Faculty of Computer Science &Application

P.K.University

Shivpuri (MP)

Evaluation Scheme & Syllabus for
BCA(I Year)

(Effective from session 2019-20)

Bachelor of Computer Application
(Faculty of Computer Science & Application)
P.K. University, Shivpuri (MP)

EVALUATION SCHEME

SEMESTER I						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA101	Calculus	30	70	NA	NA	100
BCA102	Information Technology	30	70	NA	NA	100
BCA103	Internet & E - Commerce	30	70	NA	NA	100
BCA104	PC Packages	30	70	25	25	150
BCA105	Problem Solving Using C	30	70	25	25	150
	Total	**150**	**350**	**50**	**50**	**600**

SEMESTER II						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA 201	Advance Calculus	30	70	NA	NA	100
BCA 202	Computer Organization	30	70	NA	NA	100
BCA 203	Communicative English Grammar	30	70	NA	NA	100
BCA 204	Object Oriented Programming in C++	30	70	25	25	150
BCA 205	DBMS	30	70	25	25	150
	Total	**150**	**350**	**50**	**50**	**600**

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I YEAR I SEMESTER
BCA– 101 CALCULUS

UNIT–I

Review of concepts of function of one variable:
Definition of a function, Types of Functions.
LIMITS: DEFINITION, WORKING RULE FOR FINDING OUT THE LIMIT, FUNDAMENTAL PROPERTIES OF LIMITS, PROBLEMS BASED ON LIMITS.
Continuity: Definition, Points of Discontinuity, Classification of Discontinuity, Problems based on Continuity & Discontinuity.
Differentiability: Condition for Differentiability and problems.

UNIT-II

Rolles theorem, First and Second Mean value theorems, Taylor's theorem, Successive differentiation, Leibnitz Theorem, Taylor's &Maclaurin's series, Intermediate forms.

UNIT-III

Tangents, Normals, Curvature, Tests for Concavity and Convexity, Points of Inflexion, Multiple Points, Tracing of Curves in Cartesian and polarco-ordinates.

UNIT-IV

Integration of rational and irrational algebraic functions and transcendental functions, reduction formulae.

UNIT-V

Definite Integrals, Quadrature, Rectification, Volumes and surfaces of solids of revolution.

Recommended Books:

1. Differential Calculus by GorakhPrasad
2. Integral Calculus by GorakhPrasad
3. Schaum's Outline Series on Calculus

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I YEAR I SEMESTER

BCA – 102 INFORMATION TECHNOLOGY

UNIT 1 - Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers-Analog, Digital, Hybrid, General, Special Purpose, Micro, Mini, Mainframe, Super, Basic components of a computer system - Control unit, ALU, Input/Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.
Data representation and codes, Decimal, Binary, Octal and Hexadecimal System and inter conversion ,BCD numbers and ASCII codes.

UNIT 2-Computer hardware, Input devices- Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Output devices- Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, ,Printers - Daisy Wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card And Speakers , Memory Devices, Ram, Rom, Mass Storage Devices, Cd-Rom, Flash Memory And Their Characteristics And Uses.

UNIT 3-System software - Assemblers, Translators, Interpreters, Compilers, Operating Systems - Functions, Types- Batch, Single, Multiprogramming, Languages : High level languages, Procedural and Object Oriented languages. Application Software – Word Processing, Spreadsheet, Presentation Graphics, Data Base Management Software.

UNIT 4- Computer networking: Goals and applications, LAN, MAN ,WAN COMPUTER
Communication: Communication Modes : Simplex, Half Duplex, Full Duplex. Types Of Network - Lan, Wan, Man Etc., Topologies of LAN - Ring, Bus, Star, And Tree Topologies, Components Of Lan -Media, Bridges, Hub, Routers, Repeater And Gateways, Communication Channels - Twisted, Coaxial, Fiber Optic, Modem -Characteristics,.

UNIT 5- what is – Desktop, Cluster, Grid, and Cloud computing, why cloud computing, Challenges and opportunities, cloud computing three basic services- SAAS, PAAS, IAAS. Concept of Big Data , Difference Between Big Data and Small Data , 3V Characteristics - Volume , Velocity , Variety. Different Types of Big Data. -Structured Big Data, Un Structured Big Data, Semi Structured Big Data , What is Hadoop.

Reference

- Introduction to computers C. Xavier 2nd edition,
- Principles of big data Preparing, Sharing and Analyzing Complex Information - Jules J. Berman
- Cloud Computing: Principles and Paradigms,-Rajkumar Buyya, James Broberg, Andrzej M. Goscinski-2011

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I YEAR I SEMESTER

BCA – 103 INTERNETS & E- COMMERCE

UNIT I

Introduction of Internet & E- Commerce: Internet & Its services , H/S & S/W requirements to connect to the internet, Introduction of WWW, Web Server and Web Client, Difference between the web and the internet, Internet Service Provider (ISP),Web publishing concepts, Domain name registration, space on host server for website .

UNIT II

Choosing an Internet service Provider: Stability, Customer service, Performance, Pricing, Establishing an Internet account. E- Mail Basics: Running an E - Mail program, Sending mail, Reading mail, Replying to mail, Deleting mails, Newsgroups, mailing Lists, Chatting.

UNIT III

Data Transmission Protocols, client/Server Architecture & its Characteristics, FTP & its usage. Telnet Concept, Remote Logging, Protocols, Terminal Emulation. Message board, Internet chatting - Voice chat , text chat

UNIT IV

An Introduction to Internet Explorer: Starting Internet Explorer, A quick tour with Internet Explorer, At the Helm in internet explorer, viewing Various file types. Internet search Engine: What is search Engine , How do search Engines work, Types of search Engines..

UNIT V

Brief history of e-com, Elements of e- com, Types, Intermediaries, and E- commerce, Advantages and Disadvantages of e-com, E-commerce practices Vs traditional business practices. E-Business: E-Business Vs E-Commerce, EDI- Who use EDI, Origin, Benefits, Migration to open EDI-Approach, E-com with WWW/Internet.

Electronic Communication & WWW: PC & networking, network topology and communication media, E-mail, OSI and TCP/IP models, LAN, WAN, MAN, internetworking - Bridges and gateways, What is WWW, Web Architecture, The Web and E- com. Electronic Payment System: Overview, Electronic or digital cash , Electronic checks - Benefits , Online credit based system, Debit card , smart Cards.

Recommended Books:

1. Alexis Leon and Mathews Leon - Internet for everyone (Tech World)
2. Douglas Comer - The Internet Book (prentice Hall)
3. SYBEX - BPB publication - Internet Complete (Second Edition)
4. V.K. Jain - O level Module - M- 1.2 - Internet & web page designing , BPB Publication
5. " Electronic Commerce (A Manager's Guide) " By Ravi Kolkata & Andrew B.Whinston.
6. " Web Commerce Technologies Handbook " By Daniel Minoli & Emma Minoli
7. ″E- Commerce" By Dr. Varinder Bhatia

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I YEAR I SEMESTER
BCA– 104 PC PACKAGES

UNIT – 1

MS WINDOWS: Introduction To M.S. Windows; Features Of Windows; Various Versions Of Windows &Its use; Working with windows; My computer & Recyclebin; Desktop, Icons and Windows explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Auto starts; Accessories and Windows Settings using Control Panel; Start button & Program lists; installing new Hardware & Software.

UNIT – II

Basics Of Word: Creating Word Documents; The Word Window, Entering Text . Editing Document Text; Text, Copying and Moving Text. Applying Text Enhancements; Applying Fonts And Font Styles In Word, Highlighting Text For Distinctive Look . Aligning And Formatting; Aligning Text, Using Indentation Options, Setting Line Spacing Options, Using Tabs. Creating Lists, Numbers And Symbols ;Numbering And Bullets, Creating Special Characters, Replacing And Checking Text ; Creating And Applying Frequently Used Text, Finding And Replacing Text , More About Spelling And Grammar, Using The Thesaurus Command. Getting Into Print ;Using Print Preview, Changing Page Orientation And Paper Size, Aligning Text Vertically, Setting Margins, Printing options.
Advanced Formatting Techniques in Word: Formatting Pages; Formatting Sections, Creating and Modifying Page Numbers, Creating Headers and Footers, Taking Care of Loose Ends Working With Columns; Working With Newspaper Columns, Revising Column Structure. Constructing High-Quality Tables; Creating and Revising Tables, Modifying Table Structure, Formatting Tables, Using Tables Calculatingly. Working Smarter with Word ; Using Templates. Creating Outlines in Word; Creating an Outline, Modifying an Outline.

UNIT- III

Access Concepts &Terms : Database Tables ,Relational Databases , Records , Fields , Controls &Objects , Queries & Dynasets, Forms, Reports ,Properties , Wizards , Macros , Access Requirements , Starting & Quitting Access , The Access Workspace &Tool, Views .
Creating database & tables with & without wizard, field name, data types & properties, adding & deleting fields in fields, renaming fields & their caption, resizing fields, freezing columns, primary key field & indexing fields.
Form: Form wizard, saving & modifying forms: Entering & Editing data, Finding, sorting & displaying data , queries & dynasets , creating & using select queries , using wild cards in queries , reformatting dynasets.
Reports : Creating reports, previewing reports, printing reports, modifying, saving. Relational databases – definition, purpose, creation, viewing, deleting. Expressions ,Macros.

UNIT - IV

Creating Excel Worksheets : Entering and Editing Cell Entries ; The excel Application Window , Workbooks and Worksheets, Moving the Cell Pointer, Entering Text and Numbers , Revising Text and Numbers. Working with Numbers ; Creating Formulas, Formatting numbers. Changing Worksheet Layout ; Adjusting Column Width and Row Height, Inserting and DeletingRowsandColumns,InsertingandDeletingCells,MovingandCopyingCellContents , Naming a Worksheets , Selecting Worksheets , Copying and Moving Worksheets, Inserting and Deleting Worksheets, Other Formatting Options ; Aligning Text , Border and Color. Printing in Excel ; Print Preview, Changing Page Setup , Checking Worksheet Spelling.

Advanced Techniques in Excel:

Using Functions and References ; Using Functions , Entering Functions, Relative and Absolute Cell References. Naming Ranges; Naming Ranges, Using Names. Creating Easy-to-Understand Charts ; Pie Charts , Series Charts , Creating Charts , Moving , Sizing , and Printing Chart Objects . Editing and Formatting Charts; Adding a Data Series, Deleting a Data Series, Modifying and Formatting Charts.

UNIT – V

Creating PowerPoint Presentations: Creating a Basic Presentation , Building Presentations, Modifying Visual Elements , Formatting and Checking Text , Adding Objects, Applying Transitions , Animation Effects and Linking , Preparing handouts , Taking the Show on the Road.

Reference :

1. Microsoft Office 97: Will Train, Gini Courter, Annette Marquisb pb Publication.

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I YEAR I SEMESTER
BCA – 105 PROBLEM SOLVING USING 'C'

Unit 1: programming fundamentals : program concept, algorithms, flow charts - symbols, rules for making flow chart, advantage & disadvantage, programming techniques – top down, bottom up, modular, structured - features, merits & demerits, Testing & debugging.

Unit 2: Programming in c including features of 'c', ctokens, variables, identifiers, keywords, data types, constants, operator and expression, operators: arithmetic, logical, relational, conditional and bit wise operators, precedence and associativity of operators, type conversion in expression, basic input/output and library functions single character input/output i.e. getch(), getchar(). Getche(), putchar(),formatted input output i.e. printf() and scanf().

Unit 3: Branching constructs: If statement, if.....else statement, nesting of if....else statement, else if ladder, the ?: operator, goto statement, switch statement, compound statement, loop controls: for, while, do-while loops, break, continue, goto statement, arrays : what is array,declaring initializing 2d array. String: declaration,string functions –strcat,strcpy,strcmp,strlen,strstr.

Unit 4: Functions: categories, user defined function , function arguments, return values and nesting of function, recursion, calling of functions, scope and life of variables - local and global variable, storage classes - auto, extern, static, pointers: operations on pointers, operators for pointers, pointers and function, array of pointers, pointer and strings.

Unit 5: Preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elifand#ifdef&undef. structures : the concept of structure , initializing a structure, the structure tag, dot operator , array of structure, structure and pointer, arrow operator and nesting of structure. Unions : initialization and use of it in a program. Command line arguments

Reference

1.Let us C YashwantKanitkar, BPBPublicatiuon
2.Programming inANSIC Balgurusuamy Tata McGrawHill
3.CProgramming Schaum's series
4. The spritof C Mulish Cooper, JaicoPublishing
5. Programming with ANSI & Turbo C Kamthane, PearsonEducation.

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I YEAR II SEMESTER
BCA– 201 ADVANCED CALCULUS

UNIT–I
Partial differentiation:
Function of several variables, Limits, continuity and differentiability, Partial derivatives, Euler's Theorem, Mean value theorem & Taylor's theorem for functions of Two variables.

UNIT-II
Envelopes, Evolutes, Maxima, Minima and saddle points of functions of two variables, Lagrange's multiplier method.

UNIT-III
Gamma and Beta functions and their properties, some important deductions (duplication formula)

UNIT-IV

Multiple integrals:
Integration of functions of two & three variables, Double & triple integrals, Change of order of Intigration , Use of double and triple integrals in finding areas and volumes.

UNIT-V
Improper Integrals:
Convergence of improper integrals, Evaluation of convergent improper integrals.

Recommended Books:

1. Schaum's Outline Series on Calculus
2. Differential Calculus by GorakhPrasad
3. Integral Calculus by GorakhPrasad

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I YEAR II SEMESTER

BCA – 202 COMPUTER ORGANIZATION

UNIT 1-
Boolean algebra, Boolean equation of logic gates , Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAND & XOR gates, Boolean Algebra, Basic Boolean Law's,
Demorgan's theorem, Boolean laws and theorems, Duality theorem.

UNIT 2-
Karnaugh Map Map Simplification, Minimization Techniques, Sum Of Product & Product Of Sum., Pairs, Quads And Octats , Donot Care Condition,,GreyCode,Multiplexer And Demultiplexer, Bcd To Decimal Decoder, Seven Segment Dcoder, Encoder.

UNIT 3-
Aritmatic Circuits, Binary Addition, Unsigned Binary Numbers, Sign Magnitude Numbers, 2's Complement Arithmetic Addition, Subtraction, Overflow, Half Adder, Full Adder, Subtractor Circuits.

UNIT 4-
Flip flops, RS, D, JK, Master Slave, Shift registers, Types of shift registers, Asynchronous and Synchronous counters.

UNIT 5-
Semiconductor Memories, Memory Addressing, Rom, Proms, Eproms, Rams, Drams, Srams, Memory Cells A To D And D To A Converters.

Reference:

1.Digital Principles and applications MalvinoA.P. & Leech Tata
McGrawHill2.Digital Computer Organisation – Morris Mano – Pearson

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I YEAR II SEMESTER
BCA – 203 COMMUNICATIVE ENGLISH GRAMMARS

Unit-I

Sentence- its kinds, subject and predicate. Parts of Speech- Noun, Pronoun, Adjective, Verb and Adverb in detail.

Unit-II

Tenses- Present, Past and Future (Indefinite, Continuous, Perfect & Perfect Continuous) Conditional Sentences, Sequence of Tenses, Agreement of the verb with the subject, Active and Passive Voices, Direct and Indirect Narration.

Unit-III

Uses of Infinitive, Participles and Gerund. Articles, Punctuation and Preposition,
Word- building- forming Nouns from Verbs/ Adjectives and vice versa, Prefixes and Suffixes.

Unit-IV

The Structure of Sentences- Clauses (subordinate and coordinate) and Phrases, Simple, Complex and Compound Sentences. Transformation of Sentences, Synthesis of Sentences.

Unit-V

Translation- From Hindi to English & Vice Versa. Writing a paragraph in about 100- 150 words on current National/International Events, Renowned Political Leaders, Sports Personalities, Social workers, Thinkers, Scientists, Nobel Prize Winners etc.

Recommended Books:

1. A.J. Thomson &A.V. Martinet : A Practical English Grammar.(OUP)
2. F.T. Wood : A Remedial English Grammar for Foreign Students.(Macmillan)
3. Michael Swan : Practical English Usage.(OUP, ELBS)
4. Wren & Martin : High School English Grammar & Composition. (Revisedby N.D.V Prasada Rao, S.Chand & Co.)
5. W.S. Allen : Living English Structure.

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I YEAR II SEMESTER
BCA – 204 OBJECT ORIENTED PROGRAMMING WITH C++

UNIT-I

Introduction to OOPS languages: concept, characteristics of OOP's languages, benefits of OOP's, disadvantage of OOP's. Application of OOP's., **Classes & Objects:** Specifying a Class, Creating Objects, Accessing Class members, Defining member function, Outside Member Functions as inline, Accessing Member Functions within the class, Static data member, Access Specifiers: Private, Protected and Public Members. Class. Passing objects to function, Returning objects, Object assignment, This pointer.

UNIT-II

Constructor & Destructor : Introduction, Constructor, Parameterized constructor, Multiple constructor in a class, Constructor with default argument, Copy constructor, Default Argument,
Constructing two dimensional Arrays, Destructor.

Array, Pointers, and references: Array of objects, Pointers to object, Pointer to class members. References: Reference parameter, Passing references to objects, Returning reference, Independent reference, The Dynamic Allocation operators new, delete.

UNIT-III

Function & operator overloading : Function overloading, Overloading constructor function finding the address of an overloaded function, Operator Overloading: Creating a member operator function, Creating Prefix & Postfix forms of the increment & decrement operation, Overloading the shorthand operation (i.e. +=,-= etc), Operator overloading restrictions,

UNIT-IV

Inheritance : Base class Access control, Inheritance & protected members, Protected base class inheritance, Inheriting multiple base classes, Constructors, destructors & Inheritance, When constructor & destructor function are executed, Passing parameters to base class constructors, Granting access, Virtual base classes .

Virtual functions & Polymorphism : Virtual function, Pure Virtual functions, Early Vs. late binding

UNIT-V

The C++ I/O system basics: C++ streams, The basic stream classes: C++ predefined streams, Formatted I/O: Formatting using the ios members, Using manipulators to format I/O, Creating your own manipulators, -File Management: Introduction – File handling, File structure, File handling function, File types, Streams, Text, Binary, File system basics, The file pointer, Opening a file, Closing a file, Writing a character, Reading a character.

TEXT & REFERENCE BOOKS :

C++ The complete reference - Herbert Schildt,-TMH Publication
Object Oriented Programming C++ - R. Lafore , Pearson edu.
Object Oriented Programming With C++ - R. Subburaj, Vikas Publishing House, New Delhi.
C++- E. Balguruswamy, ,Tmh Public
Object oriented programming and C++, R.Rajaram, New Age International.

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I YEAR II SEMESTER

BCA– 205 DBMS

UNIT 1-Introduction: Database system concepts, Data base system, Advantages of database systems; Data Architecture of data system: View/Schema, logical, conceptual and physical and their interrelationship DDL, DML and data dictionary, Data base administrator. Entity Relationship Model as a tool of conceptual design: Entities &Entity set, Relationship & Relationship set, Attributes, Mapping Constraints, Keys, Entity-Relationship diagram (E-R diagram): Strong & weak entities, Generalization, Specialization, Aggregation, Reducing ER diagram to tables.

UNIT 2- Relational, Hierarchical and Network Model their advantages and disadvantages, storage organization for Relations. Rational Model: Structure tupple Attributes, Normalization: First, Second, Third & BCNF Normal Forms, key, primary key, Candidate key, Integrity rules: Entity integrity, Referential integrity rule.

UNIT 3-Relational Algebra: Select, Project, Cross Product, Different Types Of Joins I.E. Theta Join, Equi Join, Natural Join, Outer Join, Set Operations Definition Of Union, Set Difference, Cartesian Product, Selection, Intersection, Relational Query Language.

UNIT 4- Functional Protection And Crash Recovery: Protection Against Crashes: Different Types Of Crashes; Backup, Journal, Rollback, Committed And Uncommitted Transactions, Security On Database.

UNIT 5-Transaction concept, Transaction state, serializability security or Database: user identification. Physical Protection and maintenance, Transmitted of Rights. Integrity: Integrity violation, Implementation of check's in enforcing integrity; Concept of Distributed database.

REFERENCE:

1. Introduction of Database system-C.J.DATE-Addition-ESLEY
2. Principles of database system - Jeffery D. Ullman Galgotia Publication
3. Database system concepts - Henry F.Korth
4. Abraham silberschatz Megraw - Hill International Editio

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Evaluation Scheme & Syllabus
Bachelor of Computer Application
Second Year
(III & IV Sem)

(Effective from session 2019-20)

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EVALUATION SCHEME

SEMESTER III						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA 301	Discrete Mathematics	30	70	NA	NA	100
BCA 302	Programming in Visual Basic	30	70	25	25	150
BCA 303	Introduction to System Analysis & Design	30	70	NA	NA	100
BCA 304	Communication Techniques	30	70	NA	NA	100
BCA 305	Computer Graphics & Multimedia	30	70	25	25	150
	Total	**150**	**350**	**50**	**50**	**600**

SEMESTER IV						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA 401	Numerical Methods	30	70	NA	NA	100
BCA 402	Advanced Computer Architecture	30	70	NA	NA	100
BCA 403	Data Structure using C++	30	70	NA	NA	100
BCA 404	Accounting & Management Control	30	70	NA	NA	100
BCA 405	Programming in Java	30	70	25	25	150
	Total	**150**	**350**	**25**	**25**	**550**

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II YEAR III SEMESTER

BCA– 301 DISCRETE MATHEMATICS

UNIT-I

Introduction and Preliminaries: Logical connectives, Truth tables, Tautologies and Contradiction, Logical equivalence, Algebra of propositions.

Set Theory: Set, Singleton set, Finite and Infinite sets, Subsets, Proper subsets, Equality of sets, Union, Intersection and Difference of sets, Universal set, De Morgan laws, Symmetric difference of sets, Generalized De Morgan laws, Cartesian product of sets.

UNIT-II

Relations: Relation between two sets, Binary relation on a set, Types of binary relations, Equivalence relation, Equivalence class, Partition of a set, Fundamental theorem of equivalence relation, Composition of relations.

Functions: Function or mapping, One-one, Many-one, into and onto mappings, Identity mapping, Constant mapping, Equality of mappings, Inverse of a mapping, Composition of mappings.

UNIT-III

Boolean algebra: Definition and properties of Boolean algebra, a brief introduction to the application of Boolean algebra to switching theory, conversion of complicated switching circuits to simple one, Disjunctive and Conjunctive normal forms.

Graph Theory: Introduction to graph theory, Paths and Circuits, Trees, Spanning trees, Cut-sets, Fundamental circuits and cut-sets.

UNIT-IV

Matrices: Introduction, Expression of complex numbers in the form of a matrix, De Moivre's theorem, Elementary transformations, Elementary matrices, Equivalent matrices, Properties of equivalent matrices, Sub-matrix of a matrix, Rank and Nullity of a matrix, Row equivalence and canonical form, Normal form of amatrix.

UNIT-V

Solution of Homogeneous and Non-homogeneous system of linear equations, Characteristic roots and Characteristic vectors of a matrix, Caley-Hamilton theorem, to find the inverse of a non- singular matrix using Caley-Hamilton theorem.

Recommended Books:

1. Discrete Mathematical Structures with Applications to Computer Science by Tremblay &Manohar.
2. Discrete Mathematics by Iyengar, Chandrasekharan, Venkatesh&Arunachalam.
3. Discrete Mathematical Structures by Kolman, Busby &Ross.
4. Graph Theory with Applications to Engineering and Computer Science by NarsinghDeo.
5. Discrete Mathematical structure byKolman.
6. Discrete Mathematics by J.P.Sharma

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II YEAR III SEMESTER
BCA–302 PROGRAMMING IN VISUAL BASIC

UNIT 1
Introduction to VB.NET, Event Driven Programming, NET as better, Programming Platform NET Framework, NET Architecture, CLR, The Just-In-Time Compiler, Garbage Collection, NET Framework class library introduction VB.NET Development Environment, Creating Applications, Visual development & event drive Programming -Methods and events.

UNIT-2
The VB.NET Language- Variables -Declaring variables, Data Type of Variables,Arrays, Handling and Using Interfaces, Control flow statements: conditional statement, loop statement. Message box & Input box, Function creation.

UNIT 3
VB.NET Language Controls: Text Boxes, Buttons, Labels, Check Boxes, and Radio Buttons. List Boxes, Combo Boxes. Picture Boxes, Scrollbars, Splitters, Timer, Menus, Built-in Dialogs Image List, Tree Views, List Views, Toolbars, Status Bar and Progress bars, OpenFileDilog, SaveFileDialog, Font Dialog,

UNIT -4
Understanding Delegates.Class Library Overview.Creating a Class Library. Working with the Class Library Understanding Built-In Classes. Creating User-Defined Classes. Understanding Constructors and Instance Variables., Introduction to Error Types: Understanding Syntax Errors, Understanding Runtime Errors and Using Exception Handling, Understanding Logical Errors and Using Break Points.

UNIT 5
Database : Connections, Data adapters, and datasets, Data Reader, Connection to database with server explorer Multiple Table Connection Data binding with controls like Text Boxes, List Boxes, Data grid etc.Navigating data source Data Grid View,
Data form wizard Data validation Connection Objects, Command Objects, Data Adapters, and Dataset Class.

REFERENCE BOOKS
1. Mastering VB.NET by Evangelospetroutsos- BPBpublications
2. Introduction to .NET -Worxpublication
3. Introduction to .NET–Unleashed

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II YEAR III SEMESTER
BCA – 303 INTRODUCTIONS TO SYSTEM ANALYSIS & DESIGN

UNIT 1-
Computer system overview, Basic elements , functions and types of operating system Serial Processing , Batch System, multi- programmed , Batch System, Time sharing systems., System components, Operating system Services, System Calls, Processor registers, Instruction execution, Interrupts, Interrupt processing.

UNIT 2-
Memory hierarchy, Cache memory, I/O Communication techniques , Concept of Process, Memory management, Information Protection, Scheduling and Resource Management Structure , Process description, Process state, Two state process model, Creation and termination of processes, Five state model, Suspended process, Process description, Process attributes

UNIT 3-
Semaphores, Classical Problem Of Synchronization, Monitors, Atomic Transactions, System Model, Deadlock Characterizations, Method for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock, Combined approach to Deadlock.

UNIT 4-.
Process Concepts, Process State &Process Control Block, Process Scheduling, Scheduling, Criteria, Scheduling Algorithms, Multiple- Processor Scheduling Real-Time Scheduling, Critical Section Problem.

UNIT 5-
Loading programs, Fixed portioning, dynamic portioning, Relocation, simple paging, Simple segmentation, Loading and Linking. Paging, Segmentation, Segmentation with Paging, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement, Page Replacement Algorithms

Reference :
OPERATING SYSTEM CONCEPTS – Silberschatz & Galvin, Addison Wesley publication
Operating System - W. Stallings, Second Edition, Prentice Hall of India

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II YEAR III SEMESTER
BCA - 304 COMMUNICATION TECHNIQUES

English Language:

UNIT 1-

Review of English Grammar; Written and Spoken Language; Common Errors in language; Punctuation (purpose, role, importance and use); OED; Language Skills(Listening, Speaking, Reading, Writing).

UNIT 2-

Meaning what you mean; Listening: Effective and efficient listening in various situations (discussions, lectures, news, seminars, speech, telephone calls etc.); Reading: Purpose; Comprehension; Tactics and strategies for good reading; Writing: Guidelines for good writing; various writing styles (General and Technical writing styles).

COMMUNICATION SKILLS:

UNIT 3-

Communication (Purpose, Role, Importance, Elements); Effective And Efficient Communication; Role Of Content, Context And Language; Spoken And Written Communication; Presentation And Delivery; Role Of Speaker And Audience; Style And Body Language.

UNIT 4-

Planning, organization, presentation, participation, conduction and feedback of discussions, meetings, seminars etc; Effective and efficient presentation and discussion skills; Discussion and Presentation skills of conferences, meetings, seminars etc.

UNIT 5-

General and Technical documents(correspondence (applications, letters, resumes, CV), drafts, proposals, précis, reports, summary, synopsis,),Use of Audio-Visual Aids: OHP, Slides, Charts, Computers.

Reference :

1. Wren & Martin -Grammar
2. Books Prescribed By M.P.UchahaShikshaAnudanAyog Are The Text Books For This Syllabus.

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II YEAR III SEMESTER
BCA – 305 COMPUTER GRAPHICS & MULTIMEDIA

UNIT 1-
Basics Of Graphics Systems Applications, Display Devices : Video Displays, Raster- Scan Displays, Random Scan Displays, Dvst, Flat-Panel Displays. Input Devices : Keyboards, Mouse, Trackball And Space Ball, Joysticks, Igitizers, Image Scanner, Touch Panel, Light Pens, Voice Systems Etc.

UNIT -2-
Line drawing algorithms: DDA Algorithm, Bresenham's line Algorithm. Bresenham's Circle drawing algorithm, Mid-Point Circle Algorithm, Scan-line Polygon Fill Algorithm, Inside-Outside test, Boundary Fill algorithm, Flood-Fill algorithm.Pixel, Pixel addressing, Antialiasing.

UNIT 3-
Clipping : Cohen-Sutherland Line Clipping Algorithm, Line Clipping Using Non Rectangular Clip Windows, Polygon Clipping, Text Clipping.

UNIT 4-
Two-dimensional geometric transformation: Translation, Rotation, Scaling, Reflection, Shear, Matrix representation and Homogeneous coordinates. Composite transformation: Translations, Rotations, Scalings. General Pivot-Point Rotation and Scaling.

UNIT 5 –
Introduction To Multimedia: Review Of Multimedia, Multimedia Applications, Multimedia Systems Architecture, Multimedia Hardware, Multimedia Software, Representation And Operations On Various Multimedia Data Types: Text, Images, Graphics, Video And Audio, Introduction To Multimediaauthoring.

REFERENCE

1. COMPUTER GRAPHICS –R.C.S.Asthana,N.K.Sinha,New Age International
2. Principles of Interactive Graphics Newman &SproulMcGrawHill
3. Computer Graphics : Principles & Practice Second Ed. in C Foley, Van Dam, Feiner, Hughes Pearson Education, Eleventh IndianReprint.
4 Computer Graphics Apurva A Desai PHI Learning, 2009
5 Computer Graphics Herrington S. Prentice Hall –
6 Computer Graphics with Multimedia A RajaramanNarosa

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II YEAR IV SEMESTER
BCA – 401 NUMERICAL METHODS

Unit – I
Computer Arithmetic, Floating point number operations, Normalization and their consequences, Emphasis on computational Algorithms, Iterative methods, Zeros of a single transcendental equation and zeros of polynomials using Bisection, False position, Newton- Raphson and Secant methods, convergence ofsolutions.

Unit – II
Simultaneous linear equations, Solution of simultaneous linear equations, Gauss elimination method with pivoting, Gauss – Jordan method, Jacobi's iteration method and Gauss – Seidel iteration method, Ill-conditioned equations and refinement of solutions.

Unit – III
Difference Operators and Interpolation: Definition of Forward, Backward, Shifting, Divided difference, Central and Averaging Operators and their relationships, Newton's forward difference, backward difference and divided difference interpolation formulae, Lagrange's Interpolationformula.

Unit – IV
Numerical Differentiation and Integration:
Numerical Differentiation using Newton's forward difference, backward difference and divided difference interpolation formulae, General Quadrature formula, Newton Cote's integration, Trapezoidal rule, Simpson's one – third and three – eight rules.

Unit – V
Numerical Solution of Ordinary Differential equations by Euler's Method, Modified Euler's method, Taylor's series method, Picard's method, RungeKutta, second order and fourth order methods, Predictor-correctormethods.

Recommended Books:

1. Computer Oriented Numerical Methods by V.Rajaraman..
2. Numerical Analysis byS.S.Sastry.
3. Numerical Algorithms byE.V.Krishnamurthy
4. Numerical Methods byB.S.Grewal.
5. Numerical Methods for Scientific &Engg. Computer by Jain &Iyenger.
6. Numerical Method by Bala Guru Swamy.
7. Computer oriented Numerical Method bySalaria.
8. Numerical &Statsitical Methods in Computer By Sing

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II YEAR IV SEMESTER
BCA – 402 ADVANCED COMPUTER ARCHITECTURE

UNIT 1
Structure and Function, Computer Interconnection Structure, The computer system, system buses, computer function, fetch and execution cycle, interrupts, multiple interrupts by interconnection and bus design , PCI bus .

UNIT 2
Computer Memory System, And Their Characteristics, Semi-Conductor / Main Memory ,Chip Packaging Error Correction ,Cache Memory And It's Mapping .

UNIT 3
External memory - magnetic disk organization, RAID, Optical memory, CD- ROM, VROM magnetic tape .

UNIT 4
Input/Output External Devices, I/O Module Programmed I/O and Interrupt Driver, I/O Interrupt Controller.

UNIT 5
Programmable peripheral interface. DMA I/O channels and external interface. ASSEMBLY LANGUAGE PROGRAMMING: DETAILED STUDY OF 8086/8088 ASSEMBLY LANGUAGE

Instruction Set, Loops And Comparisons, Condition And Procedure, Arithmetic Operator Assembly Language, Illustrations Using Typical Programs Like: Table Search, Subroutines, Symbolic And Numerical Manipulations And I/O

Reference:

1.Computer Organisation And Architecture - Stalling Williams -Phi
2.Mano,M.M.-Computer system Architecture, Prentice Hall of India

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II YEAR IV SEMESTER
BCA – 403 DATA STRUCTURE USING C++

UNIT 1

Introduction To Data Structure, Array, Records, Stacks Introduction To Stack &Primitive Operation On Stack, Stack As An Abstract Data Type, Multiple Stack, Stacks Application: Infix, Post Fix, Prefix And Recursion. : Introduction To Queues, Primitive Operations On The Queues, Queue As An Abstract Data Type, Circular Queue, Dequeue, Priority Queue, Applications Of Queue

UNIT 2

Pointer & linked allocation, linear, circular &Doubly linked list, Operations on linked list, application of Linked list: Polynomial manipulation.

UNIT 3

Tree: General & Binary Tree. Conversion Of General To Binary Tree. B^+ ,Traversal Methods- In Order, Preorder &Post Order, Application Of Tree: Manipulation Of Arithmetic Expression.

UNIT 4

Graph: Graph &Their Representations. Breadth First & Depth First Search. Spanning Trees. Application Of Graphs: Pert & Related techniques.

UNIT 5

Introduction to file organization: Sequential, Indexed sequential, Relative & Direct file organization. Searching: Linear & Binary Search Sorting :Concept, selection sort, Bubble sort merge Sort, Tree sort & Partition - Exchange sort.

Reference :

- Data Structure and Program design in C by Kruse/Leung - PHI
- Fundamentals of data structure, Bys. Sawhney & E.Horowitz data structure:Bytrembley&Sorrenson
- Data Structure : By Lipschuists (Schaum'soutline Series Mcgraw Hill Publication)

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II YEAR IV SEMESTER
BCA – 404 ACCOUNTING & MANAGEMENT CONTROL

UNIT-I
Meaning of Financial Accounts, Important concepts of Accounts, types of accounts, Rules of Journal, Simple journal entries, , Cash Book – Types, Format of Cash book, Balancing of Cash Book, Ledger, posting of entries.

UNIT – II
Trial Balance, Adjustment Entries Relating To Closing Stock, Outstanding Expenses, Prepaid Expenses, Accrued Income, Unearned Income, Depreciation And Interests On Capital., Simple Final Accounts With The Above Adjustments.

UNIT – III
Meaning and need of material control, purchasing of materials, inspection of materials, FIFO and LIFO methods of outgoing material, their advantages and limitations.

UNIT – IV
Pay Master's Department, Pay Roll Accounting , Methods Of Payments Of Wages, Overview Of Computerized Method For Payroll Preparation.

UNIT – V
Meaning and scope of financial management , functions of finance , Objectives of financial management , Mathematics of finance : present value techniques, fund from operations, importance & usefulness of statement.

TEXT & REFERENCE BOOKS

1. Book Keeping by GrewalT.S.
2. Cost Accounting by S.K.Maheshwari

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II YEAR IV SEMESTER
BCA 405: PROGRAMMING IN JAVA

UNIT- I

Introduction of Java : Types of java, Feature of java, C++ Vs JAVA, JAVA environment, JAVA virtual machine. Constant & Variables, Declaration of Variables, Scope of Variables, Data Types in java, Operators in java, Control statements in java.

UNIT–II

Basic concept of OOPS : OOPS terminology, Classes , methods , creating instance & class variable , accessing class member ,Constructor , Methods overloading , Method overriding , final classes , finalize method, Abstract method & classes , visibility control , Interfaces :Defining interfaces , extending interfaces , implementing interfaces , accessing interfaces , Package - system package , using system package , creating package , accessing a package, adding a class to a package .

UNIT–III

ARRAYS: ONE DIMENSIONAL &TWO DIMENSIONAL, STRINGS: String, string Buffer, and string Bulder. Collection Framework : Set, List, Queue, Maps.

UNIT–IV

Exception Handling- Fundamental, types, uncaught exception, using try and catch, multiple catch, nested try, throw, throws, finally.

Java thread model, creating threads, extending thread class, stopping & blocking a thread, Life cycle of thread, thread exception, thread priority, synchronization- implementing and runnable interface, inter thread communication, multithreading.

UNIT–V

What is an applet, applet architecture, applet life cycle, a simple applet program, AWT-Working with Graphics; line, rectangles, ellipses, circles, arcs, polygons working with colors; Working with fonts?

TEXT & REFERENCE BOOKS:

- Java Complete Reference – TMH Publications Java Volume I & Ii – Pearson Education
- Programming In Java, 2nd edition, E. Balaguruswamy, ,TMH Publications
- Peter Norton Guide To Java Programming ,Peternorton, Tech media publications

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Evaluation Scheme & Syllabus

Bachelor of Computer Application

Third Year

(V & VI Sem)

(Effective from session 2019-20)

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EVALUATION SCHEME

SEMESTER V						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA 501	Differential Equations	30	70	NA	NA	100
BCA 502	Software Engineering	30	70	NA	NA	100
BCA 503	Enterprise Resource Planning	30	70	NA	NA	100
BCA 504	Programming in Advance Java	30	70	25	25	150
BCA 505	Oracle 8i	30	70	25	25	150
	Total	**150**	**350**	**50**	**50**	**600**

SEMESTER VI						
		THEORY		PRACTICAL		TOTAL
SUBJECT CODE	**SUBJECT NAME**	SESS.(30)	EXT.(70)	SESS.(25)	EXT.(25)	
BCA 601	Probability & Statistics	30	70	NA	NA	100
BCA 602	Networking Concepts	30	70	NA	NA	100
BCA 603	Introduction to Asp.net & C#	30	70	NA	NA	100
BCA 604	Software Testing	30	70	NA	NA	100
BCA 605	Mobile Application Development	30	70	25	25	150
BCA 606	Project	30	NA	35	35	100
	Total	**180**	**350**	**60**	**60**	**650**

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III YEAR V SEMESTER

BCA – 501 DIFFERENTIAL EQUATIONS

UNIT–I

Differential Equations of First Order and First Degree:

Homogeneous Differential Equations, Reducible to Homogeneous Differential Equations, Linear Differential Equations, Reducible to Linear Differential Equations, Bernoulli's Equation, Exact Differential Equations, Change of Variables.

Differential Equations of First Order and Higher Degree:

Differential Equations solvable for p, solvable for y, solvable for x, Clairaut's Equation.

UNIT–II

Family Of Curves:

Linear Differential Equations of Higher order with constant coefficients, Differential Equations reducible to Linear Differential Equations with Constant Coefficients, Simultaneaus differential equation of first order..

UNIT–III

Partial Differential Equations:

Definition and Formation. Partial Differential equation of first order, Lagrange's method, standard forms, Charpit's Method, Linear Partial Differential Equation of Higher order with Constant Coefficients.

UNIT–IV

Linear Differential Equations of second order, Application of Partial differential equation : Method of separation of variables , Solution of One dimensional wave equation and one dimensional heat equation.

UNIT–V

Series Solution of Differential Equations:

Power series method, Bessel and Legendre functions and their properties, Recurrence relations for Besseles function & Legendre function.

Recommended Books:

1. Partial differential equation by Snadden
2. Ordinary and Partial Differential Equations by M.D.Raisinghania

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III YEAR V SEMESTER
BCA – 502 SOFTWARE ENGINEERING

UNIT – I

Introduction: Software Crisis, software engineering, Software Processes & Characteristics, Need of Software life cycle models, Waterfall, Prototype, and Spiral Models. Software Requirements analysis & specifications: Requirement elicitation techniques: Interview, form analysis, need for SRS, Characteristics ofSRS.

UNIT – II

Software Project Planning: Issues involved in software estimation, Size Estimation like lines of Code & Function point method, Cost Estimation Models - COCOMO, Software project management technique – Gantt Chart.

UNIT-III

Basic Concept of Software Design, Design process, design fundamentals, software design levels: Architectural Design, high level design, detail Design, Design notations & specification Modularization, Design Structure Charts, Pseudo Codes, Flow Charts, Coupling and Cohesion Measures, Design Strategies: Function Oriented Design, **,** Object Oriented Design, software design approaches: Top-Down and Bottom-Up Design. S/W Configuration Management terminology**.**

UNIT – IV

Basic concept of object-oriented analysis & Design, traditional paradigm versus object- oriented paradigm, Overview of UML: class diagram object diagram, use case diagram, sequence diagram, activity diagram, component diagram, collaboration diagram.

UNIT – V

Software Metrics: Software measurements: What & Why, Token Count, Halstead Software Science Measures, Design Metrics, software testing, Test cases, Software Maintenance: Types of software Maintenance, software maintenance model: Quick fix Model, taute's maintenance model, Concept of Software Re- engineering & Software Reverse engineering- Definition, purposes and objectives, benefits**.**

Reference:

1.Software Engineering – A practitioner's approach"- R. S. Pressman, 5th Ed., McGraw HillInt.
2. Software Engineering (Principle & Practices –Waman S. Jawadekar , Tata McGrawHill
3. An Integrated approach to software Engineering,- PankajJalote , NarosaPublication
4. Software Engineering- Shari Lawrence, Pfleeger, Pearsonedu.
5. Unified software development Process- Ivar Jacobson, Grady Booch, Pearsonedu.

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III YEAR V SEMESTER
BCA -503 ENTERPRISE RESOURCE PLANNING

UNIT 1 :

Overview of business function: Business function in an organization, material management , scheduling ,shop floor control, forecasting, accounting and finance, human resources, productivity management, typical business processes, core processes, product control, sales order processing, purchases, administrative process, support processes, marketing strategic planning, research and development

UNIT 2 :

Problems In Traditional Functional View: Need For Integrated Process Views, Information As A Resource Motivation For Erp

UNIT 3:

Evolution of information systems: EDP Systems, MIS, Executive information systems, Information needs of organization, ERP as an integrator of information needs at various levels, Decision making available at the above level.

UNIT 4:

ERP Models/Functionality: Sales order purchasing, MRP scheduling, forecasting, maintenance, distribution, finance features of each of the model, description of data flows across each module, overview of supporting databases, technologies required for ERP.

UNIT 5:

Implementation issues: Pre implementation issues, financial justification of ERP, Evaluation of commercial software, during implementation issues, reengineering of various business processes, education and training, project management, post implementation issues, performance measurement.

REFERENCE BOOKS:

Recommended Books:

1.V.K. Garg and N.K. Venkita Krishnan Enterprise Resource Planning Practices Prentice Hall
2.J. Kanter, Managing with information Prentice Hall(I) 1996 New Delhi
3.S Sadagopan Management Information System Prentice Hall(I) 1996 New Delhi
4.V.Rajaraman, Analysis and Design of information system Prentice Hal(I)11997
5.K.M. Hussain and D. Hussain, Information System: Analysis Design and Implemetation, Tata McGraw Hill 1995 NewDelhi

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III YEAR V SEMESTER
BCA –504 PROGRAMMING IN ADVANCE JAVA

UNIT–I
Started with Web Applications in java :
Introduction to web applications, Benefits of web applications, Web Architecture Models- Model-1 Architecture, Model-2 Architecture.
Introducing MVC Architecture : Model component, View component, Controller component.

UNIT–II
Introduction to JDBC : Introducing JDBC, Communatting with database : obtaining connection, creating jdbcsataement object, executing SQL statement, closing connection. Creating DSN, understsnding various JDBC drivers. Creating table by using JDBC, types of statements : statement, prepared statement, callable statement, working with resultset.

UNIT–III
Introduction to Servlet : Needs for server side Extensions, what is servlet, advantage of servlet, understanding of servlet api :, Stage of Servlet life cycle : loading of servlet, Initializing of a servlet, Request Handling, Destroying the servlet. deploying servlet application, genric servlet class.

UNIT–IV
Introduction to JSP : Understanding of JSP, Advantage of JSP, Describing Jsp Architecture.
Jsp LifeCycle : page translation, Compilation stage, Loading and initialization stage, request handling, destroyingstage,

UNIT–V
Introduction to JavaBeans : Introduction of JavaBean, advantages of using JavaBeans, Describing Tags : describing Action Tag, describing useBean Tag, describing setProperty Tag

TEXT & REFERENCE BOOKS:

- Java Complete Reference – Tmh Publications Java Volume I & Ii – Pearson Education
- Programming In Java, 2nd Edition, E. Balaguruswamy, ,Tmh Publications
- Peter Norton Guide To Java Programming **,**Peter Norton, Techmedia Publications

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III YEAR V SEMESTER
BCA – 505 ORACLE 8i

UNIT – I

Different Data Base Model ,Rdbms Components – Kernel, Data Dictionary,Client/Server Computing And Oracle, Overview Of Oracle Architecture – Oracle Files, System And User Process, Oracle Memory, Role Of Dba, System Data Base Object, Protecting Data

UNIT – II

SQL Plus, Oracle data types, Creation, Insertion, Updation, Deletion of tables, Modification of structure of tables, Removing, Deleting, Dropping of Tables, Data Constraints, Column level & table Level Constraints. Null, Unique Key, Default key, Foreign key ,Check Integrity constraints. Defining different constraints on the table Defining Integrity Constraints in the ALTER TABLE Command, Select Command, Logical Operator, Range Searching, Pattern Matching, Oracle Function, Grouping data from Tables in SQL, Manipulation Data in SQL

UNIT-III

Joining Multiple Tables (Equi Joins),Joining a Table to itself (self Joins), Subqueries Union, intersect & Minus Clause, Creating view, Renaming the Column of a view, Granting Permissions, - Updation, Selection, Destroying view, Permission on the objects created by the user, GRANT statement, Object Privileges, Referencing a table belonging to another user, Revoking the permission given, Indexes

UNIT-IV

Pl/Sql, Sql & Pl/Sql Differences, Block Structure, Variables, Constants, Datatype, Assigning Database Values To Variables, Select … Into, Cursors, Using Flow Control And Loop Statement, Goto Statement, Error Handling, Built-In Exceptions, User Defined Exceptions, The Raise-Application-Error Procedure, Oracle Transaction, Locks, Implicit And Explicit Locking. *21*

UNIT-V

Procedures & Functions - Concept, creation, execution, advantages, syntax, deletion, Triggers
- Concept, use, how to apply database triggers, type of triggers, syntax, deleting, Import, Export, Oracle backup and recovery

Recommended Books:

1. Ivan Bayross, "SQL, PL/SQL", BPB Publications"
2. Liebschuty, "The Oracle Cook Book", BPBPublication
3. Michael Abbey, Michael J.Corey, "Oracle a Beginners guide". TMH Publication
4. Oracle Unleashed (Chapter 1,2,3,4,5 and9)

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III YEAR VI SEMESTER
BCA – 601 PROBABILITY & STATISTICS

UNIT-I

Introduction: Frequency distribution and Frequency charts, Histogram, Frequency polygons, Frequency curves and Cumulative frequency distribution, Ogives.

Measures of Central Tendency: Arithmetic mean, weighted arithmetic mean, geometric mean, harmonic mean, median, mode, quartiles, deciles and percentiles.

Measures of Dispersion: Range, mean deviation, semi-inter quartile range for quartile deviation, absolute and related dispersion, coefficient of variation.

UNIT-II

Moments, Skew ness and Kurtosis: Moments of various types, relation between moments, Sheppard's correction, Skew ness and kurtosis, moment generating functions.

Elementary Probability Theory: Sample space, events, classical definition of probability, theorems on total and compound probability, independent and dependent events, mutually exclusive events, mathematicalexpectation.

UNIT-III

Probability Distributions: Discrete and continuous probability distributions, basic concepts and applications of Binomial, Poisson, Rectangular, Exponential and Normal distributions.

UNIT-IV

Regression and Correlation: Regression analysis, Least square fit, polynomial and curve fitting, Linear and non-linear regression algorithms, Linear correlation, measures of correlation, coefficient of correlation, rank correlation, multiple and partial correlation for three variables.

UNIT-V

Testing of Hypotheses: Simple and composite hypothesis, errors of kind-I and kind-II, critical region, level of significance.

Tests of Significance: Tests for simple hypotheses, Chi-square, t, F and z tests, ANOVA-one way and two-way classification.

Recommended Books:

1. Mathematical Statistics by J. N. Kapur and H. C.Saxena.
2. Mathematical Statistics by M.Ray and H. S.Sharma.
3. Statistical Methods by S.P.Gupta
4. Statistics- Theory, Methods and Applications by Sancheti andKapoor.
5. Probability &Staistic in Engg. ByHines.
6. Probability Models for Computer Science byM.Ross.
7. Introduction to Probability byRoussars.

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III YEAR VI SEMESTER
BCA – 602 NETWORKING CONCEPTS

UNIT 1

Data Communication System: Purpose, Components : Source, transmitter, transmission System, receiver, and destination. Data transmission: Frequency, Spectrum and Bandwidth. Time- domain and frequency domain Concepts. Relationship between data-rate and Bandwidth.

UNIT 2

Analog And Digital Data Transmission. Data And Signal. Analog And Digital Signaling Of Analog And Digital Data. Modem, Modulation Techniques, Codec, Digital Transmitter etc. Transmission impairments: Attenuation and attenuation distortion, Delay Distortion, Noise.

UNIT 3

Introduction to Network, OSI reference model, TCP/IP reference model. Transmission Media: Magnetic Media, Twisted-Pair cables, Baseband & Broadband Coaxial cables, Fiber Optics. Wireless Transmission: Radio Transmission, Microwave Transmission.

UNIT4

Isdn;Atm;Datalinklayer:Services,Framing,Errorcontrol,Error-Detecting& Correcting Codes. Data Link Protocols: Stop-And-Wait Protocol, Sliding Window Protocol. Hdlc; Static & Dynamic Channel Allocation In LANS & MANS.

UNIT 5

-Multiple Access Protocols: ALOHA, CSMA/CD; IEEE standards 1002.3 and Ethernet, 1002.4: Token Bus; 1002.5: Token Ring. Bridges, Routers, Gateways, Routing Algorithm, Congestion control Algorithm, Internetworking, The TCP/IP Protocol ,IP Addressing, Subnets.

Reference:

1. Computer Networks By Tanenbaum
2. Data & Computer Communications By Stallins.

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III YEAR VI SEMESTER
BCA -603 INTRODUCTION TO ASP.NET &C#

UNIT – I
Programming in C#: Overview of C#, C# environment, data type, type conversion, variables, constants, operators: Arithmetic Operators , Relational Operators, Logical Operators, Bitwise Operators, Assignment Operators, Misc Operators, , decision making, loops, overview of oop's: (encapsulation, inheritance, polymorphism, abstraction), class, object, methods.

UNIT-II
Programming in C#: Arrays, String, Structure, Enum, Operator Overloading, Interfaces, Preprocessor Directives, Namespace, Regular Expression : Character escapes, Character classes, Anchors, Grouping constructs, Quantifiers, Back reference constructs, Alternation constructs, Substitutions, Exception handling, File I/O : Stream Reader, Stream Writer, String Reader, String Writer.
C# Attributes, C# Properties, C# Reflection.

UNIT-III
Introduction to ASP.Net: Overview of ASP.NET framework, ASP.NET Application Life Cycle, page life cycle phases : Initialization, Instantiation of the controls on the page, Restoration and maintenance of the state, Execution of the event handler codes, Page rendering. Understanding ASP.NET Controls, Applications Web servers, installation of IIS. Web forms, web form controls -server controls, client controls, web forms & HTML.

UNIT-IV
Programming in ASP.Net: 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. Event Handling- Application and Session Events, Page and Control Events.
Validation controls: Required Field Validator, Range Validator, Compare Validator, Regular Expression Validator, Custom Validator, Validation Summary. States of ASP.Net : View State, Control State, Session State, Application State.

UNIT-V
Database connectivity in ASP.Net: 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.

TEXT BOOKS & REFERENCE BOOKS
VB.NET Black Book by stevenholzner –dreamtech
ASP.NET Unleashed ‰ C# programming – wrox publication

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III YEAR VI SEMESTER
BCA – 604 SOFTWARE TESTING

UNIT - I:
Introduction: Testing as an Engineering Activity, Testing as a Process, testing axioms, Basic Definitions Software Testing Principles, The Tester's Role in a Software Development Organization, The Defect Repository and Test Design, Developer/Tester Support for Developing a Defect Repository, Defect Prevention Strategies.

UNIT - II:
Test Case Design : Test Case Design Strategies, Using Black Box Approach to Test Case Design, Random Testing, Requirements based testing, Boundary Value Analysis, Decision tables, Equivalence Class Partitioning, State-based testing, Cause-effect graphing, Error guessing, Compatibility testing.

UNIT - III:
Using White Box Approach to Test design, Test Adequacy Criteria, static testing vs. structural testing, code functional testing, Coverage and Control Flow Graphs, Covering Code Logic, Paths, Their Role in White–box Based Test Design, Evaluating Test AdequacyCriteria.

UNIT - IV:
Levels Of Testing : The Need for Levels of Testing, Unit Test, Unit Test Planning, Designing the Unit Tests, The Test Harness, Running the Unit tests and Recording results, Integration tests, Designing Integration Tests, Integration Test Planning, Scenario testing, Defect bash elimination. System Testing, Acceptance testing, Performance testing, Regression Testing, testing OO systems, Testing the documentation.

UNIT V
Introduction to automatic testing & tools: Drawback of manual testing, Benefits of automatic testing, demerits of automatic testing, functional testing tools, performance testing tolls. Overview of automatic tool QTP : history, benefits, anatomy, main parts ofQTP..

Reference Books:

1. Srinivasan Desikan and Gopalaswamy Ramesh, "Software Testing – Principles and Practices", Pearson education,2006.
2. Ilene Burnstein, "Practical Software Testing", Springer International Edition,2003.
3. Ron Patton, " Software Testing", Second Edition, Sams Publishing, Pearson education,2007
4. RenuRajani, Pradeep Oak, "Software Testing – Effective Methods, Tools and Techniques", Tata McGraw Hill,2004.
5. Edward Kit, "Software Testing in the Real World – Improving the Process", Pearson Education,

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III YEAR VI SEMESTER
BCA – 605 MOBILE APPLICATION DEVELOPMENT

UNIT – I
Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell., Linux standard directories. Commands for files and directories cd, ls, cp, md, rm, mkdir, rmdir, pwd, file, more, less, creating and viewing files using cat, file comparisons – cmp & comm, View files, disk related commands,

Unit II-
An Introduction to Mobile Computing- mobile Application Programming, Different Platforms. Operating systems-Architecture and working of Android, iOS and Windows phone, Comparison of Android, iOS and Windows phone, Android Development Environment -Advantages and Future of Android , Android Software Development Kit for Eclipse

Unit III-
Android Software Development Platform - Understanding Java SE and the Dalvik Virtual Machine , The Directory Structure of an Android Project , Common Default Resources Folders , The Values Folder Leveraging Android XML , Screen Sizes, Launching Your Application

Unit IV-
Android Framework Overview- The Foundation of OOP: The APK File, Android Application Components, Android Activities: Defining the UI, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications,

Unit V-
Views and Layouts, Buttons, Menus, and Dialogs, Graphics Resources in Android- Introducing the Drawables , Implementing Images , Core Drawable Subclasses, Using Bitmap, PNG , JPEG and GIF Images in Android , Handling UI Events-An Overview of UI Events in Android , Listening for and Handling Events, Touchscreen Events, Keyboard Events ,Context Menus
,Controlling the Focus

Text and Reference Books:

1. Onur Cinar , "Beginning Android 4" , ApressPublication
2. Reto Meier, "Professional Android 4 Application Development",Wrox
3. István Novák, Zoltan Arvai, György Balássy and David Fulop,"Beginning Windows 8 Application Development"
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