BCA -101 INTRODUCTORY ELECTRONICs   Max Marks : 50

UNIT – I : SEMICONDUCTORS & INTEGRATED CIRCUITS Introduction to semiconductors & its types, Diode, PNP & NPN transistors, CE amplifier & Switching characteristics of Transistors, Logic Families, Scale of Integration, RTL, DTL, TTL, and its characteristics.

UNIT – II : INTEGRATED CIRCUIT FABRICATION Integrated circuits technology. Advantages and limitations of Integrated circuits, Basic monolithic integrated circuit technology.

UNIT – III : DATA REPRESENTATION Data types, number systems, fixed point representation, 1's and 2's complements, Binary fixed point representation, arithmetic operation on binary operation, overflow and underflow, codes, ASCII, EBCDIC codes, Grey codes, Excess-3, BCD codes, Error detection and correcting codes.

UNIT – IV : LOGIC GATES AND BOOLEAN ALGEBRA Logic gates AND, OR, NOT, gates and their truth tables, MOR, NAND and XOR gates, Boolean algebra, basic Boolean Law, demorgan's theorem, Map Simplification, Minimizing technique, K-Map, Sum of product, Product of sum.

UNIT –V : COMBINATOINAL & SEQUENTIAL LOGIC CIRCUITS Combinational and sequential circuits, binary adder, substractor, Flip flop – RS, D, JK, and T flip flop, data & shift register, encoder, decoder, comparator, Multiplexer, Demultiplexer, RAM & ROM.

BCA - 102 FUNDAMENTALS of IT & O.S. Max Marks : 100

Unit-I Introduction to Computers Computer System Characteristics and Capabilities : Speed, Accuracy, Reliability, Memory capability, Repeatability. Computer Hardware and Software: Block Diagram of a Computer, Different Types of Softwares. Data Processing: Data, Data Processing System, Storing Data, Processing Data. Types of Computers: Analog, Digital, Hybrid General and Special Purpose Computers. Computer Generations: Characteristics of Computer Generations Computer Systems – Micros, Minis & Main-frames. Introduction to a PC : The IBM Personal Computer Types of PC systems PC, XT & AT Pentium PC's Limitations of Micro Computer.

Unit – II Computer Organization : Introduction to Input Devices : Categorizing Input Hardware, Keyboard, Direct Entry – Card Readers, Scanning Devices – O.M.R., Character Readers, MICR, Smart Cards, Voice Input Devices, Pointing Devices – Mouse, Light Pen. Storage Devices : Storage Fundamentals, Primary and Secondary Storage, Data Storage and Retrieval Methods – Sequential, Direct & Indexed Sequential, Tape Storage and Retrieval Methods Tape storage Devices, characteristics and limitations, Direct access Storage and Microcomputers - Hard Disks, Disk Cartridges, Direct Access Storage Devices for large Computer systems, Mass storage systems and Optical Disks, CD ROM. Central Processing Unit : The Microprocessor, control unit, A.L.U., Registers, Buses, Main Memory, Main Memory (RAM) for microcomputers, Read Only Memory(ROM). Computer Output : Output Fundamentals, Hardcopy Output Devices, Impact Printers, Non-Impact Printers, Plotters, Computer output Microfilm/Microfiche(COM) systems, Softcopy Output Devices, Cathode Ray Tube, Flat Screen Technologies.

Unit – III Computer Software: System Software: System software Vs. Application Software, Types of System Software, Introduction and Types of Operating Systems programs, Booting Loader, Diagnostic Tests, Operating Systems Executive, BIOS, Utility Programs, File Maintenance, Language Processors, Assembler, Compiler & Interpreter. Application Software: Microcomputer Software, Interacting with the System, Trends in PC software, Types of Application Software, Difference between Program and Packages.

Unit – IV Microsoft Disk Operating System : Introduction, History and Versions of DOS. Fundamentals of DOS : Physical Structure of the Disk, Compatibility of drives, Disks & DOS versions, Preparing Disks for use, Device Names. Getting Started with DOS : Booting Process (DOS, Windows, Unix), System Files and Command.com, Internal DOS Commands - DIR, MD, CD, COPY, DEL, REN, VOL, DATE, TIME, CLS, PATH, TYPE. Files & Directories, Elementary External DOS Commands - CHKDSK, MEM, XCOPY, PRINT, DISKCOPY, DISKCOMP, DOSKEY, HELP, TREE, SYS, LABEL, ATTRIB, Creating a Batch Files, Additional Commands - ECHO, PROMPT, EDIT, FORMAT, FDISK, BACKUP, RESTORE, MORE, SORT, APPEND. Introduction to Unix OS, Basic commands eg pwd, is, cat, pg, who, ps, mail, cal, File commands- ls, cat, tail, cp, mv, rm, file,type, chmod. Directory Commands- cd, mkdir, rmdir.

Unit – V Overview of GUI & Windows OS: Introduction to GUI and various versions of MS Windows 98, Windows XP, Windows 2000, Windows Vista, Workgroups and domains, Quick launch toolbar, Windows Flip, 3D navigation, Desktop, Internet explorer 7.0, networking features (Sharing files), managing programs and multimedia, control panel, Speech recognition and Dictation, Handling user accounts, Security and protection features, management tools (updating, diagnosing, configurations, backup and recovery, upgrading windows vista). OLE Concept, Comparative study of Linux, DOS and Windows, features of Windows Vista, reliability, migrating the data.

BCA-103 PROGRAMMING IN 'C' LANGUAGE Max Marks :. 100

UNIT-I Fundamentals of C Programming - Overview of C : History of 'C', Structure of 'C' program. Keywords, Tokens, Data types, Constants, Literals and Variables, Operators and Expressions : Arithmetic operators, Relational operator, Logical operators, Expressions, Operator : operator precedence and associativity ,Type casting, Console I/O formatting, Unformatted I/O functions: getch(), getchar, getche(), getc(), putc(), putchar(). Control Constructs : If-else, conditional operators, switch and break, nested conditional branching statements, loops: For, do.. while, while, Nested loops, break and continue, goto and label, exit function.

UNIT- II Arrays, Strings and Functions : Array:-Array declaration, One and Two dimensional numeric and character arrays. Multidimensional arrays. String:- String declaration, initialization, string manipulation with/without using library function. Functions:-definition, function components: Function arguments, return value, function call statement, function prototype. Type of function arrangement: return and argument, no return and no argument, return and no argument, no return and argument. Scope and lifetime of variable. Call by value and call by reference. Function using arrays, function with command line argument. User defined function: maths and character functions, Recursive function.

UNIT-III Structure, Union & Enum- Structure: basics, declaring structure and structure variable, typedef statement, array of structure, array within structure, Nested structure; passing structure to function, function returning structure. Union: basics, declaring union and union variable, Enum: declaring enum and enum variable.

UNIT- IV Dynamic Data Structures in 'C' - Pointers: definition of pointers, pointer declaration, using & and * operators. Void pointer, pointer to pointer, Pointer in math expression, pointer arithmetic, pointer comparison, dynamic memory allocation functions – malloc, calloc, realloc and free, pointers vs. Arrays, Arrays of pointer, pointer to array, pointers to functions, function returning pointer, passing function as argument to function, pointer to structure, dynamic array of structure through pointer to structure.

UNIT-V File Handling and Miscellaneous Features - File handling: file pointer, file accessing functions,:fopen, fclose, fputc, fgetc, fprintf, fscanf, fread, fwrite,beof, fflush, rewind, fseek, ferror. File handling through command line argument. Introduction to C preprocessor #include, #define, conditional compilation directives: #if, #else, #elif, #endif, #ifndef etc.

BCA-104 Introduction to PC Software & Internet Applications

Unit - I Using Office 2007 MS-Word- Creating and editing word documents, formatting documents – aligning documents, indenting paragraphs, changing margin, formatting pages, formatting paragraph, printing labels, working with tables, formatting text in tables, inserting and deleting cells, rows and columns, use bulleted and numbering, checking spelling and grammar, finding synonyms, working with long documents, working with header and footer, adding page number and foot note, working with graphics, inserting clip art, working with pictures, Word art, creating flow chart, creating word templates, creating templates, working with mail merge, writing the form letter, merging form documents, selecting merge records, creating macros, running macro.

UNIT – II Working with MS-Excel – Introducing Excel, use of excel sheet, saving, opening, and printing workbook ,Apply formats in cell & text, Divide worksheet into pages , setting page layout, adding Header & Footer. Using multiple documents, arranging windows i.e. (Cascade, Tiled ,Split), protecting your work, password protection. Working with Functions & Formulas, using absolute reference, referencing cell by name , using cell label , giving name to cell and ranges , working with formulas (mathematical & trigonometric , statistical, date time , most recently used), Working with Excel graphics, creating chart & graphs. filtering a database ,using auto filter ,criteria range, calculating total and subtotal, creating pivot table, goal seek, recording & playing macros, deleting and selecting macro location.

UNIT – III Working with MS-PowerPoint & MS-Access - Presenting with PowerPoint – Creating presentation, working with slides, different types of slides, setting page layout, selecting background and applying design, adding graphics to slide, adding sound and movie, working with table, creating chart and ginih, playing a slide show, slide transition, advancing slides, setting time, rehearsing timing, animating slide, animating objects, running the show from windows. MS-Access – Creating tables in Access, defining datatypes, creating relationships, manipulating records.

UNIT – IV Introduction to HTML and Designing Web Page using MS-FrontPage – Concept of website, web standards, what is HTML, HTML documents/files. HTML Editor, explanation of the structure of home page, elements in HTML document, HTML elements, HTML tags and basic HTML tags, viewing the source of webpage. And downloading the WebPages source Image, internal and external linking between web pages – IMG elements. Features of Front page 2000, Designing web page, working with views, Hyperlinks, setting Hyperlink, using List, themes, tables, Frames, style sheet, working with forms, page Templates, frame templates, anchor, working with banners, Dynamic effect, How to publishing WebPages in local area network.

UNIT – V Animations and Graphics: Basic Concept of 2D/3D Animation, Principle and application in Multimedia, Hardware & software resources requirement for animation, steps for creating generic animation. Learn the basic of Flash Animation; Creating a new movie : Get set Up, Input Text, Animate Text, drawing and painting with tools, brush,create basic shapes like Oval, Rectangle& Polystar Tools, tools working with object & filing the object, Transformation, object properties dialog box, creating layers motion tweeing, shape tweeing , mask layers, basic action scripts, importing sound through Flash. Interface of Photoshop : The Photoshop workspace use of menus palettes and toolbox, creating new images, using selecting tools, lasso tool, Direct select Lasso, convert point tool, image adjustment through Photoshop.

BCA –105 PROGRAMMING IN VISUAL BASIC   Max Marks : 50

UNIT - I Introduction to visual Basic: Hardware requirements, features of VB, Editions of Visual Basic, and Event Driven Programming vs procedure oriented programming. Introduction to Integrated Development Enviroment. Basic concepts of Visual Basic programming: Controls, properties, methods, events, forms, projects. Creating Executable files. Variables, constants, data types, data conversion function., scope of variables Operators Control Structure : Conditional / branching statements : If...else..endif, Select case Looping statements: do.. while, for.. next, for each, exiting a loop, goto statement, msgbox and input box functions.

UNIT - II Arrays: types of arrays, array manipulation, Working with standard controls. Working with control array, various key and mouse events, using drag and drop concepts. Procedure and Functions: types of function, library function, date and time function, format function, and string related function, validation function. Creating user defined function & procedure, call by value and call by reference, concept of recursion, working with basic module, class module and form module.

UNIT – III Working with Advanced Controls: toolbar, status bar, tabbed dialog controls, progress bar, animation controls, dtpicker, calendar, common dialog control. SDI & MDI Application: creating MDI application, menu editor: defining menu & popup menu, sub main, startup objects. Working with graphics control and using grphic methods.

UNIT - IV Error Handling: Types of errors, error trapping tools: watch window, local window, immediate window, debug menu, tracing program flow with call stack, the err object, error function, error handling routines : on error goto statements. File Handling: type of file handling, Sequential file handling: reading, writing and appending in file, understanding user defined data type, Random access file: reading, writing and appending in file.

UNIT- V Data Access Using the ADO Data Control: Basic concepts of relational database, visual data manager, introduction to SQL, concept of ODBC, Overview of DAO and RDO, Using DAO and RDO to access data. ADO features, difference among ADO, DAO and RDO, accessing and manipulating database using ADO, ADO object hierarchy, concept of recordset and its type, connection object, command object. Data Environment: accessing data using data environment, using Datagrid, Data combo, data list, MSHFlexgrid. Report Generation: Overview of Data Report, creating Data report, adding groups, using data report functions. Introduction to Crystal Report Writer

BCA −106 COMMUNICATION SKILLS Max Marks : 50

Objective : This course is designed to enable the students of computer education to speak and write English with a fare degree of grammatical correctness. The inputs in the course contents are related to spellings, meanings of words and the correct use of words relating to the field of computers and other areas of knowledge.

Unit-1 Vocabulary, knowledge of at least one thousand words - their spelling, meanings and usage. Phrases.

Unit – II Structure of sentences - Simple, Complex and compound. Clauses and Subordinate clauses

Unit-III The tenses and aspects. The modal, the gerund, the participle, the infinitive.

Unit – IV Transformation of sentences :- 1. Interchange of Active and Passive Voice. 2. Interchange of Affirmative and Negative Sentences. 3. Interchange of Explanative and Assertive Sentences. 4. Interchange of interrogative and Assertive Sentences. 5. .Direct and Indirect Speech.

Unit - V Practical Application of grammar. Practice in talks, conversation and writing. Report writing. Writing of applications. Letter writings, Description of events.

Bridge course for BCA (Only For Non mathematics Students) Max Marks : 50 Min. Marks : 20

Unit -I Algebra Partial fractions, Arithmetic Progression & Geometric Progression. Determinants and matrices, Inverse matrix.

Unit-II Permutation combination, method of induction, Binomial Theorem for positive integral index. And any index (without proof), Exponential and logarithmic series.

Unit-III Trigonometry Measurement of angles, Trigonometric ratios, simple formula, compound angles, Trigonometric ratios of multiple and sub multiple angles. Height and Distance, Inverse Function.

Unit-IV Geometry Locus, Cartesian coordinate system, Distance formula, Section formula, Slope of a straight line various forms, Angle between two lines, pair of straight lines, parabole, ellipse and hyperbola.

Unit-V Statistics Frequency Distribution, Measures of central tendency, Mean. Median, Mode, G.M., H.M., Inter quartile range, Mean deviation, Standard deviation.

BOOKS RECOMMENDED Mathematic (class XI and XII) –
R.D.SHARMA YOUGBODH Mathematics - (class XI and XII)

BCA -101 THEORETICAL FOUNDATION OF COMPUTER SCIENCE PAPER-I : DISCRETE MATHEMATICS Max Marks : 50

UNIT - I Recall of statements and logical connectives, tautologies and contradictions, logical equivalence, algebra of propositions quantifiers, existential quantifiers and universal quantifiers.

UNIT – II Boolean algebra and its properties, algebra of propositions as an example, De Morgan's Laws, partial order relations g.l.b., l.u.b. Algebra of electric circuits and its applications. Design of simple automatic control system.

UNIT - III Boolean functions - disjunctive and conjugative normal forms. Boolean's expansion theorem, fundamental forms. Many terminal Networks.

UNIT – IV Arbitrary Cartesian product of sets. Equivalence relations, partition of sets, injective, surjective, bijective maps, binary operations, countable, uncountable sets.

UNIT –V Basic Concept of Graph Theory, Sub graphs, Trees and their properties, Binary Trees, Spanning Trees, Directed Trees, Planar graphs, Euler Circuit, Hamiltonian Graph. Chromatic number.

BCA -101 PAPER-II : CALCULUS AND STATISTICAL METHODS Max Marks : 50.

Unit- I Limits, Continuity and differentiability of function(s) of one variable, First and second kind of discontinuities.

UNIT – II Differentiation of Functions, Differentiation of functions of functions, parametric functions, product of functions, function in Product and quotient form, Logarithmic differentiation, Differentiation of Parametric functions.

UNIT – III Tangent & Normal, Subtangent, Subnormal, Monotonic Increasing and Decreasing function, Simple examples of Maxima and Minima. Statistical Methods

UNIT – IV Probability – sample space, Types of events (mutually exclusive, equally, likely event, favorable events, dependent and independent events), composition of events, additive and multiplicative law of probability, conditional probability, inverse probability, Bays Theorem.

UNIT –V Frequency distribution and measures of dispersions, Binomial, Poisson and Normal distribution. Curve fitting and Principle of least square, Correlation and Regressions lines.