

Syllabus of
BCA III
(Bachelor of Computer Application)
Semester-V

Designed by Dr. S.B. Kishor



**GONDWANA UNIVERSITY,
GADCHIROLI**

SESSION 2014-2015

BCA –III

SEM V

Paper 1	Theory of Computational Analyzer	Theory : 80 Marks Internal : 20 Marks	Practical : 50 Marks
Paper 2	E-Commerce and Web Designing	Theory : 80 Marks Internal : 20 Marks	
Paper 3	Computer Graphics	Theory : 80 Marks Internal : 20 Marks	Practical : 50 Marks
Paper 4	Computational Linguistics	Theory : 80 Marks Internal : 20 Marks	

BCA –III (Semester – V)

Paper – I : Theory of Computational Analyzer

Paper – II :E-Commerce and Web Designing

Paper – III :Computer Graphics

Paper – IV : Computational Linguistics

BCA - III
SEMESTER – V

PAPER- I: Theory of Computational Analyzer[Marks: 80
(5BCA1)

UNIT-I: FINITE AUTOMATON

Finite State Machine: Finite automaton Model, Acceptance of strings and Languages, Types of FA (Deterministic Finite Automaton, Non-Deterministic Finite Automaton, NFA with ϵ Moves, Two way Deterministic Finite Automaton), Construction of DFA and NFA, Equivalence between NFA and DFA, Conversion of NFA into DFA, Minimization of FA.

UNIT- II :REGULAR EXPRESSION&CONTEXT FREE GRAMMAR

Regular Expression , Manipulation of Regular Expression, Equivalence between RE and FA, Inter Conversion, Pumping Lemma for Regular Set, Regular Grammar, Left Linear Grammar, Right Linear Grammar, Inter conversion of LLG and RLG

Context Free Grammar, Derivation Tree, Chomsky Normal Form, Greibach Normal Form, Ambiguity in Grammar, Useless Symbol.

UNIT- III:PUSH DOWN AUTOMATON AND TURING MACHINE

Push Down Automaton: Definition, Model, Acceptance of CFL, Equivalence between CFL and PDA, Construction of PDA, Interconversion, Pumping Lemma for CFL.

Turing Machine:Definition, Model, Acceptance of REL, Types of TM, Construction of TM,Linear Bounded Automaton, Chomsky Hierarchy.

UNIT- IV : INTRODUCTION TO COMPILER

Compiler :Definition of Compiler, Structure of Compiler, Lexical Analysis, Role of Lexical Analyzer, Transition Diagram for Identifier and Constant, Syntax Analysis, Parse Tree Construction, Intermediate Code Generation, Code Optimization, Principle sources of Code Optimization, Code Generation, Basic block, DAG, Construction of DAG, Book keeping , Error Handling, Types of Compiler, Compiler Construction Tools.

Books :

1. J. D. Ullman and H. E. Hopcraft, "Introduction to Automata Theory, Languages and Computation", Narosa Publication, ISBN : 81-85015-96-1
2. A. V. Aho, and J. D. Ullman , Principle of Compiler Design, Narosa Publication, ISBN : 81-85015-61-9
3. Dr. S.B. Kishor, "Theory of Computation", Das Ganu Publication, ISBN : 978-93-81660-15-7

References :

1. John C Martin, "Introduction to Languages and the Theory of Computation", Tata McGraw-Hill Publication, ISBN : 0-07-049939-X
2. K. L. P. Mishra and N. Chandrashekhar, "Theory of Computer Science", Prentice Hall of India , ISBN : 81-203-1271-6

BCA-III
SEMESTER -V

PAPER- II: E-COMMERCE AND WEB DESIGNING
(5BCA2)

[Marks: 80

UNIT-I: E-Commerce and Introduction to Internet

E-Commerce- Introduction, Application, Definition, Benefits of E-Commerce, Impediments of E-Commerce, Difference between Traditional and Electronic Commerce, E-Commerce Service, **Electronic Data Interchange (EDI):** Introduction, Benefits, Value Added Services (VAS), On-line Payment Services, Trade Cycle.

Introduction- Internet, Basic Internet Terms, Internet Addressing, Protocols, Internet Protocols, Services of Internet, Search Engine.

UNIT-II: Basic of HTML and Tag

Introduction to HTML - Introduction, Features of HTML, Advantages & Disadvantages of HTML, HTML Editors, Step to Create and View HTML Document, Basic Structure of HTML Program

Tags & Attributes- Nesting of Tags, Classification of HTML Tags, Block Formatting Tags.

UNIT-III: Working with HTML

List - Introduction to Lists, Unordered List, Ordered List, Definition List, Nested List, Difference Between Ordered and Unordered List.

Linking - Introduction, Type of Hyperlink Creation, Working with Links, Pathname and Types, Types of Linking or Anchors.

Graphics in Web Page - Image Tag, Align Images, Embedding Inline Images and External Images,

UNIT-IV Advanced HTML

Tables - Basic table tags and their related attribute

Frames- Frames, <Frame> and <Frameset> tags and related attributes

Form designs, Form Controls, Text controls, password fields, radio buttons, and check boxes. Reset and submit buttons, form control selection, option processing and text area.

Books:

- 1) Greenstein and Feinman, "Electronic Commerce", TMH, 2000, TMH, ISBN-0-07-042141-2,
- 2) Bhushan Dewan, "E-Commerce", S.Chand, 2001, First Edition, ISBN - 81-219-2083-3,

References:

- 1) Complete HTML, BPB, 2010, ISBN-13:978-0-07-070194-6.
- 2) C.Xavier, "Web Technology and Design", TMH, 2010, ISBN-13:978-81-224-1450-9

BCA-III
SEMESTER-V
PAPER- III: COMPUTER GRAPHICS[Marks: 80
(5BCA3)

UNIT – I: Introduction

Geometry & Line Generation – Introduction, Vectors, Pixels and Frames Buffers, Vector Generation, Character Generation, Displaying the Frame Buffer.

Graphics Primitive – Introduction, Display Devices, Primitive Operations, the Display File Interpreter, Normalized Device Coordinator, Display File Structure, Display Control, Text Line Style Primitive.

UNIT – II: Polygons, Transformations & Segments

Polygons – Introduction, Polygons, Polygon Representation, Entering Polygon, An Inside Test, Filling Polygons.

Transformations – Introduction, Matrices, Scaling Transformation, SIN & COS, Sum of Angles Identifier, Rotation, Homogeneous Coordinates and Translation, Rotation about an Arbitrary Point, Other Transformation, Display Procedures.

Segments – Introduction, the Segment Table, Segment Creation, Closing the Segments, Other Display File Structure, Raster Technique.

UNIT – III: Windowing & 3D Geometry

Windowing & Clipping - Introduction, Viewing Transformation, Viewing Transformation Implementation, Clipping, Clipping of Polygons, Adding Clipping to the System, Avoiding Division, Generalized Clipping, Position Relative to an Arbitrary Line Multiple Windowing.

Interaction – Introduction, Hardware, Input Devices Handling Algorithms, Event Handling, Sample Devices, Delectability Attributes, Simulating a Locator with a Pick, Pick with a Locator, Echoing, Interactive Technology.

Three Dimension Geometry – Introduction, 3D Geometry, Primitives and Transformation, Rotation about an Arbitrary Axis, Parallel Projection, Perspective Projection, Viewing Parameters, and Conversation to View Plan Coordinate, 3D Viewing Transformation, Special Projection.

UNIT – IV: Surface, Shading & Curves

Hidden Surface and Lines – Introduction, Back Face Removal, Pointers Algorithm, Collection of Polygons, Remembering the Style, Hidden Surface Check.

Shading – Introduction, Diffusion, Illustration, Point- Source Illustration, Specular Reflection, Transparency and Shadow.

Curves – Introduction, Curve Generation, Implementation, Interpolating Polygon, B-Splines and Curves.

Books:

- 1) Steven Harrington ,”Computer Graphics a Programming Approach ”, Tata McGraw-Hill,ISBN- 0-07-100472-6
- 2) Donald Hearn Baker ,”Computer Graphics”, Pearson Education, ISBN-81-78-08-794-4
- 3) S.B.Kishor, S. Dubey, B.Dikhit, ”Computer Graphics”, Das Ganu Pub,

References:

- 1) Newman &Sproul,”Interactive Computer Graphics “

- 2) David F Rogers, "Procedural Elements for Computer Graphics", Tata McGraw Hill, 2nd Ed, ISBN-0-07-047371-4

BCA - III
SEMESTER-V
PAPER-IV: COMPUTATIONAL LINGUISTICS [Marks: 80
(5BCA4)

UNIT – I: Prolog Programming & A.I.

Prolog: Introduction to Turbo Prolog, Structure of Languages. Cut, Fail, Recursion, Lists and Complex Structure **Introduction to A.I.:** Definition of AI, AI Technique, Tic-Tact-Toe, Pattern Recognition, Level of the Model, Criteria For Success, Problems and Problems Spaces, Defining the Problem, Production System, Control Strategies, Heuristic, Problem Characteristics.

UNIT – II: Problem Solving

Basic Problem Solving Methods, State Space Search; Production Systems, Depth-First, Breadth-First Search, Heuristic Search - Hill Climbing, Best-First Search, Problem Reduction, Constraint Satisfaction End, Means-End Analysis

UNIT – III: Knowledge Representation

Representing Simple Facts in Logic, Conversion to Clause Form, Resolution in Propositional Logic and Predicative Logic, Unification Algorithm.

UNIT – IV: Structural Representation & Natural Language Understanding

Structural Representation of Knowledge: Some Common Language Structures, Choosing Level of Representation, Finding the Right Structure, Declarative Representation.

Natural Language Understanding : Concept of Understanding, Keyword Matching, Syntactic and Semantic Analysis, Understanding Language Generation and Matching Translation, General Concept of Implementation of A.I. System, Introduction to Pattern Recognition, Translation

Books:

- 1) Rich, Knight, Nair, "Artificial Intelligence", TMH, 3rd Ed, ISBN 9780070087705
- 2) Dan W Patterson "Introduction to Artificial Intelligence and Expert Systems", PHI, ISBN- 8120307771
- 3) NJ Nilsson, "Principles of AI", Narosa Pub. House, 1990, ISBN-8185198292

References:

- 1) Peter Jackson, "Introduction to Expert Systems", AWP, MA, 1992
- 2) RJ Schalkoff, "Artificial Intelligence - an Engineering Approach", McGraw Hill Int Ed, Singapore, 1992
- 3) Burnham & Hall, "Prolog Programming and Application "