Gondwana University, Gadchiroli

Choice Based Credit System (CBCS)
Syllabus
Of

Bachelor of Computer Application
(B.C.A) - II
(Semester – III & IV)

(Three Years Graduate Course)

Prepared by

IT and Application Board

2018-2019

BCA II (Semester III)

Subject	Paper Code	Paper Name	Total Period# /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40 %)
Core Course (CC -IV)	UBCAT301	Advance 'C'	3	2	10	40	50	40
	UBCAT302	Computer Networks & Cloud Computing	3	2	10	40	50	
Core Course (CC -V)	UBCAT303	Database Programming with Oracle	3	2	10	40	50	40
	UBCAT304	System Analysis & Design	3	2	10	40	50	
Skill Enhancement Course (SEC-I)	UBCAT305	Discrete Mathematics	3	2	10	40	50	40
	UBCAT306	Soft Skill	3	2	10	40	50	
Core VI Lab (Based on Core IV and Core V)	UBCAP307	Lab on UBCAT301 & UBCAT302	4 Prac. Per Batch	2	20	30	50	20
	UBCAP308	Lab on UBCAT303 & UBCAT304	4 Prac. Per Batch	2	20	30	50	20
Ability Enhancement Compulsory Courses (ACCC-V)	UBCAS309	Seminar	2	2	50	-	50	20
Non - CGPA Credit Course (NCCC-I)	UBCAS310	Democracy and Good Governance	2	2	--	--	--	--
Total				**20**	**150**	**300**	**450**	**180**

Note:-1) In a Group, if any student remains absent in one of the paper then candidate result will be considered as fail in that group even though he/she has scored minimum passing marks in other paper of that group. Candidate need to appear in both the papers of that group.
2) In Practical student must appear External Practical Exam conducted by University in order to clear practical exam.

B.C.A. - II (SEMESTER – III)
Paper –I: ADVANCE 'C'

[Max. Marks: 40

UNIT I: Functions & String Handling

Function Definition, Library Functions, User Defined Functions, Need for user define Function, Advantages of functions, Function Prototype, Function Call, Types of User Defined Functions, String Library Functions, Arrays & Functions, and Storage Classes.

UNIT II: Structure & Union

Structure & Union: Definition of Structure, Need of Structure, Declaring Structure, Period operator, Initialization of structure, Accessing Structure Elements, Array of Structure, Nesting of Structure. Introduction to Union, Characteristics of Union, Difference between Structure & Union, Enumeration.

UNIT III: Pointer

Pointer: Introduction to Pointer, Declaring Pointer Variables, Initialization of Pointer variable, Pointer operator, Pointer & Function (Call by Value & Call by Reference), Pointer & Arrays, Pointer & Strings, Pointer & Structure, Pointer to Pointer.

UNIT IV: File Handling in C

Introduction, Opening & Closing File, Input & Output File handling functions, Error Handling During I/O Operations, Random Access to Files, Difference between Binary mode & Text Mode, Command Line Arguments.

Books:

1) E. Balagurusamy , " Programming in ANSI C",TMH, ISBN- 0-07-068182-1
2) Dr. S. B. Kishor, "Programming in C", Das Ganu Prakashan, ISBN: 978-93-84336-21-9
3) B. L. Juneja, "Programming in C", Cengage Learning, ISBN 81-315-1429-3

References:

1) K. R. Venugopal & S. R. Prasad, "Mastering C", ISBN- 0-07-061667-1
2) S. Shrivastav, "C in Depth", 1st Edition, ISBN 81-7656-107-X

B.C.A. - II (SEMESTER – III)
Paper-II: Computer Networks & Cloud Computing

[**Max. Marks: 40**

UNIT I: Data Communication

Data Transmission- Concept and Terminology, Analog and Digital Data Transmission, Transmission Impairment, Transmission Media. **Data Encoding –** Digital Data, Analog Data, Digital Signal, Analog Signal. **Digital Data Communication-** Asynchronous and Synchronous Transmission, Error Detection Technique, Interfacing. **Data Link Controls** – Line Configuration, Flow Control, Error Controls, Data Link Control Protocols. **Multiplexing –** Frequency Division Multiplexes, Synchronous Time Division Multiplexing.

UNIT II: Data Communication Network

Circuit Switching- Communication Network, Circuit Switching, Single Node Network, Digital Network Concept, Concept Signaling. **Packet Switching-** Packet Switching Principal, Virtual Circuit and Datagram, Routing, Traffic Controls, X.25.**LAN and MAN –** LAN, MAN Technology, Bus/Tress Star Topologies, Optical Fiber Bus, Ring Topology, and Medium Access Control Protocols, LAN/MAN Standards.

UNIT III: Communication Architecture

Protocols and Architecture- Protocol, The Layered Approach, OSI Model, TCP/IP Protocol Suite, System Network Architecture. Internetworking – Principles of Internetworking, The Bridge, Routing With Bridge, Connectionless Internetworking, Connectionless Internetworking Work Protocol, Router-Level Protocol, and Connection Oriented Internetworking.

UNIT IV: Cloud Computing

Cloud Computing Overview: Applications, Intranets and cloud first movers in the cloud, **Your Organization and Cloud Computing:** When you can use Cloud Computing, Benefits, limitations, Security concurrence, Regular issues. Cloud Computing with the Titans Google. **Hardware & Infrastructure:** Clients, Security, Network, Services.

Books:

1) Dr. S. B. Kishor, Ajay Kushwaha,"Data Communication And Cloud Computing Basics",Das Ganu Publisher.
2) Willam Stalling "Data and Computer Communication", PHI, ISBN-81-7808-442-2
3) Toby Velte, Anthony Velte, "Cloud Computing A Practical Approach", McGraw-hill, ISBN : 0071626948.

Reference:

1) Tim Mather, Subra Kumarsamy, "Cloud Security and Privacy", ISBN: 0596802765
2) Forouzan, "Data Communication and Network", TMH, ISBN-0-07-049935-7

B.C.A. - II (SEMESTER – III)
Paper –III: DATABASE PROGRAMMING WITH ORACLE

[Max. Marks: 40

UNIT – I: Introduction

RDBMS Concept, Introduction to Oracle, SQL Tools, Oracle as Multi-User System, SQL, SQL *Plus, Getting Started with SQL, Writing SQL Commands, Components of SQL, Data Types, Database Users, Database Objects, Elements of SQL

UNIT – II: SQL Languages

Data Definition Language: Creation of Table, Viewing Table Structure, Data Integrity through Constraints, Altering Table, Dropping Table, Truncating Table. **Data Retrieval:** Select Command, SQL Operators, Text Search, Group Queries, Order by Clause. **DML Operation:** Insert, Update and Delete. **Transaction Control Language:** Commit, Rollback, Save Point **Data Control Language:** Grant, Revoke.

UNIT - III: SQL Function and Database Objects

Sql *Functions: Character Function, Case Manipulation, Numeric Functions, Date Function, Conversion Function, Conditional Functions, Nested Functions, Group Functions, and Database Objects: Views, Sequence, Synonym Joins, Set Operator and Sub query.

UNIT - IV: PL/SQL

Introduction of PL/SQL: Basic Elements of Programming, Control Statement, **Exception Handling**: Predefined and User defined Exception, **Cursor:** Implicit and Explicit Cursor, Implicit and Explicit Cursor Attributes, Procedure, function, Packages, Trigger.

Books:

1) Kevin Loney, Marlene Theriault, "Oracle 9i:DBA Handbook", TMH, ISBN: 78-0-07-048674-4
2) Ivan Bayross,"Oracle Developer 2000", BPB, 2006, ISBN : 8/7029-899-7
3) Dr. S. B. Kishor, "ORACLE (SQL & PL/SQL Programming) ", Das Ganu, ISBN : 978-81-921757-5-1

References:

1) Paul Hipsley, "Developing Client / Server Applications with oracle Developer/2000 TM", Techmedia, 1997, ISBN – 81-87150-02-X
2) Ivan Bayross," Commercial Application Development using Oracle Developer 2000 Forms 6i", BPB, 2003, ISBN : 81-7656-742-6

B.C.A. - II (SEMESTER – III)
Paper –IV: SYSTEM ANALYSIS & DESIGN

[Max. Marks: 40

UNIT I: System Concept

System Concept: Element of the System, Types of System. T**he System Development Life Cycle** Introduction, Consideration for Candidate Systems, Prototyping. **The Role of the System Analyst** Introduction, Multi-Faceted Role of the Analyst, the Analyst/User Interface, Rising Position in System Development.

UNIT II: System Planning and the Initial Investigation

Introduction: Base for Planning in System Analysis, Initial Investigation.

Information Gathering: Introduction, Information Gathering Tools. **The Tools of Structured Analysi**s Introduction, the Tools of Structured Analysis, Pros & Cons of Each Tool. **Feasibility Study** Introduction, System Performance Definition, Feasibility Study.

UNIT III : Cost Benefit Analysis

Introduction: Data Analysis, Cost Benefit Analysis, Procedure for Cost Benefit Determination.

System Design- Introduction, the Process of Design, Design Methodology, Major Development Activities, Audit Considerations. **Input/output and Form Design –** Introduction, Input Design, Output Design, Form Design.

UNIT IV: File Organization

Introduction: File Structure, and File Organization. **System Implementation (System Testing & Quality Assurance) -**Introduction, the Test Plan, Quality Assurance, Levels of Quality Assurance, Role of Data Processing Auditor. **Software Documentation-** Requirement Documentation, Architecture/Design Documentation, Technical Documentation, User Documentation, Marketing Documentation, Documentation Standard, Online Documentation

Books:

1) Edward, "System Analysis & Design", Tata McGraw Hill, ISBN:8120317270
2) Elias Award, "System Analysis & Design", Golgotha Publication, 2nd Ed, ISBN: 81751568-X
3) Raja Raman, "Analysis and Design of Information System", PHI Publication, ISBN - 8120312270

References:

1) Kendall & Kendall, "System Analysis & Design", PHI Publication, 5th Ed, ISBN-8120321553
2) Dennis, "System Analysis & Design", Wiley Student Publication,3rd Ed. ISBN-9788126508808

B.C.A. - II (SEMESTER – III)
Paper V: DISCRETE MATHEMATICS

[Max Marks: 40

UNIT–I: Fundamentals of Sets Fundamental- Sets and Subsets, Types of Sets, Venn-Euler Diagram, Operations on Sets, The Addition Principle, Sequences, Characteristics of Functions, Properties of Integers, GCD, LCM, Matrices and their Operations, Mathematical Structure **Logic-** Proposition and Logical Operations, Conditional Statements, Methods of Proof, Mathematical Induction.

UNIT–II: Counting and Functions Counting- Basic Counting Principles, Permutations, Distinguishable Permutation, Combinations, The Pigeonhole Principle, Recurrences Relations, Theorem Based Method **Functions-** Definition and Introduction Functions for Computer Science, Types of Functions, Permutation Functions, Cyclic Permutation, Even and Odd Permutation, Composite Functions.

UNIT–III: Graph Theory and Trees Graph Theory- Basic Concept of Graph Theory, Isomorphism of Graphs, Subgraph, Euler Paths and Circuits, Hamiltonian Paths and Circuits. **Trees-** Introduction, Types of Trees, Undirected Trees, Spanning Tree, Minimal Spanning Trees, Kruskal‟s Algorithm.

UNIT–IV: Groups and Semi Group Groups and Semi Group - Binary Operations, Semi Groups, Products and Quotients of Semi Groups, Monoids, Groups, Products and Quotients of Groups, Isomorphism, Homomorphism, Subgroup, Abelian Group, Normal Subgroup

Books:

1) Dr. S.B. Kishor, Dr. M. Singh, “Discrete Mathematics”, Das Ganu Prakashan, 2014, ISBN-978-93-81660-21-8

2) J.P. Tremblay and R. Manohar, “Discrete Mathematical Structure with Applications to Computer Science”, TMH,ISBN- 0-07-463113-6

3) Bernard Kolman, Robert C. Busby and Sharon Ross, “Discrete Mathematical Structure”, PHI, ISBN- 978-81-203-3689-6

References:

1) E. Goodaire, “Discrete Mathematics with Graph theory”, PHI, ISBN--10: 0131679953

2) J. K. Sharma, “Discrete Mathematics”, McMillan, ISBN-9780230322301

B.C.A. - III (SEMESTER – III)
PAPER- VI –: Soft Skill

[Max. Marks: 40

UNIT I- Self Analysis

SWOC Analysis: Strengths, Weaknesses, Opportunities, Challenges, Master Plans.

Enthusiasm: How to be a Positive Person, Enthusiasm, Difference between Enthusiasm and Effort, Conducive Conditions for Enthusiasm.

Etiquette: Meaning, Good Manners, Speaking Politely, Greeting People, Introduction with Grace, Grooming Appropriately.

UNIT II- Attitude

Personal Planning and Successes Attitude: Personal planning, Evaluating Success, Setting Goals, Negative Thoughts, Positive Thoughts, Success Attitude, Optimism over Pessimism, Optimism over Cynicism, Interruptions into Opportunities, TIENS Pak 8 Positive Attitude for Success and Positive Boss Attitude.

UNIT III- Time Management

Value of Time: Diagnosing Time Management, Reasons Why Time Management is Important, Weekly Planner to Do List, Prioritizing Work, Extempore.

UNIT IV- Leadership

Team Dynamics : Teamwork, Keys to Successful Teamwork, Benefits of Teamwork, Attitude(Psychology), Definition, Explicit, Implicit, Function, Conflict- Definition, Conflict Resolution.

Public Speaking: Importance of Listening and Responding, 5 steps to Better Listening- Receiving, Understanding, Remembering, Evaluating, Responding.

Books :

1. Prashant A. Dhanwalkar (Manusmare), "Soft Skills Development", Sai Jyoti Publication.
2. R C Sharma and Krishna Mohan , "Business Correspondence and Report Writing", Tata Mcgraw Hill.
3. Pravin Bhatia, S. Chand , "Professional Communication Skills".

Reference:

1. Pravin Bhatia and Meera Banerjee , "Developing Communication Skills".
2. The Communicator by Board of Editors, Orient Black Swan Publication.

B.C.A. - II (SEMESTER – III)
Practical - I based on Advance 'C'

1) A Program to find addition of two numbers using user defined function.
2) A Program to display "hello friends" using user defined function.
3) A Program to find factorial of a number using user defined function.
4) A Program to find power of a number using user defined function.
5) A Program to accept the list containing 10 numbers and pass it to function to print it.
6) A Program of passing individual elements of structure to function.
7) A Program of Passing complete structure to function.
8) A Program to enter the marks of 5 subjects of 3 students and also find the total marks of each student using structure with array.
9) A program to evaluation following series.

   $e^x = 1 + x + x^2/2! + x^3/3! + x^4/4! + \text{----------} + x^n/n!$

10) A program to define and accept the element of structure
    1) Empno.
    2) Name

    3) Basic pay and display the same structure along with DA, CCAand gross salary. DA and CCA are calculated as follows.

       DA= 91% of basic salary
       CCA= RS 100/-
       consolidation.
11) A Program to find the product and division of two numbers using pointer
12) A Program to find area of circle using pointer.
13) A Program to interchange the contents of two variables using call by value.
14) A Program to swap the contents of two variables using call by reference.
15) A Program to access the array element in different ways.
16) A Program to accessing two dimensional array elements using pointer.
17) A Program to print character string.
18) A Program to demonstrate structure pointer.
19) A Program to demonstrate pointer to pointer.
20) A program to Sort the string using Pointer.
21) A function length () which count the length (number of character in the given string.)
22) A function concat () with will concatenation the string t to the end of string s.
23) A program to simulate DOS TYPE command.
24) A program to count number of characters include uppercase and lowercase latter, digits, punctuations, space, words and number of lines in given file.
25) A program to create data file "Student.dat" having fields, Roll no, Name and Address
26) A program to read and display the contents of data file "Student.dat"

B.C.A. - II (SEMESTER – III)
Practical – II based on Database Programming with Oracle

1) Create following Tables and Execute the respective PL/SQL blocks.
   - Create table employee with the fields (empno, ename, job, hiredate, jadate&sal).
   - Create table Math with fields (numb, square, cube &square_root).
   - Create table Patient with fields (pname, age, prescription).
   - Create table Musicalbum with fields (title, hero, singer, qth).
   - Create table Stu with fields (name & marks).
   - Create table errorh with fields (error_no& description).
   - Create a table DONAR where following fields(Donar no., donar name, city, age, Sex, Blood group, quantity of blood given, date of donation)

2) Write a PL/SQL block to accept employee number and display his/her job, joining date and salary of employee. Define the variable using %rowtype.
3) Write a PL/SQL block to accept three paper marks and display result if student scores more than 35 marks in each paper and also specify the class.
4) Write a PL/SQL block to find the square, cube, square root of nos.bet 1 & 25 using loop.
5) Write a program to divide a number by character number. If any error occurs it should be handled properly, and store the error number and its description in a table called error.
6) Write a PL/SQL block to accept and insert a valid data into the table patient. Write appropriate user defined exception.
7) Write a PL/SQL block, to display only title and quality of all album stored in the table musicalbum.
8) Write a PL/SQL to delete the records from table musicalbum where quantity is less than 4 using cursor.
9) Write a PL/SQL block to display the employee all having salary>some value. The value some value can be passing during execution or through bind variable.
10) Write a PL/SQL block to accept the title and display other information; it must handle the exception properly.
11) Write a procedure to swap two numbers.
12) Write a procedure to insert values into a table stud. Write a PL/SQL, main program to call the procedure stud insert.
13) Write a function which is able to perform addition of two numbers.
14) Write a function which is able to perform addition of two numbers as well as addition of three number using default argument concepts.
15) Write a package, which contain two procedures.
16) A procedure which display the data of stud.
17) A procedure which store the data into the table stud.
18) Write trigger before inserting or updating a name into the table stud name will be automatically converted into uppercase.
19) Write a trigger on a table stud, that whenever user try to insert a marks of math either less than zero or greater than 100 a trigger must fire before insertion or updating of records.
20) Use DONAR table and write a PL/SQL block to accept donor number and display the donor detail and find how many days it pass from the last donation.
21) Write a PL/SQL block to accept donor number, donor name, city, age, sex, blood group, quantity and date of donation and store the data into the table DONAR. Use user defined exception for handling various exception like donor name should not be blank, age of donor should be at least 18 years and so on. Also use STORAGE_ERROR exception to check storage is available or not.

22) Write a PL/SQL block to accept donor name and display the information of donor. If duplicate or no donor found then proper exception should be raised.
23) Create a procedure that displays the information of donor by accepting donor number.
24) Write a trigger which will not allow the user to work on table DONAR during period say 9 am to 9:30 am, on any day.
25) Write a trigger on a table Donor, that whenever user try to insert a quantity greater than 500 ml a trigger must fire before insertion or updating of records.

Practical Book:

- Dr. S. B. Kishor, Dr. Rajani Singh, "**ORACLE (PL/SQL) PRACTICAL SOLUTION**" published in the month of Sept. 2015 by M/s Rajani Prakashan, Nagpur. **First Edition (ISBN No.: 978-93-83619-64-1)**

BCA - II (SEMESTER – III)
UBCAS309
Seminar

[Max. Marks: 50]

The seminar must be based on some current trends related to IT/Computer Science/Computer Application. A Student must present the PowerPoint presentation along with Seminar Report. Students are requested to follow the following guidelines while choosing & preparing their seminars.

Guidelines to BCA Seminar

1) Name of seminar topic must be latest to the current trends and should not be repeated.
2) Seminar topic is to be approved by the departmental allocated guide before the deadline prescribed by university time-table.
3) Seminar can be given in group of Maximum 3 students.
4) Students are allowed to use graphics/animation/audio-video aids for their presentation.
5) Seminar work will be evaluated by Internal examiner.
6) Students are requested to submit their seminar reports on or before the deadline with the concern of their respective guide otherwise students will be responsible for any appropriate action.
7) Seminar Report should be submitted to department in following format,
   A printed in double line space using A4 size bond paper, with a left margin of 1.5" and right margin of 1.0" with proper spiral binding to be done. Only one copy need to be submit.
8) Students are requested to obtained necessary certificates and declaration to be duly enclosed in the report.

BCA II (Semester IV)

Subject	Paper Code	Paper Name	Total Period# /Week	Credit	% of Assessment			
					IA	UE	Total	Min. Passing (40%)
Core Course (CC -VII)	UBCAT401	Front End Development using Visual Basics	3	2	10	40	50	40
	UBCAT402	E-Commerce & Web Designing	3	2	10	40	50	
Core Course (CC -VIII)	UBCAT403	Algorithm and Data Structures	3	2	10	40	50	40
	UBCAT404	Object Oriented Programming using C++	3	2	10	40	50	
Skill Enhancement Course (SEC-II)	UBCAT405	PC Maintenance	3	2	10	40	50	40
	UBCAT406	System Software & Micro Processor	3	2	10	40	50	
Core IX Lab (Based on Core VII and Core VIII)	UBCAP407	Lab on UBCAT401 & UBCAT402	4 Prac. Per Batch	2	20	30	50	20
	UBCAP408	Lab on UBCAT403 & UBCAT404	4 Prac. Per Batch	2	20	30	50	20
Ability Enhancement Compulsory Courses (ACCC-VI)	UBCAS409	Seminar	2	2	50	--	50	20
Non- CGPA Credit Course (NCCC-II)	UBCAS410	Environmental Science	2	2	--	--	--	--
Total				**20**	**150**	**300**	**450**	**180**

Note:-1) In a Group, if any student remains absent in one of the paper then candidate result will be considered as fail in that group even though he/she has scored minimum passing marks in other paper of that group. Candidate need to appear in both the papers of that group.
2) In Practical student must appear External Practical Exam conducted by University in order to clear practical exam.

B.C.A. - II (SEMESTER – IV)
Paper –I: Front End Development Using Visual Basics

[Max. Marks: 40

UNIT-I: Introduction to Visual Basic

Integrated **D**evelopment **E**nvironment (IDE)–Features, Event Driven Programming, **Programming Constructs:** Data Types, Variable, Constant, Operator, System and User Defined Function, Creating User Interface. **Control flow statement:** if-then, select-case, for-next, while-wend do-loop statement. With...End With, Do Event.

UNIT-II: VB Control and Procedure

Visual Basic Control: Form, Label, Textbox, Frame, Checkbox, Option Button, List Box, Combo Box, Timer, Scrollbar, Picture, Image, File Controls, Artwork Control. **ActiveX Control:** Tab Strip, Status Bar, Slider, Month View, DTPicker, Rich Text Box, Common Dialog. **Procedure:** Types of Procedure, Subroutine, Function, Module.

UNIT-III: Menu, Interface and Array

Menu: Menu Editor, Creating Menus, Utility features provided by Menu Editor, Modifying Menu at Run Time, Pop-Up Menu, Creating Toolbar using Image List. **Interface:** SDI, MDI.

Array: One Dimensional Array, Built-in Array Function, For...Each Loop, Arrays of Types.

UNIT-IV: ActiveX Data Object

Database Connection Method: RDO, DAO, ADO, Use of ADO Object, ADO Architecture, Connecting ADODC to Bound Control, ADO Object Methods for Editing, Updating and Searching Data Environment, Data Report. **Debugging and Error Handling**: Types of Error, Debugging, Handling Run Time Error.

Books:

1) Evangelos Petroutsos ,"Mastering Visual Basic 6", BPB, 2005 ISBN-81-7635-269-1.
2) MoelJerke,"Complete Reference Visual Basic 6", TMH, 2004, ISBN -0-07-463666-9.
3) Steve Brown,"Visual Basic 6.0 Complete", Complete Idiot's Books, ISBN 978-0789718129

References:

3) Peter Norton's , "Visual Basic 6.0" ,SAMS tec-Media,2006,ISBN-81-7635-150-4
4) Dr. S. B. Kishor, "Front End Development", Das Ganu Pub., ISBN : 978-93-81660-06-5
5) Michael Halvorson, " Learn Visual Basic 6.0 Now", PHI, ISBN 0-7356-0729-X
6) Michael Vine, "Visual Basic Programming – For Absolute Beginner", PHI, ISBN: 0761535535
7) Paul Sheriff , "Teaches Visual Basic 6", PHI, ISBN-978-8120315624

B.C.A. - II (SEMESTER – IV)
Paper II: E-Commerce & Web Designing

[Max Marks:40

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

Electronic Data Interchange (EDI): Introduction, Features of EDI, Benefits, Value Added Services (VAS), Three Pillars of Ecommerce, Trade Cycle.

Introduction to Web Designing- 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-

Classification of HTML Tags- Logical Tags, Layout Tags, Text and character Formatting Element.

Block Formatting Tags-Headings, Block Alignment, pre-format Text, Address, Font Tags, Alignment Attributes, Marquee tag.

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, Types of Linking or Anchors. **Embedding Multimedia 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 tag, Text Fields, password fields, radio buttons, and check boxes. Reset and submit buttons, Select tag, option tag and text area tag.

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,
3) Dr. S. B. Kishor, Dr. Rajani Singh, "E-Commerce & Web designing", Das Ganu Pub.

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

B.C.A. – II (SEMESTER – IV)
Paper III: Algorithm and Data Structures

[Max. Marks: 40

UNIT I : Data Structure & Arrays

Data Structure and Algorithms - Introduction, Data Structures, Fundamentals of DS, Operations on Data Structure. **Arrays -** Introduction, Types of Arrays, Memory/Storage Representation of One and Two Dimensional Array, Multidimensional Array, Declaration of Array

Sorting - Definition of Sorting, Comparison of Sorting Method, Insertion Sort, Selection Sort, Merging.

Recursion - Introduction, Recursion Properties, Applications of Recursion (Factorial, Addition of Two Number, Power of a Number, Fibonacci Series, Multiplication of Two Number, Tower of Hanoi), Advantages and Disadvantages of Recursion.

UNIT II : Stacks & Queues

Stacks - Introduction and Definition, Application of Stack, Various Representation of Stack, Operation on Stack (Push and Pop) Hierarchy of Operation, Representation of Arithmetic Expression (Infix, Postfix, Prefix) Multiple Stack. **Queues - Introduction**, Applications of Queue, Various Representations of Queue, Operation on Queue, Concept of Deque, Priority Queues and Circular Queue.

UNIT III: Linked List

Linked List - Introduction, Dynamic Memory Management and Definition of Linked List, Applications of Linked List and Representation of Linked List, Memory Allocation, Garbage Collection and Free List, Operations on Linked List Inserting, Removing, Searching, Sorting, Merging Nodes from a List, Concept of Double Linked List.

UNIT IV: Tree and Graphs

Trees: Introduction**,** Definition of Trees, Binary Tree, Type of Binary Tree, Operation on Binary Tree, Traversal of Binary Tree, Binary Search Tree (BST), Expression Trees, Memory Representation of Binary Tree, Threaded Binary Tree, AVL Tree, B-Tree. **Graphs:** Definition of Graph, Various Terminology Used in Graph, Sequential Representation of Graph, Path Matrix, Spanning Tree, and Minimum Spanning Tree (Kruskal Algorithm, PRIM'S Algorithm), Traversing a Graph.

Books:

1) Lipschutz Schaum's, "Data Structure", Outline Series, TMH, ISBN-0-07-060168-2.
2) Dr. S.B. Kishor, "Data Structure", Das Ganu, ISBN : 978-81-921757-4-4
3) D. Samanta, "Classical Data Structure", PHI, ISBN: 8120318749

References:

1) Tenenbaum," Data Structures Using C and C++", Second Edition, PHI, ISBN-81317-0328-2
2) Deshpande and Kakade, "C and Data Structure", Dramatic Publication, ISBN-81-7722424-7.

BCA – II (SEMESTER – IV)
Paper - IV: Object Oriented Programming using C++

[Max Marks: 40

UNIT I:

Introduction - Basic Element of Programming, Console I/O Operations**.**
Control Structures - Control and Looping Statements.
Function - Function Prototyping, Call and Return by Reference, Inline Function, Default and Const Arguments, Function Overloading, Arrays, Manipulators and Enumeration.

UNIT II:

Object Oriented Methodology - Basic Concepts/Characteristics of OOP. Advantages and Application of OOP"s, Procedural Programming Vs OOP.

Classes and Objects - Specifying a Class, Creating Objects, Private & Public Data Members and Member Functions, Defining Inline Member Functions, Static Data Members and Member Functions. Arrays within Class, Arrays of Objects, Objects as Function Arguments, Returning Objects.

UNIT III:

Constructors and Destructors - Introduction, Parameterized Constructors, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructors, Dynamic Constructors, Const Objects, Destructors
Operators Overloading - Definition, Unary and Binary operator overloading, Rules for operator overloading.
Inheritance - Defining Derived Classes, Types of Inheritance, Constructors and Destructors in Derived Classes.

UNIT – IV:

Pointers - Pointer to Objects, this Pointer, "New" and "Delete" Operators, Virtual Function, Friend Functions. Opening, Closing a File, File Modes, File Pointers and their Manipulation. **Sequential Input and Output Operations:** Updating a File, Random Access, and Error Handling During File Operations, Command Line Arguments.

Books:

1) E. Balagurusamy, "Object Oriented Programming with C++ ", Tata McGraw Hill Publishing Company Limited, New Delhi, ISBN: - 13- 978-07-066907-9

2)Dr. S.B. Kishor, "Object Oriented Programming with C++", Das Ganu Prakashan, ISBN-978-93-84336-24-0

3) Parimala N, "Object Orientation through C++", Macmillan India Ltd. Pub., ISBN:-0333 93202-1

References:

1) K.R.Venugopal, Rajkumar, T. Ravishankar, "Mastering C++", ISBN: 0-07-463454-2.

2) D. Ravichandran, "Programming with C++", Tata McGraw Hill, ISBN: 978-0-07-049488-6.

B.C.A. - II (SEMESTER – IV)
Paper V: PC Maintenance

[Max Marks: 40

Unit I: Preventive Maintenance

Introduction, Need, Tools, Materials. **Procedures:** Active Hardware Maintenance, Active Software Maintenance, Passive Maintenance Procedures, Heat and Temperature Control, Dust and Pollution Control, EMI Electrostatic Discharge Control, Humidity and Corrosion Control, Preventive Maintenance Schedule. IOS and CMOS, Working with the BIOS Setup Program.

Unit II: CPU and Monitor

History & Study of Different Types of CPUs, Terminology Used with CPU, Data Processing Inside CPU, RAM & ROM, and Different Types of ROM, Virtual Memory, Installing and Removing Memory. Video Cards and Monitors, Display Resolution, Features, Video Driver, CRTs Working, LCDs Working, Monitor Resolution, Interfacing, Refresh Rate, Monitor Driver, Adjusting Display Settings in Windows

Unit III: Study of Drives

Study of Different Types of Drives, Hard Drive Interfaces- IDE, SCSI, SATA Hard Drive Performance, Installing Hard Drives, Partitioning, Disk Formatting, Common Hard Drive Problems. Installation of Operating System and Software: Installing Video Card, Installing The CD Rom Drive , Installing Key Board and Mouse, Installing Sound Card, Installing Modem, Installing the Motherboard , Installing the Power Supply.

Unit IV: Study of Printer, Formatting and Trouble Shooting

Printer Features, Printer Performance, Print Quality, Print Speed, Printer Types, Fruiter Working, Installation of Printer Driver, Cleaning a Printer, Common Printer Problems.

Formatting: Formatting PC, Backup of Data before Formatting, System Restore, Precautions for Formatting.

Trouble Shooting: Diagnostic and Repair Tools - Diagnostic Software Tools- Diagnostic Hardware Tools, Assembling and Disassembling PC. Troubleshooting Display Problems, Memory Troubleshooting, Power Supply Testing and Problems Troubleshooting. Cleaning and Trouble Shooting of Keyboards, Mouse, Front Panel Indicators and Speakers Troubleshooting.

Books:

1. Fundamentals of Computers - Raja Raman (Prentice Hall of India)), ISBN 81-203-2581-8
2. Basics of Computer Hardware - BPB Pub

Reference:

1. Troubleshooting Your Pcs for Dummies 3rd Edition – Dan Gookin, Willey Publishing Inc. ISBN : 9780470230770

B.C.A. - II (SEMESTER – IV)
Paper VI: System Software & Microprocessor 8086

[Max Marks: 40

UNIT I: Study of Assemblers

General Design Procedure, Design of Assembler, Statement of Problem, Data Structures, Format of Data Bases, **Table Processing: Searching & Sorting:** Linear Search, Binary Search, **Sorting:** Interchange Sort, Bucket Sort.

Macro Language and Processor: Macro Instructions, Features of Macro Facility, Implementation.

UNIT II: Loaders

Loader Schemes: Compile and Go Loader, General Loader Scheme, Absolute Loaders, Subroutine Linkages, Relocating Loaders, Direct Linking Loaders, Design of Absolute Loader **Design of Direct Linking Loader:** Specification of Problem, Specification, Specification of Data Structures, Format of Data Structures

UNIT III: Architecture of 8086

Block Diagram of 8086, Pin Diagram of 8086, Addressing Modes, Bus, General Purpose Registers.

Instruction Set: Data Transfer, Arithmetic, Logical, String Manipulation, Control Transfer, Unconditional Branch, Conditional Branch, Flag, and Processor Control, Interrupts.

UNIT IV: Assembly Language Programming

Assembly Directives and Operators, Assembly Language Programs, Programming with Assembly, Introduction of MASM, DEBUG Command, ALP Examples.

Books:

1) John J. Donovan, "System Programming", Tata McGraw Hill,13th Ed., ISBN-0-07-460482-1
2) A.K.Ray and K.M. Bhurchundi, "Advanced Microprocessor and Peripherals", Tata McGraw Hill, 4TH Ed. ISBN- 0-07-060658-7

References:

1) Liu Gibson, "Microcomputer System: the 8086/8088 family", PHI, 2nd Ed. ISBN- 81-203-0409-8

B.C.A. - II (SEMESTER – IV)
Practical based on UBCAT401

1) Design a form to accept First, Middle and Last Name and display the full name (Concatenate three text box) on Label when user clicks on Command Button.
2) Design an application that gives five choices of colors. Design an application to choose any one color using option button and change the Fore Color of Textbox.
3) Write an application to add and remove the name of city from combo box
4) Design a VB screen, to display current time in digital format continuously after every one second and change the background color of form.
5) Build the application, which marquee the caption of Form
6) Build the application, to convert the Fahrenheit temperature selected through scrollbar value into corresponding temperature is Celsius.
7) Build a application that collects marks for five different subjects. Calculate total, If total is >= 500 display message" You are allowed" otherwise display "You are not allowed."
8) A book stall gives discount on the books as per the following conditions,

No. of Books Purchased	Discount
<=5	Nil
>5 and <=10	10%
>10 and <=15	12%
> 15	20%

   Create a form as follows to calculate the Discount
9) Build the VB application that converts a number entered into the Textbox to Octal, Hexadecimal and Decimal.
10) Build the application; to accept the password within time limit say 8 second otherwise display a message time elapsed.
11) Build the application using timer for personal appointment remainder while working with computer system.
12) Evaluate following sin(x) series

    Sin(x) = x – x^3/3! + x^5/5! – x^7/7! + x^9/9! - …….
13) Build the application, to change the color of Frame using RGB function from the values that are set by 3 Scroll bars.
14) Build a Calculator application to perform basic arithmetic operation
15) Build the application, to accept the temperature of Number of days passed in the current month and determines the highest and average temperature.
16) Demonstrate the working of data bound controls
17) Create a data bound control application to perform various data operation using DAO Control. Assume Database Name and Table Name is Donor having 4 fields Donor_Number, Donor_Name, Date_of_Birth, Donor_Blood and Sex.
18) Create a data bound control application to perform various data operation using ADO Control. Assume Database Name and Table Name is Donor having 4 fields Donor_Number, Donor_Name, Date_of_Birth, Donor_Blood and Sex.
19) Write an application to divide the number by another and it must be able to handle any error that may arise during run time.

B.C.A. - II (SEMESTER – IV)
Practical based on UBCAT402

1. Write HTML program which demonstrate the use of font tag.
2. Program to demonstrate logical format tag.
3. Program to demonstrate a scrolling message using marquee.
4. Write HTML program which demonstrate the use of form tag.
5. Write HTML program to demonstrate the use of image tag.
6. Write HTML program to demonstrate the use of table tag.
7. Write HTML program which demonstrate the use of list tag.
8. Write HTML program internal link page.
9. Program to insert image in the other frame using anchor tag.
10. Write HTML program to display scrolling image.
11. Program for demonstrating simple form.
12. Write HTML program to demonstrate of link to websites.
13. Program to demonstrate for internal linking.
14. Write a program to display scored of cricket.
15. Demonstration of row span and column pan attributes.
16. Write HTML program for frameset rows.
17. Write HTML program to demonstrate the use of frameset tag.
18. Write HTML program to display the calendar.
19. Write HTML to check of document submitted by student while admission.

Practical Book:

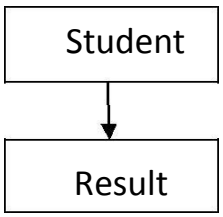
- Dr. S. B. Kishor, "Practical Guide for Web Designing with HTML" published by M/s Rajani Prakashan, Nagpur.

B.C.A. - II (SEMESTER – IV)
Practical based on UBCAT403

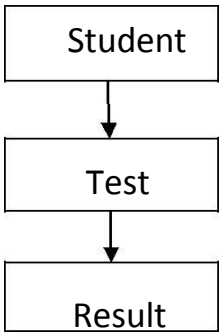
1) To delete an element from K^{th} position of Array.
2) To insert an element ITEM at K^{th} position of Array.
3) To insert an element Item in Sorted Array.
4) To implement the operation of Push, Pop and to know the status of stack.
5) An algorithm to check the status of stack.
6) To find factorial of a number using Recursion.
7) To find multiplication of two number using Recursion.
8) To simulation the game of Tower of Hanoi using recursion.
9) To implement the operation of insertion and deletion on Queue.
10) A menu driven program to implement the operation of addition, deletion, searching, traversing, reversion, sorting, counting number of nodes and at the end erasing the link list.
11) Implementation of stack using linked list.
12) Implementation of Queue using linked list.
13) To create binary search tree, traverse it and find number of leaves and total nodes in the Tree.
14) To arrange the list of number in a Sorted order using Merge Sort.
15) To arrange the list of number in the Sorted order using Quick sort.
16) To check all the element of list is in sorted order or not.
17) To search an element using sequential or linear search .At the end display time required to search an element including number of comparison.
18) To search an item position in sorted list (Binary search).

B.C.A. - II (SEMESTER – IV)
Practical based on UBCAT404

1. Write a cpp program to find roots of quadratic equations.
2. Write a cpp program that will ask for a temperature in Fahrenheit and display in Celsius.
3. Write a cpp program which accepts marks of three subjects. Calculate total & average marks and also check student is pass or fail. (if average above or equal to 50 the „Pass‟) .
4. Design a menu driven program using switch case which accepts two integer values and program will display menus for addition, subtraction, multiplication, division and ask user to select appropriate choice.
5. Design inline functions for add and multiply of two integer numbers.
6. Write a cpp program to overload "sum()" function for add two integers, to add three real and add three integers.
7. Write a cpp program for following series.
   Sin $X= X – X^3/3! + X^5/5!- X^7/7!+$……..
8. Write a cpp program for following.
   Cos $X= 1 – X^2/2! + X^4/4!- X^6/6!+$……..
9. Design a class "Complex" with real and imaginary members also design appropriate member function to get and print complex numbers.
10. Design a class " Time" with hours and minutes as data members and to get and print data of Time class also design a sum() with object as arguments to add two objects of Time class.
11. Design a class "Employee" with appropriate members. Demonstrate array of objects.
12. Create a class " Complex" with real and imaginary members and to initialize them write overloaded constructor for i) Default constructor ii) Constructor with one parameter iii) Constructor with two parameters.
13. Create a constructor for "Integer "class with M and N as data members and constructor for initialize data members.
14. Design a class "String" with name and length as data members. Create a dynamic constructor to initialize object of any length can be created.
15. Create a class "Employee" with empno, ename, salary as data members and create Copy constructor to create objects from already created objects.
16. Write a cpp program to overload unary „++‟ and „- -" operator for "Sample" class with X,Y, Z of integer type.
17. Write a cpp program to overload binary „+‟ operator for Complex Class. (Complex class is already design).
18. Write a program to Single inheritance for following structure. Student Class (rollno, sub1, sub2) and Result class(total,avg)



19. Write a class for Multilevel Inheritance for following structure
    Student class (rollno),Test Class(sub1,sub2), Result Class(total, avg)



20. Write a program in show () and display () function are overridden. Demonstrate use of virtual function for runtime polymorphism.
21. Write a program which demonstrates the pure virtual function.
22. Write a cpp program in which use pointer to Sample class objects are used. Demonstrate it.
23. Write a cpp program which read contents from file and counts no. vowels and consonants in a file.
24. Write a cpp program which counts no. command line arguments on command line.
25. Write a cpp program which read a file and write contents of a file without white spaces into another file.
26. Write a cpp program which reads contents from a file and the even nos. are copied to "even.txt" and odd nos. are copied to "odd.txt" file.
27. Write a cpp program which demonstrates use of this pointer.

BCA - II (SEMESTER – IV)
UBCAS409
Seminar

[Max. Marks: 50]

The seminar must be based on some current trends related to IT/Computer Science/Computer Application. A Student must present the PowerPoint presentation along with Seminar Report. Students are requested to follow the following guidelines while choosing & preparing their seminars.

Guidelines to Seminar

1) Name of seminar topic must be latest to the current trends and should not be repeated.

2) Seminar topic is to be approved by the departmental allocated guide before the deadline prescribed by university time-table.

3) Seminar can be given in group of Maximum 3 students.

4) Students are allowed to use graphics/animation/audio-video aids for their presentation.

5) Seminar work will be evaluated by Internal examiner.

6) Students are requested to submit their seminar reports on or before the deadline with the concern of their respective guide otherwise students will be responsible for any appropriate action.

7) Seminar Report should be submitted to department in following format,
A printed in double line space using A4 size bond paper, with a left margin of 1.5" and right margin of 1.0" with proper spiral binding to be done. Only one copy need to be submit.

8) Students are requested to obtained necessary certificates and declaration to be duly enclosed in the report.

BCA - II (Semester- IV)
Paper: Environment Science

Syllabus and direction will be same as that of B.Sc. and visit www.unigug.org for detail