COURSES OF STUDY FOR BACHELOR OF
COMPUTER APPLICATION
HONOURS

Under

DEPARTMENT OF PHYSICS

Number of Papers: 20

Full Marks: 1600

Number of Semesters: 6

BCA Hons. Part - I: 400 Marks

BCA Hons. Part - II: 400 Marks

BCA Hons. Part - III: 800 Marks
## Framework of BCA syllabus

### BCA - I SEMESTER
**THEORY**

<table>
<thead>
<tr>
<th>CODE</th>
<th>TITLE</th>
<th>UNIT</th>
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<tbody>
<tr>
<td>1BCA 1001</td>
<td>Fundamentals of Computer Science</td>
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<tr>
<td>1BCA 1002</td>
<td>C and data Structure</td>
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**Practical**

1BCA 1003 MS Office, C Programming Labs

### BCA - II SEMESTER

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<tr>
<td>2BCA 2002</td>
<td>Computer Oriented Numerical Analysis Method</td>
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**Practical**

2BCA 2003 Linux Programming, CONAM Lab

### BCA - III SEMESTER

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<td>Introduction to Object Oriented Analysis and Design Using C++</td>
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<tr>
<td>3BCA 3002</td>
<td>Database Management System</td>
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**Practical**

3BCA 3003 C++ Programming and Data Base Programming Using Oracle

### BCA - IV SEMESTER

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<tr>
<td>4BCA 4002</td>
<td>Programming in Visual Basic.NET</td>
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**Practical**

4BCA 4003 Vb.Net programming Lab

### BCA - V SEMESTER

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<tr>
<td>5BCA 5003</td>
<td>Automata Theory</td>
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**Practical**

5BCA 5004 Java, XML, DHTML, ASP Programming Lab

### BCA - VI SEMESTER

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<td>Computerized Financial Accounting</td>
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**Practical**

6BCA 6004 Final Project
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<td>Programming in VB.NET</td>
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**Note:**
- **E:** External
- **I:** Internal
- **P:** Practical
- **JT:** Job Training
B.C.A. Part - I
SEMESTER - I
Paper - 1

1BCA 1001 Fundamentals of Computer Science (Classes-50)

Full Marks: 25 (MSE) + 50 (ESE) = 75  Time: 2½ hrs  Pass Marks: 34

Instructions to Question-setter & Examinee

1. This paper consists of **50 marks** and divided into three groups:
   - **Group 1:** Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   - **Group 2:** Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).
   - **Group 3:** Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

Introduction, Number systems, conversion between number bases, signed and unsigned Nos., concept of overflow. 2’s complement arithmetic.

Logic gates, truth tables, combinational logic circuits & realization with logic gates, Half & full adders & codes, Multiplexers.

Demultiplexers, Encoder, decodes, code conversion.

Sequential circuits, JK, RS, T, D, Master slave flip flop, shift registers, synchronous & asynchronous counters.

Architecture of a simple computer, Architecture of 8085 and 8086, registers and ALU, Instruction set, Addressing modes, timing diagram, Fetch decode & execute cycle, Interrupt mechanism, DMA.

Memory hierarchies, RAM types of RAM, ROM, types of ROM introduction to virtual & cache memory.

Books Recommended:
1. Computer system Architecture – M. Mano
2. Digital electronics – Floyd
   – B. Ram.
B.C.A. Part - I
SEMESTER - I
Paper - 2

1BCA 1002 C and Data Structure (Classes-50)

Full Marks: 25 (MSE) + 50 (ESE) = 75  Time: 2½ hrs  Pass Marks: 34

Instructions to Question-setter & Examinee

1. This paper consist of 50 marks and divided into three groups:
   
   **Group 1:** Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   
   **Group 2:** Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).
   
   **Group 3:** Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

History and Importance of C, Sample programming, Basic Structure and execution of C programmers, Constants, Variables, and Data Types and various type of declarations, Different type operators and Expressions, Evaluation of Expressions, Operator Precedence and Associability.

Managing Input and Output operations, Decision Making and Branching Decision Making and Looping.

One – dimensional Arrays and their declaration and Initializations, Two-dimensional Arrays and their initializations, String Variables, String – handling functions, Table and other features of Strings.

Need and Elements for user –defined Functions, Definition of Functions, Return values and their types, Function calls and Declaration, Arguments and corresponding return values, Functions that return multiple values, Nesting of functions, Recursion. The Scope, Visibility and Life time of variables.


Understanding Pointers, Accessing the Address of a Variable, Declaration and Initialization of Pointer Variables, Accessing a Variable through its Pointer, Pointers and Arrays, Pointers and Character Strings, Arrays of Pointers, Pointers and Function Arguments, File Management in C.

**DS Fundamentals**

Definition of Data structure & Storage Structure. Classification of Data structures. Selection of a Data Structure.

**Arrays** (vectors and matrices)

Vectors (1-D arrays), Row-major & Column-major storage of a matrix, Addition of two matrices, Multiplication of two matrices, Character array vs. Strings

**Stacks:** Array implementation, Linked-list implementation, Postfix, Prefix and Infix Notation

Evaluation of postfix/prefix expression

**Queues:** Circular Queue, Dequeue, linear quarter.

**Linked-list:** Array implementation Linked-list, Singly, Doubly & Circular linked list

**Graphs:** Nomenclature, adjacency lists & adjacency matrix representation of graph.

**Trees:** Definition & Properties of Binary tree Pre-order, in-order, post-order and level order

Traversal of binary tree, Binary search tree.

**Sorting:** Bubble, insertion, Quick & Merge Sort.

**Searching:** Sequential search & Binary Search.

**Text Book:**


**Reference:**

1. Programming with C, B.S.Gottfried (TMH)
3. C Programming Language – Kernighan & Ritchie
4. Let us C- Y.P. Kanetkar
5. Data Structures – Lipschutz.
B.C.A. Part - I
SEMMESTER - 1
Paper – 3 (Practical)
1BCA 1003 Ms-office Lab., C Programming Lab.
Full Marks: 50  Time: 3 hrs  Pass Marks: 23

A. MS Office Lab.
1. MS-Word
2. MS-Excel
3. MS-PowerPoint
4. MS-Access
(a) Slide making & presentation using MS-PowerPoint (MS-Office 2000)
(b) Editing, mail merging, macros using MS-Word (Ms-Office 2000)
(c) Spreadsheets, worksheets application using MS-Excel (MS-Office 2000)

B. C Programming Lab.
1. C programming on variables and expressions.
2. Precedence of operators, Type casting.
3. Decision control structures— if and nested if-else.
4. Loop controls— do, while, for and case control structure.
5. Unconditional jumps— break, continue, goto.
6. Modular program development using functions.
7. Arrays and matrix operations—add, subtract, multiply.
8. Recursion
9. Pointers, address operators and pointer arithmetic.
10. Structures and Unions, Accessing their members.
12. Files and file operations, standard streams.
13. Dynamic memory allocation and de-allocations.
B.C.A. Part - I  
SEMESTER - II  
Paper - 4  
2BCA 2001 Operating System (Classes-50)  
Full Marks: 25 (MSE) + 50 (ESE) = 75  
Time: 3 hrs  
Pass Marks: 34  

Instructions to Question-setter & Examinee

1. This paper consist of 50 marks and divided into three groups:  
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1= 15).  
   Group 2 : Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).  
   Group 3 : Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).  

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

Introduction: What is an Operating System? Type of Operating System.

Operating-system Structures: System Components, Operating-System Services, System Calls, System Programs, System Structure, System Design and Implementation, System Generation.


CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms.

Storage Management: Memory Management – Swapping, Contiguous Memory Allocation, Paging, Segmentation, Segmentation with Paging.


Mass-Storage Structure: Disk Structure, Disk Scheduling, Disk Management, Swap-Space Management.


Text book:  

Reference Books:  
B.C.A. Part - I
SEMESTER - II
Paper - 5

2BCA 2002 Computer Oriented Numerical Analysis Method
(Classes-50)

Full Marks: 25 (MSE) + 50 (ESE) = 75  Time: 3 hrs  Pass Marks: 34

Instructions to Question-setter & Examinee
1. This paper consist of 50 marks and divided into three groups:
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1= 15).
   Group 2 : Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).
   Group 3 : Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

Basic Statistics—measure of central tendency, dispersion, Probability, distribution introduction to mass function, density function, distribution function (Binomial, Poisson, Normal).
Interpolation—Newton’s Forward, Backward, Lagrange’s Interpolation
Gauss Elimination Method, Gauss-Jacobi, Inverse Interpolation.
Taylor’s Series method, Runge-Kutta method, Milne’s Predictor-Corrector method.

Books:
1. Numerical Analysis – Shastri, PHI
3. Numerical Analysis – James B. Scarborough
7. Numerical Analysis & Algorithms – Pradeep Niyogi, TMH
9. Numerical Methods – Arumugam, Scitech
B.C.A. Part - I
SEMESTER - II
Paper – 6 (Practical)
2BCA 2003 Linux Programming, CONAM Lab.

Full Marks: 50  Time: 3 hrs  Pass Marks: 23

A
Common commands on Linux, vi editor basics, shell programming.

Conum Lab.
B
Programs to be written through C- language.
B.C.A. Part - II  
SEMESTER - III  
Paper - 7  
3BCA 3001 Introduction to Object Oriented Analysis and Design Using C++ (Classes-50)  
Full Marks: 25 (MSE) + 50 (ESE) = 75  
Time: 3 hrs  
Pass Marks: 34  

Instructions to Question-setter & Examinee  

1. This paper consist of 50 marks and divided into three groups:  
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).  
   Group 2 : Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit  
             50 words) (5 x 2 = 10).  
   Group 3 : Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit  
             250 words) (5 x 5 = 25).  

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.  

Concepts of OOPS and differences with procedural languages, characteristics of OOPS (Idea of  
objects, class, data abstraction & encapsulation, inheritance polymorphism, dynamic binding, I/O  
stream, Cin, Covet, I/O manipulation).  
Data types, operators, control structure & looping statements, functions, and arrays.  
Objects & classes: classes & objects, constructor, destructor, overloading binary operators, data  
conversion.  
Inheritance: Derived class and base class, protected access specifier, derived class constructors,  
class hierarchies, abstract base class, public and private inheritance, multiple inheritance,  
containership (classes within classes).  
Pointers: Address and pointers, pointers and arrays, memory management, "New" & "Delete"  
pointer to objects, linked list, pointer to pointer.  
Virtual functions: Virtual functions, friend functions, static functions,"This" pointer.  
Files and streams: String, string I/O, object I/O, I/O with multiple objects file pointer, error  
handling, and redirection.  
Templates in C++  

Books Recommended:  
1. C++ – Lafore  
2. C++ – Balaguruswamy  
3. C++ – Kanetkar  
4. OOPS Concept – Booch
B.C.A. Part - II
SEMESTER - III
Paper - 8
3BCA 3002 Database Management System (Classes-50)
Full Marks: 25 (MSE) + 50 (ESE) = 75  Time: 3 hrs  Pass Marks: 34

Instructions to Question-setter & Examinee

1. This paper consist of 50 marks and divided into three groups:
   
   **Group 1:** Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   
   **Group 2:** Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).
   
   **Group 3:** Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

DATABASE SYSTEM CONCEPTS & ARCHITECTURE:
Definition, Architecture of DBMS, Schemas, Instances, Database Languages, Data Models.

DATA MODELING:
Data Models, ER Diagrams, Subclasses, Superclasses and Inheritance, Specialization & Generalization, Conceptual Object Modeling using UML Class Diagrams, Knowledge Representation Concepts, Exercises.

RELATIONAL DATA MODEL:
Relational Constraints, Domain Constraints, Key Constraints Referential Integrity Constraints, Relational Algebra, Fundamental Operations of Relational Algebra & their Implementation, Interdependence of Operations, Example Queries.

ER AND EER TO RELATIONAL MAPPING:
Mapping EER Model Concepts to Relation, Tuple Relational Calculus, Domain Relational Calculus Queries.

DATABASE DESIGN:
Functional Dependencies, Irreducible Sets of Dependencies, Lossless Decomposition, 1st, 2nd & 3rd NF, Boyce Codd NF, Multivalued Dependency & 4th NF, Join Dependency & 5 NF, Domain Key normal Form, Demoralization.

TRANSACTION –
Schedules, Serializability, Precedence Graph, Concurrency Control Techniques, Implementation of Transaction in Programs, Cursors and Transaction, Recovery, Checkpoints.

DATABASE SECURITY & AUTHORIZATION:

TEXT BOOKS:
1. Fundamental of Database Systems – Elmasri Navathe-Pearson Education Asia

REFERENCES BOOKS:
1. An Introduction to Database Systems – C.J. Date, Addison Wesley, Pearson Education Press

Books Recommended:
1. DBMS -Korth
2. DBMS -C.J. Date
3. Oracle –E. Byross
4. DBMS -Mazumdar
A. C++ Lab.
Basic C++ programming using cout, cin, if, if else, nested if, for, while, do while, goto, select case, break, nested for.
Function, Array, pointer, string handling
Program for Class and Object, Constructor, destructor. This pointer, inline function, Copy Constructor, Constructor overloading, static function, operator overloading, function overloading, Inheritance, Polymorphism (virtual function), File handling.

B. DBMS Lab
Learning basic DDL and DML commands
Learning basic DCL and TCL commands.
Insertion, Deletion, Updating to a table using SQL commands
Working with dual table.
Data retrieval using Select & where clause.
Oracle inbuilt functions-Date, aggregate, group by etc.
Use of Joins and Sub queries.
Views, sequences and indexes.
Introduction to PL/SQL
B.C.A. Part - II
SEMESTER - IV
Paper - 10
4BCA 4001 Computer Networks (Classes-60)

Full Marks: 25 (MSE) + 50 (ESE) = 75       Time: 3 hrs       Pass Marks: 34

Instructions to Question-setter & Examinee

1. This paper consist of 50 marks and divided into three groups:
   - **Group 1** : Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   - **Group 2** : Concept based questions (5 out of 7 questions, each of 2 marks to be solved; words-limit 50 words) (5 x 2 = 10).
   - **Group 3** : Descriptive type questions (5 out of 6 questions, each of 5 marks to be solved; words-limit 250 words) (5 x 5 = 25).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

Basic network concepts, Advantages and disadvantages of computer network, Types of networks-LAN, WAN, MAN. Network topologies. Hardware requirement of a network. Network operating system.
A communication model, communication tasks, three-layer approach to protocols, brief introduction to TCP/IP and OSI (brief function to different layers).

**Data transmission:** concept and terminology, analog and digital data transmission, Transmission impairments. Guided transmission media.
Data encoding digital data digital signal, digital data analog signal, analog data digital signal and analog data analog signal.
Asynchronous & synchronous transmission, interfacing.

**Data link control:** flow control, error detection (CRC), Error control, High level data control (HDLC).
Multiplexing, statistical time division multiplexing.

**Circuit switching:** switched network, circuit switching networks, switching concepts, routing in circuit switched networks.

**Packet switching:** packet switching principals, routing, congestion and control, X.25, Dijkstra’s algorithm, Bellman ford algorithm.

**LAN Technology:** LAN architecture, Bus/Tree LAN, Ring & Star LANs. Ethernet and fast Ethernet (CSMA/CD), Token ring and FDDI.

**Bridges:** Bridge operation, routing with bridges

What is NET, Overview of .NET Framework, Common Language Runtime: Assemblies Modules, types?

**Object Oriented terminology:** Objects, Classes, and Instances.

Constructor, Constructors with Parameter, Constructor Overloading, Overloading methods, Inheritance, Overriding, Interface.

**Namespaces:** Common namespaces.

**Windows Forms:** Using Forms via Sub Main, Forms at Design Time, startup Forms, Control Arrays, validating data entry, Menus, Context Menu, Toolbars, MDI Forms,

**Data Access with ADO.NET:** ADO.NET Architecture, Datasets, Data Providers, Connection Object, Data Adapter Objects, Dataset Collection

**Text Book:**
B.C.A. Part - II
SEMESTER - IV
Paper – 12 (Practical)
4BCA 4003 Vb.Net programming Lab

Full Marks: 50  Time: 3 hrs  Pass Marks: 23
B.C.A. Part - III
SEMESTER - V
Paper - 13

5BCA 5001 Internet & Web Technology (Classes-60)
Full Marks: 30 (MSE) + 70 (ESE) = 100  Time: 3 hrs  Pass Marks: 45

Instructions to Question-setter & Examinee

1. This paper consist of 70 marks and divided into four groups:
   - **Group 1**: Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   - **Group 2**: Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).
   - **Group 3**: Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

**Internet Basics**: Basic concepts, Communication on the Internet, Internet Domains, Internet Server Identities, Establishing Connectivity on the Internet, Client IP Address, A Brief Overview of TCP/IP and its Services, Transmission Control Protocol, Web Server, Web Client, Domain Registration

**Introduction to HTML**: HTML, HTML Tags, Commonly Used HTML Commands, Title and Footers, Text Formatting, Text Style, Lists, Adding Graphics to HTML Documents, Tables, Linking Documents, Frames.


**Understanding XML**: SGML, XML, XML and HTML, Modeling XML Data, Styling XML with XSL, XHTML

**Creation of Dynamic Web pages using ASP**: Dynamic Web Page, Introduction of ASP, Pages Overview, ASP Scripting, Database Connectivity, Recordset

**Text Books**:
1. Ivan Bay Ross- Web Enable Commercial Application Using HTML, DHTML, XML, and ASP - BPB Publication
2. Michel Morrison - HTML and XML for Beginners, PHI, New Delhi- 2001
B.C.A. Part - III
SEMESTER - V
Paper - 14
5BCA 5002 Java Programming (Classes-60)
Full Marks: 30 (MSE) + 70 (ESE) = 100
Time: 3 hrs
Pass Marks: 45

Instructions to Question-setter & Examinee
1. This paper consist of 70 marks and divided into four groups:
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1= 15).
   Group 2 : Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).
   Group 3 : Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.


Constants, Variables, and Data Types: Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Values of Variables, Scope of Variables, Symbolic Constants, Type Casting, Getting Values of Variables, Standard Default Values.


Classes, Objects and Methods: Introduction, Defining a Class, Adding Variables, Adding Methods, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance: Extending a Class, Overriding Methods, final Variables and Methods, Final Classes, Finalize Methods, Abstract Methods and Classes, Visibility Control.

Arrays, String and Vectors: Arrays, One-Dimensional Arrays, Creating an Array, Two- Dimensional Arrays, Strings, Vectors, Wrapper Classes.

Interfaces: Multiple Inheritances: Introduction, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables.

Packages: Putting Classes Together: Introduction, Java API Packages, Using system Packages, Naming Conventions, Creating Packages, Accessing a Packages, Using a Package, Adding a Class to a Package, Hiding Classes.


Managing Input/Output Files in Java: Introduction, Concepts of Streams, Stream Classes, Byte Stream Classes, Character Stream Classes, Using Streams, Other Useful I/O Classes, using the File Class, Input/Output Exceptions, Creation of Files.

Text Book:

Reference Books:
B.C.A. Part - III  
SEMESTER - V  
Paper - 15  

5BCA 5003 Theory of Computer Science (Automata Theory)  
(Classes-50)  

Full Marks: 30 (MSE) + 70 (ESE) = 100   Time: 3 hrs   Pass Marks: 45  

Instructions to Question-setter & Examinee  

1. This paper consist of 70 marks and divided into four groups:  
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1= 15).  
   Group 2 : Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).  
   Group 3 : Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).  

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.  

Mathematical Preliminaries: Sets, Relations, Functions, Graph and Trees, Strings and their properties Principle of Induction  

Theory of Automata: Definition, Description of Finite Automaton, Transition Systems, Properties of Transition Functions, Acceptability of a string by a Finite Automaton, Nondeterministic Finite State Machines.  

Formal Languages: Basic Definition and examples, Chomsky Classification of Languages, Languages and their Relations, Operations on Languages, Languages and Automata.  


Context-free Languages: Context-free Languages and Derivation Trees, Ambiguity in context-free Grammars, Simplification of Context-free Grammar, Normal Forms for Context-free Grammars.  


Turning Machines and Linear Bounded Automata: Turning Machine Model, Representation of Turning Machines, Language Acceptability by Turning Machines, Design of Turning Machines.  

Proportions and Predicates: Proportions (Or statements), Normal Forms of Well-formed Formulas, Rules of Inference for Propositional Calculus (Statement Calculus), Predicate Calculus, Rules of Inference for Predicate Calculus.  

Text Book:  
B.C.A. Part - III
SEMESTER - V
Paper – 16 (Practical)
5BCA 5004 Java, XML, DHTML, ASP Programming Lab.

Full Marks: 100  Time: 3 hrs  Pass Marks: 45

**Java Prog. XML, DHTML, JavaScript, ASP Programming Lab.**

Java: Simple programming using Java, applet creation

JavaScript: Overview to JavaScript, Features of JavaScript, Variables, Operators, JavaScript Object hierarchy (Window Objects & Array), Various events, methods and Objects of JavaScript, Decision making and Loop forming statements, Functions, Creation of Document at Runtime.

ASP: Overview to ASP, Creation of Virtual Directory, Active Data object, ADO Connection with MS-Access, ADO Command object and Query, Creation of Recordset, Execute method of command object, Open method of RecordSet Object, Execute method of Connection Object, Insertion, Deletion and Modification of Data in a Database.

DHTML: Overview to DHTML, Features of DHTML, Document Object Model, Events, Inner Text Property, Dynamically changing Text Attributes (Style sheet and its properties, inline, Embedded, External & Imported Style Sheets), Displaying items in Tree structure.

XML: SGML, XML, XML and HTML, Modeling XML Data, Styling XML with XSL, XHTML
B.C.A. Part - III
SEMESTER - VI
Paper - 17
6BCA 6001 EDP (Classes-50)
Full Marks: 30 (MSE) + 70 (ESE) = 100  Time: 3 hrs  Pass Marks: 45

Instructions to Question-setter & Examinee

1. This paper consist of 70 marks and divided into four groups:
   Group 1 : Multiple choice question, fill in the blanks and true false types (15 x 1= 15).
   Group 2 : Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).
   Group 3 : Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

EDP
Need, scope and characteristics of Entrepreneurship, special schemes for Technical Entrepreneurs, STED.
Identification of opportunity.
Exposure to demand based, resource based, service based, import substitute and export promotion Industries.
Market survey Techniques.
Need scope and approaches for project formulation.
Criteria for Principles of Product selection and development.
Structure of project report.
Choice of technology, plant and equipment.
Institutions, financing procedure and financial incentives.
Financial ratio and their significance.
Books of accounts, financial statements and funds flow analysis.
Energy requirement and Utilization.
Critical Path Method [CPM] and Project Evaluation Review Techniques [PERT] as planning tools for establishing SSI.
   A) Creativity and innovation.
Techno – economic feasibility of the project.
Plant layout and Process Planning for the product.
Quality control/quality assurance and testing of product.
Elements of Marketing and Sales management.
   A) Nature of product and market strategy
   B) Packaging and advertising.
   C) After Sales service.
Costing and Pricing.
Management of self and understanding human behavior.
Sickness in small scale industries and their remedial measures.
Copying with uncertainties, stress management and positive reinforcement.
   A) Licensing , registration.
   B) Municipal bye laws and insurance coverage.
   A) Dilution control
   B) Social responsibility and business ethics.
Income Tax , Sales Tax and Excise Rules.
Conduct of mini market survey (One day exercise) : Data collection through questionnaire and personal visits.
Entrepreneurial Motivation Training: Through games, role playing discussions and exercises.
   A) Working capital and fixed capital: Practice assessment and management
   B) Exercise on working capital: Practice fixed capital calculation
   C) Analysis of sample project report: Discussion
   D) Break even analysis: Practice
Communication written and oral: Practice
B.C.A. Part - III
SEMESTER - VI
Paper - 18
6BCA 6002 Software Engineering Principles (Classes-50)
Full Marks: 30 (MSE) + 70 (ESE) = 100  Time: 3 hrs  Pass Marks: 45
Instructions to Question-setter & Examinee

1. This paper consist of 70 marks and divided into four groups:
   - **Group 1**: Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   - **Group 2**: Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).
   - **Group 3**: Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

**Introduction to Software Engineering**: Characteristics, Emergence of Software Engineering, Software Metrics & Models, Process & Product Metrics.

**Software Life Cycle Models**: Waterfall, Prototype and Spiral Models and their Comparison.

**Software Project Management**: Size Estimation- LOC and FP Metrics, Cost Estimation- COCOMO

**Software Requirements Specification**: SRS Documents, their Characteristics and Organization.

**Software Design**: Classification, Software Design Approaches, Function Oriented Software Design, Structured Analysis- Data flow Diagrams and Structured Design, Introduction to Object Oriented Design.

**Coding and Testing of Software**: Unit Testing, Integration Testing, System Testing, Verification and validation.

**Software Reliability and Quality Assurance**: Reliability Metrics.

**Software Development Tools**: Introduction to “Rational Rose”.

**Text Book**:
1. Rajib Mall – Fundamental of Software Engineering, Prentice Hall of India, New Delhi, 2005

**Reference Book**:
B.C.A. Part - III
SEMESTER - VI
Paper - 19

6BCA 6003 Computerized Financial Accounting (Classes-50)
Full Marks: 30 (MSE) + 70 (ESE) = 100 Time: 3 hrs Pass Marks: 45

Instructions to Question-setter & Examinee

1. This paper consist of 70 marks and divided into four groups:
   - **Group 1**: Multiple choice question, fill in the blanks and true false types (15 x 1 = 15).
   - **Group 2**: Concept based questions (5 out of 7 questions, each of 5 marks to be solved; words-limit 50 words) (5 x 5 = 25).
   - **Group 3**: Descriptive type questions (3 out of 5 questions, each of 10 marks to be solved; words-limit 250 words) (3x10 = 30).

2. The question must cover the entire syllabus with equal distribution of marks as far as practicable.

**Computerized Financial Accounting**

**Accounting**: Basic of Accounting, Accounting Mechanics- Double Entry System, Classification, Rules for Debit and Credit Concepts & Conventions, Indian Accounting Standards.

**Journal, Ledger and Trial Balance:**

- **Ledger**: Meaning, subdivision, Mechanics of Posting, balancing of Ledger accounts
- **Trial Balance**: Objectives, Defects of trial balance, Errors disclosed by trial balance, preparation and locating errors.


**Finance Accounts**: Trading account, Profit & Loss account, Adjustments, Balance Sheet, Forms of balance Sheet, Assets and their classification, liabilities and their classification, uses and limitations.

**Capital & Revenue Expenditure & Receipts**: Rules for determining capital expenditure, Deferred Revenue expenditure, Capital & Revenue receipts, Capital & Revenue Profits, Capital & Revenue Loss.


**Understanding of Financial statements**: Concept of profit and loss account and balance sheet-significance of their preparation.

**Statement of Changes of financial position**: definition of funds, fund flow statement, cash flow statement.

**Text Books**:
1. Management Accounting – Manmohan Singh and Goel
2. Financial management – Pandey I. M.

**Reference Books**: