithmetic (adding and subtracting dates)
  - iii) Date functions (day, month, year)
  - iv) Using time functions (hour, minute, second)
- b. Math function
  - i) SUM, COUNT, AVERAGE
  - ii) MAX, MIN
  - iii) STDEV, VAR
  - iv) ABS, EXP, INT
  - v) LOG 10 AND LOG
  - vi) MOD, ROUND, SORT
  - vii) Using auto sum
- c. Logical and financial functions
  - i) Logical (IF/AND/OR/NOT)
  - ii) Financial (PMT, FV, NPER, RATE)
5.
  - i) Creating and running a Macro
  - ii) Assigning button to a defined Macro
  - iii) Editing a Macro

### **III. MS – POWER POINT:**

1. Creating a presentation using auto content wizard.
2. Different views in power point presentation
3. Setting animation effects/grouping/ungrouping/cropping power/point objects
4. Printing a presentation/Importing – Exporting files.
5. Creating an organization chart in Power point.

### **VISUAL BASIC**

1. Preparation of students mark sheet
2. Personal Information system
3. Quiz program system
4. Creating Active X controls
5. Railway Reservation System
6. Voters Information system
7. Library Information System

# **209UITT01 – OBJECT ORIENTED PROGRAMMING WITH C++**

## **UNIT – I:**

Principles of Object – Oriented Programming: Software Evolution – A Look at Procedure – Oriented Programming – Object – Oriented Programming Paradigm – Basic Concepts of Object – Oriented Programming – Benefits of OOP – Object – Oriented Languages – Applications of OOP.

## **UNIT – II:**

Beginning with C++: What is C++ - Applications of C++ - Structures of C++ program – A Simple C++ Program – More C++ Statements – An Example with Class. Tokens, Expressions and control Structures: Introduction – tokens – Keywords – Identifiers and constants – Basic Data Types – User – Defined Data Types – Derived Data Types – Symbolic constants – Type Compatibility – Declaration of Variables – Dynamic Initialization of Variables – Reference Variables – Operators in C++ - Scope resolution Operator – Member Dereferencing Operators – Memory Management Operators – Manipulators – Type cast operators – Expressions and their types – Special assignment Expressions – Implicit Conversions – Operator Overloading – Operator Precedence – Control Structures. Functions in C++: Introduction – The Main Function – function Prototyping – Call by Reference – Return By Reference – Inline Functions – Default Arguments – Const arguments – Function Overloading – Friend and Virtual Functions.

## **UNIT – III:**

Classes and objects: Introduction – Specifying A Class – Defining Member Functions – A C++ Program with class – Making An Outside Function Inline – Nesting of Member Functions – Private Member Functions – Arrays Within A Class – Memory Allocation for Objects – Static Data Members – Static Member Functions – Arrays of Objects – Objects as Function Arguments – Friendly Functions – Returning Objects – Const Member Functions – Pointers to Member – Local Classes.

Constructors and Destructors: Introduction – Constructors – Parameterized Constructors – Multiple Constructors in A Class – Constructors with Default

Arguments – Dynamic Initialization of Objects – Copy Constructor – Dynamic Constructors – Constructing Two – Dimensional Arrays – Const Objects – Destructors.

#### **UNIT – IV:**

Operator Overloading and Type Conversions: Introduction – Defining Operator Overloading – Overloading Unary Operators – Overloading Binary Operators – Overloading Binary Operators Using Friends – Manipulation of Strings Using Operators – Rules for Overloading Operators – Type Conversions – Inheritance Extending Classes: Introduction – Defined Derived Classes – Single Inheritance – Making a Private Member Inheritable – Multilevel Inheritance – Multiple Inheritance – Hierarchical Inheritance – Hybrid Inheritance – Virtual base Classes – Abstract Classes – Constructors in Derived Classes – Member Classes: Nesting of Classes. Pointers, virtual Functions and Polymorphism: Introduction – Pointers to Objects – this Pointer – Pointer to Derived Classes – Virtual Functions – Pure Virtual Functions.

#### **UNIT – V:**

Managing Console I/O Operations: Introduction – C++ Stream Classes – Unformatted I/O Operations – Formatted Console I/O Operations – Managing Output With Manipulators. Working with Files: Introduction – Classes for File Stream Operations – Opening and Closing A File – Detecting End-of-File-More About Open(): File Modes – File Pointers and their Manipulations – Sequential Input and Output Operations – Updating A File: Random Access – Error Handling during File Operations – Command – Line Arguments. Templates: Introduction – Class Templates – Class Templates with Multiple Parameters – Function Templates – Function Templates with Multiple Parameters – Overloading of Template Functions – Member Function Templates. Exception Handling: Introduction – Basis of Exception Handling – Exception Handling Mechanism – Throwing Mechanism – Catching Mechanism – Rethrowing and Exception – Specifying Exceptions.

#### **TEXT BOOKS:**

1. "Object Oriented Programming with C++" E.Balagurusamy TMH, NewDelhi 2<sup>nd</sup> Edition.

# 209UITT02 – DATA STRUCTURES AND ALGORITHMS USING C++

## UNIT – I:

Definition – Stacks: The Stack Data Structure – Implementing a Stack – A Stack Class in C++ - Postfix notation: Computer arithmetic – Evaluating a Postfix Expression – A Postfix Evaluator in C++ - Queues: The Queue Data Structure – Implementing a Queue – A Queue in C++.

## UNIT – II:

Linked List: Arrays and list - List in C++ - Inheritance and Templates. Trees: Binary Trees: Definition – Tree Operation – C++ Code for a simple binary tree – Deletion from a binary tree. AVL Trees: Construction of an AVL Tree – C++ code for AVL trees – Efficiency of AVL trees. Heap, Heap sort, Priority Queues – B-Trees: Multi way search trees – a balanced multi way search trees – Constructing a B-Tree.

## UNIT – III:

Definitions – Implementing Graphs on a computer – Graph Traversal: Depth – First Traversal – Breadth – First Traversal. Topological sorting: Depth – First Topological Sort – Breadth – First Topological sort. C++ code for graph Traversal: Iterators – C++ Code for Topological Ordering of a Graph. Minimum Cost Spanning trees: Kruskal’s Algorithm – C++ code for Kruskal’s algorithm. Shortest Paths in a directed: Dijkstra’s algorithm – C++ Code for Dijkstra’s algorithm.

## UNIT – IV:

The Study of Algorithms – Sequential Search – Binary Search – C++ Templates for searching algorithms: Sequential Search – Binary Search. Efficiency of Searching algorithms – Counting Steps: Best, Worst, and Average cases – Efficiency of the Sequential Search – Efficiency of Binary Search. Efficiency of Algorithms – General: Classifying algorithms by their efficiency – The Big-OH Notation. Using a Template with a User-Defined Class – Searching a List of Names.



## **UNIT – V:**

Introduction – Insertion Sort – Selection Sort – C++ Code for Insertion and Selection Sort – Efficiency of Insertion Sort and Selection Sort: Comparisons and assignments – Insertion Sort – Selection Sort .More Efficient Sorting methods – Merge Sort – Efficiency of Merge Sort – Quick sort: Basics – Implementing Quick Sort in an Array – C++ code for Quick sort. Efficiency of Quick Sort. Tables and Hashing – Alternative methods of storing data – the table data structure – Hashing: Principles – Choosing a hash function – Collision resolution with chaining. C++ code for hash tables: Abstract or pure virtual classes – C++ code for Hashing with open addressing – C++ code for hashing with chaining – Efficiency of hashing.

### **TEXT BOOK:**

1. "Introduction to Data Structures and Algorithms with C++" Glenn W. Rowe  
P.H.I New Delhi - 110001

# **209UITT03: DATA COMMUNICATION AND NETWORK**

## **UNIT – I:**

Introduction: Data communications – Networks – Protocols and standards. Network Models: Layered tasks – Internet Model – OSI Model. Signals: Analog and Digital – Analog signals – Digital signals – Transmission Impairment. Digital Transmission: Line coding – Block coding – Sampling – Transmission mode – Analog Transmission: Modulation of Digital Data – Telephone Modems.

## **UNIT – II:**

Multiplexing: FDM-WDM-TDM. Transmission Media: Guided Media – Unguided Media. Circuit switching and telephone Network: Circuit switching – Telephone Network.

## **UNIT – III:**

Error Detection and correction: Types of Errors – Error Detection – Error Correction. Data Link control and protocols: Flow and Error Control-Stop-And-wait-ARQ-GO-BACK-N ARQ-Selective Repeat ARQ. Local Area Networks: Ethernet: Traditional Ethernet – Fast Ethernet – Gigabit Ethernet. Wireless LANs: IEEE 802.11 – Bluetooth.

## **UNIT – IV:**

Cellular Telephone and Satellite Networks: Cellular Telephony – Satellite Networks. Virtual circuit switching: Frame Relay and ATM: Virtual Circuit Switching – Frame Relay – ATM. Host-to-Host Delivery: Internet working, Addressing and Routing: Internet works – Addressing – Routing. Network layer protocols: ARP, IPv4, ICMP, IPv6 and ICMPv6: ARP-IP-ICMP-IPv6.

## **UNIT – V:**

Unicast and multicast Routing: Routing protocols: Unicast Routing – Unicast Routing Protocols – Multicast Routing – Multicast Routing Protocols. Process-to-Process Delivery: UDP and TCP: Process-to-Process Delivery-UDP-TCP. Cryptography: Introduction – Symmetric – Key Cryptography – Public – Key Cryptography. Message security, user Authentication and Key Management: Message Security – Digital Signature – User Authentication – Key Management.

## **TEXT BOOK:**

1. “ Data Communications and Networking” Behrouz A. Forouzan TMH, New Delhi, 3<sup>rd</sup> Edition.

## **209UITT04: CLIENT/SERVER TECHNOLOGY AND RDBMS**

### **UNIT – I:**

Introduction: Purpose of Database systems – View of data – Data Models – Database Languages – Transaction management – Storage management – Database administrator – Database users – Overall system structure. Entity relationship model: Basic concepts – Keys – Entity relationship Diagram – Weak entities sets – Extended ER features Specialization – generalization. Relational model: Structure of relational databases – The relational Algebra – views.

### **UNIT – II:**

SQL: Background – Basic structure – set operations – Aggregate functions – null values – Nested sub queries – Derives Relations – Views – modification of database – Joined relations – Data definition languages - Embedded SQL – Other SQL features.

### **UNIT – III:**

Integrity constraints: Domain constraints – Referential Integrity – Assertions – triggers – Functional Dependencies. Relational database design: \pitfalls in relational database design – Decomposition – normalization using functional Dependence – normalization using multilevel Dependencies - Normalization using multilevel Dependencies – Normalization using join Dependencies. Object oriented Databases: New database applications – The object Oriented data model – Object Oriented Languages – Persistent programming Languages.

### **UNIT – IV:**

Welcome to Client/Server Computing: Basic concepts of Client/Server – Characteristics – File Servers – Database Servers – Transaction Servers – Groupware Servers – Object Servers – Web Server – Fat Servers of Fat Clients – 2 tire Versus 3 tire. Client / server Building Block. Client, Servers and Operations Systems: Server need from an OS, Base Services, Extended Server, Server scalability, Client Anatomy 101.

## **UNIT – V:**

NOS: NOS Middleware – Peer to Peer Communications – RPC – MOM  
Middleware – MOM Versus RPC. Data Warehouses: Online Transaction Processing –  
Decision Support System – OLTP Versus DSS – Data Warehouses – Elements –  
Hierarchies – Replication Versus Direct access – The Mechanics of Data  
Replications. EIS/DSS: Query / Reporting tools – OLAP and multi dimensional Data,  
Client / Server Transaction Processing: The ACID properties – Transaction Models.  
TP Monitors: TP Monitors – Transaction Management Standards.

## **TEXT BOOKS:**

1. "Database system concepts" Abraham Silberschatz, Hendry F. Korth, S. Sudharshan Third edition McGraw Hill International edition – 1997.
2. "The Essential Client / Server Survival Guide", Robert Orfali, Dan Harbey, Jeri Edwards, Galgotia Publication Pvt. Ltd, 5, Ansari Road, Daryagray NewDelhi – 110002. Second Edition, Galgotia.

## **209UITT05: ALLIED – II MANAGEMENT ACCOUNTING**

### **UNIT – I:**

Management Accounting – Nature and Scope – Meaning – Definitions – Objects of Management Accounting and Financial accounting – Management Accounting and Cost accounting.

### **UNIT – II:**

Analysis and Interpretation of Financial statements – The concept of Financial Statement – Limitations of Financial Statements – Analysis and Interpretation – Tools – Comparative Financial Statements – Common Size financial Statements and Trend Percentages.

### **UNIT – III:**

Ratio analysis – Nature, Interpretation and Limitations of Ratios – Short-term and Long-term financial ratios – Profitability – efficiency, Proprietary and Yielding ratios.

### **UNIT – IV:**

Fund Flow Analysis – Concept of funds – Sources and uses of funds – Concept of Fund Flow statement – Managerial uses of Fund analysis – Construction of fund flow statement – Distinction of Cash from funds – Utility of cash flow statement – Construction of cash flow statement.

### **UNIT – V:**

Marginal Costing and Break Even analysis for Profit Management and control. Capital Budgeting – Nature of Capital Expenses – Concept of Capital Budgeting – Capital Budgeting Procedures – Methods of Ranking Investment. Proposals – Simple Problems Involving Payback Method – Average Rate Method and Discounted Cash Flow Methods.

**TEXT BOOKS:**

1. " Principles of Management Accounting" S.N. Maheshwari, Sultan & Sons NewDelhi.
2. "Management Accounting" Dr. S.Ganeshan & S.R. Kalavathi Thirumalai Publication, Nagercoil.

**REFERENCE BOOKS:**

1. " Principles of management Accounting, ManMohan and S,N, Goyal Sahithya Bhanvnan, Agra.
2. Management Accounting T.S. Reddy & Hari Prasad Reddy Margham Publication, Chennai – 17.

**NOTE:**

- i) 70% of the questions shall be problem oriented and 30% theory oriented.
- ii) This paper has to be taught and examination papers to be valued only by the Commerce Board.

## **209UITTP01: PRACTICAL – II PROGRAMMING IN C++ AND RDBMS (ORACLE)**

### **C++ PROGRAMMING LIST:**

1. Matrix Manipulation (Addition, Subtraction, Multiplication and Transpose)
2. Implement Push, Pop Operations of a Stack using
  - a. Array
  - b. Pointer
3. Implements Add, Delete Operations of a Queue using
  - a. Array
  - b. Pointer
4. Write a Program to Convert an Infix Expression to Postfix Expression using Arrays.
5. Write a program to Add two Polynomials using Pointers.
6. Write a Program to Create a Doubly Linked List and to Insert of Delete an Element form Doubly Linked List.
7. Perform all Tree Traversals for a Binary Tree using arrays and Recursive.
8. Implement Dijkstra's Algorithm to find the shortest path between the given source and the Destination path of a Graph.



## **LIST OF PRACTICALS: RDBMS (ORACLE)**

1. Creating Tables and writing simple queries using
  - a) Comparison Operators.
  - b) Logical Operators.
  - c) Set Operators.
  - d) Sorting and Grouping.
2. Creation of Reports using Column format.
3. Writing Queries using built in functions.
4. Updating and altering tables using SQL.
5. Creation of Students Information table and write PL/SQL Block to find the Total, Average marks and Results.
6. Write a PL/SQL block to prepare the electricity Bill.
7. Splitting the Table: Write a PL/SQL Block to split the students information Table into two, one with the Passed and other with Failed.
8. Joining the Tables – Write a PL/SQL Block to join two tables, first table contains Roll number, Name, Total and Second Table contains the Roll No and Address.
9. Create a Databases Trigger to check the data validity of Record.
10. Recursive Functions, Write a Recursive function to find
  - a) Factorial of N.
  - b) Fibionacci Series with N terms.
11. Write a Recursive function to create as sequence of Roll No's using sequence.
12. Write a Database Trigger to Implement the Master – Detail Relationship.

# **309UITT01: MODERN COMMUNICATION TECHNOLOGY**

## **UNIT – I:**

Network Evolution – The ISDN – The Basic Rate ISDN customer's Interface: The customer's Installation layer 1,2,3.

## **Unit – II:**

Primary rate ISDN access: background – signaling – evaluation of PABX signaling – International standards for inter – PABX signaling. Frame mode services: Store and Forward Switching – Data Grams and Virtual Circuits – Flow and Congestion Control – New ISDN Frame mode Services – Frame Format. ISDN customer premises Equipment and Applications: High quality speech – Music coding FACSIMILE – Photographs Video text – Video – Audio Visual services and Embedded – Customer premises Equipment.

## **UNIT – III:**

ATM Network concepts and Architecture: ATM's position in the OSI reference Model – B-ISDN protocol reference model – ATM functions and layers – ATM signaling principles – the ATM layer – ATM switching principles.

## **UNIT – IV:**

Modern Communication: Fundamentals of Information Handling – Information media as viewed from the Human Interface – Various facts of modern Communication systems – Composition of Modern Communication systems.

## **UNIT – V:**

Components of modern communication systems: Home systems – Home system image – Home systems and their service Trends – Access systems for Home systems. Business Communications: Basic structure of the Office system in a single office/plant – Basic Structure of the office system connected to WAN's. The general structure of the office system – Actual Composition of CAN and WAN. Mobile communication in the information society – Technical Background of Mobile

Communication various Mobile communications services – Positioning of VAN – Classification by service operation mode – Classification of VAN purpose – Classifications of specific Industry service type VAN's from the added value viewpoint – New Electronic Media. Construction of Global Infrastructure: Satellite Communications systems – TV Broadcasting – Approaches to meeting new goals – Possibilities of new Broadcasting forms – Information service center systems – Automatic Interpretation telephone systems – Teleconferencing systems.

### **TEXT BOOKS:**

1. "ISDN Explained" John M.Griffiths 2<sup>nd</sup> Edition March 1995, John Willey & Sons. (UNIT I & UNIT II).
2. "Introduction to ATM Networking" Walter J. Goralski J. McGraw Hill Inc. (Unit III)
3. "Computers and Communications" Koji Kobayashi the MID Press 1986. (A version of C and C). (Unit IV and Unit V).

## **309UITT02: E-COMMERCE**

### **UNIT – I:**

Electronic commerce: Electronic Commerce – electronic Data Interchange – Value Added Networks – Electronic Commerce over the Internet – Internet Commerce Examples – Commerce Net. PCs and Networking: Networking – Communication Media. Electronic Mail: Computer communication systems – ISO'S Open system Interconnection Model – Electronic Mail – The X,400 Message Handling System – Internet Mail – E-Mail Security – X.500 Directory Services – Mail User Agent.

### **UNIT – II:**

The Internet: The Internet: A brief Introduction – Internet Communication Protocols – Internet Services and Resources – Internet Mail – Internet Search – Concerns about the Internet – Browsers – Hypertext Markup Language – Java – The Java electronic Commerce Framework – Internet 2. Intranets: Internet – Intranet services – Intranet Implementation – The Webmaster. Electronic Data Interchange: Electronic Data Interchange – costs and Benefits – Components of EDI systems – EDI Implementation Issues – Legal Aspects.

### **UNIT – III:**

The UN/EDIFACT Standard: Introduction – An EDIFACT Message – Interchange structure – UN/EDIFACT Message Directories. The Internet and Extranets for electronic Commerce: E-Commerce – Commerce over the Internet – Commerce over Extranets.

Identification and Tracking tools for electronic Commerce: The EAN System – EANCOM – Article Numbering – Bar Coding – The serial shipping container code and the EAN label – EAN location numbers – How it Works: Warehousing Example. Internet bandwidth and Technology Issues: Bandwidth Issues – Technology Issue

For the Internet/NII Standards – NII Standards – NII Services – Actors in the NII – NII Agenda – GII.

#### **UNIT – IV:**

Security Issues: Security Concerns – Security solutions – electronic Cash over the Internet – Security and UN/EDIFACT Messages – Internet Security – Guidelines for Cryptography policy. Business Process Reengineering: Introduction – Approach to BPR – Strategic Alignment Model – BPR Methodology. Management of Change: Change Management – Change Management in Public Administration – The Implementation Plan.

#### **UNIT – V:**

Legal Issues : Legal Issues – Risks: paper Document Versus Electronic Document – Technology for Authenticating and Electronic Document – Laws for E-Commerce – EDI Interchange Agreement – Legal Issues for Internet Commerce. E-Commerce in India: EDI in India – The Internet in India – Laws for E-Commerce in India. Getting Started: Getting Connected: What do you need? – Setting up a Website – Web Servers – Business –To-Business EC – Payment for Goods and Services – Bottlenecks.

Case Studies: EDI in Indian Customs – Us Electronic Procurement – Banks – EDI Pilot project in the Automotive Industry.

#### **TEXT BOOK:**

1. "E-Commerce – the cutting edge of Business" Kamlesh K. Bajaj and Debjani nag. Fourth Reprint 2000, TMH, NewDelhi.

# **309UITT03: INTERNET AND PROGRAMMING LANGUAGE JAVA**

## **UNIT – I:**

Internet Connection concepts: Internet communication Protocols – Types of Internet Connections – Internet Service Providers – Security Issues on the Internet. E-Mail Concepts: How do you Get Your E-Mail? E-Mail Addressing – Message Headers – Downloading E-Mail – Formatted E-Mail – Attaching Files to Messages – Web based E-Mail Away from Home-Avoiding Viruses. E-Mail Security: Reasons to Secure Messages, Public Key Cryptography, using Cryptography with E-Mail – Online Chatting and Conferencing Concepts: forms of Chat, Messaging and Conference – How the Chat Work. WWW Concepts: Elements of the Web, Web Browsers, Security and Privacy Issues.

## **UNIT – II:**

Fundamentals of Object Oriented Programming: Introduction – Object-Oriented Paradigm – basic Concepts of Object-Oriented Programming – Benefits of OOP-Applications of OOP. JAVA evolution: JAVA History – JAVA Features – How JAVA Differs from C and C++ - JAVA and Internet – JAVA and World Wide Web – Web Browsers – Hardware and Software Requirements – JAVA Support Systems – JAVA Environment. Overview of JAVA Language: Introduction Simple JAVA Program – More of JAVA – An Application with Two Classes – JAVA Program Structure – JAVA Tokens – JAVA Statements – Implementing A JAVA Program – JAVA Virtual Machine – Command Line Arguments – Programming Style.

Constants, Variables and Data Types: Constants – Variables – Data Types – Declaration of Variables Giving Values to Variables Scope of Variables – Symbolic Constants – Type Casting – Getting Values of Variables. Operators and Expressions: Introduction – Arithmetic Operators – Relational Operators – Logical Operators – Assignment Operators – Increment and Decrement Operators – Conditional Operators – Bit Wise Operators – Special Operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type Conversions in Expressions – Operator Precedence and Associativity –

Mathematical Functions. Decision making and Branching: Introduction – Decision Making with IF statement – Simple if statement – The if.. else Statement – Nesting of if.. else Statements – The else if Ladder – The Switch statement. Decision Making and Looping: Introduction – The While Statement – The do statement – The for Statement – Jumps in Loops – Labeled Loops.

### **UNIT – III:**

Classes, Objects and Methods: Introduction – Defining A Class Adding Variables – Adding Methods – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static Members – Nesting of Method Inheritance: Extending A Class – Overriding Methods – Final Variables and Methods – Final Classes – Finalizer Methods – Abstract Methods and Classes – Visibility Control. Arrays, String and Vectors: Arrays-One-Dimensional Arrays – Creating An Array – Two-Dimensional Arrays – Strings – Vectors – Wrapper Classes. Interface: Multiple Inheritance: Introduction – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface Variables.

### **UNIT – IV:**

Packages: Putting Classes Together: Introduction – JAVA API Package – Using System Packages – Naming Conventions – Creating Packages – Accessing A Package – Using A Package – Adding A Class to A Package – Hiding Classes.

Multithreaded Programming: Introduction – Creating Threads – Extending the Thread Class – Stopping and Blocking a Thread-Life Cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing The 'Runnable' Interface. Managing errors and Exceptions: Introduction – Types of Errors – Exceptions – Syntax of Exception handling Code – Multiple Catch Statements – Using Finally Statement – Throwing our own Exceptions – Using Exceptions for Debugging.

## **UNIT – V:**

Applet Programming: Introduction – How Applets Differ from Applications – Preparing to Write Applets – Building Applet Code – Applet Life Cycle – Creating An Executable Applet – Designing A Web Page – Applet Tag – Adding Applet to HTML File – Running the Applet – More about Applet Tag – Passing Parameters to Applets – Aligning the Display – More About HTML Tags – Displaying Numerical Values – Getting Input from the User. Graphics Programming: Introduction – The Graphics Class – Lines and Rectangles – circles and ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control Loops in Applet – Drawing Bar Charts. Managing Input / Output Files: Introduction – Concept of Streams – Stream Classes – Byte Stream classes – Character Stream Classes – Using Stream – Other Useful I/O Classes – Using the File Classes – Input/Output Exceptions – Creation of Files – Reading/Writing Characters – Reading/Writing Bytes – Handling Primitive Data Types – Concatenating and Buffering Files – Random Access Files – Interactive Input and Output – Other Stream Classes.

## **TEXT BOOKS:**

1. "The Complete Reference – Internet Millennium edition" Margaret Levine Young, T.M.H. NewDelhi (Unit – I)
2. "Programming with JAVA" – E.Balagurusamy, .M.H. NewDelhi. 2<sup>nd</sup> Edition (Unit II to V)



## **309UITT04: MULTIMEDIA SYSTEM**

### **UNIT – I:**

Introduction: Definitions – CD ROM and the Multimedia Highway – Where to use Multimedia. Introduction to making Multimedia: The stages of a project – What you need – Hardware – Software – Creativity – Organization, Multimedia skills: The team – Project Manager, Multimedia designer, Interface designer, Writer video specialist, Audio Specialist, Multimedia programmer, producer, multimedia for the web, the sum of parts.

### **UNIT – II:**

Multimedia H/W and S/W: Macintosh and windows production platforms – Macintosh versus windows, the macintosh platform, the windows platform, Networking macintosh and windows computers, connections, memory and storage devices, I/O devices – O/P Hardware, Communication devices.

### **UNIT – III:**

Multimedia Authoring tools: Types of Authoring tools – Card and page based Authoring tools – Icon based authoring tools – Time Based Authoring tools – Cross Platform Authoring Tools. Multimedia Building Blocks: Text – The power of meaning – About fonts and Faces – Using text in multimedia – Computer and text.

### **UNIT – IV:**

SOUND: The power of sound – Multimedia system sounds – MIDI versus digital Audio – Audio file formats – adding sound in your multimedia project. IMAGES: Before you start to create making still images – colors – Images file formats.

### **UNIT – V:**

ANIMATION: The power of motion principles of Animation, Making Animations that work. VIDEO: Using video – How video works – Broadcast Video Standards – Integrating Computers and Television – Shooting and Editing Video – Video tips – Recording formats – Digital Video.

### **TEXT BOOK:**

1. "Multimedia making in work" Tay Vaughan T.M.H. NewDelhi, 5<sup>th</sup> Edition.

## **309UITP01: PRACTICAL – III PROGRAMMING IN JAVA**

### **1. HTML PROGRAMMING USING TAGS:**

- a.** Simple Web Page.
- b.** Hyper linked Web page, `<^> <^\\>`
- c.** Web Page with Image `<IMG SRC="">`
- d.** Web Page with Applet `<APPLET>`
- e.** Web Page with Table `<TB>`

### **2. JAVA PROGRAMMING LIST:**

- a.** Program to create a simple Applet and Application.
- b.** Using JAVA Classes and Objects
- c.** Using JAVA Inheritance and Interface.
- d.** Using Arrays in JAVA
- e.** Using Exceptions
- f.** Using Threads and Multitreads
- g.** Using AWT Package
- h.** Using I/O Package

## **309UITP02: PRACTICAL – IV MULTIMEDIA**

### **1. LIST OF PRACTICAL USING PHOTOSHOP:**

- i) Designing New Object
- ii) Editing
- iii) Retouching the Objects
- iv) Creating Background Material and Mixing more Objects

### **2. LIST OF PRACTICAL USING MACROMEDIA DIRECTOR:**

- i) Converting the Objects into Motion Picture
- ii) Adding Transition Objects
- iii) Adding Audio Effects