B.Sc. (Information Technology)

SYLLABUS

CORE - I

PROGRAMMING IN C & LINUX

Unit – 1: Fundamentals character set – Identifier and keywords – data types – Constants – variables – Declarations – Expressions – Statements – Arithmetic, Unary, Relational and logical, Assignment and conditional Operators – Bitwise Operators - Library Functions - Data input output functions – Simple C programs.

Unit – 2: Flow of control – if, if-else, while, do-while, for loop, Nested control structures – Switch, Break and continue, go to statements – Comma operator- Arrays – defining and Processing - Multi-Dimensional Arrays.

Unit – 3: Functions – Definition – Proto-types – Passing arguments – Recursions – storage Classes – Automatic, External, Static, Register Variable – Structure – Union-File Creating, Processing, Opening and Closing a data file.

Unit – 4: Introduction to Linux – Linux Components – Linux Files – File Attributes and Permission – Standard I/O – Redirection –Grep and Stream Editor

Unit – 5: Shell Programming – Shell Variables – Export, Read, Exit Commands – Control Structures – Arithmetic in Shell Programming – Structure of an AWK Script – AWK Control Structures – Executing AWK Scripts with the Shell.

Recommended Texts:

1. E. Balaguruswamy, 2009, "Programming in ANSI C", TMH publishing Company LTD
2. M.G. Venkateshmurthy, 2005, Introduction to Uinux & Shell Programming, Pearson Education India, Delhi.

Reference Books:

1. N. Kanthane, 2005, Programming with ANSI and Turbo C, Pearson Education,

ALLIED PAPER – I

Subject	Code
Allied: Foundation Mathematics – I *(for B.C.A. Computer Applications)*	

YEAR	SEMESTER	CREDITS	LECTURE HOURS
I	I	4	90

Objective:

- ✓ *To introduce basics in mathematics and to improve analytical skills*

Unit I : Mathematical Logic

propositions Compound proposition – Logical equivalence – Algebra of proposition Tautologies an contradiction – normal forms

Unit II : Set theory

Venn Diagram – relation: reflexive, symmetric, transitive and equivalence relations – Functions: one-to-one and onto – composition of functions Equivalence classes – partial ordering.

Unit III : Finite Difference

Operators (definition only) – difference tables – Newton's forward and backward interpolation formulae – Lagrange's interpolation formulae.

Unit IV : Solution of polynomial equations

Bisection, Regula Falsi and Newton Raphson's method

Unit V : Differential Calculus

Basics properties – Successive differentiation (up to 2^{nd} order only) – Maxima and minima (functions of one variable only)

Partial differentiation: Euler's theorem.

***Recommended Text book for Study*:-**

1. Discrete Mathematics, G. Balaji, Balaji Publications
   Unit – I: 1.1 to 1.5 only truth table method
   Unit – II: 3.1 to 3.6
2. Allied mathematics, A. Abdul Rasheesd (2006), Vijay Nicole Pvt.Ltd,Chennai.
   Unit – III: 4.1 to 4.3
   Unit –V : 6.4 (only second order), 6.5
3. Numerical Methods, P. Kandasamy, K, Thilagavathy, and K. Gunavathi, S.Chand Pbulications
   Unit – IV:- 3.1, 3.3, and 3.4 (Problems only)

CORE - III

PROGRAMMING IN JAVA

Unit – 1: Introduction to Java – Features of Java – Object Oriented Concepts – Lexical Issues – Data Types – Variables – Arrays – Operators – Control Statements.

Unit – 2: Classes – Objects – Constructors – Overloading method – Static and fixed methods – Inner Classes – String Class – Inheritance – Overriding methods – Using super – Abstract class.

Unit – 3:– Packages – Access Protection – Importing packages – Exception Handling – Throw and Throws – Thread – Synchronizing – Messaging – Runnable Interface – Inner thread Communication – Deadlock – Suspending, Resuming and stopping threads – Multithreading

Unit – 4: I/O streams – File Streams – Applets-String Buffer-Char Array-Java Utilities-Code Documentation.

Unit – 5: AWT - Working with windows using AWT Classes-AWT Controls-Layout Managers and Menus

Recommended Texts:

1. E. Balaguruswamy, 2009, "Programming in JAVA ", TMH publishing Company LTD.

2. M.G. Venkateshmurthy, 2005, Introduction to Uinux & Shell Programming, Pearson Education India, Delhi.

Reference Books:

1. K.Arnold and J.Gosling- The Java Programming Language – Second Edition,Addison Wesley,2002.

2. P.Naughton and H.Schildt –Java2 (The Complete References)-Seventh Edition,TMH 2004.

ALLIED - II

FOUNDATION MATHEMATICS – II

Unit – 1: Matrices

Basic operations of matrices – determinant of matrix – transpose of a matrix – Symmetric< skew-symmetric, orthogonal – computation of inverse of a matrix.

Linear transformation – rotation, reflection, expansion, compression, shear and translation (no derivation) use of transformation to problems.

Unit – 2: Solution for system of linear equations

Gauss elimination method – Gauss-Jorden method. Iterative method: Jacobi method – Gauss-Seidel method.

Unit – 3: Integral Calculus

Integration of irrational, trigonometric functions, Integration by parts Bernaulli's formula for integration by parts

Unit – 4: Ordinary Differential Equations

Second order Differential equation with constant coefficients and F(x)=eax.

Sin ax, cos ax, eax sinbx, eax cosbx

Unit – 5: Two dimensional co-ordinates

Straight Line – slope – slope point – two point form circle – conic – parabola –ellipse (no derivation) – tangent normal Cartesian form.

Recommended Text book for study:-

1. Foundation mathematics by P.R. Vittal, Margham Publishers Chennai.
2. Foundation mathematics by Rizwan, Scitech Publishers Chennai.

CORE - V

DESIGN AND ANALYSIS OF ALGORITHMS

Unit – 1: Introduction - Definition of Algorithm – pseudocode conventions – recursive algorithms – time and space complexity –big-"oh" notation – practical complexities .

Unit – 2: Divide and Conquer: General Method - Finding maximum and minimum – merge sort -Quicksort, Strassen's matrix multiplication

Unit – 3: Greedy Method: General Method –knapsack problem - Tree vertex splitting - Job sequencing with dead lines – optimal storage on tapes.

Unit – 4: Dynamic Programming: General Method - multistage graphs – all pairs shortest paths – single source shortest paths - String Editing – 0/1 knapsack.

Unit – 5 :Search techniques for graphs – DFS-BFS-connected components – biconnected components Back Tracking: General Method -Sum of subsets Branch and Bound: General Method - Traveling Salesperson problem.

Recommended Texts

1. E. Horowitz, S. Sahni and S. Rajasekaran, 1999, Computer Algorithms, Galgotia, New Delhi.

Reference Books

1. G. Brassard and P. Bratley, 1997, Fundamentals of Algorithms, PHI, New Delhi.

CORE - VI

DATA ANALYSIS USING SPREAD SHEET

Unit – 1: Cell Editing, Usage of Formulae and Built-in Functions, File Manipulations, Data Sorting (both number and alphabets), Worksheet Preparation, Drawing Graphs, Usage of Auto Formatting. Inserting Clip arts and Pictures, Frame movements of the above, Insertion of new slides

Unit – 2: Uses of Advance Excel Formulas -VLOOKUP, HLOOKUP, SUMIF, SUMIFS, SUMPRODUCT, DSUM, COUNTIF, COUNTIFS, IF, IFERROR, ISERROR, ISNA, ISNUMBER, ISNONTEXT, OR, AND, SEARCH, INDEX, MATCH etc.

Unit – 3: Various Methods and Uses of IF Conditions, When should use the "IF" Conditions? , Creation of Multiple IF Conditions in One Cell, Use the IF Conditions with the Other Advance Functions, How to use nested IF statements in Excel with AND, OR Functions.

Unit – 4: Sorting, Data Forms, Adding Data Using the Data Form, Finding Records Using Criteria: Filtering Data, AutoFilter, Totals and Subtotals Total, Row, Various Methods of Filter Creating and Updating Subtotals

Unit – 5: Introduction to VBA, Variables in VBA- Variable Data Types- Message Box and Inputbox functions – Looping in VBA.

Recommended Texts

1. Jordan Goldmeler, "Advanced Excel Essentials" , APress, 2015 edition.

Reference Books

1. John Walkenbach , "Microsoft Excel 2013 Bible" ,Wiley Publications ,2013

CORE - VIII

OPERATING SYSTEMS

Unit – 1: Introduction: Views –Goals –Types of system – OS Structure –Components – Services - System Structures – Layered Approach -Virtual Machines - System Design and Implementation. Process Management: Process - Process Scheduling – Cooperating Process–CPU Scheduling : CPU Schedulers – Scheduling criteria – Scheduling Algorithms

Unit – 2: Process Synchronization: Critical-Section problem - Semaphores – Classic Problems of Synchronization – Critical Region – Monitors. Deadlock : Methods for handling Deadlocks – Prevention, Avoidance, and Detection of Deadlock - Recovery from deadlock.

Unit – 3: Memory Management : Address Binding – Dynamic Loading and Linking – Overlays – Logical and Physical Address Space - Contiguous Allocation – Internal & External Fragmentation . Non Contiguous Allocation: Paging and Segmentation schemes

Unit – 4: Virtual Memory :: Demand Paging – Page Replacement - Page Replacement Algorithms – Thrashing. – File System: Concepts – Access methods – Directory Structure –Protection Consistency Semantics – File System Structures – Allocation methods – Free Space Management.

Unit – 5: I/O Systems: Overview - I/O Hardware – Application I/O Interface – Kernel I/O subsystem – Transforming I/O Requests to Hardware Operations – Performance.

Recommended Texts

1. Silberschatz A., Galvin P.B., Gange., 2002, Operating System Principles ,Sixth Edition, John Wiley & Sons.

Reference Books

1. H.M. Deitel ,1990, An Introduction to Operating System,- Second Edition, Addison Wesley.
2. Andrew S.Tanenbaum, Modern Operating Systems, Pearson Education, II Ed.

ALLIED - III

COMPUTER BASED NUMERICAL & STATISTICAL METHODS

Unit – 1: Numerical Differentiation

Finding derivatives using Newton's forward, Newton's backward and Stirling's formula (no proof)

Unit – 2: Numerical Integration

Evaluating definite integrals using Trapezoidal rule, Romberg's method, Simpson's one-third rule, and Simpson's three-eight rule

Unit – 3:

Measures of Central Tendency – Measures of Dispersion: Mean deviation – standard deviation – coefficient of variation.

Unit – 4:

Karl Pearson's Coefficient of Correlation – Spearman's Rank Correlation coefficient – Regression.

Fitting Straight line y=ax+b by the method of least squares.

Unit – 5:

Small sample tests: t& F-test,

Chi-Square test: Test of independence of attributes.

Recommended Text book for study:-

1. Numerical Methods(1999) S.Chand & Co Ltd.
   -by P. Kandasamy, K. Thilagavathy and K.Gunavathy

2. Computer Oriented Statistical methods
   -by P.R. Vittal
   Unit 1: Chapter 9 (Page 281 to 299)
   Unit 2: Chapter 9 (Page 299 to 321)
   Unit 3: Chapter 10 (Page 321 to 347)
   Unit 4: Chapter 11 (Page 390 to 111, Omit Sections 11.4 to 11.8)
   Unit 5: Chapter 13 (Page 468 to 483)

CORE - IX

PYTHON PROGRAMMING

Unit – 1: Introducing the Python Interpreter - Program Execution-Execution Model Variations - Introducing Python Object Types- Python's Core Data Types –Numbers, Strings, Lists –Dictionaries, Tuples, Files. Numeric Type Basics - Numeric Extensions - Shared References

Unit – 2: String Fundamentals : String Basics ,String Literals ,Strings in Action, String Methods, String Formatting Expressions, String Formatting Method Calls, General Type Categories. Lists and Dictionaries: Lists, Dictionaries, Tuples, Files, Built-in Type Gotchas - Assignments, Expressions, and Prints : Assignment Statements - Expression Statements - Print Operations

Unit – 3: if Statements Truth Values and Boolean Tests - if/else Ternary Expression - while and for Loops - while Loops -break, continue, pass, and the Loop else - for Loops-Loop Coding Techniques - Iterations and Comprehensions

Unit – 4: Function Basics - Coding Functions - Scopes - Python Scope Basics-The global Statement- Scopes and Nested Functions -The nonlocal Statement in 3.X - Function Design Concepts – python and OOPS. Advanced Function Topics - Recursive Functions - Function Objects: Attributes and Annotations

Unit – 5: Anonymous Functions: lambda - Functional Programming Tools - Timing Iteration Alternatives - Modules and Packages - Python Program Architecture - Module Coding Basics : Module Creation- Module Usage - Module Namespaces -Reloading Modules – Module design Concepts – Data Hiding in Modules- Exception Basic – Exception Objects .

Recommended Texts

1. Mark Lutz , "Learning Python, Powerful Object-Oriented Programming", 5th Edition O'Reilly Media

Reference Books

1. Python Programming: Learn Python 5th Edition – Mark Lutz- O'Reilly A Python Book: Beginning Python, Advanced Python, and Python Exercises Paperback – Import, 1 Sep 2011 by Dave Kuhlman Open Source MITLicense

CORE – X

BIG DATA ANALYTICS

Unit – 1: Basic nomenclature - Analytics process model – Analytics model requirements – Job Profiles in Analytics – Types of Data Sources- Sampling – Sampling - Types of Data Elements

Unit – 2: Missing Values–Outlier Detection and Treatments– Weight of Evidence Coding. Predictive Analytics basics – Linear Regression-Logistic Regression - Decision Trees

Unit – 3: Descriptive Analytics: Association Rules- Support and Confidence- Applications of Association Rule – Sequence Rules – Segmentation.

Unit – 4 : Hierarchical clustering -Social Network Analytics: Social Network Definitions - Social Network Metrics - Social Network Learning -Relational Neighbor Classifier

Unit – 5: Data Quality - Software–Privacy - Model Design and Documentation - Corporate Governance. Example applications: Credit Risk Modeling

Recommended Text:

1. Baesens, 2014, Analytics in a Big Data World: The Essential Guide to Data Science and Its applications, Wiley India Private Limited

CORE - XII

DATA COMMUNICATION AND COMPUTER NETWORKS

Unit – I: Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OS1 Model.

Unit – II: Parallel and Serial Transmission - DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface - Interface standards - Modems - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Corrections.

Unit – III: Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet - Token Bus - Token Ring - FDDI - IEEE 802.6 - SMDS - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

Unit – IV: History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol - ATM - ATM Topology - ATM Protocol.

Unit – V: Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.

Recommended Text:

1. Behrouz and Forouzan - Introduction to Data Communication and Networking - 2nd Edition - TMH-2001

Reference Book:

1. Jean Wairand - Communication Networks (A first Course) - Second Edition - WCB/McGraw Hill - 1998.

ALLIED - IV

APPLIED OPERATION RESEARCH

Unit – 1: Linear Programming Program (LLP)

Formula of LLP – Graphical Solution of a LLP

Unit – 2: Transportation & Assignment problem

Initial feasible solution: North- West Corner Rule, Least Cost method, Vogel's Approximation Method (VAM) (no optimal solution).

Assignment problems: Solution for a balanced and unbalanced Assignment problem by Hungarian method.

Unit – 3: Sequencing Problems

Processing for 'n' jobs through 2 machines – 'n' jobs through 3 machines – 2 jobs through 'm' machines.

Unit – 4: Network Analysis

Basic Concepts – Construction of network – Critical Path Method (CPM) – Programme Evaluation Review Technique (PERT)

Unit – 5: Game Theory

Introduction – Zero sum game – Two person zero-sum game – Solution for a game with saddle point or without saddle point (Algebraic, arithmetic and matrix methods) – Solving 2xn or mx2 game by graphical method.

Text Book :

1. Resource Management Techniques, A.R. Publication
   -by V. Sundaresan, K.S. Ganapathy Subramanian and K.Ganesan

Unit 1:	Chapter 1, 2 and Chapter 3 (Section 3.1 & 3.2 only)
Unit 2:	Chapter 7 (Section 7.1) Chapter 8
Unit 3:	Chapter 11 and 14
Unit 4:	Chapter 15
Unit 5:	Chapter 16 (omit 16.8)

CORE – XIII

DATABASE MANAGEMENT SYSTEMS

Unit – 1: Introduction to Database Systems – Record based Data Models - Networking Model, Hierarchical Model and Relational Model — Storage and File Structure – RAID Technology.

Unit – 2: E-R Model – Constraints – E-R- Diagrams Weak Entity Sets – Relational Database Design – Features of Relational Design – ACID Properties – Normalization – 1NF, 2NF, 3NF

Unit – 3:–SQL Datatypes - Table Constraints: – Not Null, Primary Key, Unique, Check, DDL: –Table creation and Manipulation, View creation and Manipulation – Different types views : Simple and Complex views.

Unit – 4: DML : Record Insertion, Updation and Deletion of Records – Select query : Basic Select Query clauses, usage of Group By, Having, Order By clauses, Like

Unit – 5: Transaction Management – Serializability – Recoverability – Concurrency Control – Dead Lock Handling – Recovery System.

Recommended Texts:

1. A. Silberschatz, H.F. Korth and S. Sudharshan, 2006, Database System Concepts, 5th Edition, Tata McGraw Hill, New Delhi.

Reference Books:

1. J. D. Ullman,1988,Principles of Database Systems, Galgotia Publishers, New Delhi
2. C.J. Date, 1985, An Introduction to Database Systems, Third Edition, Narosa, New Delhi.
3. Elmasri and Navathe, 1999, Fundamentals of Database Systems, Third Edition, Pearson Education, Delhi.
4. C. Ritchie, 2004, Relational Database Principals, 2nd Edition, Thomson, Singapore.

CORE – XIV

DATA SCIENCE USING R

Unit – 1 : History and Overview of R -Basic Features of R - Free Software -Design of the R System -Limitations of R -R Resources -Getting Started with R -Installation -Getting started with the R interface --Entering Input- Evaluation -R Objects -Numbers – Attributes-Creating Vectors -Mixing Objects -Explicit coercion -Matrices -Lists -Factors -Missing Values -Data Frames –Names.

Unit – 2: Getting Data In and Out of R -Reading and Writing Data -Reading Data Files with read. table() -Reading in Larger Datasets with read. table -Calculating Memory Requirements for R Objects -Using the read r package -Lines of a Text File

Unit – 3: Reading From a URL connection -Subsetting -R Objects -Subsetting a Vector - Subsetting a Matrix -Subsetting Lists -Subsetting Nested Elements of a List -Extracting Multiple Elements of a List -Partial Matching -Removing NA Values -Vectorized Operations -Vectorized Matrix Operations

Unit – 4: Dates and Times -Dates in R -Times in R -Operations on Dates and Times- Managing Data Frames with the dplyr package -Data Frames -The dplyr Package -dplyr Grammar-Installing the dplyr package -select() -filter() -arrange()-rename() -mutate()- group_by()-Control structures -if-else -for Loops -Nested for loops -while Loops -repeat Loops -next, break

Unit – 5: Functions -Functions in R -Your First Function -Argument Matching -Lazy Evaluation -The ... Argument-Arguments Coming After the ... Argument-Coding - standards for R -Loop Functions -Looping on the Command Line -lapply() -sapply() - split() -Splitting a Data Frame -tapply -apply() -Col/Row Sums and Means -Other Ways to Apply -mapply()

Recommended Texts

1. R Programming for Data Science – Roger D.Peng, Learn Pub Book,Learn Publishing

Reference Books

1. R for dummies – Andrie de vries and Joris Meys, A John Wiley sons ,Ltd Publication

ELECTIVE - I

INFORMATION SECURITY

Unit – 1 : Introduction: Security- Attacks- Computer criminals- Method of defense Program Security: Secure programs- Non-malicious program errors- Viruses and other malicious code- Targeted malicious code-Controls against program threats.

Unit – 2: Operating System Security: Protected objects and methods of protection- Memory address protection- Control of access to general objects- File protection mechanism- Authentication: Authentication basics- Password- Challenge-response- Biometrics.

Unit – 3: Database Security: Security requirements- Reliability and integrity-Sensitive data- Interface-Multilevel database- Proposals for multilevel security.

Unit – 4: Security in Networks: Threats in networks- Network security control- Firewalls- Intrusion detection systems- Secure e-mail- Networks and cryptography- Example protocols: PEM- SSL- Ipsec.

Unit – 5: Administrating Security: Security planning- Risk analysis- Organizational security policies- Physical security - Legal- Privacy- and Ethical Issues in Computer Security - Protecting programs and data-Information and law- Rights of employees and employers- Software failures- Computer crime- Privacy-Ethical issues in computer society- Case studies of ethics.

Recommended Texts:

1. C.P.Pfleeger, and S.L.Pfleeger, Security in Computing, Pearson Education,4th Edition, 2003
2. Matt Bishop, Computer Security: Art and Science, Pearson Education, 2003.

Reference Books:

1. Stallings, Cryptography & N/w Security: Principles and practice, 4th Edition, 2006.
2. Kaufman, Perlman, Spincer, Network Security, Prentice Hall, 2nd Edition, 2003
3. Eric Maiwald, Network Security : A Beginners Guide, TMH, 1999
4. Macro Pistoia, Java Network Security, Pearson Education, 2nd Edition, 1999
5. Whitman, Mattord, Principles of Information Security, Thomson, 2nd Edition, 2005

ELECTIVE – II

ECOMMERCE

Unit – 1: Electronic Commerce and Opportunities : Background The Electronic Commerce Environment – Electronic Marketplace Technologies – Modes of Electronic Commerce: Overview : Electronic Data Interchange.

Unit – 2: Approaches to Safe Electronic Commerce . Overview – Secure Transport Protocols – Secure Transaction – Secure Electronic Payment Protocol (SEPP) – Secure Electronic Transaction (SET)

Unit – 3: Certificates for Authentication – Security on Web Servers – Payment Schemes: Internet Monetary Payment and Security Requirements- Payment and purchase order process – Online electronic cash.

Unit – 4: Internet / Intranet Security Issues and Solutions : The Need for Computer Security – Specific Intruder Approaches – Security Strategies-Security Tools – Encryption – Enterprise Networking and Access to the Internet Antivirus Programs.- Security Teams

Unit – 5: MasterCard/Visa Secure Electronic Transaction : Introduction –Business Requirements – Concepts – payment Processing. E-mail and secure e-mail technologies for Electronic Commerce: Introduction _ The Means of Distribution – A model for Message Handling- MIME, S/MIME, MOSS , MIME and Related Facilities for EDI over the Internet.

Recommended Texts:

1. Daniel Minoli & Emma Minoli, "Web Commerce Technology Handbook". Tata McGraw Hill – 1999.

Reference Book:

1. K.Bajaj & D Nag , "E-Commerce", Tata McGraw Hill – 1999.
2. Mamta Bhusry – "E-Commerce"

CORE – XVI

NoSQL MongoDB

Unit – 1 : Big Databases- SQL – NoSQL Tradeoffs – CAP Theorem – Eventual Consistency - NoSQL – database types – MongoDB- Introduction - MongoDb – Need – MongoDB Vs RDBMS – MongoDBDriver Installation – Configuration – Import and Export – MongoDB Server Configuration

Unit – 2: Data Extraction Fundamentals - Intro to Tabular Formats - Parsing CSV - Parsing XLS with XLRDParsing XML - Intro to JSONGetting Data into MongoDB - MongoDB- CURD – Database Creation – Update – Read –Delete Using mongoimport - Operators like $gt, $lt, $exists, $regex -Querying Arrays and using $in and $all Operators -Changing entries: $update, $set,

Unit – 3: Data Analysis - Field Queries -Projection Queries- Limiting – Sorting - - Aggregation - Examples of Aggregation Framework -The Aggregation Pipeline - Aggregation Operators: $match, $project, $unwind, $group –

Unit – 4: User Management – MongoDb Data Replication in Servers – Data Sharding – MongoDB Indexes – Create – Find – Drop – Backup – MongoDB – Relationships – Analyzing Queries – MongoDB Objectid

Unit – 5: Advanced MongoDB: MapReduce – MongoDB - Text Processing - Regular Expression – Case Studies – Text processing of large datasets, Map Reduce using MongoDB

Recommended Texts:

1. MongoDB: The Definitive Guide, 2nd Edition , Powerful and Scalable Data Storage, By Kristina Chodorow, Publisher: O'Reilly Media
2. MongoDB Basics - David Hows, Peter Membrey, Eelco Plugge, Publisher Apress - Ebook(free) https://it-ebooks.info/book/4527/

CORE – XVII

SOFTWARE ENGINEERING

Unit – 1: The Product – the process – project management concepts – software projects and project metrics.

Unit – 2: Software project planning-risk analysis and management-project scheduling and tracking-software quality assurance.

Unit – 3: Software configuration management-system engineering-analysis concepts and principles-analysis modeling.

Unit – 4: Design concepts and principles- architectural designs-user interface design.

Unit – 5: Component level design- software testing techniques- software testing strategies – technical metrics for software.

Recommended Texts

1. Roger S. Pressman – software Engineering a Practitioner's Approach -5th edition, McGraw hill.

Reference Books

1. Ian Sommerville – Software Engineering – 5th Edition –Addison Wesley.

CORE – XVIII

UI PROGRAMMING

Unit – 1: Introduction to HTML, Overview of basic HTML , Structure of HTML, Creating and opening HTML file, Singular and paired tags, Text formatting tag, Anchor tag, Lists, Image, Image Map, Table, Frames and Frameset.

Unit – 2: HTML5: Introduction to HTML5, Need of HTML5, DOCTYPE Element, Tags-Section, Article, aside, header, footer, nav, dialog, figure etc. Events in HTML5, Input tag (Type, Auto focus, placeholder, required etc. attributes.) in HTML5, Graphics in HTML5, Media tags in HTML5

Unit – 3: Cascading Style Sheet-Introduction, Use of CSS, Types of CSS, Class & ID Selector, CSS Font Properties, CSS Text Properties, CSS Background Properties ,CSS List Properties, CSS Margin Properties, CSS Comments

Unit – 4: Javascript: Introduction, Client side programming, script tag, comments, variables, Document Methods: write and writeln methods, Dialog Boxes-alert, prompt, confirm, Operators: Arithmetic, Assignment, Relational, Logical

Unit – 5: Java Script Control Structure , Conditional Statements, Loops, break and continue. Events Familiarization: onLoad, onClick, onBlur, onSubmit, onChange.

Recommended Texts

1. Jon Duckett, Web Programming with HTML,XHTML, CSS, JavaScript,Wrox Beginning
2. HTML5 Black Book Kogent Learning Solutions Inc Dreamtech.

CORE – 1: Object Oriented Programming in C++

Subject Code :

Duration : 3 Hours Max Marks : 100

Unit-I

Introduction Procedure Programming-Object oriented programming - Some Difference Between C and C++ - Algorithms and flowcharts-Introduction to object oriented programming- Benefits and Applications – C++

Unit-II

Fundamentals of C language-Tokens-Constants-Variables-Operators and Expressions-Input/Output Function,-Controls structures in C [IF .. IF..ELSE.., NESTED IF ., SWITCH CASE - Loop Control structures -While-Do..While,For..loop,,Breaking Control Structure goto,break,continue statements.

Unit-III

Funciton Declaration-Calling a function-Inline Function –Recursive Fucntion- String handling in C-uses of function-User defined function- Arrays and Subscript variables-Array Declarations Storage Classes in C-Structures,Pointers:-Array of Pointer – Function to pointer-Pointer to strucure

Unit-IV

Basic concepts of OOPS-Simple C++ program-Keywords in C++ program-Function overloading-Classes and Objects-Static data member-Static member function-Friend Fuction Constructor-Types-Destructor-Operator overloading-Types of Inheritance,Virtual functions, streams and Stream classes:-Formatted console I/O Operations,Unformatted Console I/O operations.

Unit-V

Files-classes for file stream operation-opening and closing a file-detecting end of file-Files Modes-error handling-command line arguments.Exception handlling-Try..Throw..catch statements,Templates-class templates and function templates.

TextBook for study

1. H.Schildt, C The complete reference, 4th edition TMH edition,2000.
2. H.Schildt, Complete reference C++

Reference Books for study

1. Byron Gottfried, Programminng with C. 2nd edition, TMH edition,2000.
2. Programming With C-T.Jeyapoovan-Vikas publiction

Object oriented programming With C++-E.Balagurusamy Tata McGraw Hill Third Edition

CORE – 2: Data Structures and Algorithms

Subject Code :

Duration : 3 Hours

Max Marks: 100

Unit – I

Definition of Data structure – **Arrays**: Representation – Array Operations. **Stack**: Introduction – Stack Operations – Applications.

Unit – II

Queues: Introduction – Operation on Queues – Circular Queue – Dequeue.

Linked List: Introduction – Singly Linked List – Doubly Linked List – Application – Addition of Polynomials.

Unit – III

Trees & Binary Trees: Trees – Representation of trees – Binary trees – Representation of Binary Trees – Binary Tree Traversals.

Graphs: Definition – Types of Graphs – Graph Traversals. Hash tables – Hash functions.

Unit – IV

Algorithm: Definition – Space complexity – Time complexity. Divide and Conquer: General method – Binary Search – Finding Maximum and Minimum – Merge Sort.

Unit – V

Greedy Method: General Method – Knapsack problem – Minimum Cost Spanning trees – Single Source Shortest Path. Backtracking: General Method – The 8 – Queen Problem.

Text Books:

1. Data structures, Concepts and Applications by G A V PAI , Tata McGraw Hill Edition.
2. Computer Algorithms by Ellis Horowitz, Sartaj Sahani and Sanguthevar Rajasekaran.

Reference Book:

1. Fundamentals of Data structures in C++ by Ellis Horowitz, Sartaj Sahani.

CORE – 3: Operating System with UNIX

Subject Code :

Duration : 3 Hours Max Marks: 100

UNIT-I:

Introduction-Types of Systems: Batch systems-multiprogramming system-time sharing system-Desktop system-Multiprocessor System-Clustered System-Real time system-I/O Structure: I/O Interrupts-OS Structure: System Components-OS Services-Virtual Machines.

UNIT-II:

Process Management: Process-process state-PCB-Process scheduling-remote procedure call-CPU Scheduling: CPU scheduler-scheduling criteria-Scheduling Algorithms: FCFS-SJFS-Priority Scheduling-Round-Robin Scheduling-Multilevel Queue Scheduling-Deadlock-Deadlock characterization-Methods for handling Deadlock: Deadlock Prevention-Deadlock Avoidance-Deadlock Detection-Deadlock Recovery.

UNIT-III:

Memory Management: Logical-Versus Physical Address Space-overlays-swapping-contiguous memory allocation-Paging-Segmentation-Virtual Memory: Demand Paging-Page Replacement-page replacement algorithms:FIF0,Optimal Page replacement-LRU-File Concepts: File Attributes-File Operations-Access Method-Directory Structure: Single level-two level-tree structure

UNIT-IV

Introduction to UNIX OS-General components-features of UNIX,UNIX Architecture-UNIX Commands: File commands, Directory commands -Filters, I/O redirection, pipes-search pattern commands: grep, egrep, fgrep, database columns and field Commands; cut, paste, sort, uniq, pr, join, tail, tr commands-Process commands: nohup, nice, at, sleep, kill commands, trap command.

UNIT-V

Shell Programming: Shell script, Executing shell script, variables, operators, expr command, conditional statement, case statement, break and continue statement, read command, test command-loops- while, until, for loops.

Text Books:

1. Operating System Concepts – Silberschatz , sixth edition
2. Introduction to Unix and Shell Programming – M.G.Vekateshmurthy pearson education

Reference Books:

1. Introduction to Unix System- V.Rachel Morgan - TMH
2. A user guide to UNIX System- Rebeca Thomas 2nd edn-TMH

ELECTIVE-I; ELECTIVE-1: MATLAB Programming

Subject Code :

Duration : 3 Hours

Max Marks: 100

Units - I

Introduction: Basic of MATLAB – A minimum MATLAB Session – creating and working with arrays of numbers – creating and printing simple plots creating saving and executing script file function file

Units -II

Working with arrays matrices anonymous functions files and directories symbolic computation importing and exporting data matrix manipulation matrices and vectors matrix and arrays operations

Units - III

Character strings vectorization command line functions files plotting simple graphics programming in Mat lab scripts files function files publishing reports

Units - IV

Language specific features advanced data objects graphic basic 2D plots using subplot 3 D plots hands graphic

Units - V

Fun with 3D surface graphic animation errors the symbolic math toolbox using the symbolic math toolbox using MuPAD Notebook

Book for Study:

1. Getting Started with MATLAB7: Rudra Pratap; Oxford Press.

Books for Reference:

1. Won Young Yang, Tae-sang-Chung.Mooris,"Applied Numerical Methods using MATLAB", Wiley &Sons

2. L.F.Shampine, I Gladwell, Thompson, "Solving ODE's with Matlab", Cambridge University Press

Web Reference:

www.mathworks.in/help/pdf_doc/matlab/matlab_prog.pdf

www.tutorialspoint.com/matlab/

ELECTIVE-II; ELECTIVE-4: Object Oriented Analysis and Design

Subject Code :

Duration : 3 Hours Max Marks : 100

Unit I

Object oriented system development, objects, classes, object behaviours and methods,Encapsulation and Information hiding, polymorphism, object oriented development life cycle

Unit II

Object oriented methodologies, Rambaugh methodology, Booch methodology, Jacobson methodology, patterns, frameworks, The unified Approach, UML class diagrams, Use case diagrams

Unit III

Object Oriented Analysis, Use case models, Object Analysis, Object relationships, attribures, methods, class and object responsibilities, case studies

Unit IV

Object Oriented design process, Design Axioms, Corallaries, design patterns, designing classes, UML object constraint language, class visibility, designing methods and protocols

Unit V

Quality Assurance test, testing strategies, Object orientation on testing, Test cases, test plans, continuous testing, debugging, principles, system usability,measuring user satisfaction, case studies

Main Reading

Ali Bahrami Object Oriented system development Mc Rawhill International edition 99

Supplementary Reading

R S Pressman Software Engineering McRawhill International edition 99

Grady Booch Object oriented Analysis Design – Addison Wesley

CORE – 6: Relational Database Management Systems

Subject Code :

Duration : 3 Hours

Max Marks: 100

UNIT I

Introduction – Database-Systems Applications – Purpose – View of Data – Database Users and Administrators – Introductions to the Relational Database – keys – Formal Relational Query Languages – The Relational Algebra.

UNIT II

Introduction to SQL: SQL Data Definition – Basic Structure of SQL Queries – Additional Basic Operations – Set Operations – Aggregate Functions – Nested Subqueries – Modifications of the Database – Join – Views – Integrity Constraints – Authorization.

UNIT III

E-R Model: The Entity Relationship Model – Constraints – Entity-Relationship Diagrams. Database Design: Normalization – Pitfalls in Relational Database Design – Non-Loss Decompositions – Functional Dependencies – First, Second, Third Normal Forms – BCNF – Multi-valued Dependencies – Join Dependencies.

UNIT IV

Transactions: Transaction Concept – Storage Structure – Transaction Atomicity and Durability – Transaction Isolation – Serializability. Concurrency Control: Lock-Based Protocols – Timestamp-Based Protocols – Validation – Based Protocol. Recovery and Atomicity.

UNIT V

Database-System Architecture: Centralized and Client-Server Architectures – Server System Architecture – Distributed Systems. Distributed Database: Homogeneous and Heterogeneous Database – Distributed Data Storage – Distributed Transaction.

Text Books

1. Abraham Silberschaz, Henry F.Korth and S.Sudersan, *Database System Concepts*, McGraw-Hill International Edition, Sixth Edition, 2011.

2. C.J Date, *An Introduction to Database System*, Pearson Education Ltd., Seventh Edition, Fourth Indian Reprint 2002.

Reference Books

1. Ramez Elmasri, Shamkant B. Navathe, *Fundamentals of Data Base Systems*, Addison Wesley, Third Edition, 2000

2. Connolly and Begg, *Database Systems,* Pearson Education Ltd., Fourth Edition, 2008.

CORE – 7: Advanced Java Programming

Subject Code :

Duration : 3 Hours

Max Marks: 100

Unit I

Object Oriented Programming: OOP Concepts – Class and Objects – Encapsulation – Inheritance – Interfaces – Referential Polymorphism – Loose Coupling – Exception Handling

Unit II

Lang and Util Package: java.lang package – Wrapper Classes, Handling Strings and String Buffer – java.util package – ArrayList , Vector, HashSet, TreeSet, HashMap, Date Class, StringTokenizer

Unit III

J2EE Concepts: Core J2ee Technologies – Enterprise Architecture - Application Server. JDBC – Structured Query Language – Database Drivers, Jdbc API and Batch Processing

Servlets & JSP : Http Request – Servlet Technology – Deployment Descriptor – Lifecyle of Servlet – Servlet Initialization – Session Management – Request Dispatching – **JSP** – JSP Basics, Implicit Objects, Java Beans in Jsp

Unit IV

Spring: Spring Framework – Goals of Spring Framework – Architecture of Spring Framework – Inversion of Control – Core Module – Application Context – Aspect Oriented Programming (AOP)

Unit V

Hibernate: Introduction – ORM Solutions – Mapping Beans to Tables – Hibernate Associations – Many to One, One to Many, One to One, Many to Many – Polymorphic Associations – Hibernate Query Language (HQL)

Text Book:

1. "**Java and J2EE Made Easy**", Kindle Edition 2007, **PHANI KOSURI** by J2EE Consulting Inc

Reference Book:

1. **"J2EE – The Complete Reference" ,** First Edition, McGraw Hill, **James Edward Keogh**
2. **"Spring and Hibernate**", 2013, Second Edition, **K. SANTHOSH KUMAR** McGraw Hill,

CORE – 8: . NET Programming using C#

Subject Code :

Duration : 3 Hours Max Marks: 100

UNIT I :

Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data Types, Operators, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

UNIT II:

Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

UNIT III:

Introducing .NET, .NET Frame work – Common Language Runtime, .NET Class Library, C# Language- Basics, Variables and Data Type, Variable Operations, Conditional Logic, Loops, Methods, Building a Basic Class, Value types and reference types , Understanding NameSpaces and Assemblies.

UNIT IV:

Exception Handling, Page Tracing, State Management – View State, Transferring information between pages, Cookies, Session State,Session State Configuration, Application State, Validation – Understanding Validation, Validation Controls, Rich Controls – Calendar, AdRotator .

UNIT V:

ADO.NET- Data Provider Model Direct Access Model, Disconnected Data Access model, Data Binding- Data Controls – Selecting, Editing , Sorting and Paging, Files and Streams – File System Information,Reading and Writing with Streams

TEXT BOOKS:

1. E. Balagurusamy, "Programming in C#", Tata McGraw-Hill, 2004. (Unit I, II)

2. Mathew MacDonald , "Beginning in ASP.NET 4 in C# 2010", APRESS(Unit III, IV, V)

ELECTIVE-I; ELECTIVE-1: Multimedia System

Subject Code :

Duration : 3 Hours Max Marks: 100

Unit – I :

Definition – Multimedia highway – Multimedia applications – Need for multimedia project – Macintosh versus windows – Networking Macintosh and windows – connections – Memory and storage devices - Input devices – output hardware - communication devices.

Unit – II :

Text in multimedia – Font editing and design tools - Hyper media and hypertext – Multimedia sounds – digital audio – making MIDI audio – MIDI versus digital audio – adding sound to multimedia project. Images: bitmaps, vector drawings, 3D drawing and rendering – colours- principle of animation – animation by computer. Video: How video works – analog display standards – digital display standards – digital video – optimizing video files for CD ROM.

Unit – III :

Multimedia skills: Project manager, Multimedia designer, interface designer, writer, video specialist, audio specialist, multimedia programmer. Web server – web browsers – search engines – web page makers and site builders – plug-ins and delivery vehicles.

Unit – IV:

Working on the web – text, Images, sounds, animations for the web – making instant multimedia – types of authoring tools – card and page based authoring tools - icon and object based authoring tools - time based authoring tools – cross platform authoring tools.

Unit – V :

Planning and costing: Process of making multimedia – scheduling – Estimating – Designing – producing- testing – preparing for delivery – delivery on CD ROM – compact disc technology – delivery on world wide web.

Text book :

1. "Multimedia Making it works" by Tay Vaughan, Seventh edition, McGraw Hill Publications

References :

1. Creating Instructional Multimedia Solutions: Practical Guidelines for the Real World, Peter Fenrich, Informing Science Publication, 2005

Multimedia in Action, James E. Shuman, Course Technology Publication, 1997

14MJM210/ 14MSM210

Essentials of Language and Communication*

Semester II
Hours/Week: 2
Credits: 2

Category: **Extra Disciplinary Elective I**

Objective **To provide the basics of communication skills to Students of Computer Science**

Unit I

Types of communication: Functional and situational, verbal and non-verbal communication

Unit II

Interpersonal, group and interactive communication

Unit III

Mass and Mass-line communication

Unit IV

LSRW in communication: Listening skills, Speaking Skills

Unit V

Reading Skills and Writing Skills.

Recommended Text:

1. *Communication & Soft skills: Paper I Essentials of Language and Communication.* Publication Division, University of Madras.

***To be offered to M.Sc. (Computer Science) and M.Sc. (IT) students.**

Pattern of Question Paper - Total Marks: 75

Section A: Paragraph - 5/8 questions (5 x 6 = 30)
Section B: Essays - Either/or (3 x 15 = 45)

CORE – 11: Computer Networks

Subject Code :
Duration : 3 Hours

Max Marks: 100

UNIT – I:

Introduction: Uses of Computer Networks. Network Hardware: LAN – MAN – WAN. Networks Software: Protocol Hierarchies – Design Issues for the Layers. Reference Models: OSI-TCP/IP.
The Physical Layer: Guided Transmission Media. The Public Switched Telephone Network: Structure of the Telephone System – Switching. The Mobile Telephone System.

UNIT – II:

The Data Link Layer: Data Link Layer Design issues. Error Detection and Correction. Elementary Data Link Protocols. Sliding window protocol.
The Medium Access Control Sub Layer: Multiple Access Protocol: Carrier Sense Multiple Access Protocols – Collision Free Protocols. Bluetooth: Bluetooth Architecture – Bluetooth Applications. Data Link Layer Switching: Repeaters, Hub, Bridges, Switches, Router, and Gateways.

UNIT – III:

The Network Layer: Network Layer Design Issues: Store and Forward Packet Switching – Services Provided to the Transport Layer – Implementation of Connectionless Service – Implementation of Connection Oriented Service. Quality of Service: Requirements – Techniques for Achieving Good Quality of Service – Integrated Services. Internetworking. The Network Layer in the Internet: The IP Protocol – IP Addresses – Internet Multicasting – Mobile IP.

UNIT – IV:

The Transport Layer: The Transport Service: Service Provided to the Upper Layer – Transport Service Primitives – Berkeley sockets. Elements of Transport Protocols: Addressing – Connection Establishment – Connection Release – Flow Control and Buffering – Multiplexing. A Simple Transport Protocol. The Internet Transport Protocols (UDP). The Internet Transport Protocols (TCP): Introduction to TCP – The TCP Service Model – The TCP Protocol – The TCP Segment Header.

UNIT – V:

The Application Layer: DNS. Electronic Mail: Architecture and Services – Message Formats – Message Transfer. The World Wide Web: Architectural Overview – Dynamic Web Documents – HTTP – The Wireless Web. Multimedia: Introduction to Digital Audio – Audio Compression – Streaming Audio – Introduction to Video – Video Compression – Video on Demand.

Text Book:

1. Andrew S. Tanenbaum, "Computer Networks", **4th edition** by, 2003 PHI.

Reference Books:

1. William Stallings, " Data and Computer Communication", **5th edition**, PHI.
2. Behrouz A. Forouzan, " Data Communications and Networking", **3rd edition** Tata McGraw-hill.

CORE – 12: Software Engineering

Subject Code :

Duration : 3 Hours

Max Marks: 100

UNIT – I:

The evolving role of software – software characteristics and software applications – software process- Software process models : Linear sequential model & Prototyping model – RAD model- Evolutionary software process models, Project management concepts

UNIT – II:

Software process and project metrics : measures, metrics and indicators – metrics in the process And project domain – software measurement, Project planning objectives – software scope – Resources - software project estimation- Decomposition techniques: software sizing, problem based estimation, Emperical estimation models : The COCOMO model

UNIT – III:

Risk analysis and management – software risks- risk Identification – risk projection – risk refinement – risk mitigation, monitoring and management,

Project scheduling and tracking : basic concepts – the relationship between people and effort

UNIT – IV:

Software quality assurance: Quality concepts – the quality movement – software quality assurance- Software reviews – formal technical reviews, ISO 9000 quality standards– the SQA plan. software configuration management : the SCM process – identification of objects in the software configuration

UNIT – V:

Software testing techniques: software testing fundamentals – test case design – White Box testing- Basis path testing – control structure testing – black box testing, software testing strategies : A strategic approach to software testing – unit testing , integration testing, validation testing, system testing.

TEXT BOOK:

1. "Software Engineering : A practioner's approach " by Roger S.Pressman, 5th edition , Mcgraw-Hill International Edition

REFERENCE BOOKS:

1. "Software Engineering " by Ian sommerville , 8th edition, Addision Wesley .

2. "software engineering" by S.A.Kelkar,, Prentice Hall of India pvt ltd.

CORE – 13: PYTHON Programming

Subject Code :

Duration : 3 Hours Max Marks: 100

Unit- I:

Welcome to Python – What is Python? – Origins – Features – Downloading and Installing Python – Running Python – Python Documentation. Getting Started – Program Output statement – Program Input function – Python Basics – Statements and syntax – Variable Assignment – Identifiers – Numbers – Introduction – Integers – Double Precision Floating Point Numbers – Complex Numbers – Operators – Built-in functions for all numeric types.

Unit- II:

Sequences: Strings, Lists and Tuples – Sequences – Strings – Strings and Operators – String-Only Operators – Built-in Functions – String Built-in Methods – Lists – Operators - Built-in Functions – List Type Built-in Methods – Tuples – Tuple Operators and Built-in Functions - Mapping and Set Types: Dictionaries – Mapping Type Operators – Mapping Type Built-in Functions and Built-in Methods – Dictionary Keys.

Unit- III:

Conditionals and Loops – If statement – else statement – elif statement – Conditional expressions – while statement – for statement – break statement – continue statement – pass statement - Functions and Functional Programming – What are functions? – Calling Functions – Creating Functions – Passing Functions – Formal Arguments – Variable-Length Arguments.

Unit- IV:

Errors and Exceptions – What are Exceptions? – Exceptions in Python – Detecting and Handling Exceptions – Context Management – with statement – Raising Exceptions – Modules – What are Modules? – Modules and Files – Namespaces – Importing Modules – Features of Module Import – Module Built-in Functions – Packages – Other Features of Modules

Unit- V:

Files and Input / Output: File Objects – File Built-in Functions – File Built-in Methods – File Builtin Attributes – Command-Line Arguments - File System – Object-oriented Programming – Introduction – Classes – Class Attributes – Instances – Instance Attributes – Binding and Method Invocation – Subclassing – Inheritance.

TEXT BOOK

1. Wesley J. Chun, "Core Python Programming", 2nd Edition, Pearson Education LPE, New Delhi, 2007.

REFERENCE BOOK

1. Mark Summer field, Programming in Python 3, Pearson Education LPE, New Delhi, 1996.

ELECTIVE-IV; ELECTIVE-10: E-Commerce

Subject Code :

Duration : 3 Hours

Max Marks : 100

Unit – I

Overview of e- commerce: Introduction – Definition of e-commerce – Potential benefits of e-commerce – Internet and www as enablers of e- commerce – Impact of e- commerce on business models – E- commerce security – Organization of topics – Implication for the accounting. E-commerce and the role of independent third parties: Introduction – Consulting practices and accountants – Impact of Electronic commerce on the traditional assurance function – third party Assurance of web based electronic commerce – Implications for the accounting.

Unit– II

Edi electronic commerce and Internet: Introduction – Traditional Edi system – Data transfer and standards – financial Edi – Edi system and the internet – Impact of Edi Internet applications on the accounting profession. Risks of insecure system : Introduction – Overview of risks associated with internet transactions – Internet associated risk – Internet associated risk – risks associated with business transactions – Risks associated with confidentially maintained archival – master file and reference data – risks associated with virus and malicious – Implication of the accounting.

Unit – III

Internet security standards: Introductions – Standard setting issues and Committees – Security committees and organization- Security protocols and languages – Messaging protocols – Secure electronic payments and protocols – the role of accountants in internet related standard setting process. Cryptography and authentication: Introduction – Message security issues Encryption techniques – key management- Additional authentication methods – Additional non – repudiation techniques – implications of the accounting.

Unit – IV

Firewalls: Introduction – firewall defined – TCP/IP- Open system interconnect (OSI)- Components of firewall – typical functionality of firewalls 0 network topology – Commercial firewall software – Limitations of security prevention provided by firewall Implications of the accounting – Introduction – the set protocol – Magnetic strip cards – smart cards – Electronic check – Electronic cash – Implication of the accounting.

Unit – V

Intelligent Agent: Introduction – Definition of intelligent agent – Capabilities Of intelligent agent – intelligent agents and e-commerce – Online information Chain – limitations agents – implication of the accounting. Web based marketing: Introduction – the scope of marketing – business marketing and information technology – internet marketing techniques – Online adv Mechanisms – Web site design issues – intelligent agent and their impacts on marketing techniques – Implications of the accounting.

Books for Study :

1. MARILYN GREENSTEIN, TOOD.M.FEINMAN, "electronic Commerce"-TMH.
2. KALAKOTA & WINSTON, Frontiers of Electronic Commerce – Addison Wasley, fifth
3. BAJAJ & NAG , E-Commerce, The cutting Edge of Business – Tata McGraw Hill.

ELECTIVE-V; ELECTIVE-13: Cloud Computing

Subject Code :

Duration : 3 Hours Max Marks : 100

Unit I:

Difining Cloud computing –Cloud types-Characteristics of cloud computing –Assessing the role of open standards. Measuring the cloud value – Behavioral factors relating to cloud adoption-measuring cloud computing costs-Avoiding Capital Expenditures-computing total cost of ownership.

Unit II

Understanding cloud Architecture : Exploring Cloud computing stack – Connecting to the cloud – Defining Infrastructure as a Service (IaaS)-Defining Platform as a Services (Paas)-Defining Software as a Services(SaaS)-defining Identity as a Services(IDaaS)-Defining Compliance as a Services(CaaS).

Unit III

Using Platforms: Understanding Abstraction and Virtualization – Capacity Planning – Exploring platform as a service – Using Google Webservices – Using Microsoft Cloud Services.

Unit IV

Exploring Cloud Infrastructures : Managing the Cloud : Administrating the clouds – Cloud Management Products – Emerging Cloud Management Standards- Understanding Cloud Security : Securing the Cloud – Securing Data – Establishing Identity and presence.

Unit V:

Understanding Services and Applications: Understanding Service Oriented Architecture – Moving Applications to the Cloud –Working with Cloud Based Storage – Using Webmail Services – Communicating with the cloud – Using Media and Streaming- Using the Mobile Cloud- Working with Mobile Web Service.

Text Book:

1. Cloud Computing, Barrie Sosinsky, Wiley India Edition