Bachelor of Computer Application
Syllabus

BCA I SEMESTER

1BCAI	**COMMUNICATIVE ENGLISH**	**100**
1BCA2	**MATHEMATICAL FOUNDATION**	**100**
1BCA3	**Operating System (Windows, DOS, Linux)**	**100**
1BCA4	**Programming Methodology and C Programming**	**100**
1BCA5	**Fundamentals of Computers and Programming**	**100**
1BCA6	**PRACTICAL(OS,C)**	**100**
1BCA7	**INTERNAL**	**100**

BCA II SEMESTER

2BCAI	**Computer System Architecture**	**100**
2BCA2	**Data Structures**	**100**
2BCA3	**Database Management System**	**100**
2BCA4	**Objects Oriented Programming with C++**	**100**
2BCA5	**Numerical Methods & Analysis**	**100**
2BCA6	**PRACTICAL**	**100**
2BCA7	**INTERNAL**	**100**

BCA I SEMESTER
PAPER- I
Subject: COMMUNICATIVE ENGLISH

Duration: 3 Hours Max: 100
Min: 40

UNIT-I **10**
Lectures

Comprehension: comprehension includes understanding the language by reading & listening, some interesting current passages or poem will be given to the students individually or in group and they are allowed to read in the class in a given sufficient tome. Their comprehension will be tested/ checked by formulating various questionnaires in different ways such as objective type / fill in the blanks or small question answers. Similarly passages or poems will be read out in the class and question will be asked verbally to evaluate level of comprehension: Talks, reports, and poems.

UNIT-II **10 Lectures**

Write skills: in this section student will be exposed to various techniques of writing a paragraph, report composition, daily entry, application and letters, this count temporary Indian writing on culturally familiar topics and would promote inferential and analytical learning apart from literary application. Paragraph writing-objective, introduction, the topic sentence, developing the topic. Coherence-transitional devices. Punctuation marks-(i) need (ii) importance. Composition writing-objective, introduction, a model composition for study. Type of composition-(i) expository (ii) argumentative, (iii) narrative, (iv) descriptive. Techniques of writing food composition.

UNIT-III **10 Lectures**

Note Making/Talking: - Objective, introduction, How to read, specimen notes, reduction devices, heading and subroutine points. Report writing: - Reporting-Events, Reporting interviews, Reporting surveys: Objective, introduction, definite stages in writing a Report, types or report, key words.

UNIT-IV **10 Lectures**

Application: on given circumstances, format of the application. Letter writing- personal letter, business, business letters, objectives, introduction, format of the letter, how to write effective letters.

UNIT-V **10 Lectures**

Functional grammar: - grammar will be taught in functional, integrated and informal way giving more stress on the usage rather than defining. Maximum possible exercises will be given. Correct usage-parts of speech, agreement of the verb with the subject. Subject and predicate. Transformation of sentences – interchange of active and voice, interchange of affirmative and negative sentences, interchange of explanative and assertive sentences, interchange of parts of speech.

Text Books:
English grammar by wren & Martin.
Reference Books:
The most common mistakes in English usage the addition by Thomas Ellat.
Website:
www.edufind.com/english/grammer/index.cfm
www.en.wikipedia.org/wiki/Grammer
www.a4esl.org/q/h/grammar.html

BCA I SEMESTER
PAPER- II
SUBJECT: MATHEMATICAL FOUNDATION

Duration: 3 Hours Max:100
Min:40

UNIT-I **10 Lectures**

Boolean algebra, Principle of Duality, Properties of Boolean Algebra, inclusion in Boolean Algebra, Boolean sub algebra, partial order relations, lower and upper bound total order, algebra of propositions, algebra of electric circuits: Switching circuits, design of simple automatic control system.

UNIT-I I **10 Lectures**

Sets & operations on sets: Union, Intersection, disjoint set, difference, symmetric difference, complement laws of operation on sets, Venn diagram, generalized De-morgan's law, generalized form of distributed law. Cartesian products of sets & relations: Cartesian products of two sets, relations binary relations, equivalence relations, equivalence sets, properties of equivalence classes, partitions of sets, functions or mapping, kinds of mapping

UNIT-III **10 Lectures**

Functions, function of different kinds, limits, some important expansions, some theorems of limits. Some important limits, right hand and left hand limits. Continuity, kinds of dis-continuity, properties of continuous functions (Mosted Theorem, Intermediate Value Theorem) basic concepts of derivatives of a function, right hand and left hand derivatives, rolls theorem, first and second mean value theorems, taylor's theorem, Maclaurian's theorem.

UNIT-I V **10 Lectures**

Elementary integration anti-derivative, indefinite Integral, Definite Integral, Fundamental Rules of Integration, Standard formula, Integration by Substitution, Extended from of fundamental formula, some important integrals, Integration by Parts.

UNIT-V **10 Lectures**

Partial Differentiation, Partial Differentiation of higher orders, Homogeneous functions, Total Differentiations, Differentiations of composite & Implicit functions, changes of variables Taylor's theorems for several variables. Simple problem of maxima and minima.

Textbooks:
Discrete mathematics: D.C.Agrawal,Thakur& shrivastava
Calculus: B.R. Thakur,H.K . Pathak,
Reference Books:
Elementry Calculus : D.C.Agrawal,Thakur& Harikishan
Vector calculas and Geometry by D.C.Agrawal
Websites:
en.wikipedia.org/wiki/Boolen_algebra
www.bymath.com/studyguide/sets/sec/sets2.htm

BCA I SEMESTER
PAPER- III
SUBJECT: OPERATING SYSTEM (WINDOWS, DOS, LINUX)

Duration: 3 Hours Max: 100
Min: 40

UNIT I **10**
Lecture

(DOS):-Introduction-History and version of DOS, DOS basics-Physical structure of disk, drive name, FAT, File and directory structure and naming rules, Booting process, Dos System files, Dos commands-Internal-DIR, MD, CD, RD, COPY, DEL, VOL, DATE ,TIME,CLS,PATH,TYPE,External-CHKDSK, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, TREE, MOVE, LABEL, APPEND, FORMAT, SORT, FDISK, BACKUP, EDIT, MODE, ATTRIB, HELP, SYS.

UNIT-II **10 Lecture**

(Windows XP)-hardware requirements of windows, windows concept, features, windows structure, desktop, taskbar, start menu, my computer ,recycle bin, Windows Accessories:-calculator,notepad,paint,wordpad,charactermap,Windows Explorer:-creating folders and other explorer facilities, Entertainment:-cod player, dvd player, media player ,sound recorder, volume control.

UNIT –III **10 Lecture**

An overview of Linux and historical perspective, understating Linux commands, arguments, options and file name, Combining command entering a command before previous command has finished.

UNIT-IV **10 Lecture**

General purpose utilities :- cal, date, cat, who, tty, uname, passwd, lock, echo, bc, time, spell, ispell, Files System:- ordinary, directory devices and special files, path name, mkdir, rmdir, ls(with options), cd.

UNIT-V **10 Lecture**

Handling ordinary file, displaying and creating file, copying, deleting, renaming files, pattern matching, printing a file, line word and character counting, comparing two files, finding what is common, The Shell, sh command, pattern matching(wild cards),Quoting, redirection.

Text Books:-

DOS 6 & 6.2:-Robert Thomas.
Windows XP Professional edition, Complete BPB publication.
Summit AbhaDas :Unix Concept and Application,

Reference Books:-

Beginning Red Hat Linux9 (Sandeep Bhattachary,Simon Whiting)
Beginning Shell Scripting(Eric Foster Johnson,John C Welch)

WebSites:

en.wikipedia.org/wiki/operting_systesm.
en.wikipedia.org/wiki/List_of_Dos_Commands.
www.computerhope.com/overview.htm.

BCA I SEMESTER
PAPER- IV
SUBJECT: PROGRAMMING METHODOLOGY AND C PROGRAMMING

Duration: 3 Hours Max: 100
Min: 40

UNIT I **10 LECTURES**

Introduction to Programming, language, type of PL- HL,ML,LL, Basic steps in program development, **Design:** algorithm, pseudo code, flowchart, techniques of program design – top down design, bottom up design, structured oriented programming

UNIT II **10 LECTURES**

Language translator – Assembler, Compiler and Interpreter, modules of structured programming – (1) sequence (2) selection and (3) repetition(iterative logic). Introduction to C language-Variables, data types, operators, keyword and arithmetic expressions.

UNIT III **10 LECTURES**

Structure of C Program- Variable declaration, Input/Output Function, Control Statements: branching, jumping & looping, local and global variable, storage classes of C variable

UNIT IV **10 LECTURES**

Arrays (single dimension & multidimensional array) functions: user defined function, Standard function, Recursion.Pointers: declaration, pointer to arithmetic, Structures, arrays of structures. Union

UNIT V **10 LECTURES**

Graphics programming, Introduction, functions, stylish lines, drawing and filling images, palettes and colors, justifying text, bit of animation**.**

Text books:

How to design Programs-An Introduction to programming and computing- Felleisen, et,al, PHI Publictaion
Let us C by Yashwant Kanetkar IV Edition
ANSI C by E. Balagurusamy

Intoduction to C by Bhatia

Reference Books:

Introduction to Algorithms by Cormen. PHI

Programming in C: Denis Richi

Websites:

en.wikipedia.org/wiki/C++

en.wikipedia.org/wiki/C

BCA I SEMESTER

PAPER- V

SUBJECT: FUNDAMENTALS OF COMPUTERS AND PROGRAMMING

Duration: 3 Hours Max: 100

Min: 40

UNIT I **10**

Lecture

Introduction to Computer: History, Characteristics, capabilities and limitations, Block diagram of computers, Generation of computers and characteristics, Computer Hardware and Software introduction, Types of Computers: analog, digital (classification of digital computers), hybrid, general purpose and special purpose computer. Types of PC Systems- PC, XT and AT, Pentium, Computer systems: Micro, mini, mainframe, super.

UNIT-II **10 Lecture**

Computer Organization: - Input Devices: Keyboard, Mouse, Trackball, Joystick, Light Pen ,Touch Screen, Scanners, MICR, OMR, OCR, Bar-Code Reader, Voice Input Devices, Storage devices: Primary and secondary storage, sequential, direct and indexed sequential, Tape storage devices, characteristics and limitation, tape storage and retrieval methods, direct access storage devices : hard disks, floppy disk, optical disks.

UNIT –III **10 Lecture**

Central processing unit: Microprocessor, control unit, registers, buses, Main memory: [RAM, ROM (types)], Output device: Hard copy- Printer, plotter, Soft copy-[monitors (types)].

UNIT-IV **10 Lecture**

Computer software: Types of software-[System, Application (types)], Translator-compilers, assemblers, interpreters, difference between language and package.

UNIT-V **10 Lecture**

Computer languages: Types of languages [HL, ML, LL], generation, advantages and limitations, types of programming language [machine language, assembly language, procedural language, object oriented language, 4GL-advantages and limitations]

Text books:-
Computer today by S.K. Basandra, Galgothia publication pvt. Ltd, New Delhi
Computer fundamentals by P.K Sinha
Reference Books:-
O-level module by V.K Jain
Websites:
en.wikipedia.org/wiki/software
en.wikipedia.org/wiki/computer_language

Scheme of Practical Examination

Time 3 hrs **MM: 100**

DOS/UNIX Commands	**20**
C Programming	**30**
Record Book	**15**
Viva voce	**20**
Observation copy	**15**

List of Practicals

1BCA3-Operating System (Windows, DOS, Linux)

- DOS: Various internal and External commands
- Linux: Commands(Cal,Date,cat,who,tty,rename,passwd,lock,echo,bc,time,spell,ispell)
- Linux file utilities(Pathname, mkdir, rmdir, ls(with options), cd)
- sh(Shell commands) and pattern matching

1BCA4 – Programming Methodology and C Programming

- Simple interest, area of different objects
- Programming related to conditional statements
- Programming related to looping statements
- Programming related to array

- Programming related to function
- Programming related to structure, union
- Programming related to pointer
- File handling

BCA II SEMESTER
PAPER- I
SUBJECT: Computer System Architecture

Duration: 3 Hours Max: 100
Min: 40

UNIT I **10 Lectures**

Data types and Number Systems, Binary, Octal & Hexadecimal number system, 1's & 2's complement, Binary Fixed- Point representation, Arithmetic operation on Binary numbers, Overflow & Underflow, Floating Point Representation, Codes- ASCII, EBCDIC, Gray Code, Excess-3 & BCD, Error detection & Correcting codes.

UNIT- II **10 Lectures**

Logic Gates- AND, OR, NOT, NOR, NAND, XOR, XNOR and their Truth Tables, Boolean algebra, Basic Boolean Law's, DeMorgan's theorem, MAP Simplification- K MAP, Sum-of- Product & Product-of- Sum.

UNIT- III **10 Lectures**

Combinational & Sequential circuits, Half Adder & Full Adder, Half Subtractor & Full Subtractor, Flip- Flops- RS, D, JK, & T flip- flop, Shift Registers, RAM, ROM, Multiplexer, Demultiplexer, Encoder, Decoder, Program Control, Instruction Sequencing.

UNIT- IV **10 Lectures**

I/O Interface, Properties of simple I/O devices and their controller, Isolated verses memory-mapped I/O, Asynchronous data transfer- Strobe Control, Handshaking, Asynchronous serial transfer, Modes of Data transfer, I/O Processor.

UNIT- V **10 Lectures**

Auxiliary Memory- Magnetic Drum, Disk & Tape, Semi- conductor memories, Memory Hierarchy, Associative Memory-Hardware Organization, Match Logic, Read and write Operation, Cache Memory- Hit Ratio, Mapping Techniques, Writing into Cache, Virtual Memory- Address Space & Memory Space, Address Mapping, Page Table, Page Replacement.

Prescribed Books:
Bartee – Digital Computer Fundamentals
Malvino- Digital Computer Electronics
Reference Books:
Morris Mano- Computer System Architecture
Websites:
en.wikipedia.org/wiki/Logic_gate
en.wikipedia.org/wiki/Cache
www.pcguide.com/intro/fun/clock.htm

BCA II SEMESTER
PAPER- II
SUBJECT: Data Structures

Duration: 3 Hours Max: 100
Min: 40

UNIT-I **10 Lectures**

Concept of data structure ,Abstract data structure, Analysis of algorithm, Introduction to stack and primitive operation on stack, Stack as an abstract data type, Multiple stack, Stack application:-Infix, Prefix, Postfix and Recursion, Introduction to queues, Primitive operation on queues, Queues as an abstract data type, Circular queue ,Dequeue , Priority queue and Applications of queue.

UNIT-II **10 Lectures**

Introduction to Linked List, Basic operations on Linked List, Stacks and Queues as a Circular Linked List, Header nodes ,Doubly Linked List, Circular Linked List, Application of Linked List.

UNIT-III **10 Lectures**

TREES-Basic terminology ,Binary Trees, Tree representations as array and Linked List, Basic operation Binary tree, Traversal of Binary trees:- Inorder, Preorder, Postorder,
Application of Binary tree, Threaded Binary tree, AVL tree, Binary tree representation of trees.

UNIT-IV **10 Lectures**

Sequential Searching, Binary search, Insertion sort, Selection sort, Quick sort, Bubble sort, Heap sort, Comparison of sorting methods.

UNIT-V **10 Lectures**

Hash Table, Collision resolution technique, Introduction to graphs, Definition, Terminology, Directed, Undirected and Weighted Graph, Representation of Graph, Graph Traversal-Depth first, Breadth first search, Spanning tree, Minimum Spanning tree, Shortest path algorithm.

Text Books:-

Fundamental of Data Structure By S.Sawhney & E. Horowitz.
Data Structure: By Trembley & Sorrenson.

Reference Books:-

Data Structure: By Lipschuists (Schaum's Outline Series)
Fundamental of Computer Algorithm: By Ellis Horowitz and S.Sawhney.

Websites:-

en.wikipedia.org/wiki/Data_Structure.
www.csse.monash.edu.au/~lloyd/tildeAlgDS

BCA II SEMESTER
PAPER- III
SUBJECT: Database Management System

Duration: 3 Hours Max: 100
Min: 40

UNIT-I **10 Lectures**

Operation data, Purpose of database system, Views of data, Data models: Relation, Network, Hierarchical, Instances and schemas, Data Dictionary, Types of Database languages:-DDL, DML, Structure of DBMS, Advantages and disadvantages of DBMS, 3-level architecture proposal:-external ,conceptual & internal levels,

UNIT-II **10 Lectures**

Entity Relationship model as tool of conceptual design:-Entities & Entities set ,Relationship and Relationship set, Attributes and Mapping constraints, Keys, ER diagram:-Strong and weak entities, Generalization ,Specialization & Aggregation, Reducing ER diagram to tables.

UNIT-III **10 Lectures**

Set theory concepts and fundamentals : Relations, Domains, Attributes, Tuples, Concept of keys: Primary key, Super key, Alternate key, Candidate key ,Foreign key, Fundamental Integrity rules:-Entity & Referential integrity ,Extension and Intention, Relational Algebra :select ,project, cross product, different types of joins:-theta, equi, natural, outer joins, set operations.

UNIT-IV **10 Lectures**

Functional Dependencies, Good &Bad Decomposition, Anomalies as a database: A consequences of bad design, Universal relation, Normalization: 1NF, 2NF, 3NF &BCNF normal forms, Mutivalued dependency, Join dependency, 4NF, 5NF.

UNIT-V **10 Lectures**

Basic concepts:-Indexing and Hashing, B-tree Index files, Hashing: Static & Dynamic hash function, Index definition in SQL: Multiple key accesses.

Text Books :-

Database Management System by Leon & Leon, Vikas Publication.
Database System Concepts by Henry Korth and A. Silberschatz.

Reference Books:-

An Introduction to Database System by Bipin Desai
An Introduction to Database System by C.J.Date.

Websites:-

en.wikipedia.org/wiki/Database_management _system
en.wikipedia.org/wiki/Functional_dependency
www.cs.jcu.edu.au/Subjects/cp1500/1998/Lecture_notes/normalisation/fd.html

BCA II SEMESTER
PAPER- IV
SUBJECT: Objects Oriented Programming with C++

Duration: 3 Hours Max: 100
Min: 40

UNIT I **10 Lectures**

Overview of C++: Objected oriented programming, introducing C++ Classes, concepts of Object oriented programming, Classes & Objects: Classes, Structure & classes, Union& classes, Friend function, Friend classes, inline function, Scope resolution operator, Static class members: Static data member, Static member function, passing objects to function, Returning objects, and object assignment.

UNIT II **10 Lectures**

Array, pointers references and the dynamic allocation operators: array of objects, pointers to object, type checking C++ pointers, The this pointer, pointer to derived types, pointer to class members, references: Reference parameter, passing reference to objects, returning reference, independent reference, C++'s Dynamic allocation operators, initializing allocated memory, allocating array, allocating objects. Constructor and destructor: introduction, parameterized constructor, multiple constructors in a class, constructor with default argument, copy construction, default argument, constructing two-dimensional array, destructor.

UNIT III **10 Lectures**

Function and operator overloading: function overloading, overloading constructor function finding the address of an overloaded function, operator overloading: creating a member operator function, creating prefix and postfix forms of the increment and decrement operation, overloading the shorthand operator (i.e: +=, -+ etc), operator overloading restrictions, operator overloading using friend function, overloading new and delete, overloading some special operators, overloading [], (), -, Comma operator, overloading<<.

UNIT IV **10 Lectures**

Inheritance: basic class access control, Inheritance and protected members, protected base class Inheritance, inheriting multiple base classes, constructors, destructors and Inheritance, when constrictor and destructor function are executed, passing parameters to base class constructors, granting access, virtual functions, and polymorphism: virtual function, pure virtual functions, early Vs Late Binding.

UNIT V **10 Lectures**

The C++ I/O system basics: C++ streams, the basic stream classes: C++ predefined streams, formatted I/O: formatting using the IOS members, setting the format flags, clearing format flags, an overloaded form of setf(), examining the formatted flags, setting all flags, using width() precision() and fill(), using manipulators to format I/O, creating your own manipulators.

Text books:

Balagurusamy: object oriented programming in C++

Reference Books:

Herbert Schlitz: C++ the complete Reference- TMH publication.
R. Lafore: Object oriented programming in C++

Websites

www.cplusplus.com/doc/tutorial
en.wikipedia.org/wiki/C++

BCA II SEMESTER
PAPER- V
SUBJECT: Numerical Methods & Analysis

Duration: 3 Hours Max: 100
Min: 40

UNIT – I **10 Lectures**

Floating point arithmetic. Errors and their computation- absolute, relative and percentage error. Transcendental& polynomial Equations, Direct & indirect Methods, Muller's methods, Newton Raphson method, Bisection Methods, Regular falsi method.

UNIT –II **10 Lectures**

MATRICES: Hermitian, Skew Hermitian & Symmetric Matrices, Elementary Transformations, Elementary Matrices, Determinant & Inverse of a Matrix. Rank & Nullity of matrices and solutions of Non homogeneous Linear Equations, Characteristic roots, Caley Hamilton theorem, vector and matrix norms.

UNIT – III **10 Lectures**

SYSTEM OF LINEAR ALGEBRAIC EQUATIONS: Cramer rule, decomposition of matrix, gauss elimination methods, consistent and inconsistent system of equations, Jacobi iteration method, gauss seidal iteration method of convergence, gauss Jordan method.

UNIT – IV **10 Lectures**

INTERPOLATION AND APPROXIMATION: Newton interpolation formula, Newton forward and Newton backward interpolation formula, error in Newton interpolation formula, Lagrange interpolation formula, Newton's divided difference interpolation formula.

UNIT – V **10 Lectures**

NUMERICAL DIFFERENTIATIONS AND INTEGRATION: methods based on interpolation methods based on finite difference operators, Newton cotes method, trapezoidal rule and Simpson's rule- Simpson 1/3 and Simpson 3/8.

Text Books:

Numerical Methods, E.Balagurusamy
Numerical Methods for Solving Scientific and Engineering Problems, Iyengar and Jain.
Numerical Analysis, B.S. Garewal.

Reference Books:

Numerical Analysis, S.S. Sastry.
Abstract Algebra, H.K. Pathak.
Numerical Algorithm, E.B. Krishnamurthy.

Website:

math.fullerton.edu/mathews/**numerical**.html
www.math.niu.edu/~rusin/known-math/index/65-XX.html
archives.math.utk.edu/topics/**numericalAnalysis**.html

List of Practical:-

PAPER II- Data structure
Program related to operations on strings
Program related to Queue operation
Program related to Stack operation
Program related to Singly Linked List operation
Program related to Doubly Linked List operation
Program related to Tree operation
Program related to various search techniques
Program related to various sorting techniques
Program related to Graphs

PAPER IV- C++
Program for Data Encapsulation
Program for Data Abstraction
Program for Inheritance-Derived Classes
Program for Polymorphism-Operator Overloading
Program using Friend Functions
Program for Polymorphism-Virtual Functions
Program for Class Templates
Program for Hybrid Inheritance
Program for Multilevel Inheritance
Program for Multiple Inheritance
Program for Hierarchical Inheritance
Program for Multipath Inheritance
Program using Stack, Queue, single linked list, double linked list, circular linked list
Program for Searching : Sequential searching, Binary Searching
Programs for Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods.
Programs for Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract methods and Classes
Programs for Creating Threads, Extending the Threads ClassThread Priority, Implementing the Runnable Interface.
Programs for Creating Applets, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

PAPER III- Data base management system
Creation of table

Deletion of rows and table
Insertion of records
Selection of tuples with criteria
Updation of records and table
Renaming columns
Range searching
Pattern matching
Oracle functions
Views
Joins
Granting & Revoking Permission.
Procedures
Database triggers.

BCA III Sem

Subject code	Subject name	Max. Marks	Min. Marks
4BCA1	Software Engineering	100	40
43BCA2	Accounts And Business Application	100	40
4BCA3	Computer Graphics (With Multimedia)	100	40
4BCA4	Programming With Java	100	40
4BCA5	Internal Assessment	100	50
4BCA6	Practical(1)	100	50
4BCA7	Practical(2)	100	50

Subject code	Subject name	Max. Marks	Min. Marks
3BCA1	Operating System Concepts	100	40
3BCA2	System Analysis And Design	100	40
3BCA3	Programming In Visual Basic	100	40
3BCA4	SQL And PL-SQL In ORACLE	100	40
3BCA5	Internal Assessment	100	50
3BCA6	Practical(1)	100	50

BCA IV Sem

BCA III SEMESTER
PAPER I
SUBJECT: OPERATING SYSTEM CONCEPTS

Duration: 3 Hours **Max: 100**
Min: 40

UNIT I: **10 Lectures**

Definitions, and functions of Operating System. Types of operating system – simple batch systems, multiprogrammed batched systems, time sharing system, personal computer systems, parallel systems, distributed and real time systems. Computer system structures – computer system operations, I/O structures, storage structures, storage hierarchy, and hardware protection.

UNIT–II **10 Lectures**

Process Concepts, process state & process control block, Process Scheduling, Scheduling Criteria, Scheduling Algorithms, Multiple-Processor Scheduling Real-Time Scheduling, Threads-overview, Interprocess Communication.

UNIT–III **10 Lectures**

Critical Section Problem , Semaphores, Classical Problem Of Synchronization, , Critical Regions, Monitors, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock.

UNIT–IV **10 Lectures**

Introduction to Partitioning Scheme, Types of Fragmentation: Internal Fragmentation & External Fragmentation. Logical versus physical address space, Swapping, Contiguous Allocating, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms, thrashing.

UNIT–V **10 Lectures**

File System Structure, Access Methods, Directory Structure, Protection, Free space management, Allocation Methods, Disk Scheduling, Disk Management, Swap Space Management, Disk reliability, Stable Storage Implementation.

Text Books:

Operating System Concepts by Silberschatz & Galvin, Addison Wesley Publication 6th Edition.

Reference Books:-

Operating System Concepts & Design by Milan Milen Kovic, TMH Publication

Websites:

http://en.wikipedia.org/wiki/Operating_system
http://phoenix.goucher.edu/~kelliher/cs42/sep27.html

BCA III SEMESTER
PAPER II
SUBJECT: SYSTEM ANALYSIS AND DESIGN

Duration: 3 Hours **Max: 100**
Min: 40

UNIT-I **10 Lectures**

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system, open and closed system, man-made information systems. System Development Life Cycle: Various phases of system development, Considerations for system planning and control for system success. System Planning: Base for planning a system, Dimensions of Planning.

UNIT-II **10 Lectures**

Initial Investigation: Determining users requirements and analysis, fact finding process and techniques. Feasibility study: Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. Cost/Benefit Analysis: Data analysis, cost and benefit analysis of a new system.

UNIT-III **10 Lectures**

Tools of structured Analysis: Logical and Physical models, context diagram, data dictionary, data flow diagram, form driven methodology, IPO and HIPO charts, Gantt charts, system model, decision tree, decision tables, and data validation. Input/Output and Form Design: Input and output form design methodologies.

UNIT-IV **10 Lectures**

Management standards – Systems analysis standards, Programming standards, Operating standards. Documentation standards – User Manual, system development manual, programming manual, programming specifications, operator manual. System testing & quality: System testing and quality assurance, steps in system implementation and software maintenance. System security: Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis. System audit.

UNIT-V **10 Lectures**

Organization of EDP: Introduction. Job Responsibilities & duties of EDP Personnel's- EDP manager, System Analyst, Programmers, Operators etc. Essential features in EDP Organization. Selection of Data Processing Resources: purchase, lease, rent-advantages and disadvantages. Hardware and software procurement – In-house purchase v/s hiring and lease.

Text Books:

System Analysis and Design by Elias M. Awad

Reference Books:

System Analysis & Design by V K Jain, Dreamtech Press

Modern System Analysis & Design by A Hoffer, F George, S Valaciah Low Priced Edn. Pearson Education.

Information Technology & Computer Applications, by V.K.Kapoor, Sultan Chand & Sons, New Delhi.

Web Sites:

http://www.knovel.com/knovel2/Toc.jsp?BookID=1419

http://www.nos.org/htm/sad1.htm

BCA III SEMESTER
PAPER III
SUBJECT: PROGRAMMING IN VISUAL BASIC

Duration: 3 Hours **Max: 100**
Min: 40

UNIT–I **10 Lectures**

IDE of VB - Menu bar, toolbars, project explorer, toolbox, Properties window, Form designer, Form layout, Immediate window. VISUAL DEVELOPMENT AND EVENT-DRIVEN PROGRAMMING -Event Driven Programming Methods and events, Concept of VB project, types of VB project, Opening and saving the projects, Elements of the user interface, Designing the user interface, Creating forms and code modules, Running the application, Grouping controls, CUSTOMIZING THE ENVIRONMENT -Editor tab, format tab, general tab, docking tab, environment tab, Working with Forms, Loading, Showing and hiding forms, Controlling one form within another

UNIT–II **10 Lectures**

Variables -Declaring variables, Type of variables Converting variables types, User-defined data types, Special values, Forcing variables declarations, Scope and lifetime of a variable, Constants, Arrays, types of array, control array, Collections, Procedures, subroutines, functions, Control flow statements and conditional statements, Loop statements, Designing menus and popup menus, Programming menu commands, Using access and shortcut keys, Using message box and input box, Using standard modules

UNIT – III **10 Lectures**

The Text Box Control -Text selection, Search and replace operations, The List box and Combo box controls, Indexing with the List box controls, Searching a Sorted list, The scroll bar and slider controls, Using the common dialog controls, Color common dialog box, Font common dialog box, The file open and save common dialog boxes, Print dialog box, Help common dialog box, The file controls.

UNIT–IV **10 Lectures**

Classes, instances, objects, Encapsulation and abstraction, Derived classes and base classes, class in. Object linking and embedding (OLE), OLE at runtime, OLE control, GRAPHICS WITH VISUAL BASIC, Form, picture box and image box controls Sizing images, loading and saving images, Coordinate systems, scale properties and methods, The drawing methods: drawing text, drawing, drawing boxes, filling, Drawing curves, manipulating pixels, specifying colors, Using timer controls, Multiple Document Interface(MDI), MDI-built-in capabilities, Parent-child menus, Objects and instances, Loading and unloading of child forms, New and open commands

UNIT–V **10 Lectures**

Database Programming using Visual Data Manager: specifying indices and entering data with visual data manager . The ADO control and dataware control- ADO object model, using ADO control, establishing a connection and execution of SQL. VB and Web designing DHTML pages in VB- inserting text, hyperlink, graphics, tables. Using Web Browser control.

Text Books:

Evangelos Petroutsos, " Mastering Visual Basic 6", BPB Publications.
Reeta Sahoo & G. B. Sahoo, "Beginner's Guide to Visual Basic 6", Khanna Publishing House
Bradley , "Visual Basic 6"

Reference Books :-

Peter Norton's Guide to Visual Basic 6
Mohammd Azam "Programming in Visual Basic 6.0", Vikas Publishing
Peter Wright, "Beginning Visual Basic 6", Shroff Publishers
David Jung, "Visual Basic 6 Super Bible", Techmedia Publication

Websites :-

www.profsr.com/vb/vbintro.htm

www.profsr.com/vb/vbless01.htm
www.imt.net/~joe/matt/program/vb/Tutorials
www.vbtutor.net

BCA III SEMESTER
PAPER IV
SUBJECT: SQL AND PL-SQL IN ORACLE

Duration: 3 Hours **Max: 100**
Min: 40

UNIT - I **10 Lectures**

Oracle data types, working with Tables: SQL Commands: DDL, DML & DCL: create, insert, delete, select(all phases). Data Constraints, Column level & table Level Constraints. Defining constraints, Defining Integrity Constraints in the ALTER TABLE Command. Relational & Logical Operator, Range Searching, Pattern Matching.

UNIT - II **10 Lectures**

Oracle Function., Grouping data from Tables in SQL, Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins), Sub queries Union, intersect & Minus Clause, Creating and managing User, Grant, Revoke.

UNIT-III **10 Lectures**

Sequence, Creating Indexes, PL/SQL: SQL & PL/SQL differences, block structure, variables, constants, data type, Oracle transaction, program related to PL/SQL, Error handling, Raise-Application-error procedure.

UNIT-IV **10 Lectures**

Locks, Implicit and explicit locking. Procedures [local & stored] & Functions

UNIT-V **10 Lectures**

Triggers, Cursor, Import & Export, Oracle backup & recovery.

Text Books:

Ivan Bayross, “SQL, PL/SQL”, BPB Publications”

Reference Books:

Liebschuty, “The Oracle Cook Book”, BPB Publication
Michael Abbey, Michael J.Corey, “Oracle A Beginners Guide”. TMH Publication
Oracle Unleashed (Chapter 1, 2,3,4,5 and 9)

Websites:

http://infolab.stanford.edu/~ullman/fcdb/oracle/or-plsql.html
http://w2.syronex.com/jmr/edu/db/introduction-to-plsql/

Scheme of Practical Examination

Time 3 hrs.	**MM- 100**
Practical / (Mini Project)	50
Record Book	15
Viva Voce	20
Observation copy	15
Total	**100**

3BCA6

List of Practical: Programming In Visual Basic-

1. Create a password form.
2. Create a color mixture
3. Create a calculator
4. Working with list box, combo box
5. Create a screen saver
6. Create a MDI form
7. Working with OLEDB
8. Working with ADODC
9. Working with API
10. Create a text editor.

3BCA7

List of Practical: SQL and PL-SQL in ORACLE

1. Creation of Table
2. Deletion of rows and table
3. Insertion of rows
4. Selection of rows
5. Updating the data in the table
6. Renaming columns
7. Range searching
8. Pattern matching
9. Oracle functions
10. Creating Views
11. Joins
12. Locks & Exception.
13. Granting & Revoking Permission.
14. Procedures & Functions.
15. Database triggers.
16. Database Cursors.

BCA IV SEMESTER
PAPER I
SUBJECT: SOFTWARE ENGINEERING

Duration: 3 Hours **Max: 100**
Min: 40

UNIT – I **10 Lectures**

SOFTWARE: Software Characteristics, Components & Applications, Software Engineering - A Layered Technology, Software Process Models [Linear Sequential Model, Prototype & RAD Model], Evolutionary Software Process Model [Incremental Model and Spiral Model]. Project Management Concepts – People Problem and Process, S/W PROCESS AND PROJECT METRICS: Metrics in The Process and Project Domains . Software Measurement –Size Oriented, Function Oriented Metrics, Extended Function

UNIT – II **10 Lectures**

SOFTWARE PROJECT PLANNING: Objectives, Scope, Project Estimation, Decomposition Techniques, Empirical Estimation Models, ANALYSIS CONCEPT AND PRINCIPLES: Requirement Analysis, Analysis Principles, Software Prototyping, Specifications.

UNIT – III **10 Lectures**

DESIGN CONCEPTS AND PRINCIPLES: Design Process, Design Concepts, Design Principles, Effective Modular Design, Transform Mapping and Transaction Mapping, User interface Design, - models, design process.

UNIT – IV **10 Lectures**

S/W Quality Assurance : Quality Concepts, SQA activities, S/W Reviews, Formal Technical Reviews**,** S/W Reliability, S/W TESTING TECHNIQUES: S/W Testing Fundamentals, Test Case Design, White and Black Box Testing, Basic Path Testing, Control Structure **S/W TESTING STRATEGIES :** Strategic Approach To S/W Testing, Unit Testing, Integration Testing, Validation Testing, System Testing, Debugging

UNIT – V **10 Lectures**

S/W REUSE : Reuse Process, Building Reuse Components, Classified And Retrieving Components, Economics Of S/W Reuse COMPUTER AIDED S/W ENGINEERING: Introducing of Case, Building Block For Case, Taxonomy Of Case Tools, Integrating Case Environment, Integrating Architecture, Case Repository

Text Books:

Software Engineering By R.S.Pressman,Edition V- [Unit 1-4 & CASE] and Edition VI (Reuse)
An Integrated Approach To Software Engineering By Pankaj Jalote

Reference Books:

Software Engineering (7th Edition) Addison- Wesley 2004 ,Ian Sommerville
Software Engineering Hand book Auerbach publication,Jessica Keyes
Software Engineering Principles and Practice 2nd edition Wiley , Hans Van Vliet

Websites :

http://en.wikipedia.org/wiki/Software_testing
en.wikipedia.org/wiki/Software_engineering
www.bleading-edge.com/Publications/C++Journal/Cpjour2.htm -

BCA IV SEMESTER
PAPER II
SUBJECT: ACCOUNTS AND BUSINESS APPLICATION

Duration: 3 Hours **Max: 100**
Min: 40

UNIT-I **10 Lectures**

The basic Financial Accounts, types of accounts, Rules of Entries of transaction, Journal, Cash Book – Types, Format of Cash book, Balancing of Cash Book, Subsidiary books – Purchase, Sales, Purchase return and sales return, Ledger, posting of entries.

UNIT – II **10 Lectures**

Trading Account, P/L Account & Balance Sheet, Trial Balance, Rectification of errors, adjustment entries, Depreciation and Inflation.

UNIT – III **10 Lectures**

Principles of Cost Accounting, Valuation of Stocks, Allocation of Overheads, Methods of material issues.

UNIT – IV **10 Lectures**

Pay roll department, Preparation of Pay roll, Preparation of wage record, Methods of payments of wages, overview of computerized method for payroll preparation. Inventory account and store record, inventory or stock control and cost accounting, Department demand and supply method of stock control, Classification and condition of material Report on material handling, Overview of computerized accounting software

UNIT – V **10 Lectures**

Computerized Accounts, System Configuration, Creation of Accounts, Audit Trails, Nominal (General) Ledger, Purchase Ledger, Trial Balance, Balance Sheet,Regular Report, Stock Control, Payroll, Introduction to Accounting Packages- Tally, Creation and Maintenance of Businesss Establishment Accounts Using Accounting Packages

TEXT BOOKS:

A to Z Computer Accounts by Goyal
Financial Accounting by S.M. Shukla, Pub- Sahitya Bhawan
I.M.Pandey, **Financial Management**, 8th Edition, 1999, Vikas Publication
Computerized Financial Accounting by Singh & Singh

REFERENCE BOOKS

Management Accounting,H.N. Mishra Jawahar Publication
Management Accounting by Dr. S P Gupta
Management Accounting, Singh Kalyani Publication
Management Accounting**,** By Leslie Chadwick

Websites :

tutor2u.net/business/**accounts**/**financial_accounts**.htm
en.wikipedia.org/wiki/Balance_of_payments
en.wikipedia.org/wiki/Accounting
www.futureaccountant.com/accounting-process/study-notes/**trial**-**balance**.php

BCA IV SEMESTER
PAPER III
SUBJECT: COMPUTER GRAPHICS (WITH MULTIMEDIA)

Duration: 3 Hours **Max: 100**
Min: 40

UNIT–I **10 Lectures**

A brief background about applications of Computer Graphics. Overview of graphic systems, video display devices, refresh cathode ray tubes, raster and random screen display, color CRT monitors, flat panel displays, LCD's. Design and architecture of raster scan and random scan display systems. A brief introduction to input devices and hardcopy devices. Output primitives, DDA and Bresenham's 2D line drawing algorithms, parallel line algorithms.

UNIT – 2 **10 Lectures**

Midpoint circle generating algorithm, Ellipse generating algorithm, Character generation, attributes of output primitive, line and curve attributes, character attributes, Basic Transformation, Composite Transformation

UNIT – 3 **10 Lectures**

Clipping operations, Cohen Sutherland line clipping, Liang Barsky line clipping, Nicholl-Lee-Nicholl line clipping, polygon clipping, Sutherland Hodgeman and Weiler-Atherton polygon clipping, text and curve clipping.

Unit – 4 **10 Lectures**

Photoshop-Introduction: Working with image file- creating a new file, opening an existing file, importing and image, grabbing scanner image, grabbing a digital camera image, adding file information, saving a file, saving to another format, switch between file, closing a file. **Adding contents with tools:** selecting a tool, setting a tools option in option bar, resetting defaults, choosing colors, working with painting and drawing tools. **Working with image view:** using the zoom tool, changing the view zone.

Unit-5 **10 Lectures**

Selecting image content: Using the marquee tool, using the lasso tool, selecting pictures with magic wand, selecting by color range, adjusting and removing selection. **Changing a selection:** Deleting, Moving, Copying, Transforming, Modifying, Saving, and loading a selection, undoing a change. **Using positioning tools:** showing and hiding a grid, showing and hiding rulers, using snap and snap to locking guides. **Using layers, masks and paths:** Working with layer, deleting a layer, setting layer properties, choosing a layer style, arranging layer order, grouping and ungrouping layers, flatter the image.

Text Book:

Computer Graphics by Donald Hearn and M. Pauline Baker, Second Edition, PHI 1997.
Photoshop 6 for Windows by Lisa A. Buckly, Pub. BPB.

Reference Books:

Learn yourself Photoshop by Vishnu Priya Singh and M. Singh Asia Pub.

Website

www.wikipedia.org/wiki/Computer_graphics
www.graphics.cornell.edu/KOC95

BCA IV SEMESTER
PAPER IV
SUBJECT: PROGRAMMING WITH JAVA

Duration: 3 Hours **Max: 100**
Min: 40

UNIT–I **10 Lectures**

C++ Vs JAVA, JAVA and Internet and WWW, JAVA support systems, JAVA environment. JAVA program structure, Tokens, Statements, JAVA virtual machine, Constant & Variables, Data Types, Declaration of Variables, Scope of Variables, Symbolic Constants, Type Casting. Operators : Arithmetic, Relational, Logical Assignments, Increment and Decrement, Conditional, Bitwise, Special, Expressions & its evaluation, If statement, if…else… statement, Nesting of if…else… statements, else…if Ladder, Switch, ? operators, Loops – While, Do, For, Jumps in Loops, Labelled Loops.

UNIT–II **10 Lectures**

Defining a Class, Adding Variables and Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods.
Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Classes, Visibility Control.

UNIT–III **10 Lectures**

Arrays: One Dimensional & two Dimensional, strings, Vectors, wrapper Classes, Defining Interface Extending Interface, Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, Adding a Class to a Package, Hiding Classes.

UNIT–IV **10 Lectures**

Creating Threads, Extending the Threads Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the Runnable Interface.

UNIT–V **10 Lectures**

Local and Remote Applets Vs Applications, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

Text Books:

E. Balaguruswamy, “Programming In Java”, 2nd Edition, TMH Publications ISBN 0-07-463542-5

Reference Books:

Peter Norton, “Peter Norton Guide To Java Programming”, Techmedia Publications ISBN 81-87105-61-5

Web Sites:

java.sun.com/cgi-bin/java-ports.cgi
www.exampledepot.com
www.java2s.com

Scheme of Practical Examination

Time 3 hrs.	**MM- 100**
Practical / Mini Project	50
Record Book	15
Viva Voce	20
Observation copy	15

4BCA6

List of Practical: Tally, Computer Graphics (With Multimedia)

1. WAP to draw a line using DDA algorithm
2. WAP to draw a line using Bresenham algorithm
3. WAP to draw a circle using mid point circle generation algorithm
4. Creating image using painting and drawing tools.
5. Preparing Creation of Accounts, Audit Trails, Nominal(General) Ledger, Purchase Ledger, Trial Balance, Balance Sheet, Regular Report, Stock Control, Creation and Maintenance of Business Establishment Accounts using Tally 5.4

4BCA7

List of Practical: PROGRAMMING WITH JAVA

1. Programs for Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods.
2. Programs for Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Abstract methods and Classes
3. Programs for Creating Threads, Extending the Threads Class, Thread Priority, Implementing the Runnable Interface.
4. Programs for Creating Applets, Passing Parameters to Applets, Aligning the Display, HTML Tags & Applets, Getting Input from the User.

BCA V Sem

Subject code	Subject name	Max. Marks	Min. Marks
5BCA1	LINUX AND WEB PAGE PROGRAMMING	100	40
5BCA2	DATA WAREHOUSING	100	40
5BCA3	COMPUTER NETWORKS	100	40
5BCA4	PROGRAMMING WITH .NET	100	40
5BCA5	Internal Assessment	100	50
5BCA6	Practical(1)	100	50
5BCA7	Practical(2)	100	50

Semester VI
Paper I: 6BCA
Subject: Major Project

Semester	Major Project	Maximum Marks/Paper

VI	**Valuation** **1. Synopsis** Need & Objective Database Used Environment Outline of Project **2. Project Report** **3. Mid sem assessment 1** **2** **4. Presentation**	 **100** **100** **50** **50** **100**
	Viva Voce	**100**
	Total	**500**

BCA V SEMESTER
PAPER I
SUBJECT: LINUX AND WEB PAGE PROGRAMMING

Duration: 3 Hours **Max: 100**
Min: 40

UNIT - I **10 Lectures**

Linux introduction - Basic Features, Advantages,, Basic Architecture of Unix/Linux system, Types Of Files, File system- Inode, data blocks Boot block, super block,General Purpose Uitilies,Handling filesystem and Ordinary files Redirection comparisons.

UNIT–II **10 Lectures**

Filters:-pipe,pr,head,tail,cut,paste,sort,tr,grep,SysetmAdministration:UnderstandingProcesses,Back ground processing ,Termination Of Process(kill), Suspension Of Process(sleep), managing multiple processes, changing process priority, scheduling of processes:- at , batch commands, Managing user accounts-adding & deleting users, super user using su ,changing permissions and ownerships, Creating and managing groups, modifying group attributes ,Mounting .

UNIT–III **10 Lectures**

Shell programming:-Understanding shell,Types of shell ,vi editor, Basic of shell programming: Shell variables, shell keywords, conditional and looping statements, case statements, parameter passing and arguments.

UNIT–IV **10 Lectures**

Basic HTML Tags and Java Script, Introduction to PHP, PHP Syntax(Basic PHP Syntax,Comments in PHP), PHP Variables, Variable Naming Rules, PHP Operators, Conditional Statements, Switch Statement, Looping Statements, Arrays(Numeric array, Associative array, Multidimensional array), Create a PHP Function, Use a PHP Function, Adding parameters and Return values, The $_GET Variable, The $_POST Variable.

UNIT–V **10 Lectures**

Introduction to My-SQL , creating Database in My-SQL,My-SQL and PHP: Database connectivity, Adding,modifying and deleting records,Access Records From Database.

Text Book:

Unix Concept– Sumitaba Das
Unix Shell Programming – Yashwant Kanetkar, Bpb Publications,

Reference Book:

Using Linux By Jack Tackett, David Gunter, Phi, Eee Edition
Red Hat Linux7.X Bible –Cristopher Negus, Idg Books India Ltd.
Linux Installtion And Administration, Nicholas Wells, Course Technology (Vikas Publishing, New Delhi).

Web Site:

www.linux-tutorial.info/modules.php?name=MReviews&op=show&rid=43
java.sun.com/docs/books/tutorial/getStarted/cupojava/unix.html
www.ibm.com/developerworks/linux/

BCA V SEMESTER
PAPER II
SUBJECT: DATA WAREHOUSING

Duration: 3 Hours **Max: 100**
Min: 40

UNIT – I **10 Lectures**

Data Warehouse: Introduction and Building Blocks-
Objective and Need for data warehouse, Features, Architecture, Data warehouse and Data Mart, Components, Metadata

UNIT- II **10 Lectures**

Dimensional Modeling- - Objectives, requirements, Star Schema, Star Schema keys, snowflake schema, fact tables.

Unit- III **10 Lectures**

ETL overview, data extraction, data transformation, data loading,

Unit –IV **10 Lectures**

Overview of OLAP, features, functions, Models

Unit -V- **10 Lectures**

Latest trends in database- Concept of Object oriented database, web database, multimedia database, relational database,

Text Books

Data WareHousing Fundamental by PualrajPonniah(Wiley India Edition) Unit I,II, III, IV
Data Warehousing,Data Mining &OLAP by Alex Berson Stephen J.Smith(Tata McGraw-Hill Edition)
Data Mining Concepts and Techniques, Han Kamber, Morgan Kaufmann Unit 1

Reference Books:

Introduction to Business Intelligence and Data Warehousing, PHI
The Data Warehouse Lifecycle toolkit, Ralph Kimball, John Wiley.

BCA V SEMESTER
PAPER III
SUBJECT: COMPUTER NETWORKS

Duration: 3 Hours **Max: 100**
Min: 40

UNIT I: **10 Lectures**

Needs and Advantages- Network, Types- Server based, Peer, Hybrid, Server types, Network Topology- Bus, Star, Ring, Star bus, Star ring, Mesh, Network Protocols- Hardware Protocols, Software Protocols, Selecting and designing

Unit-II **10 Lectures**

Signal Transmission- Digital signaling, analog signaling, bits synchronization, baseband and broadband transmission, **Network media types-**Properties and specialties, comparative studies, **Network adapters-** working principle, configuration and selection.

Unit-III **10 Lectures**

OSI, TCP/IP model, Comparison between OSI and TCP/IP, **IEEE 802 standards-** 802.3(CSMA/CD Bus), 802.4(Token Bus),802.5 (Token Ring),**Ethernet** - working principle**,** 10&100 MBPS Ethernet, **Hubs, FDDI**, **Network Scaling**- No. Of computers, distance, software, speed and special requirements.

Unit-IV **10 Lectures**

Networking Technologies- Fiber Channel, ATM, Network Connectivity- Hubs, Bridges, Repeaters, Multiplexers, Internet Connectivity- Routers and Brouters, Gateways, CSUs and DSUs.

Unit-V **10 Lectures**

Various Server and Client hardware and softwares, Overview of Internet: Internet and TCP/IP, Internet addressing, Concepts of ISP, Concept of URL addresses, Hypertext Concepts and WWW, FTP, NNTP, Email, SMTP. Internet Security- Internet Security Issues, Embedded and Software based firewall, Data Encryption, Digital Signatures.

Text Book:

Computer Networks, 3rd edition, 1997, by A.S Tanenbaum. PHI.

Local Area Networks – 5th Edition, S.K. Basandra and S. Jaiswal.

Reference Book:

Data and Computer Communication, 1996, William Stallings, PHI

Data Communication and Networking 2nd edition by Behrouz A. Forouzan, at McGraw- Hill

Web Site:

www.wikipedia.org/wiki/**Computer**_network

www.amazon.com/**Computer**-**Networks**-Andrew-S-Tanenbaum/dp/0133499456

BCA V SEMESTER
PAPER IV
SUBJECT: PROGRAMMING WITH .NET

Duration: 3 Hours **Max: 100**
Min: 40

UNIT - I **10 Lectures**

Introduction to .NET,.NET Framework features & architecture ,CLR,,MSIL,Assemblies and class libraries. Introduction to visual studio.Net,IDE of VB.NET-Menu bar,Toolbar,Solution Explorer,Toolbox,Properties Window, Form Designer, Output Window, Object browser. **Overview of c#:** A simple C# program, namespaces, Command line argument, main with a class, providing interactive input, multiple main methods, program structure. **Literal,Variables Data Type** ,value types,reference type,scope of variable boxing and unboxing. **Operators and expressions**: type conversion, operator precedence and associativity**.**

UNIT–II **10 Lectures**

Decision making and branching: if, simple if ,if-else ,Nesting of if-else ,else if ladder, switch statement,while, do for, for each statements, jumps in loops**. Methods in C#**: pass by value,reference,methods overloading**. Handling arrays, Manipulating strings**: string methods,creating,inserting,comparing strings, finding substrings, mutable and arrays of strings. **Classes and objects :** basic principles of OOPS,defining a class, adding variables and methods,constructor,overloaded constructors, static members,destructors,this reference, nesting of classes

.

UNIT –III **10 Lectures**

Inheritance and polymorphism: classical, containment inheritance, defining a subclass, visibility control, defining subclass constructors,multilevel,hierarchical inheritance, overriding methods,hiding methods,abstract class, methods,polymorphism**.Interface**:Defining,extending implementing**.Delegates and events:** Declaration,methods,instantiation,invocation,using delegates.**Managing errors and exceptions:** types of errors,exceptions,multiple catch statement,exception hierarchy, finally,nested try block.

UNIT–IV **10 Lectures**

Overview of Window forms,adding forms**,**properties,overview of container, controls(group box,panel,flow layout panel,table layout panel,tab control)command and display control,list & display control,picture and image display,menus,context menu.MDI and SDI form.

UNIT–V **10 Lectures**

Database programming with ADO.NET – Overview of ADO, ADO.NET, Accessing.CreatingConnection, Command,Data Adapter and Data Set with OLEDB andSQLDB.Display Data on data bound controls, display data on data grid. Generate Reports Using CrystalReportViewer.

Text Books:

VB.NET Programming Black Book by steven holzner –dreamtechpublications.

Reference Books:

Mastering VB.NETby Evangelos petroutsos-BPB publications.
Introduction to .NET framework-Worx publication.msdn.microsoft.com/net/.

Websites:

www.gotdotnet.com

Scheme of Practical Examination

Time 3 hrs.	**MM- 100**
Practical / (Mini Project)	50
Record Book	15
Viva Voce	20
Observation copy	15

5BCA6

List of Practical: Linux and Web Page Programming -

1) Programs using string functions
2) Programs using control statements
3) Programs using conditional statements
4) Programs to implement the utility of 1D and M D Array.
5) PHP functions
6) Forms and user inputs
7) Database connectivity to PHP Forms.
8) Administrative commands of LINUX OS.

5BCA7

List of Practical: Programming with .Net :-

9. Create a password form.
10. Create a MDI and SDI environment
11. Create a calculator
12. Working with list box, combo box
13. Working with list view and tree view
14. Working with bounded controls
15. Working with image controls
16. Working with database
17. Working with crystal report.
18. Displaying data in data grid.

Semester VI
Paper I: 6MSC
Subject: Major Project

Semester	Major Project	Maximum Marks/Paper

VI	**Valuation**
	• **Synopsis**
	  • Need & Objective
	  • Database Used
	  • Environment
	  • Outline of Project
	• **Project Report**
	• **Mid sem assessment 1**
	2
	• **Presentation**
		
		100
		
		100
		50
		50
		100

	Viva Voce	**100**
	Total	**500**