

Semester – I

Code No.	Name of the Paper	Marks (Theory + CCE)
FC	Hindi	35+15
FC	English	35+15
FC	Development of Entrepreneurship	35+15
FC	Udiyamita vikas	35+15
BCA 101	Computer Fundamentals	35+15
BCA 102	PC Software	35+15
BCA 103	Digital Computer Electronics	35+15
BAC 104	Communication & Mgt.	35+15
BCA 105	Dos & MS Office (Practical + Viva)	25+25
BCA 106	Project (internal Assessment)	50

Semester – II

Code No.	Name of the Paper	Marks (Theory + CCE)
FC	Paper - I Hindi	35+15
	Paper – II English Language	35+15
	Paper –III Development of Entrepreneurship	35+15
	Paper – III Udiyamita Vikas	35+15
BCA (201)	Business Mathematics	35+15
BCA (202)	Desktop Publishing	35+15
BCA (203)	Programming in 'C'	35+15
BCA (204)	Management Accounting	35+15
BCA 205	PageMaker, C Programming (Practical + Viva)	25+25
BCA 206	Project (internal Assessment)	50

Semester – III

Code No.	Name of the Paper	Marks (Theory + CCE)
FC	as applicable in other courses	
BCA 301	Object Oriented Programming using C++	35+15
BCA 302	Database Management and Design	35+15
BCA 303	Organizational Behavior	35+15
BCA 304	Operating System	35+15
BCA 305	C++ Programming, MS Access/ VF/ Oracle/SQL	25+25
BCA 306	Project (internal Assessment)	50

Semester – IV

Code No.	Name of the Paper	Marks (Theory + CCE)
FC	as applicable in other courses	
BCA 401	Data Structure & Algorithms	35+15
BCA 402	Computer Oriented Numerical Methods	35+15
BCA 403	Systems Analysis and Design	35+15
BCA 404	Web Design	35+15
BCA 405	Implementation of Numerical Methods in C++, Data Structure Implementation, HTML, XML (Practical + Viva)	25+25
BCA 406	Project (internal Assessment)	50

Semester – V

Code No.	Name of the Paper	Marks (Theory + CCE)
BCA 501	Data Communication & Network	35+15
BCA 502	VB	35+15
BCA 503	Marketing Management	35+15
BCA 504	MIS	35+15
BCA 505	Practical(VB)	50

Code No.	Paper	Mark (Theory + CCE)
BCA601	Internet Technology & Security	35 + 15
BCA602	Software Engineering	35 + 15
BCA603	.Net Technology	35 + 15
BCA604	Java	35 + 15

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester I

Paper code: BCA 101

COMPUTER FUNDAMENTALS

Max Marks: 35

UNIT I

INTRODUCTION OF COMPUTERS: computer System, System characteristics and capabilities, Types of Computers Analog, Digital(Micro, Mini, Mainframe & Super Computers), Generation Of computer.

UNIT II

COMPUTER ORGANISATION : Block Diagram of Computer and its functional units.

INPUT DEVICES – Keyboard, Scanner, Mouse, Light Pen, Bar Code Reader, OMR, OCR, MICR, Track Ball, Joystick, Touch Screen etc.

OUTPUT DEVICES: Monitors – Classification of Monitors based on technology (CRT Monitor & Flat Panel LCD Monitor), Printers – Dot Matrix Printer, Laser Printer and Plotters, Types of Plotters- Drum Plotter and Flat Bed Plotters, LCD Projectors.

STORAGE DEVICES : Magnetic tapes, Floppy disks, Hard Disks, Compact Disk – CD-ROM, CD-RW, VCD, DVD, DVD-RW.

UNIT –III

PROGAMMING LAGUAGES : History, Classifications- Low Level, Assembly & High Level languages, Advantages & Disadvantages Programming Languages.

UNIT-IV

TYPES OF SOFTWARE : System Software – Translator (Compilers, Interpreters, Assemblers), Operating System, Linkers, Libraries & Utilities, Application Software – Packaged & Tailored Soft wares.

OPERATING SYSTEMS : Introduction, Types of O.S. – Single User, Multi User – Multi Programming, Multi Tasking , Real Time, Time Sharing, Batch Processing, Parallel Processing, Distributed Processing.

UNIT-V

PROGRAM PLANNING : Purpose of Program Planning, Step in Program Development, Characteristics of a Good Program. Algorithms, Flow Charts through examples.

TEXT BOOK :

1. COMPUTER FUNDAMENTALS By P.K. SINHA.
2. OPERATING SYSTEM BY Peterson.

Reference Books:

1. EASY APPROACH TO COMPUTER COURCE BYG.K. IYER
2. COMPUTE TODAY BY S.K. BASANDRA
3. OPERATING SYSTEM BY Godbole
4. 'O' LEVEL PROGRAMMING CONCEPTS & SYSTEM BY V.K. JAIN

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester I

Paper code: BCA 101

PC SOFTWARE

Max Marks: 35

UNIT I

Microsoft Disk Operating System : Introduction, History and versions of DOS, Fundamentals of DOS, Booting Process, Internal DOS Commands, Files & directories, Elementary External DOS Commands: Scan disc, Format, Disk Copy, Tree, Del tree, Fdisk More, Edit, Mem, Creating Batch Files.

Introduction to Windows: Control panel & Accessories.

UNIT II

Introduction to Word Processing (MS Word) : Advantage of word Processing, Introduction and Installation, Editing a File, Using Paragraph Styles, Coping a block to another file, Newspaper Style Columns, Using Macro.

UNIT III

Advanced Word Processing: Headers and Footers, Finding Text, Setting Up Printers, Printing & its Formatting, Mail Merge And Other Applications, Mathematical Calculations.

UNIT IV

Introduction to Spreadsheet (Excel); Define and Advantages of Electronic Worksheet, Working on Spreadsheets, Range & related operations, Setting, Saving and retrieving Worksheet File, Inserting, Deleting, Copying & Moving of Data Cells, Inserting And Deleting Row & Columns, Erasing The Worksheet.

Print Preview of Worksheet, Page Margins, setting adding headers & footers before printing, removing grid lines from printout, printing the title rows.

UNIT V

Function & Other features: Classification And Usage of Various Built-In-Functions In Worksheet, Passwords, Protecting A Worksheet Or Range, Transferring Data To And From Non Worksheet Files, Database Handling, Creating, Naming & Executing Macros In Worksheet Using @ If To Make A Formula, Default Settings.

TEXT BOOK :

PC Software by R K Taxali, TMH

Reference Book :

1. Window Based Computer Courses By Gurvinder Singh & Rachhpal Singh.
2. MS-DOS INTERACTIVE COURSE BY GREG PERRY, TECHMEDIA.
3. UNDERSTANDING COMPUTER FUNDAMENTALS & DOS BY G..K.IYER.
4. WINDOWS MANUAL.

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester I

Paper code: BCA 103

DIGITAL COMPUTER ELECTRONICS

Max Marks: 35

UNIT I

Representation of information, Number System: Binary, Octal, Hexadecimal, Conversion from one base to another base, Binary Arithmetic, Unsigned binary number, signed magnitude number, 2's complement representation, 2's complement arithmetic, ASCII Code, BCD Code, EBCDIC Code, Excess-3 Code and gray Code.'

UNIT II

Basic Logic Designs: Logic gates – AND, OR, NOT, NOR, NAND, XOR gates and their Truth Tables, Boolean algebras, Minimization techniques, Karnaugh map, SOP and POS forms, Combinational circuit design with gate: multiplexers & demultiplexers, Encode-Decoder, Adders and Subtractors, Flip flops : RS, JK, Master slave flip flops, Introduction to counters and registers.

UNIT III

Memory : Memory cell, Primary memory – RAM, ROM, PROM, EPROM, EEPROM, Cache memory, Secondary Memory and Its types, Introduction to Physical memory and Virtual Memory, memory accessing methods : serial and random access.

UNIT IV

Buses, Word length of a computer, Processing speed of a computer, Microprocessor, User Interface, Hardware, Software and firmware concept, General architecture of CPU, Instruction Format, Data transfer instructions, Program control instructions.
Types of CPU organization: Accumulators based machine, Stack based machine and general purpose register based machine, addressing modes : Direct, indirect immediate, register and relative addressing modes.

UNIT V

Data transfer schemes : (1) Programmed data transfer synchronous and interrupt driven data transfer scheme, (2) Direct memory access data transfer.

TEXT BOOKS:-

1. Digital Principles and applications by *Malvino & Leach*
2. Computer fundamental and Architecture by *B. Ram*

Reference Book:

1. Computer System Architecture by *M.Morris Mano*
2. Digital Computer Electronics by *Malvino & Brown*
3. Digital Computer Fundamentals by *Bartee*.

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester I

Paper code: BCA 104

COMMUNICATIONS MANAGEMENT

Max Marks: 35

UNIT I

Introduction: communication –Definition, Nature, Objectives, Importance to Managers, Communication Theories and Processes. Symbiotic Interactions, Information Theory, Transaction Theory, Element of Communication. Importance of feedback.

UNIT II

Dimension of Communication & Directions of Communication,, media/ Means of Communication –Verbal (oral & written), Non-verbal Oral Communication, Effecting Listening, Principles of Effective Communication.

UNIT III

Non –Verbal Communication –Gesticulation, sign language / Visual and audio elements, Channels of Communication –Formal, Informal / Grapevine, Barriers to communication, Oral Business Communication –Speeches, Interviews, Group Discussion, Conference.

UNIT IV

Written Business Communication-Concept , Advantages, Disadvantages and Importance, Need of business letters, Kinds of business letters, Writing skills, Essentials of an effective business letter, structure of a business letter , Enquiries, Replies, Orders, Credit and Reference letters, Supply letters, Dunning letters, Sales letters, circular letters.

UNIT V

Drafting-Official letters, D.O. letters, application for jobs. Report Writing –Importance of reports, Types of Business Reports, Chairman’s Speech , Report of Committees .Modern Forms of Communication- fax, E-Mail, Video Conferencing, (International Communication Adapting to Global business).

TEXT BOOKS:-

1. Business Communication - Sahitya Bhawan Publication.
2. Business Communication by Virendra Kumar.
3. Business Communication & Organization Management by Rohini Agalwal.

SEMESTER 2

www.civildia.org

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester II

Paper code: BCA 201

BUSSINESS MATHAMETICS

Max Marks: 35

UNIT I

Trigonometry: Angles & their Management, Values of Trigonometric Ratios and Graphical Representations, Height and Distances.

Unit II

Theory of Indices, Definition & Types of Matrices, Special Matrices, Elementary Transformation of Matrices, Sparse Matrices.

Unit III

Frequency Distribution, Histogram, Measure of central Tendency, Mean, Mode, Median, Standard Deviation.

Unit IV

Determine and Matrices, Special Matrices, Inverse of a Matrix.
Ratio and Proportion, Percentage, Commission & Brokerage, Discount, Profit & Loss.

Unit V

Limits & Continuity, Limits of Function, Infinite Limits, Limits at Infinity, Continuous Function, Differentiation of 1st and 2nd order, Integration –finite, infinite, addition, subtractions & multiplication.

Text Books:

1. Business Mathematics BY *S.M.SHUKLA*.
2. Fundamentals of Statistics BY *ELHANCE & ELHANCE*.

References Books:

1. Mathematical Statistics BY H.S. SHARMA.
2. Differential & Integral Calculus BY RAY & SETH.
3. Matrices BY RAY & SETH.

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester II

Paper code: BCA 202

DESK TOP PUBLISHING

Max Marks: 35

UNIT I

Why Graphics? Various Types of Graphics Programs. Drafting Packages, DTP Package, Microsoft Windows. Various Documentation cum DTP Package e.g. Word Perfect, Microsoft Word Etc.

Unit II

Introduction To PageMaker / Ventura or a similar Package. Preparation of Document using DTP Package.

Unit III

Text Formatting, Different Page Layouts, Printing Various Fonts And Characters Sets. Various Type of Printers used in DTP.

Unit IV

Introduction to Commercial DTP System available in Market, Indian Language Fonts, Creation of Indian Language Fonts.

Unit V

Import & Export of Documents created by other Word Processors, Spelling Check, Designing exercise like Visiting Card, Greeting Cards etc.

Text Books:

1. Desktop Publishing on PC by MC Shrama, BPB Publication.
2. PAGEMAKER 6 BY BPB PUBLICAITONS.

Reference Books :

1. PAGEMAKER – MANUAL
2. 'O' LEVEL MODULE M3.2 DESKTOP PUBLISHING & PRESENTATION GRAPHICS BY V K JAIN, BPB PUBLICATIONS.

Barkatullah Vishwavidyalaya, Bhopal
BCA Faculty 2012 onwards
Semester II

Paper code: BCA 203

PROGRAMMING IN 'C'

Max Marks: 35

UNIT I

Program Logic development Using algorithm and Flowchart, Historical development of 'C', constants, variables and keywords, 'C' instructions.

Data types – int, float, double, char, void, short, long, long double, signed, unsigned.

Unit II

Decision control structure :- if statement, if-else statement, the conditional operators. Case control structure:- switch statement, goto statement.

'C' operators: Arithmetic, relational and logical.

Development of 'C' program using Decision control & Case control structure.

Unit III

Operators :- Increment and Decrement operators, bitwise operator, operator precedence, Arithmetic and logical expressions evolution.

Loop control structure :- for loop, while loop and do-while ,break statement ,continue Statement.

Development of c program using loops.

Unit - iv

Arrays : one dimension array, 2d array,3d array ,introduction to pointers.

Function : function declaration and prototype ,passing values between functions :- call by value

Development of c program using array , function.

Unit – v

Storage Classes in 'C', structures:- declaring a structure, accessing structure element, how structure elements are stored, array of structures, union.

Text Books:

1. Let US C by Yashwant Kanitkar
2. Programming in C by E. Balaguruswami

Reference Books:

- 1 Schaum's Series 'C' Programming
- 2 The complete reference in C\C++ Herbert Shield
- 3 Working with C by Yashwant Kanitkar

Barkatullah vishwavidyalaya, Bhopal
Bca faculty 2012 onwards
Semester II

Paper code: bca 204

Management accounting

Max Marks: 35

Unit -I

Introduction and Purpose of Accounting and Uses of Accounting information, Basic Accounting Concepts, Accounting Structure, Process of Accounting , Journal ,Ledger and Trial Balance Based on Double Entry Book - Keeping.

Unit - II

Valuation of Assets and Depreciation Method : Straight Line Method , Diminishing Balance Method , Sinking Fund Method , Insurance Method and Aunty Method.

Unit - III

Practical System of Accounting : Cash Book , Sales and Purchase of Good, Bills of Exchange, Bank Reconciliation Statement.

Unit –IV

Preparation of Financial Statement : Income Statement (Profit & Loss Account), Statement of Financial Position (Balance Sheet) and Adjustment.

Unit – V

Analysis of Financial Statements – Financial Ratio.

Reference books :

1 Management Accounting by *Hingorani, Grewal.*

2 Financial Management by *Khan and Jain.*

3 Management Accounting by *Shashi K Gupta* Publication.

4 Financial accounting by *dr S M shukla, Sahitya bBavan* Publication.

SEMESTER 3

www.cindia.org

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2001-12 onwards

BCA Semester III

Code No	Name of the Paper	Marks(Theory + CCE)
FC	As applicable in other courses	
BCA301	Object Oriented Programming using C++	35+15
BCA302	Database Management and Design	35+15
BCA303	Organizational Behavior	35+15
BCA304	Operating System	35+15
BCA305	C++ Programming, MS Access/ VF/ Oracle/SQL (Practical + Viva)	25+25
BCA306	Project (Internal Assessment)	50

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

Paper Code: BCA301

OBJECT ORIENTED PROGRAMMING Using C++

Max Marks: 35

UNIT I

Principles of OOP, procedure oriented programming vs. object oriented programming, basic concepts, advantages, application of OOPs, object oriented languages.

Beginning with C++: What is C++, structure of C++ program, creating, compiling, linking & executing a C++ program, Tokens, expressions & control structures, keywords, identifiers, basic data types, user-defined data types, derived data types, symbolic constants, type compatibility, variable declaration, dynamic initialization of variables, reference variables.

UNIT II

Operators in C++: scope resolution operator, memory management operators, manipulators, type cast operators, operators, operator precedence, control structures.

Functions in C++: Main function, function prototyping, call by reference vs. call by value, inline functions, default arguments, const arguments, function overloading, friend functions.

Classes and objects: specifying a class, defining member functions, making an outside functions inline, private member function; array within a class, memory allocation for object; static data members, static member functions, array of objects, objects as function arguments, returning objects.

UNIT III

Constructors and Destructors: Constructors, Parametric Constructors, Multiple Constructors in a class, constructors with default arguments. Dynamic initialization of objects, copy constructors, dynamic constructors, destructors.

Operator Overloading & Type Conversions: Definition of Overloading, & Operator Overloading, rules for Overloading Operators, Overloading Unary Operators, Binary Operators, Binary Operators using Friends.

UNIT IV

Inheritance: defining derived classes, single inheritance, multilevel inheritance, multiple inheritance, hierarchical inheritance, hybrid inheritance, virtual base class, abstract classes, constructors in derived classes, member class, nesting of class.

UNIT V

Pointers, virtual functions and polymorphism, pointers to objects, this pointer, pointers to derived class, pure virtual functions, exception handling in C++, managing console I/O operations, working with files :open, close, basic read-write operations on files .

TEXT BOOKS :

1. Object Oriented Programming with C++ by E Balagurusamy.

REFERENCE BOOKS :

1. Programming in C++ by Robert Lafore
2. C++ - The complete Reference – by Herbert Schildt (TMH)
3. Programming with C++, Schaum Series
4. OOP's concepts – by David Parsson.

Barkatullah University, Bhopal

Semester-Wise Scheme for BCA

Session 2011-12 onwards

Paper Code: BCA302

Semester III

Database Management and Design

Max Marks: 35

UNIT 1

Basic Concepts of Data File system, its advantages and disadvantages.

Concepts of DBMS: Data, Information, Database, Components of DBMS, Architecture of a database system – Physical, Conceptual and User level, Data Independence – Logical and Physical, DBMS terminology, Data Dictionary. **Database Models:** Network, Hierarchical and Relational Models, Features and Comparison of the three models. Concepts of Multitier Architecture in databases, Brief idea about the new concepts like distributed databases, parallel databases, mobile databases, temporal databases, spatial databases, geographic databases, data warehousing & data mining.

UNIT 2

RDBMS: Definition, Components, Terminology, Difference with DBMS. ER-Model, ER-Diagram, ER-concepts, types of relationships. Codd's 12 rules, **Normalization:** Introduction, concepts associated with normalization, key terminology: primary, candidate, foreign, alternate keys. Steps involved in normalization, 1st, 2nd, 3rd, 4th normal forms, BCNF, 5th normal form.

UNIT 3

Idea about Generalization, Aggregation, Specialization.

Relational Algebra: Formal Definition, Fundamental Operations – select, project, union, set, difference, Cartesian product & rename, additional operations & extended operations. Concept of SQL sublanguages – DDL, DML, DCL, TCL, SCL etc., Embedded SQL. **Interactive SQL:** Invoking sql*plus. Oracle data types, two dimensional matrix creation, Modifying the structure of tables, dropping tables.

UNIT 4

DML commands: Insertion, updation, deletion operations, many faces of select command, data constraints, logical operators, range searching, pattern matching, oracle functions, use of Alias, grouping data from tables, manipulating dates in sql, joins, Sub-queries, indexes, views, sequences, roles, synonyms, use of savepoint, rollback, commit commands, creating user accounts, granting permissions, revoking permissions. Concept of importing and exporting database files.

UNIT 5

SQL: Introduction, the SQL execution environment, the SQL syntax, block structure – declarative part, executable part, exception handling part, variable declaration using %type, %rowtype, if statements, looping structures, oracle transactions, cursors & its types, cursor attributes, nesting of cursors, parameterized cursors, error handling in SQL, locks.

TEXT BOOKS:

1. Database System Concepts – by Silberschatz, Korth, Sudarshan (Mc Graw Hill).
2. An Introduction to Database Systems – by Bipin Desai.
3. SQL, PL/SQL – The Programming language of Oracle – by Ivan Bayross (BPB).

REFERENCE BOOKS:

1. Introduction to Database Systems by C J Date (Pearsons Education).
2. SQL/PLSQL for Oracle by P.S.Deshpande (AWI).
3. ORACLE – The Complete Reference by Oracle Press (TMH).

Barkatullah University, Bhopal

**Semester-Wise Scheme for BCA
Session 2011-12 onwards**

Paper Code: BCA 303

Semester III

ORGANISATIONAL BEHAVIOUR

Max Marks: 35

UNIT I

What is Psychology? Whom does the Psychologist observe? What does Psychologist observe? Where does the Psychologist observe?

UNIT II

Sensation & Perception, Feelings and Emotions, Learning and Thinking.(in so far as they are applicable to Industry), Personality, Definition & Theories, Assessing Personality.

UNIT III

An Overview of Transactional Analysis as a Tool for Measuring One's Own Awareness and of helping Interpersonal Relationship in an Organisation.

Theories of Organisation, Contingency Model and other Models of Organisation, Theories of Motivation. – Abraham Maslow, Herzerberg Mecleland.

UNIT IV

Group Dynamics, Structure, Process, Values of Groups, Role and Stature.
Theories of Leadership, Identifying Leadership Potential.

UNIT V

Communication: Process, Methods, Barriers and Usefulness.

TEXT & REFERENCE BOOKS:

1. Organizational Behavior – by Robbins.
2. Organizational Behavior – by Luthans.
3. Organizational Behavior – by Sashi Gupta & Rozy Joshi.

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

Paper Code: BCA304

Semester III

OPERATING SYSTEM

Max Marks: 35

UNIT I

Operating System Definitions, its Components, Evolution of Operating System, types of operating systems: batch, multiprogrammed, multitasking, desktop, multiprocessor, real-time, client-server, peer-to-peer, distributed, clustered and handheld. Operating system services, dual-mode operation, protection of I/O, memory and CPU. Non-virtual and virtual machines.

UNIT II

Process Scheduling: concept of a process, process states, PCB, Process state transitions, operations on processes, context switch, types of schedulers, CPU scheduling concept, CPU Scheduler, CPU-I/O burst cycle, dispatcher, scheduling criteria, scheduling algorithms – FCFS, SJF, STRN, Round Robin, priority, multilevel queue and event driven (i.e., pre-emptive priority) scheduling algorithms, Performance evaluation of algorithms through deterministic modeling.

UNIT III

Memory Management Concepts: Address Binding, logical and physical address space, dynamic loading etc., Contiguous allocation methods – static & dynamic partitioned memory allocation. Concepts of fragmentation, swapping, relocation, compaction, protection, sharing. Segmentation.

Non-contiguous allocation methods – Paging: basic principle of operation, h/w support for paging, protection and sharing. Virtual memory: concept of demand paging, Page fault, page replacement algorithms – FIFO, LRU, OPT. Thrashing, Concept of Page fault frequency, prepaging, decision about minimum number of frames, page size etc.,

UNIT IV

File system implementation, Responsibilities of file management system, directory implementation as linear list/hash table, directory structure, disk organization, disk controller and driver, disk space management – contiguous allocation, non contiguous allocation – chaining and indexing, disk address translation. Idea about disk caching, disk mirroring. Disk scheduling algorithms. Disk management.

UNIT V

Device Management: I/O hardware, Techniques for device management. Dedicated devices, shared devices, virtual peripherals. Security & protection: Security threats and goals, penetration attempts, Security policies and mechanism, authentication, protection and access control. Interprocess communication, need for interprocess synchronization. Deadlocks – definition, avoidance, detection, prevention and recovery.

TEXT BOOK:

1. Operating System Concepts – by Silberschatz, Galvin and Gagne.

REFERENCE BOOKS:

1. Operating System Concepts and Design – by Milenkovic
2. Operating System – by Tanenbaum.
3. Operating System – by Peterson.

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

BCA Semester IV

Code No	Name of the Paper	Marks (Theory + CCE)
FC	As applicable in other courses	
BCA401	Data Structure & Algorithms	35+15
BCA402	Computer Oriented Numerical Methods	35+15
BCA403	Systems Analysis and Design	35+15
BCA404	Web Design	35+15
BCA405	Implementation of Numerical Methods in C++, Data Structure Implementation, HTML, XML (Practical + Viva)	25+25
BCA406	Project (External Assessment)	50

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

Paper Code: BCA401

Semester IV
DATA STRUCTURE & ALGORITHMS

Max Marks: 35

Unit I

Definition of Data Structure, its types, Basic operations in Data Structures.

Array – its representation, Operations on arrays, address calculation of single and multi dimensional arrays in memory, Applications of arrays.

Unit II

Stack: Representation of Stacks, operations on Stacks, infix and postfix notations, postfix expression evaluation, application of Stacks.

Queues: Representation of queues, operations on queues, circular queue, Dequeue, Priority Queue, Applications of queues.

Unit III

Linked list: Single Linked List – description & operations, Doubly Linked List – description & operations, Linked implementation of Stacks and queues, Header linked list.

Unit IV

Trees: Basic terminology, binary tree, binary search tree, Operations on binary tree: Insertion & Deletion algorithms.

Traversal of binary trees: Inorder, Preorder & Post order.

Unit V

Searching: Linear Search, Binary Search.

Sorting: Selection Sort, Bubble Sort - method & its algorithm, Quick Sort, Merge Sort.

Graphs: Related Concepts and its representations. Graph Traversal Schemes: Depth first search, Breadth first search.

TEXT BOOKS:

1. Data Structure by Schaum Series.
2. Data Structure by Tanenbaum.

REFERENCE BOOK:

1. Data Structure by Sartaj Sahani.
2. Data Structure using C++ by Yashwant Kanetkar.

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

Paper Code: BCA402

Semester IV
COMPUTER ORIENTED NUMERICAL METHODS

Max Marks: 35

UNIT I

Solutions of Algebraic, Transcendental & Simultaneous Algebraic Equations.

Introduction to Algebraic & Transcendental Equations, Newton-Raphson method, Regula-Falsi method, Successive Bisection method, Secant method, Comparison of Regula-Falsi method with Bisection method, Gauss Elimination method, Gause-Seidal method, Gauss Jordan method, Concept of Pivoting.

UNIT II

Interpolation & Extrapolation: Newton's Interpolation formulae, Newton's forward difference & Backward difference formula, Lagrange's Interpolation formula, Newton's divided-difference interpolation, Sterling's and Bessel's Central difference formula.

UNIT III

Numerical Integration & Differentiation: Introduction, Newton's Cotes formulae, Trapezoidal rule, Simpson's rule, Weddle's rule.

UNIT IV

Solution of ordinary Differential & Integral Methods: Euler's, Picard's and Taylor's series methods. Modified Euler method, Picard's method for successive approximation, method of successive differentiation, Runge-kutta second & forth order methods.

UNIT V

Correlation & Regression: Karl Pearson's Coefficient of Correlation, Rank Coefficient of Correlation, Partial & Multiple Correlation, Lines of Regression, Coefficient of Regression.

TEXT BOOKS:

1. Computer Oriented Numerical Methods by Rajaraman.
2. Mathematical Statistics by Ray & Harswarup Sharma.
3. Numerical Analysis by Prahlad Tiwari.

REFERENCES BOOKS:

1. Method of Numerical Methods by Shastri.
2. Computer Based Numerical Algorithms by Krishnamurthy.
3. Computer Oriented Numerical Methods by Salvadori.
4. Numerical Methods by H C Agarwal.
5. Fundamentals of Mathematical Statistics by Gupta & Kapoor.

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA

Session 2011-12 onwards

Paper Code: BCA403

Semester IV

SYSTEM ANALYSIS & DESIGN

Max Marks: 35

Unit I

Overview of System Analysis & Design – Definition, Characteristics, System Concepts, Elements and Types. System Development Life Cycle – Impetus for change, Steps involved in SDLC, People involved in SDLC. Initial Investigation – Background Analysis, Fact finding techniques, tools for Information gathering, types of interviews and questionnaires.

Unit II

Structured Analysis – Definition, tools for structured analysis. Feasibility Study – Definition, Considerations – Technical, Economic, Behavioral & Political, Steps in Feasibility Study, Feasibility Report. Cost Benefit Analysis (CBA) – Categories – Hardware, Personnel, Facility, Operating and Supply Costs, Procedure for CBA Determination.

Unit III

System Design – Definition, Process of Design, Structured Design, Elements of Functional Decomposition – Module, Connection and Coupling, HIPO and IPO Charts, Major development activities of Design Stage, Data Validation, Audit Trail. System Testing – Why Testing?, Factors considered for testing, Test Data & Test Plan, Phases of Testing, Types of System Tests.

Unit IV

Quality Assurance – Definition, Goals in System Life Cycle, Levels of Quality Assurance, Trends in Testing. Implementation – Conversion, Stages of Conversion, Combating resistance to change, Post Implementation Review, Review Plan. Software Maintenance – Maintenance/Enhancement, Activities of a Maintenance procedure, reducing maintenance costs.

Unit V

System Security – Data Security, Threats to System Security, Risk Analysis, Control Measures, System Audit, Protection Against VIRUS. Hardware and Software Selection – Hardware/Software Suppliers, Procedure for Hardware/Software Selection, Major Phases in Selection, Types of Software, Attributes of Software, Criteria for Software Selection, Evaluation Process, Financial Consideration in Selection – Rental, Lease, Purchase options.

TEXT BOOKS:

1. System Analysis and Design - by Elias M Awad.
2. System Analysis & Design – by V K Jain, *Dreamtech Press*.
3. System Analysis & Design – by Theoroff.

REFERENCE BOOKS:

1. Computers Today – by Suresh K Basandra.
2. Modern System Analysis & Design – by A Hoffer, F George, S Valaciah, *Low Price Edn. Pearson Education*.
3. Information Technology & Computer Applications – by V.K.Kapoor, *Sultan Chand & Sons, New Delhi*.
4. Introduction to Systems Analysis and Design – by Lee.

Barkatullah University, Bhopal
Semester-Wise Scheme for BCA
Session 2011-12 onwards

Paper Code: BCA404

Semester IV

WEB DESIGN

Max Marks: 35

Unit I

Introduction to Internet & World Wide Web , Internet Addressing , Browsers, URL, Web Server, Web Site, Homepage, Domain Names – Basic concepts. Facilities available over the Internet - email, www, ftp, telnet, usenet, blog, faq, chat. Components of Internet - client/server, modem, cable, modem, backbone, router, IP addresses, address classes, DNS names, subnet, UDP & TCP, Uses of Internet. Introduction to HTML – HTML Overview, Structure of HTML documents, Types of Documents, HTML Elements and Attributes.

Unit II

Basic Formatting of HTML documents layout – Font, Lists, Paragraph, Break Rule, Horizontal Rule, Colors, Backgrounds, text elements, <PRE>, etc., Links in html – anchor element and its attributes, images and anchors, using META information. HTML Media Types – media like element <MARQUEE>, Audio & Video support in Web browsers.

Unit III

Advanced Layout: Tables, Frames, Layers.

Tables – layout, elements and attributes, ROWSPAN, COLSPAN. BFrames – using frames, layout of frames, problems using frames.

Layers – Concept of layers, Positioned and Inflow Layers.

Unit IV

Style Sheets – Basic Concept of Style sheet, using style sheet, Cascading Style sheets(css), using style sheets - basics and properties , positioning with style sheets.

Basic Interactivity in html: Forms – Concept of Forms, <FORM> element, attributes, Controls used for forms, examples of form design.

Unit V

Advanced Features in HTML: Scripting, DHTML & XML, Web Publishing – Concepts. Scripting – purpose of scripting, specifying scripts & designing events. DHTML: Overview of DHTML and Document Object Model, html & scripting access, rollover buttons. XML: Basic XML structure, ways to use XML, rewriting html as xml.

TEXT BOOKS:

1. The Complete Reference to HTML – by Thomas A Powell, *TMH, II Edition.*
2. Using HTML – by Lee Anne Phillips, *PHI*

REFERENCE BOOKS:

1. Learning Computer Fundamentals, MS Office & Internet & Web Technology – by Dinesh Maidasani, *Firewall Media.*
2. Introductions to Internet & Java – by Kiran Nayar, Sukhjeet Kaur, *Kalyani Publishers.*

BARKATULLAH UNIVERSITY BHOPAL
Semester – Wise Scheme for BCA Semester V
Session 2011-12 onwards
BCA
Semester V

Code No.	Paper	Marks (Theory + CCE)
BCA501	Data Communication & Network	35 + 15
BCA502	VB	35 + 15
BCA503	Marketing Management	35 + 15
BCA504	MIS	35 + 15
Practical		
BCA505	VB	50

BARKATULLAH UNIVERSITY BHOPAL
Semester – Wise Scheme for BCA Semester V
Session **2011-12** onwards

Paper-I

Data Communication and Networking

MM : 35

- Unit-I** Definition and concept of networking, evolution of Network Technology, Standards and protocol, Types of networking- LAN,WAN, MAN, features and Components of LAN,WAN, MAN with difference, Internetworking, Network Topologies, Different Transmission Media, Transmission Mode, Introduction to Analog signal, Digital signal, Modulation and Demodulation.
- Unit-II** OSI Reference Model-Layered architecture, function of each layer, protocol used, Switching- message, packet, circuit, Multiplexing, SONET, Cellular network, satellite network, IEEE 802 STANDARDS-CSMA/CD, TOKAEN BUS, TOKEN RING, Physical components of network- Hub, Bridge, Repeaters, Gateway, Routers, Adapters, Brouters.
- Unit-III** TCP/IP- Overview, Architecture, functions of each layer and protocol, IP addressing, subnet and subnet mask, IP addressing-classes, IP,IPVV, Bootstrap protocol, DHCP, mobile IP, DNS, Telenet, Internet routing protocol.
- Unit-IV** ATM network, BISDN reference model, ATM signaling, PNNI routing, classical IP over ATM, IP forwarding architecture, integrated services in internet, RSVP, differentiated services, network interconnection model, MPLS, ATM applications.
- Unit-V** Cryptography, Cryptography algorithms, security protocol, DATA security over LAN, Levels of security, Virus and worms related threats, nature of virus, malicious program, Introduction to Firewall, Wi-Fi, Bluetooth, Infrared.

Reference:-

Agrawalr/ Tiwaribb Data Communication and Computer Network, IE, Vikas

Forouzan Data Communication - TMG

Stallings Data and Computer Communication Pearson

Bhatia S.S, Sharma Yogesh , Computer Network and Data Communication KALYANI

BARKATULLAH UNIVERSITY BHOPAL
SEMESTER – WISE SCHEME FOR BCA SEMESTER V
SESSION **2011-12** ONWARDS
PAPER-II
VISUAL BASIC

MM : 35

- Unit-I** Introduction to Visual BASIC, VB Environment- User Interface screen, Forms, Project Explorer, Properties, Code Window, VB Menu options, Tool Bar, adding components to tool bar. VB Controls: Text Box, Label, Frames, Option Buttons, Check Box, Line, Command Button, Image, Picture Box, Data Types, Variable declarations, Constants, Scope of Variables, VB files, Naming Conventions, Default property for each VB control. Operators – logical, relational, mathematical operators. Statements- simple, using while & until in Do-Loop structure.
- Unit-II** Using MsgBox and Input Box statement and functions, Input Validation, Writing Events-adding & calling forms in a project, calling Event Procedures, Debugging VB Projects, using Common Dialog Box, Writing Procedures – subroutines & functions and its calling methods, using multiple forms, using standard code modules. Using An About Box and Splash Screen, using Sub Main for Startup, using List Boxes and Combo Boxes, creating and using Menus, using String Function, Control Arrays, Case Structure. Arrays – Single and Multi dimensional arrays, User Defined Data Types.
- Unit-III** Handling Data Files- Sequential file Organisation, Trapping Program Errors, Sequential Data Files. Accessing Database files – Data Bound Control (DAO & ADO) objects, Navigating Database in Code, Updating database file, Preventing Errors. Advanced Data Handling – using Grids, Validation, setting a recordset, repositioning the records, finding & filtering recordset, using SQL in recordset. Various methods of using SQL as Recordsource and changing at runtime. Date Report Designer – creating Data Environment and linking to Data Report.
- Unit-IV** Introduction to SQL: Components of SQL, DDL, DML, Query Language, DCL, TCL, SCL etc. Invoking sql*plus. The oracle data types two dimensional matrix creation. Insertion, updation, deletion operations, the many faces of select command, creating tables using query, inserting data using query, modifying the structure of tables, renaming tables, dropping tables, dropping columns, logical operators, range searching, pattern matching, use of Alias, Oracle Functions. Accessing data from multiple tables. Set operations: Union, Intersect, Minus.
- Unit-V** Data Constraints: I/O constraints, Business rule constraints. Grouping data from tables. Joins: Equi-join Self-join, Sub-Queries. Views, Sequences, Synonyms, use of savepoint, rollback & commit commands, creating user accounts, granting permissions, revoking permission.

Refernece:-

Carnell - VB6 - From the Ground up - TMH

Deitel - VB 2005 - Hw to program - Reason

Stephons - VB 2012 Programmer's Reference - Wiley

Zok - VB 8 - Cengage

BARKATULLAH UNIVERSITY BHOPAL
SEMESTER – WISE SCHEME FOR BCA SEMESTER V
SESSION **2011-12** ONWARDS

PAPER-III

MARKETING MANAGEMENT

- Unit-I** Indian Markets:- Environment, Structure, Force and measurement: Introduction, market environment, market planning, marketing research and information system, Consumer behavior, organizational buying behavior, segmenting and targeting the market, market measurement and forecasting.
- Unit-II** Assembling marketing mix for Indian markets: Product management, new product decisions, brand equity, pricing decisions, promotion decision, advertising management, sales promotion, personal selling managing the sales force, managing the distribution function.
- Unit-III** Marketing strategy, marketing organization, marketing performance and control.
- Unit-IV** Global marketing, customer service, rural marketing.
- Unit-V** Cases in marketing management.
Case1: The Indian Television industry.
Case2: Hi-end audio products.
Case3: Pepsi-Killing safely.
Case4: Hi-Tech system distributors Ltd.
Case5: New Inductance product for women market.
Case6: Market opportunity for automotive gears in India.
Case7: Zen Microgrip tyres.
Case8: Marketing of milk-Amul.

BARKATULLAH UNIVERSITY BHOPAL
SEMESTER – WISE SCHEME FOR BCA
SEMESTER V
SESSION **2011-12** ONWARDS

PAPER-IV
MANAGEMENT INFORMATION SYSTEM

Unit-I Introduction: Overview role of IT, MIS trends etc. Personal Productivity Overviews, introduction data hardware components, O/S, applications, Solving problems: System approach, OO design, operations and transaction, database management who should control corporate data.

Unit-II Models and decision support biases EIS.

DECISION IN BUSINESS AREAS :

Accounting. finance,Marketing, HRM,Production & design, Geographic information system.

Unit-III Complex decision and artificial intelligence : DSS

DECISION SUPPORT SYSTEM

Importance of Decision support system, limitation,Characteristics of Decision Support Systems Decision Support and

Structure of Decisions Making

Decision Support and Repetitiveness of Decisions

Decision Support System Users

EXPERT SYSTEMS, SUPPORT FOR DECISION MAKING PHASES

Support for the Intelligence Phase, Support for the Design Phase

Support for the Choice Phase

Decision Support and Alternative Concepts of Decision Making

APPROACHES TO DEVELOPMENT OF DECISION SUPPORT SYSTEMS

Programming Language, Spreadsheet Processor ,Analysis Package, Model Generator,Model Base Management

SUMMARY OF A PLANNING SUPPORT SYSTEM

Models and Facilities Used in Planning Support ,Planning Software System

Database and Database Query Systems for Planning ,Advantages of a Planning Support System

SUMMARY OF A CONTROL SUPPORT SYSTEM

And AI. Strategic analysis.

Unit-IV Designing and maintaining information system, Organizing information system resource, information society and management.

Unit-V

Performance Evaluation and monitoring, Model building, simulation.

Quality control and Quality assurance, Scheduling, pricing.

REFERENCE:-

Bagchi Nirmalya Management Information System, Vikas

Jindal Aman,Management Information System KALYANI

Barkatullah University Bhopal
Semester – Wise Scheme for BCA Semester VI
Session 2011-12 onwards
BCA
Semester VI

Code No.	Paper	Mark (Theory + CCE)
BCA601	Internet Technology & Security	35 + 15
BCA602	Software Engineering	35 + 15
BCA603	.Net Technology	35 + 15
BCA604	Java	35 + 15
Practical		
BCA605	Java & .Net	50
Project (External Assessment)		50

Paper – I
Internet Technology & Security

Unit – I Conventional Encryption – Conventional Encryption: Conventional Encryption Model, Steganography, Classical Encryption Techniques, Simplified DES, Block Cipher Principles, The data Encryption Standard, The strength of DES, Differential and Linear Cryptanalysis, Block Cipher Design Principles, Block Cipher Modes of Operation, Conventional Encryption algorithms

Unit – II Public key encryption and hash function – Public key cryptography, principles of public key cryptosystems, The RSA algorithm, key management, Diffie Hellman Key Exchange, Elliptic Curve Cryptography Message Authentication and Hash Functions Authentication Requirements, Authentication Functions, Message Authentication Codes, Hash Functions, Security of Hash Functions.

Unit – III Hash And Mac Algorithms
Message Digest Algorithm, Security Hash Algorithm

Unit – IV Authentication Applications, IP Security, Web Security

Unit – V Intruders, Viruses and Worms Intruders, Viruses and Related Threats
Firewalls Firewall Design Principles, Trusted Systems.

Paper – II

Software Engineering

Unit – I The Software Problem, Software Engineering problem, Software Engineering approach – phased development process. Project management and matrices. Software processes – Processes, Projects, Components, Characteristics, Software Development process – Process step specification, waterfall model, prototyping, iterative enhancement, spiral model.

Unit – II Software Requirement Analysis and Specification – Software Requirements, Problem Analysis, Requirement Specification, Validation, Metrics.

Unit – III Planning a Software project – Cost Estimation, Project Scheduling, Staffing and personnel planning, Software Configuration management plans, Quality Assurance plans, Project Monitoring Plans, Risk Management.

Unit – IV Software Design Principles, Module level concepts, Design Notation and Specification Structural Design Methodology, Verification. Coding – Programming Practice, Verification and Metrics.

Unit – V Software Testing- Testing fundamentals, Functional testing Structural testing. Testing process. Software Quality Assurance (SQA) Approach. Software Configuration Management-Configuration Identification, Change Control, Status Accounting and Auditing.

References:-

Khurana Rohit Software Engineering I E, Vikas
Pressonan – Software Engg. – MGH

Paper – III

.Net Technology

UNIT – I What is .NET, overview of .NET framework and platform, Common Language Runtime, XML as the .NET “Meta Language”, overview of Visual Studio IDE, New Object capabilities in Visual Basic, Modern Language capabilities added to Visual Basic, fitting Visual Basic into framework.

UNIT – II Overview of ASP .NET framework, Understanding ASP .NET Controls, Applications Web servers installation of IIS. Web forms, web form controls – server controls, client controls, web forms & HTML Adding controls to a web form, Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box, etc Running a web Application, creating a multiform web project. Form Validation: Client side validation server Side validation, Validation Controls: Required Field Comparison Range. Calendar control, As rotator Control, Internet Explorer Control. State management – View state, Session state Application state.

UNIT – III Architecture of ADO.NET, Connected and Disconnected Database, Create Connection using ADO.NET Object Model, Connection Class, Command Class, Data Adapter Class, Dataset Class. Display data on data bound Controls and Data Grid. Database Accessing on web applications: Data Binding concept with web, creating data grid, Binding standard web server controls. Display data on web form using Data bound controls.

UNIT – VI Writing datasets to XML, Reading datasets with XML. Web services: Introduction remote method call using XML, SOAP, web service description language, building & consuming a web service, web Application deployment.

UNIT – V Overview of C#, C# and .NET, similarities & differences from JAVA, Structure of C# program. Language features: Type system, boxing and unboxing, flow controls, classes, interfaces, Serialization, Delegates, Reflection.

References:-

Pankaj Agrawal – Principal of .Net Framework – Vaya
Kogent - .NET Programming Black Book – Wiley
VB.NET – Wrox Publication
ASP.NET Unleashed
C# programming – wrox Publication
C# Programming Black Book by Matt Telles

Paper –VI

Java

UNIT – I Primitive data type- integer, Short, byte, float, double, Unicode Character set, Boolean, their ranges default initial values, wrapping of integer arithmetic, casing comments identifiers and reserved words. Local variables operators, precedence, Examples and Exercises.

UNIT – II Statements Simple and compound, Uses of control do, for, while, switch, break case of continue label, class type Data; String, Arrays. Examples and Exercises.

UNIT – III Definition and naming conventions for the member of Java classes. Instances, fields and methods initialization by constructors. Creation of Objects, access methods. Example and Exercise.

UNIT –IV Inheritance, Super class, Subclass, Method overloading, Interface, Thread, Multithreading example, Synchronized, Exception (Try- Catch-Final blocks examples.) Java Virtual Machine concept, java platform overview, Programming examples to clarify use of objects, threads exception and Packages For I / O, file String handling. Examples and Exercise.

UNIT – V Local and Remote Applets Vs Application, Writing Applets, Applets Life Cycle, Creating an Executable Applet, Designing a Web page, Applet Tag, Adding Applet to HTML file, Running the Applets, Getting Input from the User.

References:-

Schildt java Complete Reference TMH

Das Rashmi kanta Core Java, IE, Vikas

Bansal Nitin, Ajit Kumar, A Simplified approach to Java Programming, KALYANI