



SARVEPALLI RADHAKRISHNAN UNIVERSITY, BHOPAL

Yearly Scheme for BCA (Bachelor of Computer Application)

First Year Scheme

With Effect from Session 2017-18

Subject code	Subject Name	Internal Assessment		Theory		Practical	Grant Total
			Total		Total		
1BCA1	Foundation Course (Paper I)	10	20	25	80		100
1BCA2	Foundation Course (Paper II)	05		30			
1BCA3	Foundation Course (Paper III)	05		25			
1BCA4	Fundamental of Computer (Paper I)	10	15	40	85		100
1BCA5	Fundamental of Computer (Paper II)	10		40			
1BCA6	Programming in C (Paper I)	10	15	40	85	50	150
1BCA7	Programming in C (Paper II)	10		40			
1BCA8	Computer System Organization (Paper I)	10	15	40	85	50	150
1BCA9	Computer System Organization (Paper II)	10		40			
Grant Total		65		335		100	500

Practical Group

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Sarvepalli Radhakrishnan University, Bhopal

Yearly Syllabus for BCA (Bachelor of Computer Application)

Session 2017-18

First Year

Paper I: Fundamental of Computers

Max Marks: 40

Min Marks: 15

UNIT – I

Brief history of development of computers, Computer system concepts, Computer system characteristics, Capabilities and limitations, Types of computers Generations of computers, Personal Computer (PCs) – evolution of PCs, configurations of PCs- Pentium and Newer, PCs specifications and main characteristics. Basic components of a computer system - Control unit, ALU, Input / Output functions and characteristics, memory - RAM, ROM, EPROM, PROM and other types of memory.

UNIT – II

Input / Output & Storage Units:-Keyboard, Mouse, Trackball, Joystick, Digitizing tablet, Scanners, Digital Camera, MICR, OCR, OMR, Bar-code Reader, Voice Recognition, Light pen, Touch Screen, Monitors - characteristics and types of monitor -Digital, Analog, Size, Resolution, Refresh Rate, Interlaced / Non Interlaced, Dot Pitch, Video Standard - VGA, SVGA, XGA etc, Printers& types - Daisy wheel, Dot Matrix, Inkjet, Laser, Line Printer, Plotter, Sound Card and Speakers, Storage fundamentals - Primary Vs Secondary Data Storage and Retrieval methods - Sequential, Direct and Index Sequential, SIMM, Various Storage Devices - Magnetic Tape, Magnetic Disks, Hard Disk Drives, Floppy Disks, Optical Disks, CD, Blue Ray Disc

UNIT – III

Software and its Need, Types of Software - System software, Application software, System Software - Operating System, Utility Program, Programming languages, Assemblers, Compilers and Interpreter, Introduction to operating system for PCs-DOS Windows, Linux, File Allocation Table (FAT & FAT 32), files & directory structure and its naming rules, booting process details of DOS and Windows, DOS system files Programming languages- Machine, Assembly, High Level, 4GL, their merits and demerits, Application Software and its types - Word-processing, Spreadsheet, Presentation Graphics, Data Base Management Software, characteristics, Uses and examples and area of applications of each of them, Virus working principles, Types of viruses, virus detection and prevention, viruses on network.

UNIT – IV

Use of communication and IT , Communication Process, Communication types- Simplex, Half Duplex, Full Duplex, Communication Protocols, Communication Channels - Twisted, Coaxial, Fiber Optic, Serial and Parallel Communication, Modem - Working and characteristics, Types of network Connections - Dialup, Leased Lines, ISDN, DSL, RF, Broad band ,Types of Network - LAN, WAN, MAN ,Internet, VPN etc., Topologies of LAN - Ring, Bus, Star, Mesh and Tree topologies, Components of LAN -Media, NIC, NOS, Bridges, HUB, Routers, Repeater and Gateways. Internet-Evolution, World Wide Web Internet Services, Convergence of technologies.

UNIT-V

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.

TEXT & REFERENCE BOOKS: ☐

- Anurag Seetha, “Introduction to Computers and Information Technology”, Ram Prasad & Sons, Bhopal. ☐
- S.K. Basandra, “Computers Today “, Galgotia Publications.
- Alexis Leon & Mathews Leon, “Fundamentals of Information technology “, Vikas Publishing House, New Delhi. ☐

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First Year

Paper II: Fundamental of Computers

Max Marks: 40

Min Marks: 15

UNIT – I

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; simple operations like copy, delete moving of files and folders from one drive to another, Shortcuts & Autostarts; 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 – II

MS Word Basics: Introduction to MS Office; Introduction to MSWord; 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

UNIT-III

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Auto texts, Symbols etc.; Working with Columns, Tabs & Indents; Creation & Working with Tables including conversion to and from text; Margins & Space management in Document; Adding References and Graphics; Mail Merge, Envelops & Mailing Labels. Importing and exporting to and from various formats.

UNIT – IV

MS Excel: Introduction and area of use; Working with MS Excel.; concepts of Workbook & Worksheets; 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 Worksheets; Column Freezing, Labels, Hiding, Splitting etc.; Using different features with Data and Text; Use of Formulas, Calculations & Functions; Cell Formatting including Borders & Shading; Working with Different Chart Types; Printing of Workbook & Worksheets with various options.

UNIT – V

MS PowerPoint: Introduction & 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 & Lists; Adding Graphics, Sounds and Movies to a Slide; Working with PowerPoint Objects; Designing & Presentation of a Slide Show; Printing Presentations, Notes, Handouts with print options. Outlook Express: Features and uses, Configuring and using Outlook Express for accessing e-mails in office.

Text & Reference Books: ☐

- Windows XP Complete Reference. BPB Publications ☐
- MS Office XP complete BPB publication ☐
- MS Windows XP Home edition complete, BPB Publications

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First Year

Paper I: Programming in C

Max Marks: 40

Min Marks: 15

UNIT – I

Program Concept, Characteristics of Programming, Various stages in Program Development Programming aids Algorithms, Flow Charts - Symbols, Rules for making Flow chart, Programming Techniques – Top down, Bottom up, Modular, Structured - Features, Merits, Demerits, and their Comparative study. Programming Logic- Simple, Branching, Looping, Recursion, Cohesion & Coupling, Programming Testing & Debugging & their Tools.

UNIT – II

Introduction to C language, C language standards features of C, Structure of C program. Introduction to C compilers, Creating and compiling C Programs, IDE features of Turbo C compiler, Command line options to compile C program in TC.

UNIT – III

Keywords, Identifiers, Variables, constants, Scope and life of variables - local and global variable. Data types, Expressions, Operators: Arithmetic, Logical, Relational, Conditional and Bit wise Operators. Precedence and Associativity of Operators, Type conversion. Basic input/output library functions: Single character input/output i.e. getch(), getchar(), getche(), putchar(). Formatted input/output i.e. printf() and scanf(). Library functions: Mathematical & Character functions.

UNIT – IV

Declaration statement, conditional statement: If statement, If.....Else statement, Nesting of If...Else Statement, else if ladder, The?: operator, Switch statement. Iteration statements: for loop, while loop, do-while loop. Jump statements: break, continue, goto exit ().

UNIT – V

ARRAYS: concept of Single and Multi Dimensional arrays, Array declaration and initialization of arrays Strings: declaration, initialization.

TEXTS & REFERENCE BOOKS: ☐

- E. Balaguruswamy, “Programming In C”, TMH Publications ☐
- Gottfried, Schaums Outline Series, “ Programming With C ”, TMH Publications ☐
- Mahapatra, “ Thinking In C ”, PHI Publications ☐
- Anurag Seetha, “Introduction To Computers And Information Technology”, Ram Prasad & Sons, Bhopal. ☐
- S.K.Basandra, “Computers Today ” Galgotia Publications. ☐
- Peter Juliff, “ program design ”, PHI Publications

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First Year

Paper II: Programming in C

Max Marks: 40

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Unit I

Introduction to Computer Based Problem Solving: Problem Definition, Problem Solving, Goals and Objectives, Problem Identification and Definition, program Design and Implementation Issues: Programming, Algorithm, System Design Techniques, Programming Techniques, Basic Constructs of Structured Programming, Modular Design of Programs, Communication between Modules. Module Design Requirements.

Unit II

The need of C functions, User defined and library function, prototype of functions, prototype of main() function, Calling of functions, Function arguments, argument passing: call by value and call by reference, Return values. Nesting of function, Recursion, Array as function argument, Command line arguments. Storage class specifier - auto, extern, static, register.

Unit-III

Defining structure, Declaration of structure variable, typedef, Accessing structure members, Nested structures, Array of structure, Structure assignment, Structure as function argument, Function that return structure, Union. Concept of debugging. Finding Errors in the programs, error codes and their meanings, Various debugging options in Turbo C compiler. (Debug and Options Menu of the TCC IDE)

Unit -IV

Pointers: Introduction to Pointers, Pointers Notation, Pointer Notation and declaration and Initialization, Accessing Variable through Pointer, Pointer Expressions, Pointers and One Dimensional Arrays

Unit-V

File Handling In C: what is a File? , Defining and Opening a File, Closing a File, Input/Output Operations on Files, Functions for Random Access to Files, Example Programs.

C Preprocessor: Introduction to Preprocessor, Macro Substitution (#define), undefining a Macro (#undef), File Inclusion, Conditional Compilation Directives (#if, #else, #elif, #endif, #ifdef, #ifndef).

TEXTS & REFERENCE BOOKS: ☐

- E. Balaguruswamy, "Programming In C ", TMH Publications ☐
- Gottfried, Schaums Outline Series, " Programming With C ", TMH Publications ☐
- Mahapatra, " Thinking In C ", PHI Publications ☐
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Paper I: Computer System Organization

Max Marks: 40

Min Marks: 15

Unit – I

Data Representation, Data Types, Number Systems, Octal and Hexadecimal, Numbers, Decimal Representation, Alphanumeric Representation, Complements, (r-1)'s Complement, (r's) Complement, Subtraction of Unsigned Numbers, Fixed-Point Representation, Integer Representation, Arithmetic-Addition, Arithmetic Subtraction, Overflow, Decimal Fixed-Point Representation, Floating- Point Representation.

Unit – II

Digital Component, Integrated Circuits, Decoders, NAND Gate Decoder, Decoder, Expansion, Encoders, Multiplexers, Registers, Register with Parallel Load, Shift Registers, Bidirectional Shift Register with Parallel Load, Binary Counters, Binary Counter with Parallel Load, Memory Unit, Random-Access Memory, Read-Only Memory, Types of ROMs.

Unit – III

Combinational Circuits, Half-Adder, Full-Adder, Flip-Flops, SR Flip-Flop, D Flip-Flop, JK Flip-Flop, T Flip-Flop, Edge-Triggered Flip-Flops, Excitation Tables, Sequential Circuits, Flip-Flop Input Equations, State Table, State Diagram

Unit – IV

Basic Computer Organization and Design, Instruction Codes, Stored Program, Organization, Indirect Address, Computer Registers, Common Bus System, Computer Instructions, Instruction Set Completeness, Timing and Control, Instruction Cycle.

Input-Output and Interrupt, Input-Output Configuration, Input-Output Instructions

Unit – V

Interrupt, Interrupt Cycle, Complete Computer Description, Design of Basic Computer, Control Logic Gates, Control of Registers and Memory, Control of Single Flip-Flops, Control of Common Bus, Design of Accumulator Logic, Control of AC Register, Adder and Logic Circuit, **Programming the Basic Computer**, Introduction, Machine Language, Assembly Language, Rules of the Language, An Example, Translation to Binary, The Assembler, Representation of Symbolic Program in Memory, First Pass, Second Pass.

REFERENCE BOOKS: ☐

- BARTEE, “Digital Computer Fundamentals” TMH Publication ISBN 0-07-003899-6 ☐
- MALVINO, “Digital Computer Electronics” TMH Publication ISBN 0-07-462235-8 ☐
- MORRIS MANO, “Computer System Architecture” PHI Publication ISBN 81-203-0417-9

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Paper II: Computer System Organization

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UNIT – I

Binary, ASCII, EBCDIC Codes, Gray Code, Other Decimal Codes, Other Alphanumeric Codes, Error Detection Codes

UNIT – II

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

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 TEXT

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- BARTEE, “Digital Computer Fundamentals” TMH Publication ISBN 0-07-003899-6 ☐
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