Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA (Annual System)

Scheme & Syllabus

w.e.f. Session 2017-18

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA – I/ First Year (Annual System)

(Examination Scheme)

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-11	Fundamental of computer & PC-Packages	10	40	50	--	100
	BCA-12	Digital Electronics	10	40	50	--	
Group-II	BCA-13	Programming and Problem Solving in C	10	40	50	--	100
	BCA-14	Operating System and System Software	10	40	50	--	
Group-III	BCA-15	Mathematical Foundation of computer Science	10	40	50	--	100
	BCA-16	Financial Accounting and Principle of Management	10	40	50	--	
Group-IV	BCA-17.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-17.2	English Language	5	30			
	BCA-17.3	Entrepreneurship Development	5	25			
Group-V	BCA-P18	Practical based on BCA11	--	--	--	50	100
	BCA-P19	Practical based on BCA13	--	--	--	50	
	TOTAL				400	100	500

NOTE: General BCA Examinations rules are same as B. Sc. (Computer Sc.)/(IT).

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

w.e.f. July 2018 Onwards

BCA – II/ Second Year (Annual System)

(Examination Scheme)

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-21	Data Structure using C++	10	40	50	--	100
	BCA-22	DBMS & RDBMS	10	40	50	--	
Group-II	BCA-23	Internet & E-Commerce	10	40	50	--	100
	BCA-24	Data Communication & Computer network	10	40	50	--	
Group-III	BCA-25	System analysis Design & Software Engineering	10	40	50	--	100
	BCA-26	Managerial Economics & Management Information System	10	40	50	--	
Group-IV	BCA-27.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-27.2	English Language	5	30			
	BCA-27.3	Environmental Studies	5	25			
Group-V	BCA-P28	Practical based on BCA-21& BCA-22	--	--	--	50	100
	BCA-P28	Minor Project	--	--	--	50	
	TOTAL				400	100	500

NOTE: General BCA Examinations rules are same as B. Sc. (Computer Sc.)/(IT).

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Bachelor of Computer Application (BCA)

w.e.f. July 2019 Onwards

BCA – III/ Third Year (Annual System)

(Examination Scheme)

Group	Paper Code	Paper Name	Internal	External (Theory)	Total	Practical	Grand Total
Group-I	BCA-31	Programming With JAVA	10	40	50	--	100
	BCA-32	Artificial Intellegance & Expert System	10	40	50	--	
Group-II	BCA-33	Internet Technology with ASP.NET and C#	10	40	50	--	100
	BCA-34	Computer graphics and Multimedia	10	40	50	--	
Group-III	BCA-35	Microprocessor and Interfacing	10	40	50	--	100
	BCA-36	Enterprise Resource Planning & organizational Behaviour	10	40	50	--	
Group-IV	BCA-37.1	Hindi Language and Moral Values	5	30	100	--	100
	BCA-37.2	English Language	5	30			
	BCA-37.3	Basic of Computer & Information Technology	5	25			
Group-V	BCA-P38	Practical based on BCA-31 & BCA-33	--	--	--	50	100
	BCA-P38	Major Project	--	--	--	50	
	TOTAL				400	100	500

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Bachelor of Computer Application (BCA)

Detailed Syllabus

BCA

(2017-18 Onwards)

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BCA - 11 Fundamental of Computers and PC-Packages

UNIT I

Computer Fundamental: Characteristics of Computers, History of Computer, Evolution of Computers, Computer Generations, Types of Computer, Components of a Computer: Registers, Instruction Set, Bus Architecture, Computer Hardware: Input Devices, Output Devices, Storage Devices: Primary Storage capacity, Memory Types, Memory Measuring Units, Secondary Storage Device

Software and Computer Applications: Software &Software Types, Computer Languages, Compiler, Interpreter, Editor, Computer Ethics, Computer applications, Introduction of Programming: Procedure Oriented Programming, Object oriented programming, Concepts used in OOP, Benefits of OOP, Main advantages and disadvantage of OOP, Applications of OOP, OOP vs. POP.

UNIT II

Operating System Overview: Computer System Startup, Computer System Structure, Computer System Components, Operating System Classifications, Operating System Services, Major Functions of Operating system, Process Management, CPU Scheduling, Scheduling Criteria. Memory and File Management: Memory Management Requirements, Swapping, Memory Management Techniques, Virtual Memory, File Management, File Access Methods, Protection.

Introduction to DBMS: File System, Traditional File Oriented Approach, DBMS-Advantages and Disadvantages, Role of DBMS, Three views of data, DBMS Architecture, Data Models, Data Independence, Major components of DBMS, Data Dictionary, Types of Users, DBMS applications, Keys in Databases, Database Languages.

UNIT III

Introduction to Computer Networks: Computer Network Definition, Importance of Networking, Types of Networks, Network Topology, Advantages and Disadvantage of Computer Networks, Applications of computer networks, Reference Model, Internet, Introduction to Internet Technology, Electronic Mail, World Wide Web.

MS Windows: Introduction to MS Windows; Features of windows; Working with Windows; My computer & Recycle bin; Desktop, Icons and Windows Explorer; Screen description & working styles of Windows; Dialog Boxes & Toolbar; Working with files & Folders; Simple operations like copy, delete, moving of files and folders from one drive to another; Accessories and Windows Settings using Control Panel-setting common devices using control panel, modem, printers, audio, network, fonts, creating users, internet settings, Start button & Program lists ;Installing and Uninstalling new Hardware & Software program on your computer.

Unit-IV

MS Word Basics – Introduction to MS Office; Introduction to MS- Word; Features & area of use, working with MS- word; Menus & Commands; Toolbars & Buttons; Shortcut Menus, Wizards & Templates, creating a New Document; Different Page Views and Layouts; Applying various Text Enhancements; Working with -- Styles, Text Attributes; Paragraph and Page Formatting; Text Editing using various features; Bullets, Numbering, Auto formatting, Printing & various print options.

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Advanced Features of MS- word- Spell check, Thesaurus, Find & Replace; Headers & Footers: Inserting- Page Number, Pictures, Files, Autotexts, Symbols etc.; working with columns, Tab& Indents; Creation and working with Tables including conversion to and from text; Margins and Space management in Documents; Adding references and Graphics; Mail Merge, Envelops & mailing Labels. Importing and Exporting to and from various formats.

Unit- V

MS Excel: Introduction and area of use; working with MS Excel: concept of workbook and worksheet; Using Wizards; Various Data Types; Using different features with Data, Cell and Texts; Inserting, Removing & Resizing of Columns & Rows; Working with Data & Ranges; Different views of Worksheet; Column Freezing, Labels, Hiding, Splitting etc.; Using different features of Data and Text; Use of Formulas, Calculation & Functions; Cell formatting including Borders and Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with Various options.

MS PowerPoint: Introduction and area of use; Working with MS PowerPoint; Creating a New Presentation; Working with Presentation; Using Wizards; Slides &its Different Views; Inserting, Deleting and Copying of Slides; Working with Notes, Handouts; Columns and Lists; Adding Graphics, Sounds and Movies to a slide; Working with PowerPoint Objects; Designing and Presentation of a Slide Show; Printing Presentations; Notes, Handouts with print options.

Reference Books:

1. Operating Systems Concepts, A. Silberschatz, P.GaIvin, G.Gagne, John Wiley & Sons
2. Object Oriented Programming in C++, Robert Lafore, Galgotia Publication.
3. Data base management systems vol. 1., Date C.J.
4. Fundamental of Computer Science & IT, Singh Umesh Kumar, Jain S., Maheshwari A., SSDN Publications New Delhi,
5. Data Communications and Networks, Godbole A, Tata McGraw-Hill Publications.
6. Windows XP Complete Reference. BPB Publications
7. MS Office XP complete BPB Publication

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BCA - 12 Digital Electronics

Unit- I

Data types and Number systems, Binary number system, Octal & Hexa-decimal number system, 1's & 2's complement, Binary Fixed-Point Representation, Arithmetic operation on Binary numbers, Overflow & underflow, Floating Point Representation, Codes, ASCII, EBCDIC codes, Gray code, Excess-3 & BCD, Error detection & correcting codes.

Unit — II

Logic Gates, AND, OR, NOT GATES and their Truth tables, NOR, NAM) & XOR gates, Boolean Algebra, Basic Boolean Law's, DeMorgan's theorem, MAP Simplification. Minimization techniques, K-Map, Sum of Product & Product of Sum.

Unit-III

Combinational & Sequential circuits, Half Adder & Full Adder, Full subtractor, Flip -flops- RS, D, JK & T Flip-flops, Shift Registers, RAM and ROM, Multiplexer, Demultiplexer, Encoder, Decoder, Idea about Arithmetic Circuits, Program Control, Instruction Sequencing.

Unit — IV

I/O Interface, Properties of simple I/O devices and their controller, isolated versus memory-mapped I/O, Modes of Data transfer, Synchronous & Asynchronous Data transfer, Handshaking, Asynchronous serial transfer, I/O Processor.

Unit—V

Auxiliary memory, Magnetic Drum, Disk & Tape, Semi-conductor memories, Memory Hierarchy, Associative Memory, Virtual Memory, Address space & Memory Space, Address Mapping, Page table, Page Replacement, Cache Memory, Hit Ratio, Mapping Techniques, Writing into Cache.

Reference Books:

1. BARTEE, "Digital Computer Fundamentals " TMH Publication
2. MALVINO, " Digital Computer Electronics " TMH Publication
3. MORRIS MANO, "Computer System Architecture PHI Publication

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BCA-13 Programming and Problem Solving in C

Unit – I

Problem identification, analysis, design, coding, testing & debugging, implementation, modification & maintenance, algorithms & flowcharts, Characteristics of a good program – accuracy, simplicity, robustness, portability, minimum resource & time requirement, modularization; Rules/conventions of coding, documentation, naming variables; Top down design; Bottom-up design.

Unit II

History of C, Structure of a C program, Data types, Constant & Variable, Operators & expressions, Control Constructs – if-else, for, while, do-while, Case statement, Arrays, Formatted & unformatted I/O, Type modifiers & Storage classes, Ternary operator, Type conversion & type casting, Priority & associativity of operators.

Unit –III

Functions, Arguments,return value, Parameter passing – call by value, call by reference, return statement, Scope, visibility and life time rules for various types of variable, static variable, calling a function, Recursion – basics, comparison with iteration, tail recursion, when to avoid recursion examples.

Unit IV

Special constructs – break, continue, exit(), goto& labels; Pointers - &and * operators, pointer expression, pointer arithmetic, dynamic memory management functions like malloc(), calloc(), free(), String, Pointer to function, Function to parameter, Structure – basic, declaration, membership operator, pointer to structure, referential operator, self-referential structures, structure within structure, array in structure, array of structures, Union – basic, declaration; Enumerated data type, Typedef, Command line arguments.

Unit V

File handling and related functions: printf&scanf family, C preprocessor – basics, # Include, # define, # undef, conditional compilation directive like #if, #else, #endif, #ifdef and #ifndef, Variable argument list functions.

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 a stream, Using fread() and fwrite(), Direct access file, fseek() and random access fprintf() and fscanf().

Reference Books:

1. Kerninghan& Richie: The C Programming language, PHI
2. Cooper Mullish: The Spirit of C, Jaico Publishing House, Delhi
3. Kanetkar Y: Let us C
4. Kanetkar Y: Pointers in C.

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BCA-14 Operating Systems and System Software

Unit I

Introduction to Operating Systems: Operating system services, multiprogramming, time-sharing system, storage structures, system calls, multiprocessor system. Basic concepts of CPU scheduling, Scheduling criteria, Scheduling algorithms, algorithm evaluation, multiple processor scheduling, real time scheduling, I/O devices organization, I/O devices organization, 1/0 devices organization, I/O buffering.

Unit II

Process concept: process scheduling, operations on processes, threads, inter-process communication, precedence graphs, critical section problem, semaphores, problems of synchronization, Deadlock problem: deadlock characterization, deadlock prevention. deadlock avoidance, deadlock detection, recovery from deadlock, Methods for deadlock handling.

Unit III

Concepts of memory management: logical and physical address space, swapping, contiguous and Non- contiguous allocation, paging, segmentation, and paging combined with segmentation.

Unit IV

Concepts of virtual memory, demand paging, page replacement algorithms. allocation of frames, thrashing, demand segmentation, Security threads protection, Intruders- Viruses- trusted system,

Unit V

Disk scheduling, file concepts, file access methods, allocation methods, directory systems, file protection, introduction to distributed systems and parallel processing case study.

Reference Books:

1. Operating System by Silberschatz
2. Operating System by Deitel
3. Modern operating system by anneubacem.

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BCA-15 Mathematical Foundation of Computer Science

UNIT-I

Types of errors, Error approximation, truncation error, rounding error. Solution of transcendental equation by: Bisection, false position, Newton-Raphson Methods.

UNIT-II

Introduction and Approximation: Polynomial interpolation, Newton and Languages interpolation. Approximation of function by Taylor series, Numerical integration: Simpson's one third rule, Gauss quadrature formula.

UNIT –III

Sets and Relation: Combinations of sets, finite and infinite sets, countable and uncountable infinite sets, Order sets. Properties of Binary Relations. Partial Ordering relations and Lattice.

UNIT-IV

Formal Languages and Finite Automata: Regular expressions, finite Automata from Regular Expression to finite Automata, Minimizing the number of States of DFA. Phrase structure Grammers, Types of Grammer and Languages.

UNIT-V

Graphs, Trees and Cut-Sets: Basic Terminology, Multigraphs and weighted graphs, Paths and Circuits, Shortest Paths, Eulerian Paths and circuits, Hamiltonian paths and circuits. Rooted trees, Path length in rooted trees, Binary search trees,Spanning trees, Minimum spanning trees.

Reference Books:

1. Hogg,R.V.Craig,A.L.: Introduction to mathematical statistics,American Publishing co.pvt.ltd.
2. SeymurLipschutz: Linear Albera.
3. Computer criented numerical analysis by S.S.Shastri

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BCA -16 – Financial Accounting and Principle of Management

Unit –I

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

Unit II

Trial Balance, Rectification of errors, adjustment entries. Depreciation and Inflation. Principles of Cost Accounting, Valuation of Stocks, Allocation of Overheads, Methods of material issues.

Unit III

Pay roll department, preparation of pay roll, Preparation of wage record, Methods of payments of wages, overview of computerized method for payroll preparation. Inventory account and store record, inventory or stock control and cost accounting, Department demand and supply method of stock control. Classification and condition of material Report on material handling. Overview of computerized accounting process – Introduction to accounting system software, their features and some basic operations.

Unit IV

Management Concept: Managements, Administration, Organization Management and Administration, Difference and Relationship between Organizations, importance of Management, characteristics of Management.

Scientific Management, Principles of Management, Process of Management, Functions of Management, Levels of Management, Project Management

Unit V

Decision Making: Introduction and Definition, Types of Decision, Techniques of Decision Making, Decision making under uncertainty, Decision Making under risk.

Reference Books:

1. Mazda, Engineering Management, Addisen Wesley
2. S P Gupta, Management Accounting
3. I.M.Pandey, Financial Management, Vikas Publication.
4. The Practice of Management : Peter Drucker, Harper and Row
5. Essentials of Management :Koontz Prentice Hall of India
6. Management : Staner Prentice Hall of India
7. Principle & Practice of Management :T.N. Chhabra ; Dhanpat Rai New Delhi

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BCA-P18

Practical based on BCA11

BCA 11. Fundamentals of Computers and PC-Packages

Windows:

1. Creating folder, cut, copy, paste, managing file and folder in windows.
2. Arrange icons, set display properties.
3. Adding and removing software and hardware.
4. Setting date and time, screen saver and appearance.
5. Using windows accessories.
6. Settings of all control panel items.
7. Search file.
8. Desktop setting – new folder, rename, recycle bin operation, briefcase, control panel utility, Display properties, screen saver, background setting.

MS-Word

1. Creating & Editing Document .
2. Formatting Document.
3. Use of Auto-text, Autocorrect, Spelling and Grammar Tool.
4. Page Formatting, Page Border, Background.
5. Creation of MS-Word-Mail Merge, Macros, Tables.
6. Practice of Printing, page setup etc.

MS- Powerpoint

1. Creating, Manipulating & Enhancing Slides.
2. Inserting Organizational Charts, Excel Charts.
3. Using Word Art.
4. Putting Animations and Sounds.
5. Inserting Animated Pictures.
6. Inserting Recorded Sound Effect.

MS-Excel

1. Creating & Editing Worksheet.
2. Use Formulas and Functions.
3. Chart creation.

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BCA-P19

Practical based on BCA13

BCA 13. Programming and problem solving through C

1. Write a program for swapping two variables without using third variable.
2. Write a program to calculate simple interest and compound interest.
3. Write a program to convert temperature entered into centigrade to Fahrenheit.
4. Write a program to find maximum of three numbers.
5. Write a program to read in a three digit number produce following output (assuming that the input is 539), 5 hundreds , 3 tens, 9 units.
6. Write a program to find sum of digits of accepted number.
7. Write a program to student grace using IF-ELSE ladder.
8. Write a program that prints given three integers in ascending order using IF-ELSE.
9. Write a program for simple calculator using switch/case loop.
10. Write a program for print Fibonacci series up to N number.
11. Write a program to find sum of first 50 odd numbers and even number.
12. Write a program to find reverse of given number.
13. Write a program to find factorial of accepted number.
14. Write a program to find all prime number between two given numbers.
15. Write a program to find minimum, maximum, sum and average of given one dimensional array.
16. Write a program for sparse matrix.
17. Write a program to find addition, subtraction, multiplication of matrix.
18. Write a program that print terms of each of the following series. (i) sin(x) (ii) cos(x)
19. Write a program to crown pyramid stoners.

*	1	1
**	1 2	2 2
***	1 2 3	3 3 3
****	1 2 3 4	4 4 4 4
*****	1 2 3 4 5	5 5 5 5 5

20. Write a program to read and write a structure.
21. Write a program for factorial function.
22. Write a program to read a string and print its reverse.
23. Write a program to find abusing call by reference.
24. Write a program for create, open and append a file.

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BCA-21 Data Structure using C++

Unit- I

Overview of C++: Object oriented programming, Concepts, Advantages, Usage.

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.

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, C++'s dynamic allocation operators, Initializing allocated memory, Allocating Array, Allocating objects.

Unit-II

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

Function & Operator Overloading: Function Overloading, Overloading constructor, Operator Overloading, Creating a member operator function, Operator overloading using friend function.

Unit-III

Inheritance: Base class Access control, protectedmembers, 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.

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.

Unit-IV

The concept of data structure, Abstract data type, Concept of list & array Introduction to stack, Stack as an abstract data type, primitive operation on stack, Stacks application: Infix, Post fix, Prefix and Recursion, Multiple Stack. Introduction to queues, Primitive Operations on the Queues, Queue as an abstract data type, Circular queue, Dequeue, Priority queue, Applications of queue.

Introduction to the Linked List, Basic operations on linked list, Stacks and queues linked list, Header nodes, Doubly Linked List, Circular Linked List, Application of Linked List.

Unit- V

Analysis of algorithm, complexity using big 'O' notation. Searching; linear search, Binary search, their comparison, Sorting: insertion sort, Selection sort. Quick sort, Bubble sort, Heap sort, Comparison of sorting methods, Hash Table, Collision resolution Techniques.

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TREES Basic Terminology, Binary Trees, Tree Representations using Array & Linked List, Basic operation on **Binary Trees Traversal of binary trees: -** In order, Preorder &Post order, Application of Binary tree, Binary tree representation of trees.

Introduction to graphs, Definition, Terminology, Directed, Undirected & Weighted graph, Representation of graphs, Graph Traversal-Depth first & Breadth first search. Spanning Trees, minimum spanning Tree, Shortest path algorithm.

Reference Books:

1. Object oriented programming in C++ by Robert Lafore.
2. Object oriented programming with C++ by David Parsons.
3. Object oriented design with C++ by Ken Barclay.
4. Programming with C++ Made simple by K. Kumar, TMH 2002
5. Fundamentals of Data Structure, By S, Sawhney& E, Horowitz
6. Data Structure: By Trembley & Sorenson
7. Date Structure: By lipschuists (Schaum's Outline Series Mcgraw Hill Publication)
8. Fundamentals of Computer Algorithm: By Ellis Horowitz and SartajSawhney

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BCA- 22 DBMS & RDBMS

Unit I

DBMS Concepts and architecture Introduction, Review of file organization techniques, Database approach v/s Traditional file accessing approach, Advantages of database systems, Data models, Schemas and instances, Data independence, Functions of DBA and designer. Entities and attributes, Entity types, Value, Sets, Key attributes, Relationships, Defining the E-R diagram of database, **Various data models:** Basic concepts of Hierarchical data model. Network data model, and Relational data model, Comparison between the three types of models.

Unit II

Relational Data models: Domains, Tuples, Attributes, Relations, Characteristics of relations, Keys, Key attributes of relation, Relational database, Schemas, Integrity constraints, Intension and Extension, **Relational Query languages:** Relational algebra and relational calculus, Relational algebra operations like select, Project, Join, Division, outer union etc.

Unit III

SQL: Data definition in SQL, Brief History and overview of Sql, **Sql Basic:** Creating a Database, Adding Tables, Adding Records, Removing and Modifying records, executing queries, Data types: Numeric, String, Date & Time, Operators: Arithmetic, Comparison, Logical, Functions: Math Function, Aggregate, String, Date & Time.

Unit IV

Data Base Design: Introduction to normalization, Normal forms, Functional dependency, Decomposition, Dependency preservation and losslessjoin, problems with null valued and dangling tuples, multivalued dependencies. Distributed databases, protection, security and integrity constraints, concurrent operation on databases, recovery, transaction processing, basic concepts of object oriented data base system and design, CODD's rule.

Unit-V

Relational Database Design: pitfalls in relational database design, subqueries, overview of subqueries, types of sub- query: Where/Having Clause, subqueries and from clause, Subqueries and Joins. Security, **Access Control and Privilege:** Granting, Revoking & Viewing user privileges, commit and roll back. Transaction, Acid Properties of Transaction.

Reference Books:

1. Data Base Management System by C.J. Date
2. Data Base Management System by Ullman
3. Fundamental of database system byElmasri/Navathe the Benjamin / Cunnings Publishing company inc.
4. Data base design by GioWiederhold, McGraw Hill
5. Fundamental of Data Base Management System by Leon & Leon, Vikas Publishing House Pvt. Ltd.
6. Complete Reference using MySql by VikramVaswani.
7. An Introduction to DataBase System by Bipin.C. Desai.

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BCA-23 Internet and E-Commerce

Unit-I

Internet: Evolution, Concepts, Internet Vs Intranet, Growth of Internet, ISP, ISP in India, Types of connectivity - Dial-up, Leased line, DSL, Broadband, RF, VSAT etc., Methods of sharing of Internet connection, Use of Proxy server. Internet Services USENET, GOPHER, WAIS, ARCHIE and VERONICA, IRC. WORLD WIDE WEB (WWW) - History, Working, Web Browsers, Its functions, URLs, web sites, Domain names, Portals. Concept of Search Engines, Search engines types, searching the Web, Web Servers, TCP/IP and others main protocols used on the Web. E-Mail: Concepts, POP and WEB Based E-mail, merits, address, Basics of Sending & Receiving, E-mail Protocols, Mailing List, Free E- mail services, e-mail servers and e-mail clients programs.

Unit-II

Concepts of Hypertext, HTML introduction, features, uses & versions Using various HTML tags, Elements of HTML syntax, Head & Body Sections, inserting texts, Text alignment, using images in pages, Hyperlinks text and images, bookmarks, Backgrounds and Color controls, creating and using Tables in HTML, and presentation, use of font size & Attributes, List types and its tags. Cascading Style sheets defining and using simple CSS.

Unit-III

Introduction to WYSIWYG Design tools for HTML, Overview of MS FrontPage, Macromedia Dream weaver, and other popular HTML editors, designing Web sites using MS FrontPage (using at least FrontPage 2000).Use of Frames and Forms in web pages, Image editors, Issues in Web site creations & Maintenance, Web Hosting and publishing Concepts, Hosting considerations, Choosing Web servers Linux Vs Windows Web servers, Choosing Domain names, Domain name Registration, Obtaining space on Server for Web site, FTP software for upload web site. Add your website on search engines.

Unit-IV

JavaScript Overview, JavaScript and the WWW, JavaScript vs. VB Script, JavaScript vs.Java, JavaScript versions, Script element,. Functions: Functions introduction, Calling functions. JavaScript Comments, Variables: Variables overview, declaring variables, Types of variables, Casting variables, Alert box, Prompt & confirm. Expressions: Arithmetic operators, Assignment operators, Logical operators, Expressions and precedence, Statements: If statement, for statement, while statement, Break/Continue Creating arrays/event handlers, JavaScript Object model, Object and Events in JavaScript – OnClick, On Mouse Over, On Focus, OnChange, On Load etc. Getting data with forms.

Unit—V

E - Commerce an introduction, Concepts, Advantages and disadvantages, Technology in E-Commerce, Internet & E-business, Applications, Feasibility & various constraints.E-transition challenges for Indian corporate, the Information Technology Act 2000 and its highlights related to e-commerce.

Electronic Payment Systems: Introduction, Types of Electronic Payment Systems, Digital Token-Based Electronic Payment Systems, Smart Cards and Electronic Payment Systems, Credit Card-Based Electronic Payment Systems, Risk and Electronic Payment Systems.

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E-security — Security on the internet, network and web site risks for e-business, use of firewalls, secure physical infrastructure

Reference Books:

1. Frontiers of Electronic Commerce, By- Kalakota, Ravi; Stone, Tom; Whinston, Andrew B, Addison Wesley Publishing Co.
2. E-Commerce an Indian Perspective (Second Edition) — by P. T, Joseph, S.J. PrenticeHall of India
3. Learn HTML in a weekend by Steven E. Callihan, PHI
4. Using HTML By Lee Anne Phillips, PHI
5. SAMS Teach Yourself JavaScript in 24 Hrs., By Michael Moncur. TechMedia

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BCA-24 Data Communication and Computer Networks

Unit I

Introduction Theoretical Model for Communication, analog and digital signals Bandwidth, Noise, Channel Capacity, Data-rate, Concepts of Circuit Switching, Message switching and Packet switching with their timing diagrams, comparison of switching techniques, ISDN.

Unit II

Evolution of Computer Networks Layered: Network architecture, OSI Layers Model, transmission media topology, error detection & Correction techniques, Parity checks, CRC, Asynchronous and synchronous transmission, TDM, FDM.

Unit III

Data Link Layer: Different Types of line discipline, simplex, half duplex and full duplex.**Flow control:** stop and wait protocol, sliding Window Protocol with their efficiency, ARQ techniques & their performances HDLC.

Unit IV

LAN: Static & Dynamic channel allocation, Media access control for LAN & WAN; **ALOHA:** pure, slotted ALOHA, CSMA, CSMA/CD,**IEEE 802 standards for LAN & MAN:** 802.3, 802.4, 802.5, 802.6 and 802.2 & their **comparison Fast LANs:** fast Ethernet, FDDI.

Unit V

Routing: Definition, Elements of routing techniques, Least Cost Routing algorithm,Dijkstra's algorithm, Bellman-ford algorithm, Routing Strategies, Congestion Control encryption & description techniques, Internet working, Internet and Intranet.

Reference Books:

1. Computer Networks Tanenbaum A. S. PHI.
2. LANs- Keizer
3. Computer Networks - Stalling w., PHI.

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-25 Systems Analysis Design & Software Engineering

Unit-I

System Concept: Definition, Characteristics, Elements of system, Physical and abstract system open and closed system, man-made information systems,**System Development Life Cycle:** Various phases of system development, Considerations for system planning and control for system success. **System Planning:** Base tor planning a system, Dimensions of Planning. **Initial Investigation:** Determining users requriments and analysis, fact finding process and techniques.**Feasibility study:** Determination of feasibility study, Technical, Operational & Economic Feasibilities, System performance constraints, and identification of system objectives, feasibility report. **Cost/Benefit Analysis:** Data analysis cost and benefit analysis of a new system. Categories determination and system proposal.

Unit-II

Tools of structured Analysis: Logical and Physical models context, diagram, data dictionary, data diagram, form driven methodology, IPO and HIPO charts, Gantt charts, system model, pseudo codes, Flow charts, system flow chart, run flow charts etc., decision tree, decision tables, data validation. **Input/ Output and Form Design:** Input and output form design methodologies, menu, screen design, layout consideration.

Management standards Systems analysis standards, Programming standards, Operating standards. Documentation standards User Manual, system development manual, programming manual, programming specifications, operator manual.

Unit-III

System testing & quality: System testing and quality assurance, steps in system implementation and software maintenance. System security: Data Security, Disaster/ recovery and ethics in system development, threat and risk analysis, System audit.

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

Unit-IV

The Software Product and Software Process: Software Engineering - A Layered Technology, **Software Process Models:** Linear Sequential Model. Prototyping Model, RAD Model Evolutionary Software Process Models: Incremental Model, Spiral Model Component Assembly Model, Formal Methods, Fourth-Generation Techniques.

Systems Engineering: The Systems Engineering Hierarchy, Information Engineering, Information Strategy Planning, Business Area Analysis, **Product Engineering Requirement Analysis Modeling:** Analysis Concepts and Principles, The Elements of the Analysis Model Data Modifying, Functional Modeling and Information Flow and Behavior Modeling, Mechanics of Structured Analysis, Data Dictionary.

Unit-V

Principles, and Methods: TheSoftwareDesignProcess:Design Principles, Design Concepts, Effective Modular Design, Design Heuristics, Design Documentation, Design Methods: Data Design, Architectural Design, Interface Design, Human Computer Interface Design, Procedural Design.

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Software Testing Methods: Software Testing Fundamentals,Test Case Design, Black-BoxTesting, White-Box Testing, Software Testing Strategies: Verification and Validation, Strategic Issues, Unit Testing, Integration Testing, Validation Testing, System Testing.
Software Process and Project Metrics: Measures, Metrics and indicators, Metrics in the Process and Project Domains, Software Measurement, Metrics of Software Quality.

Reference Books:

1. System Analysis & Design by V K Jain, Dreamtech Press
2. Modern System Analysis &Design by A Hoffer. F George- S Valaciahlow Priced Edn. Pearson Education.
3. Information Technology & Computer Applications. by V.K.Kapoor, Sultan Chand & Sons, New Delhi.
4. Software Engineering: A Practitioner's Approach by P, S. Pressman Fourth edition 1997,McGraw- HW pub.
5. An integrated Approach to Software Engineering Pankaj Jalote, 1991,Narosa Pub.
6. Software Engineering University Press — by Sonunervilie Oxford university press 1996
7. Fundamentals of Software Engineering Leon and Leon Vikas Publishing House Pvt. Ltd.

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-26 Managerial Economics and Management Information System

Unit I

Managerial Economics: Introduction of Managerial Economics- Factors Influencing Manger,Micro and Macroeconomics, Theory of the Cost Theory of the Firm Theory of Production Function, Production System

Unit II

Input-Output Analysis, Micro Economics Applied to plants and industrial undertakings, Productivity, Factors affecting Productivity, Increasing Productivity of Resources.

Unit -III

Meaning, Nature, Need, Role, Importance, Evolution of Management Through Information system. Structure of Management Information System. Relatedness of MIS with management activities, Management functions and decision making, Information System in Business and Management.

Unit-IV

Development of MIS- Methodology and Tools/ Techniques for systematic designing, implementation, evaluation. modification of MIS, A study of major financial, production, manpower and marketing MIS and case Studies.

Unit -V

Advanced MIS-concept, need and problems in achieving advanced MIS, Decision support System. Rationale of computer application, Decision support system (DSS).

Reference Books:

1. Managerial Economics: Joel Dean : Prentice Hall of India
2. Murdick, R.G., Ross,J.E. & Claggtt, J.R.: Information systems for Modern Managment, PHI
3. Thomas, R. & Prince: Information systems for planning and control.
4. Wigarders, K.,Syensson, A., Sehong. I-.,Rydin, A. &Dahlgre. G. Structured Analysis & Design ofInformation system, Mcgraw Hill Book company,1986.
5. Aktas : structured analysis and design of information system, PHI
6. Spargue and Watson : Decision Support System ,2nd Edn. Prentice Hall internationai.1989.
7. David : Applied Decision Support, Prentice hall international, 1988.

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Bachelor of Computer Application (BCA)

BCA-P28

Practical based on BCA-21 & BCA -22

BCA – 21 : DATA STRUCTURE USING C++

1. Program to calculate area of a circle.
2. Program for swapping two variables.
3. Program to find largest of three numbers.
4. program for simple calculator using switch/case.
5. Program to generate sum of N numbers.
6. Program to find factorial of a number.
7. Program to use for loop to print pattern like
   1
   12
   123
   1234
   12345
8. Program for Function Overloading.
9. Program for Class and Object.
10. Program for Friend Function.
11. Program for Static Data Member and Static Member Function.
12. Program for Parameterized Constructor.
13. Program for Copy Constructor.
14. Program for Destructor.
15. Program for Unary Operator Overloading.
16. Program for Binary Operator Overloading.
17. Program for Single Inheritance.
18. Program for Multilevel Inheritance.
19. Program for Multiple Inheritance.
20. Program for Virtual Function.
21. Program for Push and pop operation on stack using array.
22. Program for Insertion and deletion operation on queue using array.
23. Program for Insertion and deletion operation on circular queue using array.
24. Program for Insertion sort.
25. Program for Bubble sort.
26. Program for Quick sort
27. Program for selection sort.
28. Program for Linear search.
29. Program for Binary search.
30. Program for Linked List creation, insertion and deletion.

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Bachelor of Computer Application (BCA)

BCA- 22 DBMS & RDBMS

1. Assignment to create simple tables , with only the primary key constraint (as a table level constraint & as a field level constraint) (include all data types)
2. Assignment to create more than one table, with referential integrity constraint, PK constraint.
3. Assignment to create one or more tables with following constraints, in addition to the first two constraints (PK & FK) a. Check constraint b. Unique constraint c. Not null constraint
4. Assignment to drop a table from the database, to alter the schema of a table in the Database.
5. Assignment to insert / update / delete records using tables created in previous Assignments. (use simple forms of insert / update / delete statements)
6. Assignment to query the tables using simple form of select statement Select from table [where order by] Select from table [where group by i. having <> order by <>]
7. Assignment to use various additional operator available for conditional statement like between, in any, all etc.
8. Assignment to query table, using set operations (union, intersect)
9. Assignments to query tables using nested queries
10. Assignments to query more than one table using following joins
    a. Cartesian Product
    b. Inner Joins
    c. Equi-Join
    d. Table Aliases
    e. Non-Equi Join
    f. Non-Key Join
    g. Reflexive Join
    h. Natural Join
    i. Outer Joins
    j. Right Outer Join
    k. Left Outer Join
    l. Full Outer Join

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Bachelor of Computer Application (BCA)

BCA-31 Programming with 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, creatingObjects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting ofMethods. Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract methods and Visibility Control.

Unit-III

Arrays: One Dimensional & two Dimensional strings, Vectors, wrapperClasses,Defining Interface Extending Implementing Interface, Accessing Interface Variable, System Packages, Using System Package, adding a Class to aPackage, 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 Cycles,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.

Reference Books:

1. Balaguruswamy, "Programming in Java", 2nd Edition, TMH Publications
2."Peter Norton. Guide To Java Programming,Techmedia Publications

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-32 Artificial Intelligence & Expert Systems

Unit-I

Basic Problem solving methods: Production systems-state space search, control strategies. Heuristic search, forward and backward reasoning, Hill climbing techniques Breadth first search, Depth first search, Best search.

Unit-II

Knowledge Representation: Predicate logic, Resolution question Answering, Nonmonotonic Reasoning, statistical and probabilistic reasoning, Semantic Nets. Conceptual Dependency, frames and scripts.

Unit-III

AI languages: Important characteristics of Al languages PROLOG, LISP.

Unit-IV

Introduction to Expert Systems: Structure of an Expert system interaction with an expert, Design of an Expert system.

Unit V

Neural Network: Basic Structure of a neuron, Perception Feed forward, Back propagation, Hopfield Network.

Reference Books:

1. Rich E and Knight K Artificial Intelligence, 'TMH New Delhi,
2. Nelsson N.J. Principles of Artificial Intelligence, Springer Verlag, Berlin.
3. Barr A, Fergenbaub EA. and Cohen PR, Artificial Intelligence. Addisonwesley Reading (Mars) 1989.
4. Waterman D.A. A guide to Expertsystem, Adision - Wesley, Reading (Mars) 1986,
5. Artificial Intelligence Hand book, Vol. 1-2, ISA. Research Triangle Park 1989,
6. Kos Ko B Neural Networks and Fuzzy system -pH-
7. Neural Network Design, Martin Hagar, Vikas-Thomson Learning. Vikas Pub. House PVI, Ltd., Delhi.
8. Expert Systems: Principals & Programming, Joseph Giarrantons&Rilay. Vikas- Thomson Learning Vikas Pub. House Pvt. Ltd., Delhi.

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-33 Internet Technology with ASP.NET and C#

Unit-I

Overview of ASP.NET framework, Understanding ASP. NET Controls, Applications, Web servers, installation of IIS. Web forms, web form controls server controls, client controls, web forms & HTML, Adding controls to a web form, Buttons, Text Box, Labels, Checkbox, Radio Buttons, List Box, etc. Running a web Applications, creating a multiform web project.

Unit-II

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-III

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

Unit-IV

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

Unit-V

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

Reference Books:

1. VB.NET Black Book by stevenholzner - dreamtech
2. ASP.NET Unleashed
3. C# programming— wrox publication
4. C# programming Black Book by Matt telles

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-34 Computer Graphics & Multimedia

Unit I

Introduction to Raster scan displays, Storage tube displays, refreshing, flickering, interlacing, color monitors, display processors resolution, working principle of dot matrix, inkjet laser printers, working principles of keyboard, mouse scanner, digitizing camera, track ball, tablets and joysticks, graphical input techniques, positioning techniques, rubber band techniques, dragging etc.

Unit II

Scan conversion techniques, image representation, line drawing, simple DDA, Bresenham'sAlgorithm,Circle drawing, general method, symmetric DDA, Bresenham's Algorithm, curves, parametric function, Beizier Method, B-spline Method.

Unit III

2D & 3D Co-ordinate system, Translation, Rotation, Scaling, Reflection Inverse transformation, Composite transformation, world coordinate system, screen coordinate system, parallel and perspective projection, Representation of 3D object on 2D screen.

Unit IV

Point Clipping. Line Clipping Algorithms, Polygon Clipping algorithms, Introduction to Hidden Surface elimination, Basic illumination model, diffuse reflection, specular reflection, phong shading, Gourand shading ray tracing, color models like RGB,YIQ, CMY, HSV etc.

Unit V

Multimedia components, Multimedia Hardware, SCSI, IDE, MCI, Multimedia data and file formats, RTF, TIFF, MIDI, JPEG, DIB, MPEG, Multimedia Tools, Presentation tools, Authoring tools, presentation.

Reference Books:

1. James E. Shuman, "Multimedia in Action" Thomson / Vikas Publishing House.
2. Tay Vaughan " Multimedia: making it work" Tata McGraw Hill 1999« 4th Edition
3. Prabhat kAndleigh, Kiran Thakral "Multimedia System Design", PHI
4. Donald Hearn and M.P. Becker "Computer Graphics" PIR Pub.
5. FolayVandam,Feiner, Hughes "Computer Graphics Principle & Practice" Adison Wesley,2/e. 1997
6. Principles of Computer Graphics "Rogers" TMH.

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Bachelor of Computer Application (BCA)

BCA-35 Microprocessor and Interfacing

Unit-I

Microprocessor: Detailed architecture of 8085, Register architecture, buses, flags, interrupts, salient features of advanced microprocessors: 8086/ 8088/ 286/386/486/ Pentium. Super scalar architecture of Pentium.

Unit-II

Introduction to assembly language programming of 8085 and 8086, addressing modes, subroutine call and returns.

Unit-III

Introduction to various interfacing chips like 8212, 8155, 8255, 8755. General purpose programmable peripheral devices (8253) 8254 programmable interval timer, 8259 A.

Unit IV

Programmable interrupt controller & DMA, 8257 DMA Controller. Serial I/O & data communication USART,RS232C, modem etc. and various bus standards.

Unit V

Introduction to micro-controllers, DSP processors and transporters, development tool like MDS and logic analyzer, memory interfacing, floppy and CD ROM drives, introduction to programmable key boards, display interface, interfacing printers, LED's, ADC, DAC and stepper motor.

Reference Books:

1. B.B. Brey (PHI), "The Intel Microprocessors, Architecture, Programming & Interfacing".
2. A. Triebel&Avtar Singh (PHI), "The 8088/8086 Microprocessor".
3. D Hali (Mc Graw Hill), "Advance Microprocessor & Interfacing".
4. R.L. Krutz (John Wiley). "Interfacing techniques in digital design with emphasis on microprocessor".
5. A.P. Mathur (TMA), " Introduction to microprocessor".

Vikram University, Ujjain

Bachelor of Computer Application (BCA)

BCA-36 Enterprise Resource Planning and Organizational Behavior

Unit-I

Overview of business Functions: Business function in an Organisation, 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, human resource, finance, Support processes, marketing, strategic Planning, research & development.

Unit-II

Problems in traditional functional view Need for integrated process views information as a resource. motivation for ERP. **Evolution of information systems**: Electronic Data Processing (EDP) systems, management information systems, Executive information Systems, Information needs of Organization, ERP as an integrator of information needs at various levels, Decision making involved at the above level.

Unit-III

ERP Models/Functionality: Sales order Processing, MRP scheduling, forecasting, maintenance,distribution, finance. Features of each of the models, description of data flows across each module, Overview of the supporting databases, technologies required for ERP. **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 managements, Post implementation issues,performance measurement.

Unit-IV

Introduction to organisations and individuals, what is an organization, components of organization, nature and variety of organisation (in terms of objectives, structure etc.) models of analyzingorganisation phenomena. Organisational and business variables,organisation in the Indian context, institutions and structures, basic roles in an organisation etc., perception attitudes, motives (achievement, poser and affiliation). Commitment: Value creativity and other personality factors. Profile of a manager and an entrepreneur.

Unit-V

Interpersonal and group processes, Interpersonal trust, understanding the other person from his/her point of view, interpersonal communication, listening, Feedback counseling, transactional analysis.self-functioning. team decision making, team conflict resolution, team problem solving. Organisational structure and integrating interpersonal and group dynamics elementsof structure. Function of structure, determinants of structure, dysfunctionalities of structures, structure technology, environment people relationship, principles underlaying design of organisation, organisational change, integrating cases.

Reference Books:

1. Dr. U. K. Singh and Gaurav Agrawal, Enterprise Resource Planning, Shiva Prakashan, Indore
2. V.K. Garg and N.K. Venkitakrishanan, Enterprise Resource Planning Practices Prentice Hall
3. J.Kanter, Managing with information, Prentice Hall(I) 1996, New Delhi
4. S-Sadagopan, Management Information Systems, Prentice Hall(I) 1996 New Delhi,
5. DwivediR.S."Human Relations and OrganisationalBehaviourA Global Perspective" Macmillan India Ltd. Delhi 1995.
6. Amold J. Robertson Laven and Coopercary. L. "Work Psychology: Understanding Human Behaviour in the Workplace "MacmillanIndia Ltd. Delhi 1996.

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Bachelor of Computer Application (BCA)

BCA- P 38

Practical based on BCA-31 and BCA-33

BCA-31: Programming with JAVA

1. WAP to print hello world.
2. WAP to demonstrate use of operators like + , - , *, / with integer and string.
3. WAP to find largest of three numbers (using ternary operator).
4. WAP to calculate area of a circle.
5. WAP to find largest of two numbers (using if)
6. WAP to find largest of two numbers (using ternary operator).
7. WAP to find largest of three numbers (using if).
8. WAP to generate Fibonacci series.
9. WAP to find factorial of a number.
10. WAP to use for loop to print pattern like
    1
    12
    123
    1234
11. WAP to print pattern like this
    1
    23
    456
    78910
12. WAP to print prime number series using while loop.
13. WAP to reverse digit of a number.
14. WAP to sum digit of a number.
15. WAP to print Pythagoras triplet between 1 to n.
16. WAP to generate random number.
17. Wap to check if the number is prime.
18. WAP to calculate sum of digits of two different numbers. Find the maximum of the sum. Use only one loop for the process.
19. WAP to create an array of characters and reverse all of them.
20. WAP to find sum of array elements.
21. WAP to find out the number of vowels and consonants in a sequence of character string.
22. WAP to print maximum element from the array.
23. WAP to find out second maximum and second minimum from the list.
24. WAP for linear search.
25. WAP for binary search.
26. WAP to perform bubble sort on array.
27. WAP to perform insertion sort on array.
28. WAP to search a string within another string.
29. WAP to reverse the string.
30. WAP to reverse each word in a sentence
31. WAP to play tic tac toe game with the use of array

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32. WAP which will print array element with the help of for each loop
33. WAP to replace each small letter with the help of capital letter after every white space.
34. WAP to accept a sentence and break it into an array of strings at each white space.
35. WAP to demonstrate function overloading in a class.

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Bachelor of Computer Application (BCA)

BCA-33 Internet Technology with ASP.NET and C#

1. Design a web page for user registration that has following fields..User First Name, Last Name, DOB, city, pincode, user id, add new password, confirm password, Registration and cancel button.
2. Use validation control with necessary fields with registration form.
3. Store registration form data to the data base when user click submit button. Provide error message with registration form if input userid has already exist, otherwise open a new web page.
4. Create a user login web page. When user input id and password are correct with database then open a new default web page containing user id. (Use session state variable)
5. Create a web page that will display all user information in tabular form.
6. Create a web page that will enable to edit any required fields to only login user.
7. Create web page that contain aid rotater control and is capable to display more than one images.
8. Create an XML file for student records that has following fields…Rollno, name, class, branch.
9. Assign XML data base record into data sets and display into data grid.
10. Design a home page that contain a number of hyperlink to provide navigate all above web pages.

B.C.A / PGDCA

Bridge Course (Mathematics)

Semester I / I year for BCA

Unit 1: Differential Calculus

Meaning of Limit, existence theorem for Limits, fundamental theorem on limits (statements only Continuity of a function at a point, over an open/ closed interval: sum, product and quotient of continuous function ; continuity of polynomial, exponential, logarithmetic functions, derivative of a function, derivative of x^n sin x, cos x, tan x, from first principles; the derviates of the sum, difference , product & quotient of functions; derivative of trigonometric function.

Unit 2: Integral Calculus

Integration as the inverse of differentiation, indefinite integral or anti-derivative; properties of integrals. Fundamental integral involving algebraic, trigonometric, exponential and logarithmic functions, integration by substitution, integration by parts, Definite integral, definition as the limit of a sum.

Unit 3: Differential Equation

Definition : order and degree, general and particular solution, formation of a differential equation whose general solution is given, solution of differential equation by the method of separation of variables, homogeneous differential equation , linear differential equations.

Unit 4 : Matrices & Determinatants

Matrices:Matrix as a rectangular arrangement of numbers, tyes of matrices, equality of matrices addition, scalar multiplication and multiplication of matrices, statement and verification of non-commutativity and associativity of matrix multiplications (no proof)
Determinants:Expansion rule, minors andcofactors of a determinant, determinant of a matrix, singular and non- singular matrices, application of determinants in the solution of equation and areas of triangle,cramer's rule, adjoint, and inverse of matrices in solving simultaneous equation in two or three variables.

Unit 5: Probability and statistics

Bivariate frequency distribution, marginal and conditional frequency distribution ,relationship between two variables, scatter diagram, covariance, karl pearson's coefficient of correlation, its interpretation and limits, linear regression, relation between and correlation, least squares method of finding equation of lines of regression. Calculation of regression coefficients, angles between the lines of regression, point of intersection of lines of regression.

Probability theory : Random experimental and associated samples space ,events as subsets of sample space, occurance of an event impossible event, sure events, combination of events through the operation "and" ,"or", "net" and their set representation, meaning of equality likely outcomes, definition of probability of an the ratio of the number of favourable equally likely outcomes to the total number of outcomes, equally likely events.

Reference:

(1) Mathematics by R.D.Sharma

B.C.A / PGDCA

Bridge Course(Mathematics)

Semester III / II yr. for BCA

Unit 1:

Sets, relations and functions : set ,Cartesian product of sets; relation: functions : Binary operations.

Cartesian system of rectangular coordinates : Cartesian coordinate system –The number plane: Distance formula: Area of triangle : section formula : slop of line :locus and equations.

Unit 2:

Straight line : find the equation of a straight lines parallel to an axis; the point-slop form ;two point form ; intercept form ; slop-intercept form; Normal form ; symmetric form ;General form; angle between two lines; distance of appoint from a line.Family of lines: equation of family of lines, pair of straight lines through origin ; angle between the pair of straight lines ;equation of the Bisectors of the angles.

Unit 3:

Circle and family of circle: Standard form of the equation of a circle ; General form of the equation of a circle ; equation of a curve in parametric form ; equation of a circle when the end points of a diameter are given point of intersection of a line and a circle with centre at origin, condition of tangency ; equation of a tangent to a circle an length of the tangent.

Unit 4 :

Complex number : The algebra of complex numbers ; the argand diagram and the polar form : polar representation ; powers and roots of complex numbers,

Quadratic equation: Solution of quadratic equation ; symmetric function os roots, graph of a quadratic polynomial ; application.

Unit 5:

Sequences and series : Sequences ;arithmetic progression (A.P); Examples of A.P. and arithmetic means ;Geometric progression (G.P) ; sum to infinity of a G.P., arithmetrico – geometric sequence ;sum to n terms of special sequences.

Binomial Theorem : The binomial theorem ;some application of binomial theorem , binomial theorem for any index.

Reference:

(1) Mathematics by M.S. Rangachari