## SCHEME OF BCA
Semester – III

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<th>Code</th>
<th>Theory Paper</th>
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<th>Practical</th>
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PAPER CODE S0S BCA - 301

Discrete Mathematics


Set Theory: Set, Singleton set, Finite and Infinite sets, Subsets, Proper subsets, Equality of sets, Union, Intersection and Difference of sets, Universal set, De Morgan laws, Symmetric difference of sets, Generalized De Morgan laws, Cartesian product of sets.

UNIT-II Relations: Relation between two sets, Binary relation on a set, Types of binary relations, Equivalence relation, Equivalence class, Partition of a set, Fundamental theorem of equivalence relation, Composition of relations.

Functions: Function or mapping, One-one, Many-one, into and onto mappings, Identity mapping, Constant mapping, Equality of mappings, Inverse of a mapping, Composition of mappings.

UNIT-III Boolean algebra: Definition and properties of Boolean algebra, a brief introduction to the application of Boolean algebra to switching theory, conversion of complicated switching circuits to simple one, Disjunctive and Conjunctive normal forms.

Graph Theory: Introduction to graph theory, Paths and Circuits, Trees, Spanning trees, Cut-sets, Fundamental circuits and cut-sets.


UNIT-V Solution of Homogeneous and Non-homogeneous system of linear equations, Characteristic roots and Characteristic vectors of a matrix, Caley-Hamilton theorem, to find the inverse of a non-singular matrix using Caley-Hamilton theorem.

Recommended Books:
1. Discrete Mathematical Structures with Applications to Computer Science by Tremblay & Manohar.
4. Graph Theory with Applications to Engineering and Computer Science by Narsingh Deo.
5. Discrete Mathematical structure by Kolman.
6. Discrete Mathematics by J.P. Sharma
7. Graph Theory by Harvey.
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Programming in Visual Basic

UNIT 1-A profile of VB - Menus, Tool bar Buttons , Tool box, Form , Project, controls, Properties, Program window.
Programming Essentials- General Procedures, Sub Procedures and function-designning,. Calling & passing controls as arguments , Constant & variable : Decleration, Scope and types.

UNIT 2-DESIGNING A PROJECT :- START UP FORM , PROPERTIES AND PROGRAM DESIGN , MANAGING MULTIPLE FORMS.
Flow of control - decesions - if statement , Else if clause ,Select case structure, Nested decisions.
Loops :- Do loops , For loops ,

UNIT 3-Arrays ,Declarations arrays ,Multidimentional & dynamic arrays , User defined types :- Recorded structures, With statement arrary of records .
Date file :- Random Access Files - Opening & closing of file , Put # , Get# ,Seek# statements.
TEXT files - OPENING & CLOSING FILE, WRITE# , PRINT#, INPUT# , LINE INPUT# STATEMENTS.

UNIT 4-INPUT & OUTPUT PROCEDURES - DEFINING A MENU , CONTROL ARRAYS , INPUT TECHNICHES - VALIDATING & FORMATTING THE INPUT , MOVING THE FOCUS , MENU CHOICES OUTPUT TECHNIQUES - CALCULATION & DISPLAY , DRAWING CHART .

UNIT 5-Visual basic controls:- Intrinmic Controls, Custom control, Common dialog control , Printer object. Object, Classes and Collections :- Developing classes & collection MDI form, OLE controls . Data base connections.Data manager programme , Data control ,Bound controls.

REFERENCE:

1. Foundation of Visual Basic - Douglus Hergert.
UNIT 1 - SYSTEM: DEFINITION AND CONCEPT; REAL TIME AND DISTRIBUTED SYSTEMS; DATA INFORMATION AND RELATED ATTRIBUTES; SYSTEM ANALYSIS AND ANALYST.

UNIT 2 - SYSTEM DEVELOPMENT LIFE CYCLE: STUDY, ANALYSIS, DESIGN, DEVELOPMENT AND IMPLEMENTATION; SYSTEM PLANNING; DATA FACT FINDING TECHNIQUES.

UNIT 3 - SYSTEM DESIGN AND MODELING: LOGICAL AND PHYSICAL DESIGN REPRESENTATION, DATA FLOW DIAGRAM, ERD, STRUCTURE CHARTS.

UNIT 4 - FORMS DESIGN: CLASSIFICATION, USER INTERFACE; STANDARDS; CONTROL AND VALIDATION CHECKS; USER INTERFACE GUIDELINES MODULAR AND STRUCTURED DESIGN.

UNIT 5 - SYSTEM IMPLEMENTATION & MAINTENANCE; PROJECT MANAGEMENT TECHNIQUES; USE OF AN AVAILABLE TOOL TO IMPLEMENT A CASE STUDY.

Reference:
English Language:

UNIT 1- Review of English Grammar; Written and Spoken Language; Common Errors in language; Punctuation (purpose, role, importance and use); OED; Language Skills (Listening, Speaking, Reading, Writing).

UNIT 2- Meaning what you mean; Listening: Effective and efficient listening in various situations (discussions, lectures, news, seminars, speech, telephone calls etc.); Reading: Purpose; Comprehension; Tactics and strategies for good reading; Writing: Guidelines for good writing; various writing styles (General and Technical writing styles).

COMMUNICATION SKILLS:

UNIT 3- COMMUNICATION (PURPOSE, ROLE, IMPORTANCE, ELEMENTS); EFFECTIVE AND EFFICIENT COMMUNICATION; ROLE OF CONTENT, CONTEXT AND LANGUAGE; SPOKEN AND WRITTEN COMMUNICATION; PRESENTATION AND DELIVERY; ROLE OF SPEAKER AND AUDIENCE; STYLE AND BODY LANGUAGE.

UNIT 4- Planning, organization, presentation, participation, conduction and feedback of discussions, meetings, seminars etc; Effective and efficient presentation and discussion skills; Discussion and Presentation skills of conferences, meetings, seminars etc.

UNIT 5- General and Technical documents (correspondence (applications, letters, resumes, CV), drafts, proposals, précis, reports, summary, synopsis,), Use of Audio-Visual Aids: OHP, Slides, Charts, Computers.

REFERENCE:

1. WREN & MARTIN - GRAMMAR
2. BOOKS PRESCRIBED BY M.P. UCHAHA SHIKSHA ANUDAN AYOG ARE THE TEXT BOOKS FOR THIS SYLLABUS.
UNIT 1 - BASICS OF GRAPHICS SYSTEMS APPLICATIONS, DISPLAY DEVICES : VIDEO DISPLAYS, RASTER-SCAN DISPLAYS, RANDOM SCAN DISPLAYS, DVST, FLAT-PANEL DISPLAYS. INPUT DEVICES : KEYBOARDS, MOUSE, TRACKBALL AND SPACE ball, JOYSTICKS, DIGITIZERS, IMAGE SCANNER, TOUCH PANEL, LIGHT pens, VOICE SYSTEMS etc.


UNIT 3 - CLIPPING : COHEN-SUTHERLAND LINE CLIPPING ALGORITHM, LINE CLIPPING USING NON RECTANGULAR CLIP WINDOWS, POLYGON CLIPPING, TEXT CLIPPING.


UNIT 5 - INTRODUCTION TO MULTIMEDIA: REVIEW OF MULTIMEDIA, MULTIMEDIA APPLICATIONS, MULTIMEDIA SYSTEMS ARCHITECTURE, MULTIMEDIA HARDWARE, MULTIMEDIA SOFTWARE, REPRESENTATION AND OPERATIONS ON VARIOUS MULTIMEDIA DATA TYPES: TEXT, IMAGES, GRAPHICS, VIDEO AND AUDIO, INTRODUCTION TO MULTIMEDIA AUTHORING.