

Jiwaji University , Gwalior – BCA – Session 2014-17

Semester – I

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA101	Calculus	80	20	-	100
SOSBCA102	Information Technology	80	20	-	100
SOSBCA103	Internet & E - commerce	80	20		100
SOSBCA104	Problem solving using 'C'	80	20	-	100
SOSBCA105	PC Packages	80	20	50	150
SOSBCA106	Practical in 'C'	-	20	80	100
	Total	400	120	130	650

Semester – II

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA201	Advance Calculus	80	20	-	100
SOSBCA202	Computer Organization	80	20	-	100
SOSBCA203	Communicative English Grammar	80	20	-	100
SOSBCA204	Object Oriented Programming in C++	80	20	-	100
SOSBCA205	DBMS	80	20	50	150
SOSBCA206	Practical in c++	-	20	80	100
	Total	400	120	130	650

Semester – III

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA301	Discrete	80	20	-	100
SOSBCA302	Programming in Visual Basic	80	20		100
SOSBCA303	Introduction to System Analysis & Design	80	20	-	100
SOSBCA304	Communication Techniques	80	20	-	100
SOSBCA305	Computer Graphics & Multimedia	80	20	50	150
SOSBCA306	Practical in VB	-	20	80	100
	Total	400	120	130	650

Semester – IV

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA 401	Numerical Methods	80	20	-	100
SOSBCA 402	Advanced Computer Architecture	80	20	-	100
SOSBCA 403	Data Structure using c++	80	20	-	100
SOSBCA 404	Accounting & Management Control	80	20	-	100
SOSBCA 405	Introduction to Operating System	80	20	50	150
SOSBCA 406	Practical in Data Structure	-	20	80	100
	Total	400	120	130	650

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Semester – V

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA 501	Differential Equations	80	20	-	100
SOSBCA 502	Networking Concepts	80	20	-	100
SOSBCA 503	Enterprise resource Planning	80	20	-	100
SOSBCA 504	Programming in JAVA	80	20	-	100
SOSBCA 505	Oracle 8i	80	20	50	150
SOSBCA 506	Practical in JAVA	-	20	80	100
	Total	400	120	130	650

Semester – VI

Code	Theory Paper	External	Internal	Practical	Total
SOSBCA 601	Probability & Statistics	80	20	-	100
SOSBCA 602	Software Engineering	80	20		100
SOSBCA 603	Introduction to Asp.net & C#	80	20	-	100
SOSBCA 604	Network Programming	80	20	-	100
SOSBCA 605	Linux Operating System	80	20	50	150
SOSBCA 606	Project in ASP.net/ Java	-	20	80	100
	Total	400	120	130	650

PAPER CODE SOSBCA - 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 polar co-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 Gorakh Prasad
2. Integral Calculus by Gorakh Prasad
3. Schaum's Outline Series on Calculus

PAPER CODE SOSBCA – 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, Dot Pitch, Video Standard - VGA, SVGA,

XGA ETC, PRINTERS - DAISY WHEEL, DOT MATRIX, INKJET, LASER, LINE PRINTER, PLOTTER, SOUND CARD AND SPEAKERS , MEMORY DEVICES, RAM, ROM, WINCHESTER DRIVE, 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-MANAGEMENT INFORMATION SYSTEM - INTRODUCTION, CHARACTERISTICS, NEEDS, DIFFERENT VIEWS OF MIS, DESIGNING, PLACEMENT OF MIS, PITFALLS IN DESIGNING AN MIS, COMPUTER BASED MIS – ADVANTAGES & DISADVANTAGES.

COMPUTER APPLICATIONS IN BUSINESS-NEED AND SCOPE, COMPUTER APPLICATIONS IN PROJECT MANAGEMENT, COMPUTER IN PERSONNEL ADMINISTRATION, INFORMATION SYSTEM FOR ACCOUNTING-COST AND BUDGETARY CONTROL, MARKETING AND MANUFACTURING, COMPUTER APPLICATIONS IN MATERIALS MANAGEMENT, INSURANCE AND STOCK-BROKING, PRODUCTION PLANNING AND CONTROL, PURCHASING, BANKING, CREDIT AND COLLECTION, WAREHOUSING.

USE OF COMPUTERS IN COMMON PUBLIC SERVICES AND E-GOVERNANCE.

UNIT 5-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, MESH AND TREE TOPOLOGIES, COMPONENTS OF LAN -MEDIA, BRIDGES, HUB, ROUTERS, REPEATER AND GATEWAYS, COMMUNICATION CHANNELS - TWISTED, COAXIAL, FIBER OPTIC, SERIAL AND PARALLEL COMMUNICATION, MODEM - WORKING AND CHARACTERISTICS, TYPES OF CONNECTIONS - DIALUP, LEASED LINES, ISDN, USE OF COMMUNICATION IN DAILY LIFE.

Reference

1.INTRODUCTION TO COMPUTERS

C. XAVIER 2ND EDITION,

PAPER CODE SOS BCA – 103
INTERNET & 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

PAPER CODE SOS BCA - 104
Problem solving using 'C'

UNIT 1-PROGRAMMING FUNDAMENTALS : PROGRAM CONCEPT, ALGORITHMS, FLOW CHARTS - SYMBOLS, RULES FOR MAKING FLOW CHART, TYPES OF FLOWCHART, ADVANTAGE & DISADVANTAGE, , TECHNIQUES OF PROBLEM SOLVING : PROGRAMMING TECHNIQUES – TOP DOWN, BOTTOM UP, MODULAR, STRUCTURED - FEATURES, MERITS & DEMERITS, PROGRAMMING LOGIC- SIMPLE, BRANCHING, LOOPING, RECURSION, COHESION & COUPLING, PROGRAMMING. TESTING & DEBUGGING & THEIR TOOLS .

UNIT 2-Programming in C including features of ‘C’, Ctokens, Variables, Expressions, Identifiers, Keywords, Data Types, Constants, Operator and expression Operator: 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().

Branching Constructs: if-else,switch, conditional operator & goto statements

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.

UNIT 3- FUNCTIONS: CATEGORIES OF FUNCTIONS USER DEFINED AND LIBRARY FUNCTION , RECURSION, FUNCTION ARGUMENTS, RETURN VALUES AND NESTING OF FUNCTION, RECURSION, CALLING OF FUNCTIONS, SCOPE AND LIFE OF VARIABLES - LOCAL AND GLOBAL VARIABLE, STORAGE CLASS SPECIFIED - AUTO, EXTERN, STATIC, REGISTER.

Arrays : what is array, declaring initializing , 2D and 3D array. **String:** declaration, string functions – strcat,strcpy,strcmp,strlen,strstr.

UNIT 4-Pointers: operations on pointers, pointers Basic of pointers and operators, Pointers and function, Array of pointers, Pointer and strings, Pointer to structure, Pointers within structure;The preprocessor, #define, defining functions like macros, #error,#include, conditional compilation directives i.e. #if, #else, #elif and#endif & undef **Structures :** the concept of structure of structure , intilizing a structure, the structure tag, period operator , array of structure, structure and pointer, te arrow operator and nesting of structure. **Unions :** initialization and use of it in a program.

UNIT 5-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, Using fopen(), getc(), putc(), and fclose(), Using feof(), Working with string fputs() and fgets(), Standard streams in C,Flushing astream, Using fread() and fwrite(), Direct access file, fseek() and random access I/O, fprintf() and fscanf(), Command line arguments

Reference

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|-----------------------------------|-------------------------------------|
| 1.Let us C | Yashwant Kanitkar, BPB Publicatiuon |
| 2.Programming in ANSI C | Balgurusuamy Tata McGraw Hill |
| 3.C Programming | Schaum’s series |
| 4. The sprit of C | Mulish Cooper, Jaico Publishing |
| 5. Programing with ANSI & Turbo C | Kamthane, Pearson Education. |

PAPER CODE SOS BCA - 105
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 & RECYCLE BIN ; DESKTOP, ICONS AND WINDOWS EXPLORER;

Screen description & working styles of Windows; Dialog Boxes & Toolbars; Working with Files & Folders; Shortcuts & Autostarts; 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 FORMATING ; ALIGNING TEXT, USING IDENTATION 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 Deleting Rows and Columns, Inserting and Deleting Cells , Moving and Copying Cell Contents , 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 Marquis
bpb Publication.

PAPER CODE SOS 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 Integration , 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 Gorakh Prasad
- 3.Integral Calculus by Gorakh Prasad

PAPER CODE SOS 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 OCTETS , DONOT CARE CONDITION,,GREY CODE,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 Malvino A.P. & Leech
Tata Mc Graw Hill

PAPER CODE SOS BCA - 203
Communicative English Grammar

UNIT 1-Noun, Pronoun, Adverb, Adjective and Verb in detail articles Sentence-kinds, function & classification.

UNIT 2-TENSES-PRESENT INDEFINITE, PRESENT CONTINUOUS, PRESENT PERFECT, PAST INDEFINITE AND COMBINATION OF TENSES AGREEMENT SYNTHESIS.

UNIT 3-Transformation - Simple, compound, complex, Reporte speech, active & passive voice, degree, change the forms of sentence using too or enough, use of idioms & phrase synthesis.

UNIT 4-VOCABULARY - WORD BUILDING, SUFFIXES/PREFIXES. FORMING NOUN FROM VERB/ADJECTIVE AND VICE VERSA COMMON ERROR RELATING TO NOUNS, PRONOUNS, VERBS, ADJECTIVES, PUNCTUATION. TRANSLATION - HINDI TO ENGLISH & VICE VERSA.

UNIT 5-National events, monuments, personalities (thinkers, Sages, Politicians and social workers) some current international events & personalities.

Reference:

1. WREN & MARTIN - GRAMMAR
2. ROBERT ELLEN – ENGLISH LIVING STRUCTURE.

PAPER CODE SOS BCA - 204
Object Oriented Programming with C++

UNIT-I

Overview of C++ : Object oriented programming, Introducing C++ classes, Concepts of object oriented programming. Classes & Objects : Classes, Structure & classes, Union & Classes, Friend function, Friend classes, Inline function, Scope resolution operator, Static class members: Static data member, Static member function, Passing objects to function, Returning objects, Object assignment.

UNIT-II

Array, Pointers references & The Dynamic Allocation operators : Array of objects, Pointers to object, Type checking C++ pointers, The This pointer, Pointer to derived types, Pointer to class members, References: Reference parameter, Passing references to objects, Returning reference, Independent reference, C++ 's dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

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

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, Operator overloading using friend function, Overloading New & Delete, Overloading some special operators, Overloading [], (), -, comma operator, Overloading << .

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, Setting the format flags, Clearing format flags, An overloaded form of setf (), Examining the formatted flags, Setting all flags, Using width() precision() and fill(), Using manipulators to format I/O, Creating your own manipulators.

TEXT & REFERENCE BOOKS :

C++ The complete reference - Herbert Schildt, - TMH Publication

Object Oriented Programming C++ - R. Lafore

OBJECT ORIENTED PROGRAMMING WITH C++ - R. SUBBURAJ, VIKAS PUBLISHING HOUSE, NEW DELHI.
C++- E. BALGURUSWAMY, , TMH PUBLIC

PAPER CODE SOS 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 tuple 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

Abraham silberschatz Megraw - Hill International Edition

PAPER CODE S0S 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 a matrix.

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 Narsingh Deo.
5. Discrete Mathematical structure by Kolman.
6. Discrete Mathematics by J.P. Sharma
7. Graph Theory by Harvey.

PAPER CODE SOSBCA - 302
Programming in Visual Basic

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.

Programming Essentials- General Procedures, Sub Procedures and function-designing,. Calling & passing controls as arguments , Constant & variable : Declaration, Scope and types.

UNIT 2-DESIGNING A PROJECT :- START UP FORM , PROPERTIES AND PROGRAM DESIGN , MANAGING MULTIPLE FORMS.

Flow of control - decisions - if statement , Else if clause ,Select case structure, Nested decisions.

Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarings arrays ,Multidimensional & dynamic arrays , User defined types :- Recorded structures, With statement array of records .

Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.

TEXT FILES - OPENING & CLOSING FILE, WRITE# , PRINT# , INPUT # , LINE INPUT # STATEMENTS.

UNIT 4-INPUT & OUT PUT PROCEDURES - DEFINING A MENU , CONTROL ARRAYS , INPUT TECHNIQUES - VALIDATING & FORMATTING THE INPUT , MOVING THE FOCUS , MENU CHOICES OUT PUT TECHNIQUES - CALCULATION & DISPLAY , DRAWING CHART .

UNIT 5-Visual basic controls:- Intrinsic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form , OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

REFERENCE:

1. Foundation of Visual Basic - Douglas Hergert.

PAPER CODE SOSBCA - 303
INTRODUCTION TO SYSTEM ANALYSIS AND DESIGN

UNIT 1-SYSTEM: DEFINITION AND CONCEPT; REAL TIME AND DISTRIBUTED SYSTEMS; DATA INFORMATION AND RELATED ATTRIBUTES; SYSTEM ANALYSIS AND ANALYST.

UNIT 2-System development life cycle: study, analysis, design, development and implementation; System planning; data fact finding techniques.

UNIT 3-SYSTEM DESIGN AND MODELING: LOGICAL AND PHYSICAL DESIGN REPRESENTATION, DATA FLOW DIAGRAM, ERD, STRUCTURE CHARTS.

UNIT 4- forms design :classification, user interface; standards; control and validation checks; user interface guidelines modular and structured design.

UNIT 5-SYSTEM IMPLEMENTATION & MAINTENANCE; PROJECT MANAGEMENT TECHNIQUES; USE OF AN AVAILABLE TOOL TO IMPLEMENT A CASE STUDY.

Reference:

- 1.James, A.S.: Analysis and Design of Information systems, McGraw Hill, 1986.
- 2.Ludeberg, M., Golkuhl, G. & Hilson, A.: Information Systems Development, A sysematic Approach, Prentice Hall International, 1981.
- 3.Leason, M.: Systems Analysis and Design, Science Research Associates,

PAPER CODE SOSBCA - 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. UCHAHA SHIKSHA ANUDAN AYOG ARE THE TEXT BOOKS FOR THIS SYLLABUS.

PAPER CODE SOS 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, IGTIZERS, 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 MULTIMEDIA AUTHORING.

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 MULTIMEDIA AUTHORING.

PAPER CODE SOSBCA – 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 of solutions.

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 Interpolation formula.

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, Runge Kutta, second order and fourth order methods, Predictor-corrector methods.

Recommended Books:

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

PAPER CODE SOSBCA - 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 SUSTEM ARCHITECTURE, PRENTICE HALL OF INDIA

PAPER CODE SOSBCA – 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, By S. SAWHNEY & E. HOROWITZ

DATA STRUCTURE : By TREMBLEY & SORRENSON

DATA STRUCTURE : By LIPSCHUISTS (SCHAUM'S OUTLINE SERIES MCGRAW HILL PUBLICATION)

PAPER CODE SOSBCA - 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 Grewal T.S.
2. Cost Accounting by S.K. Maheshwari

PAPER CODE SOSBCA - 405

Introduction to Operating System

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

PAPER CODE SOSBCA – 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, Simultaneous 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 Bessel's function & Legendre function .

Recommended Books:

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

PAPER CODE SOSBCA – 502
Networking Concepts

UNIT 1-DataCommunication 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.

UNIT 4-ISDN; ATM; DATA LINK LAYER: SERVICES, FRAMING, ERROR CONTROL, 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.

PAPER CODE SOSBCA - 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. Venkitakrishnan 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 New Delhi

PAPER CODE SOS BCA – 504
Programming in Java

UNIT-I

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

UNIT-II

DEFINING A CLASS, ADDING VARIABLES AND METHODS, CREATING OBJECTS, ACCESSING CLASS MEMBERS, CONSTRUCTORS, METHODS OVERLOADING, STATIC MEMBERS, NESTING OF METHODS. INHERITANCE: EXTENDING A CLASS, OVERRIDING METHODS, FINAL VARIABLES AND METHODS, FINAL CLASSES, FINALIZE METHODS, ABSTRACT METHODS AND CLASSES, VISIBILITY CONTROL.

UNIT-III

ARRAYS: ONE DIMENSIONAL & TWO DIMENSIONAL, STRINGS, VECTORS, WRAPPER CLASSES, DEFINING INTERFACE EXTENDING INTERFACE, IMPLEMENTING INTERFACE, ACCESSING INTERFACE VARIABLE, SYSTEM PACKAGES, USING SYSTEM PACKAGE, ADDING A CLASS TO A PACKAGES, HIDING CLASSES.

UNIT-IV

CREATING THREADS, EXTENDING THE THREADS CLASS, STOPPING AND BLOCKING A THREAD, LIFE CYCLE OF A THREAD, USING THREAD METHODS, THREAD EXCEPTIONS, THREAD PRIORITY, SYNCHRONIZATION, IMPLEMENTING THE RUNNABLE INTERFACE.

UNIT-V

LOCAL AND REMOTE APPLETS VS APPLICATIONS, WRITING APPLETS, APPLETS LIFE CYCLE, CREATING AN EXECUTABLE APPLET, DESIGNING A WEB PAGE, APPLET TAG, ADDING APPLET TO HTML FILE, RUNNING THE APPLET, PASSING PARAMETERS TO APPLETS, ALIGNING THE DISPLAY, HTML TAGS & APPLETS, GETTING INPUT FROM THE USER.

TEXT & 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

PAPER CODE SOSBCA - 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, intereseect & 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”, BPB Publication*
3. Michael Abbey, Michael J.Corey, *“Oracle a Beginners guide”. TMH Publication*
4. *Oracle Unleashed (Chapter 1,2,3,4,5 and 9)*

PAPER CODE SOSBCA - 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, mathematical expectation.

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 and Kapoor.
5. Probability & Statistics in Engg. By Hines.
6. Probability Models for Computer Science by M. Ross.
7. Introduction to Probability by Roussars.

PAPER CODE SOSBCA - 602
SOFTWARE ENGINEERING

UNIT 1-INTRODUCTION TO S/W ENGINEERING; SOFTWARE PRODUCT AND PROCESS: GENERIC PHASES, SOFTWARE DEVELOPMENT MODELS; PROJECT SCHEDULING AND TRACKING.

UNIT 2-Software architecture and design: Prominent design methodologies; Verification, validation and performance evaluation; SW Configuration Management and maintenance; SW measurement-Size, Process and Project Metrics; LOC , FP metrics.

UNIT 3-Testing and the related concepts : Testability and features of Test Cases; Software Testing techniques: WBT, BBT, Software Testing Strategies: Approach, Issues; integration, System, alpha , Beta testing etc.

UNIT 4-Quality Factors, framework, Quality assurance: concepts, Activities etc. . SW Reliability, SQA Plan, Quality models: ISO 9000 and SEI-CMM and their relevance.

UNIT 5-FUNCTIONS OF CASE TOOLS AND THEIR USE WITH PRACTICAL EXAMPLES OF SPECIAL CASE TOOLS, SUCH AS TURBO ANALYST.

Reference:

Software Engineering a Practitioner's Approach - Pressman R.S. (McGraw Hill)

PAPER CODE SOSBCA - 603
Introduction to ASP.net & C#

UNIT- 1 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, Running a web application, Creating a multiform web project.

UNIT- 2 Form validation: Client side validation, Server side validation, validation controls : Required Field comparison range, Calendar control, Ad rotator control, Internet explorer control ,state management-View state, Session state, Application state..

UNIT -3

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 -4 Writing datasets to XML, Reading datasets with XML Web services : Introduction , Remote method call using XML,SOAP, web service description ,Building & consuming a web service, web application deployment

UNIT -5 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.

Reference:

V B .N ET Black book by steven holzner - dreamtech ASP.NET Unleashed

C# programming - wrox publication

C# programming Black Book by Matt telles

PAPER CODE SOSBCA - 604
NETWORK PROGRAMMING

UNIT – I

Introduction to Network Programming: OSI model, Unix standards, TCP and UDP & TCP connection establishment and Format, Buffer sizes and limitation, standard internet services, Protocol usage by common internet application..

UNIT – II

Sockets: Address structures, value - result arguments, Byte ordering and manipulation function and related functions Elementary TCP sockets - Socket, connect, bind, listen, accept, fork and exec function, concurrent servers. Close function and related function

UNIT – III

TCP client server: Introduction, TCP Echo server functions, Normal startup, terminate and signal handling server process termination,.

UNIT – IV

Crashing and Rebooting of server host shutdown of server host. I/O Multiplexing and socket options: I/O Models, select function, Batch input, shutdown function, poll function, TCP Echo server, getsockopt and setsockopt functions. Socket states, Generic socket option.

UNIT – V

Elementary UDP sockets: Introduction UDP Echo server function, lost datagram, summary of UDP example, Lack of flow control with UDP, determining outgoing interface with UDP. Elementary name and Address conversions: DNS, gethost by Name function, Resolver option.

TEXTS & REFERENCE BOOKS :

[T2] UNIX Network Programming, 1st Edition, W. Richard Stevens. PHI .

UNIX System Programming with C++, C T Chan, PHI.

UNIX for programmers and users, 3rd edition Graham GLASS, King ables, Pearson Education.

Advanced UNIX programming 2 nd edition M. J. Rochkind, pearson Education

[T1] UNIX Network Programming, Vol. I, Sockets API, 2nd Edition- W. Richard Stevens, Pearson Edition Asia.

PAPER CODE SOS BCA – 605
Linux Operating System

UNIT – I

Linux introduction and file system - Basic Features, Advantages, Installing requirement, Basic Architecture of Unix/Linux system, Kernel, Shell. Linux File system-Boot block, super block, Inode table, data blocks, How Linux access files, storage files, 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, checking disk free spaces. Partitioning the Hard drive for Linux, Installing the Linux system, System startup and shut-down process, init and run levels.

UNIT–II

Essential linux commands Understanding shells, Processes in linuxprocess fundamentals, connecting processes with pipes, tee, Redirecting input output, manual help, Background processing, managing multiple processes, changing process priority with nice, scheduling of processes at command, cron, batch commands, kill, ps, who, sleep, Printing commands, find, sort, touch, file, file related commands-ws, sat, cut, dd, etc. Mathematical commands- bc, expr, factor, units. Creating and editing files with vi, joe & vim editor

UNIT–III

System administration Common administrative tasks, identifying administrative files – configuratinn and log files, Role of system administrator, Managing user accounts-adding & deleting users, changing permissions and ownerships, Creating and managing groups, modifying group attributes, Temporary disable user's accounts, creating and mounting file system, checking and monitoring system performance file security & Permissions, becoming super user using su. Getting system information with uname, host name, disk partitions & sizes, users, kernel. Backup and restore files, reconfiguration hardware with kudzu, installaing and removing packages with rpm command. Configure X-windows desktop-redhat-config-Xfree86, understanding XF86config file, starting & using X desktop. KDE & Gnome graphical interfaces, changing X settings.

UNIT–IV

Shell programming- Basic of shell programming, Various types of shell available in Linux, comparisons between various shells, shell programming in bash, read command, conditional and looping statements, case statements, parameter passing and arguments, Shell variables, system shell variables, shell keywords, Creating Shell programs for automate system tasks.

UNIT-V

Simple filter commands – pr, head, tail, cut, paste, sort, uniq, tr. Flter using regular expressions – grep, egrep, and sed. awk programming – report printing with awk.

TEXTS & REFERENCES BOOKS :

UNIX – Concepts & Applications (Third Ed.) – Sumitabha Das, Tata McGraw Hill Publications.

Unix for programmers and users (Third Ed.) – Graham Glass & King Ables, Pearson Education India. (Low Prices Edition).

Red Hat Linux 9 Bible – Cristopher Negus, IDG Books India Ltd.
LINUX Complete – BPB Publication