BACHELOR OF COMPUTER APPLICATIONS
SCHEME OF EXAMINATION – FIRST YEAR(w.e.f. 2013-14)

Paper No.	Title of Paper	External Marks	Internal Assessment	Maximum Marks	Pass Marks	Exam Duration
	Semester – I					
BCA-111	Computer and Programming Fundamentals	80	20	100	35	3hrs
BCA-112	Windows and PC Software	80	20	100	35	3hrs
BCA-113	Mathematical Foundations-I	80	20	100	35	3hrs
BCA-114	Logical Organization of Computers – I	80	20	100	35	3hrs
BCA-115	Communicative English	80	20	100	35	3hrs
BCA-116	Programming in C	80	20	100	35	3hrs
	Semester – II					
BCA-121	Advanced Programming in C	80	20	100	35	3hrs
BCA-122	Logical Organization of Computers – II	80	20	100	35	3hrs
BCA-123	Mathematical Foundations-II	80	20	100	35	3hrs
BCA-124	Office Automation Tools	80	20	100	35	3hrs
BCA-125	Structured System Analysis and Design	80	20	100	35	3hrs
BCA-126	Personality Development	80	20	100	35	3hrs
BCA-131	Lab-I Based on BCA-112 & BCA-124	100			35	3hrs
BCA-132	Lab – II Based on BCA-116 & BCA-121	100			35	3hrs

Internal assessment will be based on the following criteria:

(I) Two Handwritten Assignments : 10 marks
(Ist Assignment after one month & IInd Assignment after two months)

(II) One Class Test : 5 marks
(one period duration)

(III) Attendance : 5 marks

Marks for Attendance will be given as under:

(1) 91% onwards : 5 Marks
(2) 81% to 90% : 4 Marks
(3) 75% to 80% : 3 Marks
(4) 70% to 75% : 2 Marks*
(5) 65% to 70% : 1 Mark*

* For students engaged in co-curricular activities of the colleges only/authenticated medical grounds duly approved by the concerned Principal.

NOTE: 1. Practical exam will be conducted annually in two sessions. However the workload will be distributed in both the semesters according to the relevant papers.

BACHELOR OF COMPUTER APPLICATIONS
SCHEME OF EXAMINATION – SECOND YEAR(w.e.f. 2014-15)

Paper No.	Title of Paper	External Marks	Internal Assessment	Maximum Marks	Pass Marks	Exam Duration
	Semester – III					
BCA-231	Object Oriented Programming Using C++	80	20	100	35	3hrs
BCA-232	Data Structures	80	20	100	35	3hrs
BCA-233	Computer Architecture	80	20	100	35	3hrs
BCA-234	Software Engineering	80	20	100	35	3hrs
BCA-235	Fundamentals of Data Base Systems	80	20	100	35	3hrs
BCA-236	Computer Oriented Numerical Methods	80	20	100	35	3hrs
	Semester – IV					
BCA-241	Advanced Data Structures	80	20	100	35	3hrs
BCA-242	Advanced Programming using C++	80	20	100	35	3hrs
BCA-243	E-Commerce	80	20	100	35	3hrs
BCA-244	Relational Data Base Management System	80	20	100	35	3hrs
BCA-245	Computer Oriented Statistical Methods	80	20	100	35	3hrs
BCA-246	Management Information System	80	20	100	35	3hrs
BCA -251	Lab – I Based on BCA-231 & BCA-242	100			35	3hrs
BCA -252	Lab – II Based on BCA-232 & BCA-241	100			35	3hrs

Internal assessment will be based on the following criteria:

(I)	Two Handwritten Assignments (Ist Assignment after one month & IInd Assignment after two months)	:	10 marks
(II)	One Class Test (one period duration)	:	5 marks
(III)	Attendance	:	5 marks

Marks for Attendance will be given as under:

1.	91% onwards	:	5 Marks
2.	81% to 90%	:	4 Marks
3.	75% to 80%	:	3 Marks
4.	70% to 75%	:	2 Marks*
5.	65% to 70%	:	1 Mark*

* For students engaged in co-curricular activities of the colleges only/authenticated medical grounds duly approved by the concerned Principal.

NOTE: 1. Practical exam will be conducted annually in two sessions. However the workload will be distributed in both the semesters according to the relevant papers.

BACHELOR OF COMPUTER APPLICATIONS
SCHEME OF EXAMINATION – THIRD YEAR(w.e.f 2015-16)

Paper No.	Title of Paper	External Marks	Internal Assessment	Maximum Marks	Pass Marks	Exam Duration
	Semester – V					
BCA-351	Web Designing Fundamentals	80	20	100	35	3hrs
BCA-352	Operating System-I	80	20	100	35	3hrs
BCA-353	Artificial Intelligence	80	20	100	35	3hrs
BCA-354	Computer Networks	80	20	100	35	3hrs
BCA-355	Programming Using Visual Basic	80	20	100	35	3hrs
BCA-356	Multimedia Tools	80	20	100	35	3hrs
	Semester – VI					
BCA-361	Web Designing Using Advanced Tools	80	20	100	35	3hrs
BCA-362	Operating System-II	80	20	100	35	3hrs
BCA-363	Computer Graphics	80	20	100	35	3hrs
BCA-364	Internet Technologies	80	20	100	35	3hrs
BCA-365	Advanced Programming with Visual Basic	80	20	100	35	3hrs
BCA-366	Programming in Core Java	80	20	100	35	3hrs
BCA-371	Lab – I Based on BCA-351 & 361	100			35	3hrs
BCA-372	Lab – II Based on BCA-355 & 365	100			35	3hrs

Internal assessment will be based on the following criteria:

(I) Two Handwritten Assignments : 10 marks
(Ist Assignment after one month & IInd Assignment after two months)

(II) One Class Test : 5 marks
(one period duration)

(III) Attendance : 5 marks

Marks for Attendance will be given as under:

1. 91% onwards : 5 Marks
2. 81% to 90% : 4 Marks
3. 75% to 80% : 3 Marks
4. 70% to 75% : 2 Marks*
5. 65% to 70% : 1 Mark*

* For students engaged in co-curricular activities of the colleges only/authenticated medical grounds duly approved by the concerned Principal.

NOTE: 1. Practical exam will be conducted annually in two sessions. However the workload will be distributed in both the semesters according to the relevant papers.

BCA – 111 Computer and Programming Fundamentals

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT-I

Computer Fundamentals: Definition, Block Diagram along with its components, characteristics & classification of computers, Applications of computers in various fields.
Memory: Concept of primary & secondary memory, RAM, ROM, types of ROM, flash memory, Secondary storage devices: Sequential & direct access devices viz. magnetic tape, magnetic disk, CD, DVD.

UNIT-II

Computer hardware & software: I/O devices, relationship between hardware and software, types of software, Operating system: Definition, functions of operating system, concept of multiprogramming, multitasking, multithreading, multiprocessing, time-sharing, real time, single-user & multi-user operating system.

UNIT-III

Planning the Computer Program: Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation, Techniques of Problem Solving: Flowcharting, algorithms, pseudo code, decision table, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.
Computer Virus, WORMS, Trojan,

UNIT-IV

Searching, Sorting, and Merging: Linear & Binary Searching, Bubble, Selection, and Insertion Sorting, Merging, Design of algorithms for searching, sorting and merging. Computer Languages: Analogy with natural language, machine language, assembly language, high-level language, language translators, characteristics of a good programming language.

TEXT BOOKS

1. Sinha, P.K. & Sinha, Priti, Computer Fundamentals, BPB
2. Dromey, R.G., How to Solve it By Computer, PHI

REFERENCE BOOKS

1. Balagurusamy E, Computing Fundamentals and C Programming, Tata McGraw Hill.
2. Norton, Peter, Introduction to Computer, McGraw-Hill
3. Leon, Alexis & Leon, Mathews, Introduction to Computers, Leon Tech World
4. Rajaraman, V., Fundamentals of Computers, PHI

BCA-112 Windows and PC Software

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT–I

WINDOWS : Introduction to Windows and its Features, Hardware Requirements of Windows. Windows Concepts, Windows Structure, Desktop, Taskbar, Start Menu, My Pictures, My Music, My Documents, Recycle Bin. Managing Files, Folders and Disk .
My Computer, Windows Explorer and its Facilities, Using CD, DVD, Pen Drive, Burning CD. Windows Accessories. Entertainment- Media Players, Sound Recorder, Volume Control.

UNIT–II

ADVANCED FEATURES OF WINDOWS:

Managing Hardware & Software - Installation of Hardware & Software, Using Scanner, Web Camera, Printers. System Tools - Backup, Character Map, Clipboard Viewer, Disk Defragmenter, Drive Space, Scandisk, System Information, System Monitor, Disk Cleanup, Using Windows Update. Browsing the Web with Internet Explorer, Multiple User Features of Windows, Creating and Deleting User, Changing User Password, etc.
Accessibility Features of Windows - Sharing Folders and Drives, Browsing the Entire Network, Using Shared Printers. Control Panel & its components

UNIT–III

WORKING WITH SPREAD SHEET:

Introduction and area of use, Working with Excel, Toolbars, Menus and Keyboard Shortcuts, 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, Cell Formatting including Borders & Shading.

UNIT–IV

ADVANCED FEATURES OF EXCEL:

Multiple Worksheets: Concept, Creating and Using Multiple Worksheets; Use of Formulas, Calculations & Functions, Various types of Functions, Cell Referencing, Absolute and Relative Addressing, Working with Different Chart Types, Chart Wizard, Printing of Workbook & Worksheets with various options, Database: Creation, Sorting, Query and Filtering a Database; Creating and Using Macros; Pivot table & Pivot chart

TEXT BOOKS

1. Microsoft Office – Complete Reference – BPB Publication

2. Learn Microsoft Office – Russell A. Stultz – BPB Publication

REFERENCES BOOKS

1. Courter, G Marquis . Microsoft Office 2000: Professional Edition. BPB.
2. Koers, D . Microsoft Office XP Fast and Easy. PHI.
3. Nelson, S L and Kelly, J Office XP: The Complete Reference. Tata McGraw-Hill.

BCA – 113 Mathematical Foundations – I

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT- I

Set, subsets and operations on sets, Venn diagram of sets. Power set of a set.
Equivalence relation on a set and partition of a set, Permutation and combinations, Partially ordered sets, Lattices (definition and examples). Boolean algebra (definition and examples)

UNIT- II

Epsilon and delta definition of the continuity of a function of a single variable, Basic properties of limits, Continuous functions and classifications of discontinuities, Derivative of a function, Derivatives of Logarithmic, exponential, trigonometric, inverse trigonometrical and hyperbolic functions. Higher order derivatives.

UNIT- III

Formation of differential equations order and degree of the differential equation, Geometrical approach to the existence of the solution of the differential equation dy/dx=f (x,y). Ordinary differential equations of first degree and the first order, exact differential equations

UNIT- IV

Linear differential equations of higher order with constant coefficients, Homogeneous linear differential equations and linear differential equations reducible to homogenous differential equations, Applications of differential equations to geometry,

REFERENCE BOOKS

1. D.A. Murray: Introductory course in differential equations, Orient Lengaman(India).
2. H.T.H. Piaggio: Elementary Treatise on differential equation and their applications C.B.S. publishers of distributors.
3. S.L. Ross : Ordinary differential equations
4. Babu Ram: Discrete Mathematics
5. Shanti Narayana : Differential & Integral calculus

BCA-114 Logical Organization of Computers-I

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT - I

Information Representation: Number Systems, Binary Arithmetic, Fixed-point and Floating-point representation of numbers, BCD Codes, Error detecting and correcting codes, Character Representation – ASCII, EBCDIC.

UNIT - II

Binary Logic: Boolean Algebra, Boolean Theorems, Boolean Functions and Truth Tables, Canonical and Standard forms of Boolean functions, Simplification of Boolean Functions – Venn Diagram, Karnaugh Maps.

UNIT - III

Digital Logic: Basic Gates – AND, OR, NOT, Universal Gates – NAND, NOR, Other Gates – XOR, XNOR etc. implementations of digital circuits, Combinational Logic – Characteristics, Design Procedures, analysis procedures.

UNIT - IV

Combinational Circuits: Half-Adder, Full-Adder, Half-Subtractor, Full-Subtractor, Encoders, Decoders, Multiplexers, Demultiplexers, Comparators, Code Converters.

TEXT BOOKS

1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.
2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall of India Pvt. Ltd.

REFERENCE BOOKS

1. Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.
2. Nicholas Carter, Schaum's Outlines Computer Architecture, Tata McGraw-Hill

BCA-115 Communicative English

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set ten Questions in all, two questions from each unit. A candidate will be required to answer five questions in all, selecting exactly one question from each unit. All questions will carry equal marks.

UNIT- I

One essay type question (with internal choice) from the prescribed text.
Five short answer type questions (with internal choice) from the prescribed text.

UNIT-II

A comprehension passage from the prescribed text book (Reflection) with five questions at the end.
Faxes, e-mails, and text messages composing. This question will carry three parts A, B, and C with questions on all the three above mentioned items.

UNIT-III

Grammar questions on the following items: (i) Articles (ii) Preposition (iii) Tenses (iv) Subject verb agreement (v) Voice (vi) Tag questions (vii) Reported speech (viii) Comparatives and superlatives
A paragraph of about 150 words on any one of the given topics.

UNIT-IV

Official letters / applications (With internal choice)
English in situations (for example: greetings, in the post office, catching a train, at a bank, making a telephone call, buying vegetables, at the hospital, on the bus etc.

UNIT -V

Right to Information Act, 2005 : Definition, Meaning, Nature and Scope of Right to Information, Obligations and functioning of PIO's(Public Information Officers), Information, which cannot be disclosed, Functioning of Appellate Authorities(State Information Commission(s) and Central Information Commission), Terms and conditions of appointment of members in State Information Commission(s) and Central Information Commission.

TEXT BOOKS

1. Reflections by I. P. Anand & Dr. R. K. Malhotra
2. Remedial English Grammar by F. T. Wood.

RECOMMENDED BOOKS:

1. Business Letter Writing by Jasmin S. and S. Bright, Universal, New Delhi.
2. English in Situations by R. O. Neil (OUP)

BCA-116 Programming in C

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT-I

Overview of C: History of C, Importance of C, Structure of a C Program.
Elements of C: C character set, identifiers and keywords, Data types, Constants and Variables, Assignment statement, Symbolic constant.
Input/output: Unformatted & formatted I/O function in C, Input functions (scanf(), getch(), getche(), getchar(), gets()), Output functions (printf(), putch(), putchar(), puts()).

UNIT-II

Operators & Expression: Arithmetic, relational, logical, bitwise, unary, assignment, conditional operators and special operators. Arithmetic expressions, evaluation of arithmetic expression, type casting and conversion, operator hierarchy & associativity.
Decision making & branching: Decision making with IF statement, IF-ELSE statement, Nested IF statement, ELSE-IF ladder, switch statement, goto statement.

UNIT-III

Decision making & looping: For, while, and do-while loop, jumps in loops, break, continue statement. Functions: Definition, prototype, passing parameters, recursion.

UNIT-IV

Storage classes in C: auto, extern, register and static storage class, their scope, storage, & lifetime. Arrays: Definition, types, initialization, processing an array, passing arrays to functions, Strings & arrays.

TEXT BOOKS

1. Gottfried, Byron S., Programming with C, Tata McGraw Hill
2. Balagurusamy, E., Programming in ANSI C, Tata McGraw-Hill

REFERENCE BOOKS

1. Jeri R. Hanly & Elliot P. Koffman, Problem Solving and Program Design in C, Addison Wesley.
2. Yashwant Kanetker, Let us C, BPB.
3. Rajaraman, V., Computer Programming in C, PHI.
4. Yashwant Kanetker, Working with C, BPB.

BCA – 121 Advanced Programming in C

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT – I

Strings in 'C': Introduction, Declaration and initialization of string, String I/O, Array of strings, String manipulation functions: String length, copy, compare, concatenate, search for a substring.
Structure and Union: Introduction, Features of structures, Declaration and initialization of structures, Structure within structure, Array of structures, Structure and functions. Union: Introduction, Union of structures. Typedef, Enumerations.

UNIT – II

Pointers: Introduction, Pointer variables, Pointer operators, Pointer assignment, Pointer conversions, Pointer arithmetic, Pointer comparison, Pointers and arrays, Pointers and functions, Pointers and strings, Pointer to pointer, dynamic allocation using pointers.

UNIT – III

Files: Introduction, File types, File operations, File I/O, Structure Read and write in a file, Errors in file handling, Random-access I/O in files.

UNIT – IV

Preprocessor: Introduction, #define, macros, macro versus functions, #include, Conditional compilation directives, undefining a macro. Command line arguments: defining and using command line arguments.

TEXT BOOKS

1. Yashwant Kanetker, "Let us C", BPB publications.
2. Balagurusamy, E., "Programming in ANSI C", Tata McGraw-Hill

REFERENCE BOOKS

1. Jeri R. Hanly & Elliot P. Koffman, "Problem Solving and Program Design in C", Addison Wesley.
2. Gottfried, Byron S., "Programming with C", Tata McGraw Hill
3. Behrouz A. Forouzan & Richard F. Gilberg, "Computer Science: A structured programming approach using C", Cengage Learning
4. Ashok N. Kamthane, "Programming with ANSI and Turbo C", Pearson Education.
5. Herbert Schildt, "The Complete Reference: C", Tata-McGraw-Hill.

BCA-122 Logical Organization of Computers – II

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT - I

Sequential Logic: Characteristics, Flip-Flops, Clocked RS, D type, JK, T type and Master-Slave flip-flops. State table, state diagram. Flip-flop excitation tables

UNIT - II

Sequential Circuits: Designing registers – Serial Input Serial Output (SISO), Serial Input Parallel Output (SIPO), Parallel Input Serial Output (PISO), Parallel Input Parallel Output (PIPO) and shift registers. Designing counters – Asynchronous and Synchronous Binary Counters, Modulo-N Counters and Up-Down Counters

UNIT - III

Memory & I/O Devices: Memory Parameters, Semiconductor RAM, ROM, Magnetic and Optical Storage devices, Flash memory, I/O Devices and their controllers.

UNIT - IV

Instruction Design & I/O Organization: Machine instruction, Instruction set selection, Instruction cycle, Instruction Format and Addressing Modes. I/O Interface, Interrupt structure, Program-controlled, Interrupt-controlled & DMA transfer, I/O Channels, IOP.

TEXT BOOKS

1. M. Morris Mano, Digital Logic and Computer Design, Prentice Hall of India Pvt. Ltd.
2. V. Rajaraman, T. Radhakrishnan, An Introduction to Digital Computer Design, Prentice Hall of India Pvt. Ltd.

REFERENCE BOOKS

1. Andrew S. Tanenbaum, Structured Computer Organization, Prentice Hall of India Pvt. Ltd.
2. Nicholas Carter, Schaum's Outlines Computer Architecture, Tata McGraw-Hill

BCA – 123 Mathematical Foundations - II

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT- I

Propositions and logical operators, Truth tables and propositions generated by a set. Equivalence and implications, Laws of logic, Mathematical system, Proposition over a universe, Mathematical induction, Quantifiers

UNIT- II

Binary operations on a non empty set, Groups, Subgroups, Normal Subgroups, Cosets, Factor groups, Rings, Sub rings, Ideals, Factor rings, Prime ideals, Minimal ideal, Fields, direct product of groups, Isomorphism of groups and rings (definitions and examples only)

UNIT- III

Addition and multiplication of matrices, Laws of matrix algebra, Singular and non singular matrices, Inverse of a matrix, Rank of a matrix, Rank of the product of two matrices, Systems of linear equations i.e. AX=0 and AX=B

UNIT- IV

Characteristic equations of a square matrix, Cayley-Hamilton Theorem, Eigen values and eigen vectors, Eigen values and eigen vectors of symmetric skew symmetric, Hermitian and skew –Hermitan matrices, Diagonalization of a square matrix.

REFERENCE BOOKS

1. Babu Ram : Discrete Mathematics
2. Shanti Naryana : A text book of matrices
3. Alan Doerr And Kenneth Levaseur, Applied Discrete Structures For Computer Science, Galgotia Publications Pvt. Ltd., New Delhi.
4. Seymour Lipschutz And Marc Lars Lipson, Discrete Mathematics", Mcgrraw- Hill International Editions, Schaum's Series, New York.

BCA 124 Office Automation Tools

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT – I

Desktop Publishing: Concept, Need and Applications; Hardware and Software requirements for DTP, An Overview and comparison between DTP packages, Common features of DTP. Introduction to Page Maker: Features, System Requirements, Components of Page Maker Window, Introduction to Menu and Toolbars, PageMaker Preferences

UNIT – II

Creating of Publications: Starting PageMaker, Setting Page size, Placing the text Formatting the text: Character Specification Paragraph setting: Paragraph Specification, Paragraph Rules, Spacing, Indents/Tabs, Define Styles, Hyphenation, Header & Footer, Page Numbering, Saving and Closing publication.
Editing Publication: Open a publication ,Story editor, Find and change the text, Change character and Paragraph attributes ,spell checking ,Selecting text, Cut, Copy, Paste, Paste multiple, Working with columns

UNIT – III

Word Processing: Introduction to Office Automation, Creating & Editing Document, Formatting Document, Auto-text, Autocorrect, Spelling and Grammar Tool, Document Dictionary, Page Formatting, Bookmark, Advance Features of Word-Mail Merge, Macros, Tables, File Management, Printing, Styles, linking and embedding object.

UNIT – IV

Presentation using PowerPoint: Presentations, Creating, Manipulating & Enhancing Slides, Organizational Charts, Excel Charts, Word Art, Layering art Objects, Animations and Sounds, Inserting Animated Pictures or Accessing through Object, Inserting Recorded Sound Effect or In-Built Sound Effect.

TEXT BOOKS:

1. PageMaker-Complete by R. Shamms, Mortier &Rick Wallacl ,Techmedia
2. Learning PageMaker 7 by Ramesh Bangia of Khanna Book Publishing Co Pvt Ltd

3. Microsoft Office – Complete Reference – BPB Publication
4. Learn Microsoft Office – Russell A. Stultz – BPB Publication

REFERENCES BOOKS

1. Courter, G Marquis . Microsoft Office 2000: Professional Edition. BPB.
2. Koers, D . Microsoft Office XP Fast and Easy. PHI.
3. Nelson, S L and Kelly, J Office XP: The Complete Reference. Tata McGraw-Hill.

BCA – 125 Structured System Analysis and Design

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

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.
Role of system analyst.

UNIT – II

System Planning: Bases for planning in system analysis: Dimensions of Planning.
Initial Investigation: Determining user's requirements and analysis, fact finding process and techniques.
Tools of structured Analysis: Data Flow diagram, data dictionary, IPO and HIPO charts, Gantt charts, pseudo codes, Flow charts, decision tree, decision tables.
Feasibility study: Technical, Operational & Economic Feasibilities.

UNIT – III

Cost/Benefit Analysis: Data analysis cost and benefit analysis of a system.
Input/ Output and Form Design, File Organization and database design: Introduction to files and database, File structures and organization, objectives of database design, logical and physical view of data.

UNIT – IV

System testing: Introduction, objectives of testing, test planning, testing techniques.
Quality assurance: Goal of quality assurance, levels of quality assurance
System implementation and software maintenance: primary activities in maintenance, reducing maintenance costs.

TEXT BOOKS:

1. Awad M. Elias, "System Analysis and Design", Galgotia Publication.

REFERENCE BOOKS:

1. Igor Hawryszkiewyez, "Introduction to System Analysis and Design", Prentice-Hall.
2. Jeffrey L. Whitten, and Lonnie D. Bentey, "Systems analysis and Design Methods", Tata McGraw-Hill.
3. Mark Lejk, and David Deeks, "An Introduction to System Analysis Techniques", Prentice Hall.

BCA- 126 Personality Development

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT- I

Personality & Personal Grooming – A Brief Introduction to Personality and self-concept, Element of Personality, Determinants of Personality, Causes of deranged Personality, Personality Analysis.
Grooming, Personal hygiene, Social, Business and Dining Etiquettes, Body language use and misuse, Art of good Conversation, Art of Intelligent Listening.

UNIT- II

Interpersonal Skills & Role playing: Dealing with seniors, colleagues, juniors, customers, suppliers, contract workers, owners etc at work place

UNIT- III

Group Discussion & Presentation skills: Team behavior, how to effectively conduct yourself during GD, do's and don'ts, clarity of thoughts and its expression
Presentation skills & seminar skills

UNIT- IV

Interviews Preparation: Intent and purpose, selection procedure, types of interviews, Self planning, writing winning resume, knowledge of company profiles, academics and professional knowledge review, update on current affairs and possible questions, time – keeping, grooming, dress code, document portfolio, frequently asked questions and their appropriate answers, self – introduction, panel addressing, mental frame – work during interviews

REFERENCE BOOKS

(1) Personal management and Human Resources, by C.S. Venkata Ratanam and B.K. Srivastava, Published by Tata McGraw Hill Publishing Ltd. New Delhi
(2) Human Behaviour at Work, by: Keith Davis, Tata McGraw Hill Pub. Ltd. N. Delhi
(3) Im OK, You re OK, by : Thomas A. Harris, Publsihed By : Pan Books, London and Sydney
(4) Pleasure of your Company, by : Ranjana Salgaocar, Published By : Pyramid Publishers, Goa
(5) How to get the job you want, by : Arun Agarwal, Published By : Vision Books, New Delhi
(6) Get That Job, Rohit Anand & Sanjeev Bikhachandani, Harper Collins

BACHELOR OF COMPUTER APPLICATIONS SCHEME OF EXAMINATION
(w.e.f. 2015-16)

THIRD YEAR						
Paper No.	**Title of Paper**	**External Marks**	**Internal Marks**	**Maximum Marks**	**Pass Marks**	**Exam Duration**
BCA-301	OBJECT ORIENTED PROGRAMMING USING C++	80	20	100	35	3hrs
BCA-302	WEB DESIGNING	80	20	100	35	3hrs
BCA-303	COMPUTER NETWORKS	80	20	100	35	3hrs
BCA-304	MANAGEMENT INFORMATION SYSTEM	80	20	100	35	3hrs
BCA-305	COMPUTER GRAPHICS	80	20	100	35	3hrs
BCA-306	E-COMMERCE	80	20	100	35	3hrs
BCA-307	LAB – I BASED ON BCA-301			100	35	3hrs
BCA-308	LAB – II BASED ON BCA-302			100	35	3hrs
	TOTAL MARKS	**480**	**120**	**800**	**280**	

BCA – 301 OBJECT ORIENTED PROGRAMMING USING C++

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT – I

Object oriented Programming: Object-Oriented programming features and benefits. Object-Oriented features of C++, Class and Objects, Structures, Scope resolution operator and its significance, Static Data Members, Static member functions, Nested and Local Class.
Constructor, Initialization using constructor, types of constructor– Default, Parameterized & Copy Constructors, Constructor overloading, Default Values to Parameters, Destructors.

UNIT – II

Manipulators, Friend Function, Friend Class, Arrays, Array of Objects, Passing and Returning Objects to Functions, String Handling in C++, Dynamic Memory Management: Pointers, new and delete Operator, Array of Pointers to Objects, this Pointer, Passing Parameters to Functions by Reference & pointers.
Polymorphism: Operators in C++, Precedence and Associativity Rules, Operator Overloading, Unary & Binary Operators Overloading, Function Overloading, Inline Functions.

UNIT – III

Dynamic Polymorphism: Function Overriding, Virtual Function and its Need, Pure Virtual Function, Abstract Class.
Type Conversion: Basic Type Conversion, Conversion between objects and basic types, Conversion between objects of different classes, Inheritance: Rules of Derivations – Private, Protected and Public Derivations.

UNIT – IV

Different Forms of Inheritance – Single, Multiple, Multilevel, Hierarchical and Multipath Inheritance Roles of Constructors and Destructors in Inheritance.
Genericity in C++: Templates in C++, Function templates, Class templates in C++.
Exception Handling in C++: try, throw and catch; Introduction to files handling in C++

TEXT BOOKS:

- Herbert Scildt, C++, The Complete Reference, Tata McGraw-Hill
- Robert Lafore, Object Oriented Programming in C++, SAMS Publishing

REFERENCE BOOKS:

- Bjarne Stroustrup, The C++ Programming Language, Pearson Education
- Balaguruswami, E., Object Oriented Programming in C++, Tata McGraw-Hill.

BCA-302: WEB DESIGNING

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT – I

Introduction to Internet and World Wide Web; Evolution and History of World Wide Web; Basic Features; Web Browsers; Web Servers; Hypertext Transfer Protocol; URLs; Searching and Web-Casting Techniques; Search Engines and Search Tools.

Steps for Developing Website; Choosing the Contents; Home Page; Domain Names; Internet Service Provider; Planning and Designing Web Site; Creating a Website; Web Publishing: Hosting Site;

UNIT – II

Introduction to HTML; Hypertext and HTML; HTML Document Features;

HTML Tags; Header, Title, Body, Paragraph, Ordered/Unordered Line, Creating Links; Headers; Text Styles; Text Structuring; Text Colors and Background; Formatting Text; Page layouts; Insertion of Text, Movement of Text

Images: Types of Images, Insertion of Image, Movement of Image, Ordered and Unordered lists; Inserting Graphics; Table Handling Functions like Columns, Rows, Width, Colours; Frame Creation and Layouts; Working with Forms and Menus; Working with Buttons like Radio, Check Box.

UNIT-III

DHTML: Introduction, Features, Events, Dynamic Positioning, Layer Object, Properties of STYLE, Dynamic Styles, Inline Styles, Event Handlers; Cascading Style Sheets (CSS): Basic Concepts, Properties, Creating Style Sheets; Common Tasks with CSS: Text, Fonts, Margins, Links, Tables, Colors; Marquee; Mouseovers; Filters and Transitions; Adding Links; Adding Tables; Adding Forms; Adding Image and Sound; Use of CSS in HTML Documents Linking and Embedding of CSS in HTML Document

UNIT – IV

Microsoft FrontPage: Introduction, Features, Title Bar, Menu bar, FrontPage Tool Bar, Style, FontFace and Formatting Bar, Scroll Bars

XML: Introduction, Features, XML Support and Usage, Structure of XML Documents, Structures in XML, Creating Document Type Declarations, Flow Objects, Working with Text and Font, Color and Background Properties.

TEXT BOOKS:

- Bayross Ivan, Web Enabled Commercial Applications Development using HTML, Javascript, DHTML & PHP, BPB Publication, 2005
- Powell Thomas, The Complete Reference HTML & CSS, Tat Mc-Graw Hill, 2010
- Jon Duckett, Beginning web programming with HTML, XHTML, CSS and JavaScript– Wiley India Pvt. Ltd.

REFERENCE BOOKS:

- Wendy Willard, HTML Beginners Guide, Tata McGraw-Hill
- Deitel and Goldberg, Internet and World Wide Web, How to Program, PHI.
- Raj Kamal, Internet and Web Technologies, Tata McGraw-Hill.
- Multimedia and Web Technology, Ramesh Bangia, Firewall Media.

BCA-303: COMPUTER NETWORKS

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction to Data Communication and Computer Networks; Uses of Computer Networks; Types of Computer Networks and their Topologies; Network Hardware Components: Connectors, Transceivers, Repeaters, Hubs, Network Interface Cards and PC Cards, Bridges, Switches, Routers, Gateways; Network Software: Network Design issues and Protocols; Connection-Oriented and Connectionless Services; OSI Reference Model; Networking Models: Distributed Systems, Client/Server Model, Peer-to-Peer Model, Web-Based Model and Emerging File-Sharing Model;

UNIT – II

Analog and Digital data and signals; Bandwidth and Data Rate, Capacity, Baud Rate; Transmission Impairment; Data Rate Limits; Guided Transmission Media; Wireless Transmission ; Communication Satellites; Switching and Multiplexing; Modems and Modulation techniques; ADSL and Cable Modems;

UNIT - III

Data Link Layer Design issues; Error Detection and Correction; Sliding Window Protocols: One-bit, Go Back N and Selective Repeat; Media Access Control: ALOHA, Slotted ALOHA, CSMA, Collision free protocols; Introduction to LAN technologies: Ethernet, Switched Ethernet, Fast Ethernet, Gigabit Ethernet; Token Ring; Introduction to Wireless LANs and Bluetooth; VLANs

UNIT – IV

Routing Algorithms: Flooding, Shortest Path Routing, Distance Vector Routing; Link State Routing, Hierarchical Routing; Congestion Control; Traffic shaping; Choke packets; Load shedding; Elements of Transport Protocols; Network Security Issues: Security attacks; Encryption methods; Digital Signature; Digital Certificate

TEXT BOOKS:

- Andrew S. Tanenbaum, “Computer Networks”, Pearson Education.
- Michael A. Gallo, William M. Hancock, “Computer Communications and Networking Technologies”, CENGAGE Learning.

REFERENCE BOOKS:

- Behrouz A Forouzan, “Data Communications and Networking”, McGraw Hill.
- Bhushan Trivedi, “Computer Networks”, Oxford

BCA – 304 MANAGEMENT INFORMATION SYSTEM

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

UNIT – I

Introduction to system and Basic System Concepts, Types of Systems, The Systems Approach, Information System: Definition & Characteristics, Types of information, Role of Information in Decision-Making, Sub-Systems of an Information system: EDP and MIS management levels, EDP/MIS/DSS.

UNIT –II

An overview of Management Information System: Definition & Characteristics, Components of MIS, Frame Work for Understanding MIS: Information requirements & Levels of Management, Simon's Model of decision-Making, Structured Vs Un-structured decisions, Formal vs. Informal systems.

UNIT – III

Developing Information Systems: Analysis & Design of Information Systems: Implementation & Evaluation, Pitfalls in MIS Development.

UNIT – IV

Functional MIS: A Study of Personnel, Financial and production MIS, Introduction to e-business systems, ecommerce – technologies, applications, Decision support systems – support systems for planning, control and decision-making

TEXT BOOK:

- J. Kanter, "Management/Information Systems", PHI.
- Gordon B. Davis, M. H. Olson, "Management Information Systems – Conceptual foundations, structure and Development", McGraw Hill.

REFERENCE BOOK:

- James A. O'Brien, "Management Information Systems", Tata McGraw-Hill.
- James A. Senn, "Analysis & Design of Information Systems", Second edition, McGraw Hill.
- Robert G. Murdick & Joel E. Ross & James R. Claggett, "Information Systems for Modern Management", PHI.
- Lucas, "Analysis, Design & Implementation of Information System", McGraw Hill.

BCA-305: COMPUTER GRAPHICS

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit. All questions will carry equal marks.

UNIT – I

Introduction to Computer Graphics; Interactive and Passive Graphics; Applications of Computer Graphics; Display Devices: CRT; Random Scan, Raster Scan, Refresh Rate and Interlacing, Bit Planes, Color Depth, Color Palette, Color CRT Monitor, DVST, Flat-Panel Displays: Plasma Panel, LED, LCD; Lookup Table, Interactive Input Devices, Display Processor, General Purpose Graphics Software, Coordinate Representations;

UNIT – II

Point-Plotting Techniques: Scan Conversion, Scan-Converting a Straight Line: The Symmetrical DDA, The Simple DDA, Bresenham's Line Algorithm; Scan-Converting a Circle: Circle drawing using Polar Coordinates, Bresenham's Circle Algorithm, Scan-Converting an Ellipse: Polynomial Method, Trigonometric Method; Polygon Area Filling: Scan-line Fill and Flood Fill Algorithms;

UNIT – III

Two-Dimensional Graphics Transformation: Basic Transformations: Translation, Rotation, Scaling; Matrix Representations and Homogeneous Coordinates; Other Transformations: Reflection, Shearing; Coordinate Transformations; Composite Transformations; Inverse Transformation; Affine Transformations; Raster Transformation;
Graphical Input: Pointing and Positioning Devices and Techniques

UNIT – IV

Two-Dimensional Viewing: Window and Viewport, 2-D Viewing Transformation
Clipping: Point Clipping; Line Clipping: Cohen-Sutherland Line Clipping Algorithm, Mid-Point Subdivision Line Clipping Algorithm; Polygon Clipping: Sutherland-Hodgman Polygon Clipping Algorithm;
Three-Dimensional Graphics: Three-Dimensional Display Methods; 3-D Transformations: Translation, Rotation, Scaling; Composite Transformations;

TEXT BOOKS:

- Donald Hearn, M. Pauline Baker,"Computer Graphics", PHI.
- Apurva A. Desai,"Computer Graphics", PHI, 2010

REFERENCE BOOKS:

- Newmann & Sproull, "Principles of Interactive Computer Graphics",, McGraw Hill.
- Foley ,"Computer Graphics Principles & Practice",Addison Wesley.
- Rogers, "Procedural Elements of Computer Graphics", McGraw Hill.
- Zhigang Xiang, Roy Plastock, "Computer Graphics", Tata McGraw Hill.
- D.P. Mukherjee,"Fundamentals of Computer Graphics and Multimedia", PHI.

BCA-306 E-COMMERCE

Maximum Marks: 100 **External: 80**
Minimum Pass Marks: 35 **Internal: 20**
Time: 3 hours

Note: Examiner will be required to set Nine Questions in all. First Question will be compulsory, consisting of objective type/short-answer type questions covering the entire syllabus. In addition to that eight more questions will be set, two questions from each Unit. Student will be required to attempt FIVE questions in all. Question Number 1 will be compulsory. In addition to compulsory question, student will have to attempt four more questions selecting one question from each Unit.

Unit-I

Introduction to E-Commerce:-Business operations; E-commerce practices vs. traditional business practices; concepts of b2b, b2c,c2c,b2g,g2h,g2c; Features of E-Commerce, Types of Ecommerce Systems, Elements of E-Commerce, principles of E-Commerce, Benefits and Limitations of E-Commerce.

Management Issues relating to e-commerce. Operations of E-commerce: Credit card transaction; Secure Hypertext Transfer Protocol (SHTP); Electronic payment systems; Secure electronic transaction (SET); SET`s encryption; Process; Cybercash; Smart cards; Indian payment models.

Unit-II

Applications in governance: EDI in governance; E-government; E-Governance applications of Internet; concept of government –to- business, business-to-government and citizen-to-government; E-governance models; Private sector interface in E-governance. Applications in B2C: Consumers shopping procedure on the Internet; Impact on disinter mediation and re-intermediation; Global market; Strategy of traditional department stores.

Unit-III

Products in b2c model; success factors of e-brokers; Broker-based services on-line; On-line travel tourism services; Benefits and impact of e-commerce on travel industry; Deal estate market; online stock trading and its benefits; Online banking and its benefits; On-line financial services and their future; E-auctions – benefits, implementation and impact.

Unit-IV

Applications in B2B: Key technologies for b2b; architectural models of b2b, characteristics of the supplier –oriented marketplace, buyer-oriented marketplace and intermediary-oriented marketplace; Just In Time delivery in b2b; Internet-based EDI from traditional EDI; Marketing Issues in b2b.

Emerging Business models: Retail model; Media model; advisory model, made-to-order manufacturing model; Do-it- yourself model; Information service model; Emerging hybrid models; Emerging models in India, Internet & E-Commerce scenario in India; Internet security Issues; Legal aspects of E-commerce

TEXT BOOKS:

- Turban E,. Lee J., King D. and Chung H.M: “Electronic commerce-a Managerial Perspective”, Prentice-Hall International, Inc.
- Bhatia V., “E-commerce”, Khanna Book Pub. Co.(P) Ltd., Delhi.

REFERENCE BOOKS

- Bharat Bhasker, “Electronic Commerce -Framework, technologies and Applications”,TMH Publications
- Whitely David , “ Electronic Commerce”, TMH, N Delhi.
- Shurety, “E-business with Net Commerce”, Addison Wesley.
- Kosiur, “Understanding E—Commerce”, Prentice Hall of India, N. Delhi.