BCA Syllabus-I Year

Bachelor of Computer Application (BCA)
### DEENBANDHU CHHOTU RAM UNIVERSITY OF SCIENCE & TECHNOLOGY, MURTHAL SONEPAT) HARYANA

**REGULAR COURSE (SCHEME AND SYLLABUS)**

**BACHELOR OF COMPUTER APPLICATION (BCA)**

**SESSION 2011-12**

**SEMESTER-I**

<table>
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<tr>
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BCA-101 MATHEMATICAL FOUNDATION

Total Marks : 150  
Minimum Pass Marks : 40%  
Theory Paper : 100  
Maximum Time : 3 Hrs  
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1 (COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is required to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION A

DETERMINANTS: Definition, Minors, Cofactors, Properties of Determinants.


STATISTICS: Measures of Central Tendancy, Prepareing frequency distribution table, arithmetic mean, geometric mean, harmonic mean, median and mode. Measure of dispersion: Range, mean, deviation, standard deviation, co-efficient of variation.

SECTION B

LIMITS & CONTINUITY: Limit at a Point, Properties of Limit, Computation of Limits of Various Types of Functions, Continuity at a Point, Continuity Over an Interval, Intermediate Value Theorem, Type of Discontinuities.

DIFFERENTIATION: Derivative, Derivatives of Sum, Differences, Product & Quotients, Chain Rule, Derivatives of Composite Functions, Logarithmic Differentiation, Rolle’s Theorem, Mean Value Theorem, Expansion of Functions (Maclaurin’s & Taylor’s), Indeterminate Forms, L’ Hospitals Rule, Maxima & Minima, Concavity, Asymptote, Singular Points, Curve Tracing, Successive Differentiation & Liebnitz Theorem.

SECTION C

INTEGRATION: Integral as Limit of Sum, Riemann Sum, Fundamental Theorem of Calculus, Indefinite Integrals, Methods of Integration Substitution, By Parts, Partial Fractions, Integration of Algebraic and Transcedental Functions, Elementary concepts of Gamma and Beta Functions.

VECTOR ALGEBRA: Definition of a vector in 2 and 3 Dimensions; Double and Triple Scalar and Vector Product and their Applications.

References

BCA-103 DIGITAL ELECTRONICS

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1(COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is require to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION A

Number System: Binary, octal, Hexadecimal Number, their addition and substraction, Base conversions, Number code: 8421, Other BCD codes, Grey, ASCII, EBCDIC.


SECTION B

Fundamentals: Products, Sum of products and Product of sums, Form of Boolean expressions, Truth Tables and Karnaugh maps, pair reads octets and Karnaugh simplification. Mltiplexers BCD to Decimal to BCD decoders and, decoders’ characteristics of digital integrated digitals.

SECTION C


Memories for Digital: System: Semiconductor Memories, Memory organization and expansion, classification of memories on the basis of principles of operation, physical characteristics and fabrication technology, ROM and basic memory cells.

References:

- W. Gotham, “Digital electronics”, PHI.
- Floyd, Thomas : Digital Fundamentals.
- V. Rajaraman : Computer Fundamentals (PHI)
BCA-105 COMPUTER FUNDAMENTS & APPLICATION TOOLS

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1(COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is required to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION A

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.

Introduction to Internet and E-mail; searching information through a search engines (google, altavista, sulekha, khoj etc)

SECTION B

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

Advanced Features of MS-Word: Spell Check, Thesaurus, Find & Replace; Headers & Footers ; Inserting – Page Numbers, Pictures, Files, Autotexts, 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.

SECTION C

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.

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.

References:
- Windows XP Complete Reference. BPB Publications
- Joe Habraken, Microsoft Office 2000, 8 in 1 by, Prentice Hall of India
- I.T. Tools and Applications by A. Mansoor, Pragya Publications, Matura
BCA-107

COMMUNICATION SKILLS-I

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1(COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is required to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION A

Communicative Grammar:
Part A : Spotting the errors pertaining to nouns, pronouns, adjective and adverbs; Concord - grammatical concord, notional concord and the principle of proximity between subject and verb.
Part B : Changing the voice : from Active to Passive and Passive to Active.
Lexis: Idioms and phrases; Words often confused; One-Word Substitutes; Formation of words (suffixes, prefixes and derivatives);

SECTION B

Oral Communication:
Part-B: Developing listening and speaking skills through various activities, such as (a) role play activities, (b) Practising short dialogues (c) Group discussion (d) Debates (e) Speeches (f) Listening to news bulletins (g) Viewing and reviewing T.V. programmes etc.
Written Communication: Developing reading and writing skills through such tasks/activities as developing outlines, key expressions, situations, slogan writing and theme building exercises, dialogue writing, interpreting pictures/cartoons.

SECTION C

Book Review – Herein the students will be required to read and submit a review of a book (Literary or non-literary) of their own choice. This will be followed by a presentation of the same in the class.

Technical Writing:
(a) Business Letters, Format of Business letters and Business letter writing
(b) E-mail writing
(c) Reports, Types of Reports and Format of Formal Reports
(d) Press Report Writing

References:
- Language in Use (Upper intermediate Level, Adrian Doff Christopher Jones, Cambridge University Press
- Common Errors in English, Abul Hashem, Ramesh Publishing House, new Delhi.
- Spoken English for India, R.K. Bansal & J.B. Harrison, Orient Longman, Delhi.
- The sounds of English, Veena Kumar, Makaav Educational Software, New Delhi.
- Business Communication, M.S. Ramesh and C.C. Pattanshetti, R.Chand and Company, Delhi
BCA-102 INTRODUCTION TO INFORMATION TECHNOLOGY

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1 (COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is required to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION A
What are computers? The evolution of computers, Classification of computers, The control unit, computer organization & Block diagram representation, storage devices, microprocessors, instruction set, CISC & RISC processor, Input-Output devices, interconnection architectures.
Low level and high level languages, assemblers, compilers, interpreters, linkers, algorithms, flow charting, decision tables, pseudo code, software, application software packages

SECTION B
Operating system concepts, Different types of operating systems, structure of operating system, DOS/UNIX/LINUX commands, Data Processing, File systems and Database Management Systems, different types of Database Management System.

SECTION C
Basic elements of a Communication System, Data transmission modes, Data Transmission speed, Data transmission media, Digital and Analog Transmission, Network topologies, Network Types (LAN, WAN and MAN), Communication protocols, Inter networking tools, Distributed Computing Systems

REFERENCES:
BCA-104    DISCRETE MATHEMATICS

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1(COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is require to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION - A

Graphs: Introduction to graphs, Graph terminology, Representing Graphs and Graph Isomorphism, Connectivity. Directed and undirected graphs and their matrix representations, reachability, Chains, Circuits, Eulerian paths and cycles, Hamiltonian paths and cycles, Minima's Path Application(Flow charts and state transition Graphs, Algorithm for determining cycle and minimal paths), Trees, Binary trees, Binary search trees and traversals, Graph coloring.

SECTION – B

Groups & Subgroups: Group axioms, permutation groups, subgroups, cosets, normal subgroups, semi - groups, free semi – groups, applications.
Finite Fields: Definition, representation, structure, minimal polynomials, polynomial roots, Splitting Field, Integral Domain, Irreducible polynomial.
Formal Languages: Representation of special languages and grammars, finite state machines.

SECTION – C

Lattices & Boolean Algebra: Relation to partial ordering, lattices, Hasse Diagram, Axiomatic definition of Boolean algebra as algebraic structures with two operations basic results truth values and truth tables, the algebra of propositional functions, Boolean algebra of truth values, Applications (Switching Circuit, Gate Circuit).

References:

BCA-106          PROGRAMMING IN C

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1 (COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is requiring attempting any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION – A

Elements of C: C character set, identifiers and keywords, Data types: declaration and definition, storage classes in C, Type conversion, Types of error, ‘C’ macro, macro vs function.
Operators: Arithmetic, relational, logical, bitwise, unary, assignment and conditional operators and their hierarchy & associativity.
Data input/output.

SECTION – B

Control statements: Sequencing, Selection: if and switch statement; alternation, Repetition: for, while, and do-while loop; break, continue, goto.
Functions: Definition, prototypes, passing parameters, recursion.
Data Structures: arrays, struct, union, string, data files.
Pointers: Declaration, operations on pointers, array of pointers, pointers to arrays.

SECTION – C

String handling, Streams, File Operations, Formatted I/O, Character I/ O, Line I/O, Block I/O, File positioning, String I/ O.
Low - level Programming : Bitwise operators, Bit- fields in Structures, Other low- level techniques : Defining machine- dependent types, Using unions to provide multiple views of data, using pointers as addresses, the volatile type qualifier.
Writing Large programs: Source files, Header files, dividing a program into files, Building a multiple- file program.

References:
• Deitel & Deitel: C How to Program (Prentice Hall), 1996.
• Yashwant Kanetker, Let us C, BPB Publications.
• Gottfried, Programming with C, Tata McGraw Hill.
BCA-108 COMPUTER ORGANIZATION AND ARCHITECTURE

Total Marks : 150
Minimum Pass Marks : 40%
Theory Paper : 100
Maximum Time : 3 Hrs
Internal Assessment : 50

Note: Total 8 Questions are to be set by the examiner covering the entire syllabus uniformly. Question No. 1(COMPULSORY) having Objective Type Questions of 2 marks from entire syllabus. Rest of the Seven questions are from Section A, B & C of Syllabus. A candidate is require to attempt any Four questions out of Sections A, B & C by selecting ATLEAST ONE Question from Each Section. All questions shall carry equal marks.

SECTION-A
Basis Computer Architecture, Functional Organisation, Register Organisation, Arithmetic and Logic Unit, Central Processing unit, Instruction Formats, Addressing Modes. Data Transfer and Manipulation, interrupts RISC/CISC architecture.

SECTION-B
Register transfer and macro-operations, Register Transfer Languages (RTL). Arithmetic, Logic and Shift Macro-operations, Sequencing, Micro-program sequences.

SECTION –C
Memory & Storage: Processor Vs. Memory speed: Cache memory. Associative memory, Virtual memory and Memory management
Input/Output organization: Peripheral devices, I/O Asynchronous Data Transfer: Strobe Control, Data Transfer Schemes (Programmed, Initiated, DW, Transfer), I/O Processor.

References:
• V. Rajaraman : Computer Fundamentals (PHI).
Syllabus – II Year

Bachelor of Computer Application
# M.D. UNIVERSITY, ROHTAK

## SCHEME OF STUDIES & EXAMINATION

### BACHELOR OF COMPUTER APPLICATION (BCA)

#### SEMESTER-I

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## M.D. UNIVERSITY, ROHTAK

### SCHEME OF STUDIES & EXAMINATION

**BACHELOR OF COMPUTER APPLICATION (BCA)**

#### SEMESTER-III

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### M.D. UNIVERSITY, ROHTAK

#### SCHEME OF STUDIES & EXAMINATION

**BACHELOR OF COMPUTER APPLICATION (BCA)**

**SEMESTER-V**

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<td>BCA-301</td>
<td>Data Communication and Networks</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-302</td>
<td>Computer Graphics</td>
<td>4</td>
<td>75</td>
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<tr>
<td>BCA-303</td>
<td>Principles of Visual and Windows Programming</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-304</td>
<td>Java Programming &amp; Internet Applications</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-305</td>
<td>Practical Software Lab (Based on Paper BCA-301, 302, 303, 304)</td>
<td>8 Hours per week</td>
<td>75</td>
<td>25</td>
<td>6 (Two sittings)</td>
</tr>
</tbody>
</table>

### M.D. UNIVERSITY, ROHTAK

#### SCHEME OF STUDIES & EXAMINATION

**BACHELOR OF COMPUTER APPLICATION (BCA)**

**SEMESTER-VI**

<table>
<thead>
<tr>
<th>Paper Code</th>
<th>Title of Paper</th>
<th>Periods per week</th>
<th>Max. Marks</th>
<th>Internal assessment</th>
<th>Exam Duration Hours</th>
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<tbody>
<tr>
<td>BCA-306</td>
<td>Internet Technologies and application</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-307</td>
<td>Scientific and Statistical Computing</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-308</td>
<td>Multimedia Information Systems</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-309</td>
<td>Management Information Systems</td>
<td>4</td>
<td>75</td>
<td>25</td>
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<tr>
<td>BCA-310</td>
<td>Practical Software Lab (Based on paper BCA-306, 307 and 308)</td>
<td>8</td>
<td>75</td>
<td>25</td>
<td>6 (Two sittings)</td>
</tr>
</tbody>
</table>

**Basic Computer Organization and Design:**
Instruction and instructions Codes, Computer instructions, Timing and Control, Instruction Cycle, Memory Reference Instructions, Input/output and Interrupts; Complete Computer Description.

**Programming the Basic Computer**
Machine Language, Assembly Language, The assembler, program loops, programming Arithmetic and Logic, Subroutine, Inputs-Outputs programming. Micro-programmed Control; Control Memory, Address Sequencing, Micro-programme Example, Design of Control Unit. **Central Processing Unit** General Register Organization Stack Organization Instruction Formats, Addressing Modes, Data and Transfer Manipulation, Program Control, Reduced Instruction Set Computer, Pipeline and Vector Processing parallel processing pipelining, Arithmetic Pipeline, RISC Quickubem Vector Processing, Arrays Processors.

**Computer Arithmetic:**

**Input-Output Organization:**
Peripheral Devices, Input-Output interface, Asynchronous Data Transfer, Modes of Transfer, Priority interrupt, Direct Memory Access (DMA), input-output processors (IOP), Serial communicatoin multiprocessors, Inter-connection stuctures, Inter-processor ArBC Aration, Inter-processor Communication and Synchronization, Cache Coherence.

**Note:** Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
BCA-202  ALGORITHMS AND ADVANCED DATA STRUCTURES

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours

Trees : Search Trees, AVL trees, threading :

Storage Management :
Run time storage management, garbage collection and compaction.

Sorting techniques
Insertion sort, quick sort, merge sort, heap sort, selection sort, radix sort, external sort; lower bound for sorting by compression of keys. Selection and adversely argument Traversal : minimum spanning tree. Shortest path, graph component algorithms, String Matching KMP and Boyer Moore algorithms.

Dynamic Programming
Matric multiplication and optional binary search tree algorithms.

NP Complete Problem
Complexity classes P and NP; examples of problems in the NP class.

Parallel Algorithms
Parallelism, PRAM and other models, Parallel algorithms finding maximum element in a list, merging and sorting.

Note : Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
BCA-203 MICRO-PROCESSOR & ASSEMBLY LANGUAGE

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours

Evolution of micro-processor : overview of intel pro-pentium Motorola 68000 series, power PC, DEC-AlphaCip; CISC architecture. Basic micro processor architecture and interface : Internal architecture, external system bus architecture, memory and Input/output interface.

Programming mode
General-purpose registers; pointer and index registers; flag; segment registers, program invisible registers; memory addressing and addressing modes. Memory interfacing; memory address decoding; cache memory and cache controllers. Basic I/O interface; I/O mapped I/O memory mapped I/O; basic input/output and handshaking input/output port address decoding; 8255 programmable peripheral interface; 8279 programmable keyboard and display interface; 8254 programmable time; 8251 programmable/communication interface; interrupts-interrupt vector, vector tables, hardware and software Interrupts, 8259 programmable Interrupts controller; real-time clock; direct memory access, 8237/ 8257 DMA controller; video controllers; shared bus operation. (The course should be taught in the context of 8085 to intel-pro pentium micro-processor and its assembly languages).

Note : Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.

Note: Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
BCA-205     PRACTICE SOFTWARE LAB

External   : 75 Marks
Internal   : 25 Marks
Total      : 100 Marks
Duration of Exam. : 3 Hours
(Two seating)

(Base on paper BCA-202 and BCA-204) 8 hours per week)
Operating systems overview: Operating systems as an extended machine & resource manager, operating systems classification; Operating systems and system calls; Operating systems architecture. Process on Management functions: process model, hierarchies, and implementation; process states and transitions; multi-programming, multi-tasking, multi-threading; level of schedulers and scheduling algorithms, micro-kernel architecture. Memory Management Functions: memory management of single user operating systems partition, swapping, paging, segmentation, virtual memory. Device Management function: I/O devices and controllers, interrupt handlers, device independent I/O software, user-space I/O software; disk scheduling; clock hardware software; terminal input/output software. File Management functions: file naming, structure, types, access mechanisms, attributes and operations; hierarchiecal directory systems, directory structures and directory operations; file space allocations; file sharing, file locking, symbolic links; file protection and security: distributed file systems. Concurrent programming: sequential and concurrent process; precedence graph, Bernsterins condition; time problem, classical process co-ordination problems, deadlock handling, Inter-process communication. (This course should be taught in the context of UNIX operating system).

Note: Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
BCA-207 SOFTWARE ENGINEERING

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours

Software engineering definition and paradigms, A generic view of Software Engineering, Requirements analysis, Statement of system scope, isolation of top level processes and entities and their allocation to physical elements, refinement and review. Analyzing a problem, creating a software specification document, review for correctness, consistency and completeness. Designing software solutions : Refining the software specifications :
Application of fundamental Design concept for data, architectural and procedural designs using software blue print methodology and object oriented design paradigm; creating a design document Review of conformance to software requirements and quality. Software Implementation : Relationship between design and implementation; Implementation issues and programming support environment; Coding the procedural design; Good coding style, and review of correctness and readability. Software testing : Role of testing and its relationship to quality assurance; Nature and limitation of software testing, Software testing methods.
Software maintenance : Maintenance as part of software evaluation, reason for maintenance, types of maintenance (Perfrective, adoptive, corrective), designing for maintainability, techniques for maintenance, Configuration management. Comprehensive examples using available software platform/case tools.

Note : Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
BCA-208  OBJECT ORIENTED DESIGN AND PROGRAMMING

External :  75 Marks
Internal :  25 Marks
Total :  100 Marks
Duration of Exam. :  3 Hours

Introduction to Object Oriented Modeling, modelling techniques, Object Oriented Design, Object design, comparison of methodologies (SA/SD, OMT, JSD) design implementation, Object Oriented Languages, Programming in C++, Applications in database, compilers, animation and Business.

Note : Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
BCA-209          FINANCIAL ACCOUNTING

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours

Conceptual Framework of Accounting : Nature and Scope of Accounting information, identifying and:


2. Fundamentals of Computerised Accounting System : Concept of grouping the accounting heads, schemes of assigning the codes to accounting heads, Maintaining the hierarchy of Ledger accounts for preparing control accounts.

3. Applications of computers in accounts:
   (a) Accounting procedures used, in practice, for recording Cash, Bank and Journal Transactions using appropriate voucher;
   (b) Preparation of Ledger counts, Cash Book, Journal Book and Bank Book;
   (c) Preparation of Trial Balance, Profit and Loss Accounts and Balance Sheet.
   (d) Accounting for petty cash transactions and preparation of petty cash register.
   (e) Lease and Loan accounting;
   (f) Accounting system for preparing and maintaining Payrolls;
   (g) Inventory Accounting and Control;
   (h) Budget and Budgetory Control;
   (i) Accounting System for Orders booking, Processing (forwarding and acceptance) and invoicing for a trading Organization;
   (j) Accounting for Decision making control : Marginal costing and standard costing.

Note : Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
BCA-210    PRACTICAL SOFTWARE LAB

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam : 6 Hours

(Based on Papers BCA - 206 & BCA - 207)
Data Communications: concepts of data, signal, channel, bandwidth, bid-rate and baud-rate Fourier analysis; maximum data-rate of channel; analog and digital communications, asynchronous and synchronous transmission; data encoding techniques; modulation technique; multiplexing TI/EI carrier systems; transmission medium; transmission errors, error-detection and correction code.


Note: Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
Development of Computer graphics; basic graphics system and standards; Raster Scan and Randod Scan graphics; continual refresh and storage displays. Display processes and character generators; colour display techniques; frame buffer and BCA BCA operations concepts in raster graphics. Points, lines and curves; ration; polygon filling; conic-section generation, antialiasing. Two dimensional viewing; basic transformations; interactive picture construction techniques, Interactive inputs/outputs devices. Three-dimensional concepts : 3-D representations : and transformations; 3-D viewing; algorithm for 3-D volumes spine curve and surfaces; Fractals; Quadtree and octree data structure. Hidden line and surface, rendering and animation.

**Note**: Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
BCA-303 PRINCIPLE OF VISUAL AND WINDOWS PROGRAMMING

<table>
<thead>
<tr>
<th>External</th>
<th>75 Marks</th>
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<tbody>
<tr>
<td>Internal</td>
<td>25 Marks</td>
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<tr>
<td>Total</td>
<td>100 Marks</td>
</tr>
<tr>
<td>Duration of Exam.</td>
<td>3 Hours</td>
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</tbody>
</table>

Diagram understanding: The symbolic description behind the scenes. Generalized icons; generalizations, formal specifications of iconic systems, iconic operations, Syntactic-semantic analysis of iconic sentences, user-interfaces as iconic systems, determination of iconic purity, a visual Language compiler; The icon dictionary ID Physical logical part of icon, structure of ID, operator dictionary CD; The environment of a window application, Basic concepts of windows programming. The programming with the graphics device interface. Displaying Text, Receiving commands and data from user.

Note: Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
BCA-304 JAVA PROGRAMMING AND INTERNET APPLICATION

**External** : 75 Marks  
**Internal** : 25 Marks  
**Total** : 100 Marks  
**Duration of Exam.** : 3 Hours

**Internet Application** : Introduction to Internet : E-mail Architecture & Services, user agent, message format & transfer, SMTP; World


**Note** : Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.

**References**:
2. Ince Darrel & Freeman Adam : Programming the Internet with Java, revised edition, Addison-Wesley.

**Note** : Latest and good books may be added from time to time.
BCA-305 PRACTICAL - SOFTWARE LAB

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours
(Two Seating)

(Based on Papers BCA-301, 302, 303 and 304)
Network Layer functions and protocols; Switching; routing and congestion control; X.25; Internet protocol (IP); Addressing flow control, connection management, multiplexing, Transmission control protocol (TCP) and user datagram protocol (UDP), socket & TLI interface. Application layer services and Protocols: Domain name services network management protocol, electronic mail and file transfer protocol, world wide webs. Survey of contemporary Internet Technologies, The Role, use and implementation of current tools. Basic TCP/IP, name, space, correctness, and protocols, worldwide/HTML Techniques for text, images, links and forms. Indexing method: Gopher, WAIS, Server side programming, CGI scripts, Security issues, Emphasis on understanding, exploring and extending internet technologies using Java or perl.

Note: Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions.
Numerical methods:
Floating point arithmetic: Basic concept of floating point numbers systems, implications of finite precision, illustrations of errors due to round off. Interpolation Finite difference calculus, polynomial interpolation.

Note: Examiner is requested to set 8 questions covering whole syllabus, in each paper, out of which the candidates will be required to attempt any 5 questions. 27 28
Introduction to multimedia technology—computers, communications and entertainment; framework for multimedia; M/M devices, presentation devices and the user interface; M/M presentation and authoring.
Digital representation of sound and transmission, brief survey of speech recognition and generation; digital video and image compression; JPEG image compression standard; MPEG motion video compression; DVI technology; time-based media representation and delivery. M/M Software environments; limitations of workstation operating system; M/M system service; OS Support for continuous media applications; media stream protocol; M/M file systems and information representation; data-media for M/M and Hypermedia information.
Applications of M/M; intelligent M/M system. Desktop BR; Virtual reality OS; distributed virtual environment system; virtual environment displays and orientation tracking; visually coupled system requirements intelligent VR software systems. Applications of environments, in various fields, such as medical entertainment, manufacturing, business, education etc.

Note: Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the candidates will be required to attempt any 5 questions.
BCA-309  MANAGEMENT INFORMATION SYSTEM
OR
PROGRAMMING LANGUAGE

External : 75 Marks
Internal  : 25 Marks
Total    : 100 Marks
Duration of Exam. : 3 Hours

Data and information; forms of data; data generation, capturing, collection, recording, retrieval and processing.
Information and Information systems; Computer Based Information System – including office Automation
Systems forms of information systems; Computer in information system ; Computer systems Transaction
Processing Systems and Decision support Systems; Expert Systems. Role of VBIS in Government; Society and
level information systems. PC based software such as MS-Office, as a micro level information processing tool.

Note : Examiner is requested to set 8 questions covering whole syllabus in each paper out of which the
candidates will be required to attempt any 5 questions.
BCA-310  PRACTICAL SOFTWARE LAB

External : 75 Marks
Internal : 25 Marks
Total : 100 Marks
Duration of Exam. : 3 Hours
(Two Seating)

(Based on Papers BCA - 306, 307 and 308)