GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE, RAJNANDGAON

TEACHING PLAN

2022-2023

DEPARTMENT OF COMPUTER APPLICATION

CLASS: PGDCA-IST SEM
SUBJECT: PROGRAMMING IN C
MONTH: AUGUST

UNIT – I : Introduction :

Introduction Character set, Identifiers and Keywords, Variables, Displaying variables, Reading Variables, Character and Character String, Qualifiers, Type define Statements, Value initialized variables, Constants, Constant Qualifier, Operators and Expressions, Operator Precedence and Associativity, Basic input output: Single Character I/O, Types of Characters in format string, Scanf with specifier.

UNIT – II : Control Structures -

Control Structure: If - statement, If -else statement, Multi decision, Compound Statement, Loops: For - loop, While -loop, Do-While loop, Break statement, Switch statement, Continue statement, Go to statement.

MONTH: SEPTEMBER

UNIT – III : Functions & Arrays -

Functions : Function main , Functions accepting more than one parameter, User defined and library functions, Concept associatively with functions, function parameter, Return value, recursion comparisons of Iteration and recursion variable length argument list.
Arrays : Scope and Extent, Multidimensional Arrays, Array of Strings, Function in String, passing arrays to functions, accessing array inside functions.

MONTH: OCTOBER

UNIT – IV Pointes

Pointers: Definition and use of pointer, address operator, pointer variable, referencing pointer, void pointers, pointer arithmetic, pointer to pointer, pointer and arrays, pointer and functions, , pointers and two dimensional arrays, array of pointers, pointers constants, pointer and strings.

MONTH: NOVEMBER

UNIT – V : Structure and Union -

Declaring and using Structure, Structure initialization, Structure within Structure, Operations on Structures, Array of Structure, Array within Structure, Creating user defined data type, pointer to Structure and function. Union, difference between Union and Structure, Operations on Union, Scope of Union.

MONTH: AUGUST

UNIT – I : Windows Concept

Windows Concepts, Features, Structure, Desktop, Icons, Taskbar, Start Menu, My Computer, Recycle Bin, My document, creating shortcut. Accessories : Calculator, Notepad, Paint, WordPad, Character Map. Windows Explorer : Creating files & folders and other Explorer facilities, Object Linking & Embedding. Communication : Dialup Networking, Phone Dialler. Difference among windows versions.

MONTH: SEPTEMBER

UNIT – II : Word Processing & Spread sheet

Word :Creating, Editing, & Previewing Documents, Formatting, Advanced Features, UsingThesaurus, Mail Merge, Table & Charts, Handling Graphics, Converting Word Documents into other Formats.

*Excel :*Worksheet Basics, Creating, Opening, & Moving in Worksheet, Working with Formula &Cell referencing, Absolute & Relative addressing, Working with Ranges, Formatting of Worksheet, Graphs & Charts, Database, Function, and Macros.

MONTH: OCTOBER

UNIT – III : Power Point & FoxPro

Power Point :Creating a presentation, Modifying visual Elements, Adding objects, ApplyingTransitions, animations and linking, Preparing hand-outs, presenting a slide show.

UNIT – VI : Access

Introduction to MS Access, The Tables of a Database, Introduction to the Record of aTable, Introduction to Controls Design, Details on Controls Design, The Characteristics of aTable, The Characteristics of a Form, The Characteristics of a Window Control, Data Controls,

MONTH: NOVEMBER

Introduction to Data Expressions, Getting Assistance With Data Entry, Database Strings,Database Numeric Values, Database Conditional Values, Database Date and Time Values,Creating Reports, Characteristics of Reports.

UNIT – V : Tally

Setting up Ledger & Groups.Study of recording of transactions in the 'Voucher'.(According to Golden rules).Study of 'Final A/C preparation & displaying in different mode/format'.Study of alteration & Deletion of ledger/Groups. Study of cash & fund flow, day book, sales register, purchase register, bills receivable/Payable etc. Study of data security & backing up data. Outline of entry for Income Tax, GST, PF, Gratuity, Bonus, Loans & Depreciation etc.

CLASS: DCA-IST SEM
SUBJECT: PROGRAMMING IN C
MONTH: AUGUST

Unit 1 - Introduction to C programming structure and C compiler, Data representation : Simple datatypes like real integer, character etc. Program, statements and Header Files, Simple Input Output statements in C, Running simple C programs. Primitive data types in C, char, integer, float, Double Long, Double Void etc.

Unit 2- Operators and Expressions – Arithmetic Operators, Assignment Operators, increment anddecrement operator, relational and Boolean operators, Mixing of Different data types and operators for forming expressions.

MONTH: SEPTEMBER

Unit 3- Control Structure: If - statement, If -else statement, Multiway decision, CompoundStatement, Loops: For - loop, While -loop, Do-While loop, Break statement, Switch statement, Continue statement, Goto statement. Arrays, Strings, Multidimensional Arrays, Strings, Array of Strings

MONTH: OCTOBER

Unit 4- Functions : Function main , Functions accepting more than one parameter, User defined andlibrary functions, Concept associatively with functions, function parameter, Return value, recursion function, Structure and Union, Declaring and using Structure, Structure initialization, Structure within Structure, Operations on Structures, Array of Structure, Array within Structure,

MONTH: NOVEMBER

Unit 5- Pointers: Definition and use of pointer, address operator, pointer variable, referencingpointer, void pointers, pointer arithmetic, pointer to pointer, pointer and arrays, passing arrays to functions, pointer and functions, accessing array inside functions, pointers and two dimensional arrays, array of pointers, pointers constants, pointer and strings.

MONTH: AUGUST

UNIT-I Introduction to Visual Basic, Programs, variables

Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files, Understanding modules, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option automatic code completion features. Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing, Overview of variables, Vser-defined data types, constants working with procedures, Working with dates and times, Using the Format Function, Manipulating text stringe.

MONTH: SEPTEMBER

UNIT-IIControlling Program Execution, Working with Control

Comparison and logical operators, If....Them statements, Select Case Statements looping structures, Using Do....Loop structures, For....Next statement, Exiting a loop. Types of controls, Overview of standard controls, ComboBox and ListBox, OptionButton and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Arrays, Dynamic Arrays.

MONTH: OCTOBER

Advanced standard controls, ActiveX controls, Insertable objects, Arrays, Dynamic Arrays.

UNIT-III Procedure, Function Error Trapping & Debugging

Procedure, Function, call by value, call by reference, Type definition, with object, Validation, Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error handling styles, General error-trapping options.

MONTH: NOVEMBER

Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing Program flow with the Call Stack.

UNIT-IV Sequential and Random Files :

Saving data to file, basic filling, data analysis and file, the extended text editor, File organization Random access file, The design and coding, File Dialog Box, Picture Box, Image box, Dialog Box, using clipboard, Copy, Cut, Paste of Text & Picture in Clipboard, Use of Grid Control Multiple document interface, Single document interface.

MONTH: DECEMBER & JANUARY

UNIT-VData Access Unsing the ADO Data Control & Report Generation

Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard. Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator.

CLASS: PGDCA-IIND SEM
SUBJECT: PROGRAMMING IN VISUAL BASIC

MONTH: JANUARY

UNIT – I

Introduction to visual Basic - Editions of Visual Basic, Event Driven Programming, Terminology, Working environment, project and executable files ,Understanding modules, Using the code editor window, Other code navigation features, Code documentation and formatting, environment options, code formatting option, Automatic code completion features.
Creating Programs - Introduction to objects, Controlling objects, Properties, methods and events, Working with forms, Interacting with the user: MsgBox function, InputBox function, Code statements, Managing forms, Creating a program in Visual Basic, Printing.
MONTH: FEBUARY

UNIT – II

Variable and Procedures - Overview of variables, Declaring, Scope, arrays, User-defined data types, constants working with procedures, Working with dates and times, Using the Format function, Manipulating text strings.
Controlling Program Execution - Comparison and logical operators, If…Then statements, Select Case Statements looping structures, Using Do…Loop structures, For…Next statement, Exiting a loop.
UNIT – III

Working with Controls - Types of controls, Overview of standard controls, ComboBox and ListBox, OptionButton and Frame controls Menu, Status bars, Toolbars, Advanced standard controls, ActiveX controls, Insertable objects, Validation.

MONTH: MARCH

Error Trapping & Debugging - Overview of run-time errors, error handling process, The Err object, Errors and calling chain, Errors in an error-handling routine, Inline error handling, Error-handling styles, General error -trapping options Type of errors, Break mode Debug toolbar, Watch window, Immediate window, Local window, Tracing program flow with the Call Stack.

UNIT – IV

Sequential and Random Files - Saving data to file,basic filling, data analysis and file, the extended text editor, Random access file,The design and codeing.
Data Access Using the ADO Data Control - Overview of ActiveX data Objects, Visual Basic data access features, Relational database concepts Using the ADO Data control to access data, Overview of DAO, RDO, Data Control, structured query language (SQL), Manipulating data Using Data Form Wizard.
MONTH: APRIL

UNIT – V

Report Generation - Overview of Report, Data Report, Add groups, Data Environment, Connection to database Introduction to Crystal Report Generator.

Advances Tools - Overview of drag and drop, Mouse events, Drag-and drop basics, Date Time Control, Calendar, Print Dialog, MDI(Multiple Document Interface).

CLASS: PGDCA-II^(ND) SEM
SUBJECT: E-COMMERCE

MONTH: JANUARY

Unit – I : Introduction to Electronic Commerce –The scope of E-commerce; Size, growth and future projection of E-commerce market Worldwide and in India; Internet and its impact on traditional businesses; Definition of E-commerce; Business models in E –Commerce environment; Case studies.

Unit – II : Emergence of E-commerce - E-commerce on private networks, Electronic Data Interchange (EDI), What is EDI, EDI in action, EDI basics, EDI standards, financial EDI,

MONTH: FEBUARY

FEDI for international trade transaction, FEDI payment system within the US, ACH credit transfer payment system FEDI, application of EDI, benefits of EDI, Electronics Payment system, E-commerce on the web, E-commerce in India**,**

Unit – III : Internet, Security and E-Commerce: Security of Data/Information in Internet/web environment; Client security, Network security; Virus protection and Hacking; Security Measures: Authentication, Integrity, Privacy, Non-repudiation; Public information, Private information, firewall tunnels, encryption, secret key encryption, public key encryption, digital signature.

MONTH: MARCH

Unit – IV: E-commerce Payment Systems – E-Commerce Payment Models: Pure and Hybrid E-Commerce Payment Models; Credit Card; Debit Cards; Pre-paid Card; Online debit to the accounts; and Alternative Payment Systems employing Electronic Clearing System of Reserve Bank of India**.**

MONTH: APRIL

Unit – V : Types of E-commerce Business–to-Business (B2B), Business-to-Consumer (B2C); Business-to-Business-to-Consumer (B2B2C) and Consumer-to-Consumer (C2C) E-Commerce , Inter organizational transaction; Business transaction cycle, different types of transactions in E-commerce environment; Electronic markets, advantages and disadvantages of E-Market, Future of E-Markets; Inter- Organizational E-Commerce transactions; Advantages and Disadvantages of Inter-Organizational E-Commerce.

CLASS: DCA-IIND SEM
SUBJECT: PROGRAMMING IN VISUAL BASIC

MONTH: JANUARY

UNIT - I

Introduction to visual Basic: Hardware requirements, features of VB, Editions of Visual Basic, and Event Driven Programming vs procedure oriented programming. Introduction to Integrated Development Enviroment. Basic concepts of Visual Basic programming: Controls, properties, methods, events, forms, projects. Creating Executable files.
Variables, constants, data types, data conversion function., scope of variables Operators

MONTH: FEBUARY

UNIT - II

Control Structure : Conditional / branching statements : If...else..endif, Select case Looping statements: do.. while, for.. next, for each, exiting a loop, goto statement, msgbox and input box functions.

Arrays: types of arrays, array manipulation, Working with standard controls. Working with control array, various key and mouse events, using drag and drop concepts.

UNIT – III
Procedure and Functions: types of function, library function, date and time function, format function, and string related function, validation function. Creating user defined function & procedure, call by value and call by reference, concept of recursion, working with basic module, class module and form module.

MONTH: MARCH

UNIT - IV

Working with Advanced Controls : toolbar, status bar, tabbed dialog controls, progress bar, animation controls, dtpicker, calendar, common dialog control.

SDI & MDI Application: creating MDI application, menu editor: defining menu & popup menu, sub main, startup objects. Working with graphics control and using grphic methods.

MONTH: APRIL

UNIT- V

Data Access Using the ADO Data Control: Basic concepts of relational database, visual data manager, introduction to SQL, concept of ODBC, Overview of DAO and RDO, Using DAO and RDO to access data. ADO features, difference among ADO, DAO and RDO, accessing and manipulating database using ADO, ADO object hierarchy, concept of recordset and its type, connection object, command object.

Database Management System
Subject Code - BCA-202

Max Marks : 80   **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT - I: Overview of Database Management
Data, Information and knowledge, Increasing use of data as a corporate resource, data processing verses data management, file oriented approach verses database oriented approach to data management; data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational.

UNIT - II: Relational Model & Relational Algebra
Entity-Relationship model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys; Case studies of ER modeling Generalization; specialization and aggregation. Converting an ER model into relational schema. Extended ER features, Introduction to UML, Representation in UML diagram (Class Diagram etc.)

UNIT - III: Relational Database Design
Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self-join); set operations, Tuple relational calculus, Domain relational calculus, Simple and complex queries using relational algebra, stand alone and embedded query languages.

UNIT - IV: Structured Query Language (SQL)
Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF). Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF. De-normalization.
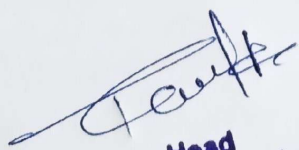
UNIT - V: Query Processing and Security
Introduction to SQL constructs (SELECT...FROM, WHERE... GROUP BY... HAVING... ORDERBY....), INSERT, DELETE, UPDATE, DROP, VIEW definition and use, Temporary tables, Nested queries, and correlated nested queries, Integrity constraints: Not null, unique, check, primary key, foreign key, references Inner and Outer Joins. **Query Processing:** Parsing, translation, optimization, evaluation and overview of Query Processing. **Protecting the Data Base:** Integrity, Security and Recovery. Domain Constraints, Referential Integrity, Assertion, Triggers, Security & Authorization in SQL.

(Margin handwritten notes: September, October, November, December, January, February)

BOOKS RECOMMENDED:

1. **Database System Concept:** *A. Silberschatz , H.F. Korth and S. Sudarshan,* TMH
2. **Fundamentals of Database Systems:** *Elmasri & Nawathe,* Pearson Education
3. **An Introduction to Database Systems:** *C. J. Date,* AWL Publishing Company
4. **SQL, PL/SQL:** *Ivan Bayross,* BPB Publication
5. **An Introduction to database systems:** *Bipin Desai,* Galgotia Publication.
6. **Database Management System:** *A. K. Majumdar & P. Bhattacharya,* TMH

3

Head
Department of Computer Application

B. SC. PART - II
COMPUTER SCIENCE
PAPER - I
COMPUTER HARDWARE

AIM - The emphasis in on the design concepts & organisational details of the common PC, learning the complicated electronics of the system of the computer Engineers.

OBJECT OF THE COURSE -

1. To introduce the overall organisation of the microcomputers.

2. To introduce the common peripheral devices used in computers.

3. To introduce the hardware components, use of micro processor and function of various chips used in microcomputer.

N.B. : Since the computer organisation study is very vast & complicated, so the study is restricted to only the description and understanding part, fence the paper setter is requested to keep this important factor in mind.

UNIT-I

CLASSIFICATION AND ORGANIZATION OF COMPUTERS

Digital and analog computers and its evolution. Major components of digital computers; Memory addressing capability of CPU; word length and processing speed of computes. Microprocessors single chip microcomputers; large and small computers. Users interface Hardware software and firmware, multi programming multi user system. Dumb smart and intelligent terminals computer network and multi processing, LAN parallel processing. Flinn's classification of computers. Computer flow and data flow computers.

UNIT-II

CENTRAL PROCESSING UNIT.

CPU organization, ALU control unit registers. Instructions for INTEL 8085, Instruction word size, Various addressing mode interrupts and exceptions, some special Control signals and I/O devices. Instruction cycle fetch and execute operation, time Diagram, data flow.

UNIT-III

MEMORY OF COMPUTERS.

Main memory secondary memory, backup memory, cache memory; real and virtual Memory Semiconductor memory. Memory controller and magnetic memory; RAM; disks, optical disks Magnetic bubble memory; DASD, destructive and non destructive. readout. Program of data Memory and MMU.

UNIT-IV

I/O DEVICES.

I/O devices of micro controller; processors. I/O devices, printer, plotter, other output devices, I/O port serial data transfer scheme, Micro controller, signal processor, I/O processor I/O processor arithmetic processor.

UNIT-V

SYSTEM SOFTWARE AND PROGRAMMING TECHNIQUE.

ML, AL, HLL, stack subroutine debugging of programs macro, micro programming, Program Design, software development, flow & chart multi programming, multiuser, multi tasking Protection, operating system and utility program, application package.

RECOMMENDED BOOKS :

1. Computer Fundamentals : Architecture and Organization -   By B.Ram (Wilwy East-ern Ltd.)
2. Computers Today   -   By Donal H. Sanders
3. Computers Fundamental -   By Rajaraman.
4. IBM PC - XT Clones   -   By Govinda Rajalu

(handwritten margin notes: September, October, November, December, January, February)

1

GOVT. DIGVIJAY AUTONOMOUS P.G. COLLEGE , RAJNANDGAON
Department of Computer Science
2022-23

B. SC. PART – II
COMPUTER SCIENCE
PAPER - II
SOFTWARE

AIM - Introduction to the web-language-HTML & problem solving throgh the concept of object oriented programming.

OBJECT OF THE COURSE -

1. To introduce the internet & web related technology & learn the intricacies of web-page designing using HTML.

2. To introduce the object oriented programming concept using C++ language.

3. To introduce the problem solving methodology using the C++ programming features.

Examiners are requested to prepare unit-wise Questions papers.

UNIT- I

HTML BASICS & WEB SITE DESIGN PRINCIPLES

Concept of a Web Site, Web Standards, What is HTML? HTML Versions, Naming Scheme for HTML Documents , HTML document/file, HTML Editor , Explanation of the Structure of the homepage , Elements in HTML Documents ,HTML Tags, Basic HTML Tags, Comment tag in HTML, Viewing the Source of a web page, How to download the web page source? XHTML, CSS, Extensible Markup Language (XML), Extensible Style sheet language (XSL), Some tips for designing web pages, HTML Document Structure. HTML Document Structure-Head Section, Illustration of Document Structure,<BASE> Element,<ISINDEX> Element,<LINK> Element ,META, <TITLE> Element,<SCRIPT> Element ,Practical Applications, HTML Document Structure-Body Section:- Body elements and its attributes: Background; Background Color; Text; Link; Active Link (ALINK); Visited Link (VLINK); Left margin; Top margin, Organization of Elements in the BODY of the document: Text Block Elements; Text Emphasis Elements; Special Elements — Hypertext Anchors; Character-Level Elements; Character References ,Text Block Elements: HR (Horizontal Line); Hn (Headings) ; P (Paragraph); Lists; ADDRESS ; BLOCKQUOTE; TABLE; DIV (HTML 3.2 and up) ; PRE (Preformatted); FORM ,Text Emphasis Elements, Special Elements — Hypertext Anchors ,Character-Level Elements: line breaks (BR) and Images (IMG), Lists , ADDRESS Element, BLOCKQUOTE Element, TABLE Element, COMMENTS in HTML ,CHARACTER Emphasis Modes, Logical & Physical Styles, Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER.

UNIT- II

IMAGE, INTERNAL AND EXTERNAL LINKING BETWEEN WEBPAGES

Netscape, Microsoft and Advanced Standard Elements List, FONT, BASEFONT and CENTER Insertion of images using the element IMG (Attributes: SRC (Source), WIDTH, HEIGHT, ALT (Alternative), ALIGN),IMG (In-line Images) Element and Attributes; Illustrations of IMG Alignment, Image as Hypertext Anchor, Internal and External Linking between Web Pages Hypertext Anchors ,HREF in Anchors ,Links to a Particular Place in a Document ,NAME attribute in an Anchor ,Targeting NAME Anchors ,TITLE attribute, Practical IT Application Designing web pages links with each other, Designing Frames in HTML. Practical examples.
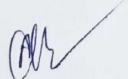
UNIT-III

INTRODUCTION TO OOP

Advantages of OOP, The Object Oriented Approach, Characteristics of object oriented languages- Object, Classes, Inheritance, Reusability, Polymorphism and C++.

Function: Function Declaration, Calling Function, Function Defines, Passing Argument to function, Passing Constant, Passing Value, Reference Argument, returning by reference, Inline Function, Function Overloading, Default Arguments in function.

UNIT-IV

OBJECT CLASSES AND INHERITANCE

Object and Class, Using the class, class constructor, class destructors, object as function argument ,copy constructor ,struct and classes , array as class member, Static Class Data, Static Member

2

Functions, , Friend function, Friend class, operator overloading. Type of inheritance, Base class, Derive class. Access Specifier: protected. Function Overriding, member function, String, Template Function.

UNIT-V
POINTERS AND VIRTUAL FUNCTION

pointers: & and * operator pointer variables, .pointer to pointer, void pointer,pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, this pointer Virtual Function: Virtual Function, Virtual member function, accesses with pointer,pure virtual function File and Stream: C++ streams, C++ Manipulators, Stream class, string I/O, char I/O, Object I/O, I/O with multiple object, Disk I/O,

RECOMMENDED BOOKS :
1. Introduction to HTML : Kamlesh Agarwala, O.P.Vyas, Prateek A. Agrawala (Kitab Mahal Publication)
2. Let us C++ : Y. Kanetkar B.P.B Publication
3. Programming in C++ : E. Balaguruswami
4. Mastering in C++ : Venu Gopal
5. Object Oriented Programming in C++ : Lafore R, Galgotia Publications.

H.O.D
Department of Computer Science
Govt. Digvijay College Rajnandgaon

3

Computer System Architecture
Subject Code - BCA-306

Max Marks : 80   **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT I

September

Data Representation - Data Types, Number System, Fixed Point Representation - I's, 12 complement, Binary Fixed point representation, Arithmetic operation on Binary operation Overflow & Underflow, Codes, ASCII, EBCDIC codes. Grey codes, Excess-3, BCD codes Error detection & correcting codes.

UNIT II

October

Digital Logic Circuits - Logic Gates AND, OR, NOT, Gates & their truth tables, NOR, NAN XOR Gates, Boolean algebra, Basic Boolean Law, Demerger's theorem, Map Simplification minimizing technique, K Map, Sum of products, Product of sums Combinational & sequent circuits Half adder & Full adder, Full Subtractor , Flip Flop - RS, D, JK & T Flip Flop, Shift register, RAM & ROM.

UNIT III

November

CPU organization, ALU & control circuit, Idea about arithmetic circuits, Program control Instruction sequencing Introduction to Microprocessor, System buses, Registers, Program counter, Block diagram of a Macro computer system, Microprocessor control signals, Interfacing devices , Introduction to Motherboard, SMPS

UNIT IV

December
January

Input output organization, 1/0 Interface, Properties of simple I/O devices and their Controller isolated versus Memory mapped 1/0, Modes of Data transfer, Synchronous & Asynchronous Transfer, Handshaking, Asynchronous serial transfer, I/O processor
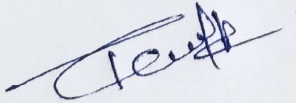
UNIT V

February

Auxiliary memory - Magnetic drum, Disk & Tape, Semiconductor memories, Memory hierarchy, Associative memory, Virtual memory, address space & memory space, Address mapping , Page table, Page replacement, cache memory, Hit ratio, Mapping Techniques, Writing cache.

REFERENCE:
1. Computer System architecture -- M. Morris Mano
2. Computer Architecture and Organization- Nicholas P Carter, Schaum's Outlines
3. Computer Organization and Architecture William Stallings

Head
Department of Computer Application
Gevt. Digvilay P.G. College

M.SC. COMPUTER SCIENCE 2022-23
FIRST SEMESTER
Paper IV : Object Oriented Programming using 'C++'
(PCSCT04)

Max Marks:100　　　　　　　　　　　　　　　　　　　　　Min Marks:40

NOTE: - The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome:
Students will be able to:

- Understand object oriented programming, difference between object oriented programming and procedural programming.
- Able to build program using C++ features such as Class, objects, operator overloads, dynamic memory allocation, inheritance and polymorphism, file I/O, exception handling, etc.
- Able to build C++classes using appropriate encapsulation and design principles.
- Improve problem solving skills by applying object oriented or non-object oriented techniques

UNIT - I : Language Fundamental
Advantages of OOP, The Object Oriented Approach, and Characteristics of object oriented languages-Object, Classes, Inheritance, Reusability, and Polymorphism.
Overview of C++: History of C++, Data Types, Constants and Variables, Operators and Expression.
Control structures : if , if-else, nested if-else, while(), do-while() , for(;;), break, continue, switch, goto, String, Storage class.

September

UNIT - II : Structure, Function & Array
Structures : A Simple structures ,specify the structures, Defining a structure variable, Accessing structures member, Enumeration data type.
Function: Function Declaration, Calling Function, Function Defines, Passing Argument to function, Passing Constant, Passing Value, Reference Argument, Passing struct variable, Overloaded Function, Inline Function, Default Argument, return statement, returning by reference.
Array: Defining array, array element, initiation array, multi dimensional array, passing array to function.

UNIT - III : Object Classes and Inheritance
Object and Class, Using the class, class construct, class destructors, object as function argument, struct andclasses, array as class member, operator overloading. Type of inheritance, Derive class, Base class. Access specifier: protected. Overriding, member function.

October

UNIT - IV : Pointers
Pointers : & and * operator pointer variables, pointer to void ,pointer and array, pointer and function, pointer and string, memory management, new and delete, pointer to object, pointer to pointer.

November

UNIT - V : Virtual Function and File & Stream
Virtual Function : Virtual Function, Virtual member function, accesses with pointer, Late binding, pure virtual function, Friend function, Friend class, static function, this pointer, Templates.
File and Stream: C++ streams, Stream class, string I/O, char I/O, Object I/O, I/O with multiple object, File pointer, Disk I/O.

December

RECOMMENDED BOOKS :
1. ObjectOrientedProgramming　　　　: McGregor and Sykes S A, 1992 VanNostrand.
2. The C++ProgrammingLanguage　　　: StrustrpB,AddisionWasley.
3. Object Oriented ProgramminginC++　: Lafore R, GalgotiaPublications.
4. Introduction to Object Oriented Programming : Witt KV, GalgotiaPublications.
5. ObjectOrientedProgramming　　　　: Blaschek G, SpringerVerlag
6. ObjectDataManagement　　　　　　: Cattel R, AddisonWasley.

Suggested Digital Platforms Web Links:
https://onlinecourses.swayam2.ac.in/aic20_sp01/preview

Page 5

Operating Systems with Linux
Subject Code - BCA-205

Max. Marks: 80   **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT - I: Introduction
Defining operating system, History and Evolution of operating system, **Basic Concepts**: batch processing, spooling, multiprogramming, multiprocessor system, time sharing, real time systems, Functions and Goals of operating system.

November

UNIT - II: Process Management
Process concept, Process Control Block, **Process State**: State Transition Diagram, **Scheduling Queues**, Queuing Diagram, Types of schedulers-context switching and dispatcher, various types of CPU scheduling algorithms and their evaluation, multilevel queues and multilevel feedback queues.

December

January

UNIT - III: Memory Management
Preliminaries of memory management, Contiguous memory allocation, fragmentation, partition allocation policies, compaction, Non-Contiguous memory allocation, Paging, Segmentation, **Virtual Memory**: Demand paging, Swapping, **Page replacement policies**: FIFO, Optimal, LRU, MRU.

February

UNIT - IV: Introduction to UNIX
Introduction to Multi-user System, Emergency and history of Unix, Feature and benefits, Versions of Unix. **System Structure**:-Hardware requirements, Kernel and its function, introduction to System calls and Shell.
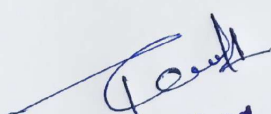**File System :** Feature of Unix File System, Concept of i-node table, links, commonly used commands like who, pwd, cd, mkdir, rm, ls, mv, lp, chmod, cp, grep, sed, awk, pr, lex, yacc, make, etc. Getting started (login / logout).**Vi Editor**:-Intro to text processing, command and edit mode, invoking vi, command structure, deleting and inserting line, deleting and replacing character, searching strings.

UNIT – V: Shell Programming
Introduction to shell feature, wild card characters, i/out redirections, standard error redirection, system and user created shell variables, profile files, pipes/tee, background processing, command line arguments, command substitution, read statement, conditional execution of commands, special shell variables $ #, #?, $* etc. Shift commands, loops and decision making- for, while and until, choice making using case…esac, decision making if ….fi, using test, string comparison, numerical comparison, logical operation, using expr.

BOOKS RECOMMENDED:
1. Operating System Concepts, Abraham Silberschatz, Peter B. Galvin and Greg Gagne (Wiley India Edition)
2. Modern Operating System, Andrew .S. Tanenbaum, (PHI)
3. UNIX Complete Reference

6

Head
Department of Computer Application
Govt. Digvijay P.G. College
Rajnandgaon (C.G.)

M.SC. COMPUTER SCIENCE 2022-23
SECOND SEMESTER
Paper IV: Principles of Compiler Design
(PCSCT204)

Max Marks:100
Min Marks :40

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome
Students will be able to:

- Specify and analyze the lexical, syntactic and semantic structures of advanced language features
- Separate the lexical, syntactic and semantic analysis into meaningful phases for a compiler to undertake language translation
- Write a scanner, parser, and semantic analyzer without the aid of automatic generators
- Turn fully processed source code for a novel language into machine code for a novel computer
- Describe techniques for intermediate code and machine code optimization
- Design the structures and support required for compiling advanced language features.

UNIT-I
Introduction to Compilers: Overview, Structure, implementation. Programming Language Grammars: Inter Language grammars| derivation, reduction, syntax tree, ambiguity, regular grammars & expressions.

UNIT-II
Scanning and Parsing Techniques : The Scanner, parser, translation, elementary symbol table organization.structures.

UNIT-III
Memory Allocation: Static and dynamic memory allocation, array allocation and access, allocation for strings, structure allocation, common & equivalence allocation. Introduction to Compilation of expressions.

UNIT-IV
Compilation of Control Structures : Control transfers, procedural calls, conditional execution, iteration control constructs. Error detection, indication &recovery. Compilation of I/O Statements: Compilation of I/O list, compilation of FORMAT list. IOSUB, file control.

UNIT-V
Code Optimization: Major issues, optimizing transformations, local optimizations, program flow analysis, Global Optimization, writing compilers.

BOOKS RECOMMENDED:
1. Compiler Construction -D.M.Dhandhere(M)
2. Compiler Writing -Tremble-Sorenson(TMH)
3. Computers : Princ, Techniques cools by Aho-Person.
4. The Essence of Compilers by Hanter-Pearson.

H.O.D
Department of Computer Science
Govt. Digvijay College Wananag...

Core Paper -V :- Semester II
DSC -V :- UBCCT202-Web Technology
Theory: - 60Lectures
(Credits: 06, Theory-04, Practical- 02)

UBCCT202
Web Technology

UNIT-I Basics of Internet
(15 Lecture)

History, Evolution, Internet applications, Intranet, WWW, Emergence of Web, Web page, Web Site, client, Web Servers, Web Browser, Web concept, Search Engine, URL, DNS, Internet Connection, Internet Service Provider, Web Design Strategies, OSI and TCP/IP model, various protocols like HTTP, FTP, SMTP, TELNET, Internet services: Email concept, Sending and receiving secure Email, Voice and video Conferencing, web Based chat services, Chat Services, Internet Messaging, Internet Relay Chat, News Group.

UNIT-II HTML
(15 Lecture)

Introduction, Html version, HTML tags, Creating headings on a web pages : Aligning the headings, creating list, Working with Links: Creating a Hyperlinks Setting the Hyperlink Colors, Linking Different sections of A web page, Creating Paragraph, Working with Images, using Images as Links, Working with Tables, Working with Frames: Creating a Frame, Creating Vertical and Horizontal Frames, Setting the Frame Border Thickness, Applying Hyperlink Targets to a Frame, Creating an HTML Form Specifying the Action URL and Method to Send the Form, Using the HTML Controls.

UNIT-III DHTML and Java Script
(15 Lecture)

DHTML: Introduction, Cascading style sheet (CSS), Inline Style sheet, External Style Sheet, Internal Style Sheets, DHTML document object model, Event handling, Java Script: Introduction, Language elements, Variables, operators, control statement Array and function in JavaScript, Objects of Java script, Client-Side and server side Java script, Benefits of using JavaScript, Embedding JavaScript into HTML Page, Handling Events, overview of VB Script.

UNIT-IV Introduction to PHP
(15 Lecture)

Introduction to PHP, Features, Advantages of PHP over other scripting languages, Installing, creating and running PHP script, working with variable, constant, operators in PHP, Control statements, looping constructs, String function, Arrays, User defined Function, Working with forms, Accessing database through PHP.

Reference Books:
1. Web Technology, A developers perspective N.p.Gopalan & J.Akilandeswari,PHI Publications.
2. The Complete Reference: HTML&CSS, Thomas A.Powell, McGraw Hill.
3. Introduction to HTML, Kamlesh N Agrawal, O.P.Vyas, P.A.Agrawal.
4. Web Technology & Design,Ramesh Bangia New Age International
5. HTML,DHTML,javascript & Perl and CGI,Ivan Bayros, BPB Publications.
6. Introduction and Web Design, Ramesh Bangia New Age International

Head
Department of Computer Application
Govt. Digvijay P.G. College
Rajnandgaon (C.G.)

M.Sc. COMPUTER SCIENCE 2022-23
Software Engineering
Paper 1 (PCSCT401)

Max Marks: 100   Min Marks: 40

NOTE:- The Question paper setter is advised to prepare unit-wise question with the provision of internal choice.

Objectives-
1. To introduce the concept of Software's, characteristics types, applications.
2. To introduce Software Engineering process using different methods.

UNIT-I
Introduction :- Definition of Software Engineering, software crisis, Software Myths, software processes & characteristics, Software life cycle model- Waterfall, Prototype, Evolutionary and Spiral Models, RAD Model.

Software Requirements analysis & specifications: Requirement engineering, requirement elicitation techniques like FAST, QFD & Use case approach, requirements analysis using DFD, Data dictionaries & ER Diagrams, Requirements documentation, Nature of SRS, Characteristics & organization of SRS, Requirement Management, IEEE Std. for SRS.

UNIT-II
Software Project Planning: -Size Estimation line of code & Function count, cost Estimation Models, COCOMO ,Putnam resource allocation model, validating software Estimation Model, Risk Management.

Software Design: - Cohesion & coupling classification of cohesiveness & coupling function oriented design, object oriented design.

UNIT-III
Software Metrics: -Software measurement: What & Why, Token count, data structure metrics, information Flow metrics.

Software Reliability:- Importance Hardware reliability & Software Reliability, Failure and Faults, Reliability models- Basic model , Software quality models, CMM, CMMI &ISO 9001.

UNIT-IV
Software Testing: - Testing process, Design of test cases, Software Testing-Verification and Validation; Testing Techniques -white box, black box; Levels of Testing - Unit, integration, validation and system; Alpha & Beta testing. Debugging - Debugging Process, Error, Fault and Failure.

UNIT V
Software Maintenance:- Introduction to Maintenance; Categories of Maintenance, Management of Maintenance, Maintenance process, Maintenance models, Regression testing Reverse Engineering, Software Re- Engineering, configuration Management, Documentation.

RECOMMENDED BOOKS
1. K.K. Aggarwal and Yogesh singh, "software Engineering" ,New Age International.
2. R.S. Pressman, "software Engineering –A Practitioner's Approach" McGraw Hill int.
3. Pankaj Jalote ,"An Integrated Approach to software Engineering, narosa

REFERENCES:
1. Stephen R Schach, "Classical & Object Oriented software Engineering" IRWIN.
2. James peter, W. pedrycz, software Engineering: An Engineering Approach.
3. I. Sommerville ,"software Engineering", Addison Wesley,8Ed,2009

Paper I: RDBMS (SQL Programming with Oracle)
(PCSCT 201)

Max Marks:100   Min Marks :40

NOTE :- The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice.

Course Outcome

Students will be able to:

- Establish a basic understanding of the process of Database Development and Administration using MySQL.
- Student will implement the concepts of both Operating Systems & Database Administration skills.
- Understand fundamental concepts of RDBMS (SQL/PLSQL)
- Understand functioning of database management systems as well as associated tools and techniques
- Develop a good database design and normalization techniques to normalize a database.
- Able to write Procedure, Function, Cursor and Trigger using SQL/PLSQL.

UNIT - I : Overview of Database Management -

Data, Information and knowledge, Increasing use of data as a corporate resource, data processing verses data management, file oriented approach verses database oriented approach to data management; data independence, database administration roles, DBMS architecture, different kinds of DBMS users, importance of data dictionary, contents of data dictionary, types of database languages. Data models: network, hierarchical, relational. Introduction to distributed databases, Client/Server databases, Object- oriented databases, Object-relational databases, Introduction to ODBC concept.

UNIT - II : Relational Model & Relational Algebra -

Entity - Relationship model as a tool for conceptual design-entities, attributes and relationships. ER diagrams; Concept of keys; Case studies of ER modeling Generalization; specialization and aggregation. Converting an ER model into relational Schema. Extended ER features, Introduction to UML, Representation in UML diagram (Class Diagram etc.).
Relational Algebra: select, project, cross product different types of joins (inner join, outer joins, self join); set operations, Tuple relational calculus, Domain relational calculus, Simple and complex queries using relational algebra, stand alone and embedded query languages.

UNIT - III :SQL

Introduction to SQL constructs (SELECT...FROM, WHERE... GROUP BY... HAVING... ORDERBY....), INSERT, DELETE, UPDATE, DROP, VIEW definition and use, Temporary tables, Nested queries, and correlated nested queries, Integrity constraints: Not null, unique, check, primary key, foreign key, references, Triggers. Embedded SQL and Application Programming Interfaces.
Introduction to PL/SQL variables – literals – data types – advantages of PL/SQL; Control statements:if ; iterative control – loop, while, for , goto ; exit when; Cursors : Types – implicit, explicit – parameterized cursors – cursor attributes; Exceptions: Types – internal , user-defined , handling exceptions – raise statement.

UNIT - IV :PL/SQL

PL/SQL tables and records: Declaring PL/SQL tables - referring PL/SQL tables, inserting and fetching rows using PL/SQL table, deleting rows; records - declaration of records - deleting records; Sub programs: Functions - procedures – input-output parameters; purity functions - packages - package specification - advantages of packages - private and public items - cursors inpackages.

UNIT - V : Relational Database Design-

Normalization concept in logical model; Pitfalls in database design, update anomalies: Functional dependencies, Join dependencies, Normal forms (1NF, 2NF, 3NF). Boyce Codd Normal form, Decomposition, Multi-Valued Dependencies, 4NF, 5NF. Issues in physical design; Concepts of De- normalization, Indexing, Clustering indexes. Data Organization - Fixed length records, variable length records, Organization of records in files, Indexing: - indexed files -B-tree, B+-tree, and Hashing Techniques.

Scanned with ACE Scanner

Computer Networks
Subject Code - BCA-204

Max Marks : 80   **Min Marks : 27**

Note : The Question Paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

UNIT - I -Introduction to Computer Networking
Data Communication, Networks - Distributed Processing, Network Criteria, Applications, Protocols and Standards, Standard Organization, Line Configuration - Point to Point, Multi Point, Topology - Mesh, Star, Tree, Bus, Ring, Hybrid; Transmission mode, Categories of Network - LAN, MAN, WAN, Inter Networks.

UNIT - II -Transmission of Digital Data
Analog and Digital, digital data transmission - parallel transmission, serial transmission, DTE-DCE interface - data terminal equipment, data circuit terminating equipment, standards, modems- Transmission rate, Modem standards.

UNIT - III- The OSI Model
ISO organization, The model - Layered architecture, functions of the layers -Physical layer, Data Link layer, Network layer, Transport layer, session layer, Presentation layer, Application layer

UNIT - IV TCP/IP Model & Protocols
The TCP/IP reference model, comparison of TCP/IP & OSI, Introduction to Internet - ARPANET, Architecture of Internet, Client server model, www, IP Address Classes. Protocols: IP, HTTP, TCP, FTP, ARP.

UNIT - V Network Security

Introduction of Network Security and it's importance. Cryptography: Definitions, Symmetric Key Cryptography: Traditional Ciphers, Simple modern Ciphers, Asymmetric Key Cryptography: RSA, Security Services, Digital Signatures.

BOOKS RECOMMENDED:
1. Introduction to Data communication & Networking - Behrouz & Forouzan
2. Computer Networking - Andres & Tanenbaum

Software Engineering
Subject code -BCA -304

Max Marks: 80   **Min Marks: 27**

Note: The question paper setter is advised to prepare unit-wise question with the provision of internal choice. Only Simple calculators allowed not scientific calculator.

't-I

Software Engineering Fundamentals: Definition of software product; software development paradigms; software engineering; knowledge engineering and end user development approaches.

July

Software Analysis:

Abstraction; partitioning and projection; system specification; software requirements specification (SRS) standards; formal specification method; specification tools; flow based, data based and object orientated analysis.

Unit-II

System design:: Idealised and constrained design; process oriented design (Gane and Sarson and Yourdon notations); data oriented design (Warnier-(Orr, E-r modeling); Object oriented design (Booch approach); Cohesion and coupling; Design metrics; design documentation standards.

August

Unit-III

Role of Case Tools : Relevance of case tools; High-end and Low-end case tools; automated support for data dictionaries, data flow diagrams, entity relationship diagrams.

Coding and Programming: Choice of programming languages; mixed language programming and call semantics; Re-engineering legacy systems; coding standard.

September

Unit -IV

Software Quality and Testing: Software quality assurance; types of software testing (white box black box, unit, integration, validation, system etc); debugging and reliability analysis; program complexity analysis; software quality and metrics; software maturity model and extension. Software cost and Time estimation. Functions points; issue in software cost estimation; introduction to the Rayleigh curve 3; Algorithm cost model (COCOMO, Putnam-slim, Watson and feliix).

oct

Unit -V

Software Project Management: Planning software projects; work background structure; integrating software design and project planning ; software project teams; project monitoring and controls.

November

RECOMMENDED BOOKS:

1. Software Engineering: A Practitioner's Approach - By Essman Roger, Tata McGraw Hill.
2. An Integrated Approach To Software Engineering- By Jalote Pankaj, Narosa: New Delhi.

PGDCA-101

INTRODUCTION TO SOFTWARE ORGANISATION

UNIT – I: Introduction to Computers
Computers – Introduction, Computer System Characteristics, Strength and Limitations of Computer, Development of Computers, Types of Computers, Generations of Computers. Introduction to Personnel Computers – Uses of PC's, Components of PC's, Evolution of PC's, Developments of Processors, Architecture of Pentium IV, Configuration of PC's; Input Device; Output Devices.

August

UNIT – II : Computer Organization
Central Processing Unit – Arithmetic Logic Unit, Control Unit, Registers, Instruction Set, Processor speed. Storage Devices – Storage and its need, Storage Evaluation Units, Primary Storage, Secondary Storage, Data Storage and Retrieval Systems, SIMM, DIMM, Types of Storage Devices.

UNIT – III : Computer Software
Basics of Software – needs of Software, Types of Software; Free Domain Software; Open Source Software; Compiler, Interpreter and Assembler; Linker and Loader; Debugger; Integrated Development Environment; Operating System – Introduction, Uses of OS, Functions of OS, Booting process, Types of Reboot, Booting from different OS, Types of OS, DOS, Windows, Linux.

September

UNIT – IV: Programming Languages – Introduction, Comparison between Human and Computer Language; Program; Data, Information and Knowledge; Characteristics of Information; Types of Programming Languages; Generations of Languages; Program Development Steps; Programming Paradigms; Object-Oriented Programming; Structured Programming, Functional Programming, Process Oriented Programming.

October

UNIT – V : Communication, Networks and Internet
Communication – Introduction, Communication process, Communication Types, Communication Protocols, Communication Channels/Media, Networks – Introduction; Types of Network; Topology; Media - NIC, NOS, Bridges, HUB, Routers, Gateways. Internet – Introduction, Growth of Internet, Owner of Internet, Internet Service Provider, Anatomy of Internet, ARPANET and Internet History of World Wide Web, Services Available on Internet - File Transfer Protocol, Gopher, E-mail, Telnet, Newsgroups, WWW, Applications of Internet.

November

Books Recommended
1. Using IT : Williams T MHill
2. Essentials of Information Technology : A. Mansoor, Prgya Publications 3.
IT : Curtin T MHill
4. Fundamental of Information Technology : Chetan Shrivastava_Kalyani Publishers 5.
Computer Fundamentals : P.K Sinha BPB Pubications 6. Fundamental of Computer :
V. Rajaraman
7. Computer today : Sanders D.H

Amair
23/07/22

Nandini