GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS), KUMBAKONAM

B.Sc., Computer Science - Course Structure under CBCS

SEMESTER	COURSE TITLE	In HOURS	CREDIT	Marks		MARKS
				Int	Ext	
	Part I Tamil	6	3	25	75	100
	Part II English	6	3	25	75	100
	Part III –CC-I-Programming in C	6	4	25	75	100
	Part III-CC-II-Practical- I-	4	3	40	60	100
Ι	Programming in C Lab					
	AC I- Numerical Methods	5	3	25	75	100
	AC II- Operations Research	3	-	-	-	-
	Total	30	16			500
	Part I Tamil	6	3	25	75	100
	Part II English	6	3	25	75	100
	Part III-CC-III-Object Oriented	5	4	25	75	100
	Programming with C++					
	Part III -CC-IV- Practical II -	3	3	40	60	100
	Programming in C++ Lab					
II	AC II- Operations Research	2	3	25	75	100
	AC III – Probability & Statistics	4	4	25	75	100
	Value education – yoga	2	2	25	75	100
	Part IV – Environmental Studies	2	2	25	75	100
	TOTAL	30	24			600
	Part I Tamil	6	3	25	75	100
	Part II English	6	3	25	75	100
	Part III –CC-V-– Fundamentals of	6	5	25	75	100
	Data structures and Algorithms					
III	Part III-CC-VI – Practical III -	3	3	40	60	100
	Lab					
	Lao					
	AC- IV – Applied Physics-I	5	4	25	75	100
	AC- V- Practical – Applied Physics –	2	_	_	_	_
	II (Carry Over)	2	-		_	_
	Part- IV - Non Major Elective					
	Course - Accounting Practice					
	Non Major Elective course for	2	2	25	75	100
	other major students: Programming					
	in C					
	TOTAL	30	20			600
IV	Part I Tamil	6	3	25	75	100
	Part II English	6	3	25	75	100
	Part III CC-VII – Programming in JAVA	4	4	25	75	100

(For the candidates to be admitted from the year June 2015 onwards)

SEMESTER	COURSE TITLE	In HOURS	CREDIT	Marks		MARKS
				Int	Ext	
IV	Part III CC-VIII - Practical IV – Programming in Java I ab	3	3	40	60	100
	Part III AC-V- Applied Physics-II					
	Lab	3	3	-	-	100
	AC VI- Applied Physics –III	4	3	25	75	100
	Part IV- Non Major Elective					
	Course - Computer Science students					
	(Marketing Practices).	2	2	25	75	100
	Non Major Elective Course for	2	2	23	13	100
	other major students: Internet					
	Programming.					
	Part IV- Skill based Elective Course	2	2	25	75	100
	- I Inter Personal Skills.		_		10	100
	Total	30	23			800
	CC-IX – Operating Systems	6	6	25	75	100
V	CC-X - Computer Architecture & Fundamentals of Microprocessor	5	5	25	75	100
	CC- XI – Data Base Systems	5	5	25	75	100
	CCXII Practical V					
	Microprocessors lab	5	4	40	60	100
	EC I - Computer Graphics /	5	5	25	75	100
	Processing	5	5	23	15	100
	Part IV – Skill Based Elective					100
	Course - II - Office Management	2	2	25	75	100
	Part IV - Skill Based Elective	2	2	25	75	100
	Total	30	20			700
VI	CC-XIII PHP Scripting Language	<u> </u>	6	25	75	100
	CC-XIV – Practical VI -	0	0	23	15	100
	Programming in PHP lab	6	5	25	75	100
	CC-XV- Mini project	6	5	40	60	100
	EC- II Major Based Elective – Data					
	and Computer Communications /	F	5	25	75	100
	Computer Network/Network	5	5	25	/5	100
	Security					
	EC- III Major Based Elective –					
	Software Engineering/System	6	5	25	75	100
	Analysis and Design/software	U		23	15	100
	Testing					
	Extension activities	-	1	-	-	-
	Gender studies	1	1	25	75	100
	Total	30	28			600

Total number of Papers = 40Total number of Hours = 180Credit = 139 Extension Activities = 1 Marks = 4000 GOVERNMENT COLLEGE FOR WOMEN (AUTONOMOUS) KUMBAKONAM

Department of Computer Science

B.Sc COMPUTER SCIENCE UG-SYLLABUS

(2015 Onwards)



2014-2015

<u>Core Paper – I - I semester</u> <u>Programming in C</u>

Unit I: Overview of C- History of C - Importance of C- Sample Programs - Basic Structure of C Programs- Programming Style - Executing a 'C' Program **Constants, Variables, and Data Types** Introduction- Character Set- C Tokens- Keywords and Identifiers- Constants- Variable- Data Types-Declaration of Variables- Declaration of Storage Class- Assigning Values to Variable- Defining Symbolic Constants- Declaring a Variable as Constant- Declaring a Variable as Volatile- Overflow and Underflow of Data **Operators and Expressions** Introduction- Arithmetic Operators- Relational Operators- Logical Operators- Assignment Operators- Increment and Decrement Operators- Conditional Operators- Bitwise Operators- Special Operators - Arithmetic Expressions- Evaluation of Expressions-Precedence of Arithmetic Operators- Type Conversions in Expressions- Operator Precedence and Associativity- Mathematical Function.

Unit II: Managing Input and Output Operation- Introduction- Reading a Character- Writing a Character- Formatted Input- Formatted Output- Decision making and Branching- Introduction

Decision Making with IF Statement - Simple IF Statement - The IF....ELSE Statement- Nesting of IF.....ELSE Statement- The ELSE IF Ladder- The Switch Statement - The ?: Operator- The GOTO Statement- Decision Making and Looping- Introduction - The WHILE Statement- The DO Statement- The FOR Statement- Jumps in LOOPS- Concise Test Expressions.

Unit III:- Arrays-- Introduction- One-dimensional Arrays- Declaration of One-dimensional Arrays

Initializing of One-dimensional Arrays- Two-dimensional Arrays- Initializing Two-dimensional Arrays-Multi-dimensional Arrays- Dynamic Arrays- More about Arrays- **Character Arrays and Strings** -Introduction - Declaring and Initializing String Variables- Reading String from Terminal- Writing Strings to Screen - Arithmetic Operation on Characters- Putting Strings Together- Comparison of Two Strings- String-handling Function- Table of Strings- Other Features of Strings.

Unit IV:- User-defined Functions- Introduction - Need for User-defined Function- A multi-function Program- Element of User-defined Function- Definition of Functions- Return Values and their Types-Function Calls- Function Declaration- Category of Functions- No Arguments and no Return Values-Arguments but no Return Values - Argument with Return Values- No Arguments but Returns a Value-Function that Return Multiple Values- Nesting of Function- Recursion- Passing Arrays to Functions-Passing Strings to Functions- The Scope, Visibility and Lifetime of Variables- Multi file Programs-Structures and Unions- Introduction

Defining a Structure- Declaring Structure Variables- Accessing Structure Members

Copying and Comparing Structure Variables- Operations on Individual Members Arrays of Structures-Arrays within Structures- Structures within Structures- Structures and Function

Unions- Size of Structures- Bit Fields.

Unit V: Pointers- Introduction- Understanding Pointers- Accessing the Address of a Variable

Chain of Pointer - Pointer Expressions- Pointer Increment and Scale Factor- Pointer and Arrays

Pointers and Character String- Array of Pointers- Pointers as Function Arguments- Functions Returning Pointer- Pointers to Function- Pointer and Structures- Troubles with Pointer

File Management in C- Introduction- Defining and Opening a File- Closing a File - Input / Output Operations on File- Error Handling During I/O Operations- Random Access to Files Command Line Arguments

TEXT BOOK : "Programming in C" – E.Balagurusamy-4th edition-Tata McGraw –Hill Pulishing company.

REFERENCE BOOK : "Programming with C" – schaum series-2nd edition-Byron S.Gottfried

<u>Core Paper II – I semester- Practical I</u>

PROGRAMMING IN C LAB:

- 1. Simple Interest
- 2. Reverse a given five digit number.
- 3. Income Tax calculation using nested IF.
- 4. Prime number checking.
- 5. Sum of digits of a given number.
- 6. Printing Pascal Triangle.
- 7. Solution of a Quadratic Equation (all cases).
- 8. Sum of Series (Sine, Cosine, e (Pow) x).
- 9. Palindrome checking.
- Ascending and descending order of numbers using Arrays(Use it to find Largest and Smallest Numbers)
- 11. Sorting of names in Alphabetical order.
- 12. Matrix Operations(Addition, Subtraction, Multiplication use Functions)
- 13. Finding factorial, generating Fibonacci Numbers using recursive function.
- String manipulations without using string functions (String length, String Comparison, String Copy, Palindrome checking, Counting words and lines in strings – use function pointers).
- 15. Calculate no.of positive, no.of negative and zero number in an array.
- 16. Swap two values using function pointers.
- 17. Number sorting using pointers.
- 18. Printing maximum marks in each subject along with the name of the student by using structure.
- 19. Pay bill calculation using file.
- 20. Counting no.of words, lines and characters using files.
- 21. Adding given numbers using command line arguments.
- 22. Graphics programs (Fill style, Olympic logo, Doordarshan)

<u>II Semester – Core Paper- III</u>

CC III- Object Oriented Programming with C++

UNIT I:

Object oriented programming: Software Evolution – OOP Paradigm – concepts, Benefits, Object Oriented Languages and Applications.

UNIT II:

Introduction to basic concepts of C++ Languages – Tokens, keywords, Identifiers, Data Types, Variables, Manipulators – Expression and Control Structures – Functions: main function – function prototyping – Call by Reference – Function Overloading – Friend and Inline functions.

UNIT III:

Classes and Objects – Constructors and Destructors – Operator Overloading – Type Conversions.

UNIT IV:

Inheritance – single Inheritance – Multiple Inheritance – Hierarchical, Hybrid Inheritance – Polymorphism – Pointers – Virtual Functions – Console I/O operations.

UNIT V:

Files – Classes for file stream operations – Opening, Closing and Processing files – End of file Detection – File pointers – Updating a file – Error Handling during file operations – Command line Arguments – Templates – Exception Handling.

Text Book:

"OBJECT ORIENTED PROGRAMMING WITH C++" – E. BALAGURUSAMY TATA McGraw Hill Publishing Ltd, New Delhi, 1995.

Reference Books:

1."OBJECT ORIENTED PROGRAMMING WITH C++" -Robert Lafore.Galgotia,1994.

2. "C++, The Complete Reference" – Herbert Schilt, 3rd Edition, Tata McGraw Hill Publishing Ltd, 1999.

3. "Let us C++" – Yeswant Kanetkar, BPB Publication, 1999.

4. Programming with C++ - John R. Hubbard – Schaum's Outline Series, 1996.

PROGRAMMING IN C++ LAB :

1. Election Candidate problem.

- 2. Function overloading and default value to a parameter.
- 3. Write a C++ program using a class to represent a bank Account with data members name of depositor, account number, type of account, balance and member functions deposit amount, withdraw amount, show name and balance. Check the program with your own data.

4. Consider a shopping list of items for which orders are placed with a dealer. The list should include code number and price the item. Operations such as adding an item to the list, deleting an item from the list and printing the total value of the order are to be provided. Write a program to implement the above using a class with arrays as data members.

5.Create a 'time' class with integer data members hours, minutes, and seconds. Develop two constructors, one should initialize the data to zero and the other should initialize to fixed values. A member function should display it in hh:mm:ss format.

6.Design an abstract base class 'Shapes' and derive three classes "Rectangle", "Circle", and "Triangle". Develop Polymorphic Functions "Circumference" and "Computer Area", to calculate the circumference and area of these objects and display is. Develop a main program to create each of these objects and apply these polymorphic functions.

- 7.Develop a program using operator overloading
 - a) To add two complex numbers.
 - b) To find the difference between any given time and the system time.
 - c) To multiply two matrices.

8. Class inheritance for a publishing company.

9. Simulation of a calculator using function overloading.

10.Income Tax calculation using virtual function.

- 11. Write a program which reads a text from a file and the display the following information Number of Lines Number of Words Number of Characters Strings should be left justified and numbers should be right justified in a suitable field width.
- 12. Write a C++ programs to illustrate the use of the following Default argument Reference Variable Copy Constructor

Develop a "Employee" class having the data members Empno, Ename, Basic pay, Dept and Grade. Calculate the DA, HRA, LIC AND PF (Assume your own data and Percentage). Using these calculate Gross pay and Net Pay.

CC V - FUNDAMENTALS OF DATA STRUCTURE & ALGORITHMS

UNIT I:

Arrays and sequential Representations – Ordered Lists – Stacks and Queues – Evaluation of Expressions – Multiple Stacks and queues – singly Linked Lists – Linked Stacks and Queues – Polynomial Addition – Doubly Linked Lists and Dynamic Storage Management – Strings – a case study.

UNIT II:

Trees – Binary tree representations – Tree Traversal – Threaded binary trees – Binary tree representation of trees – Set representations – Decision trees .

UNIT III:

Graphs and Representations – Traversal, Connected Components and spanning trees – Shortest paths and transitive Closure .

UNIT IV:

Algorithms – conventions – Writing Structured Program – Analyzing algorithms – Sorting – Heap sort – Binary search – Finding the maximum and minimum – Merge sort – Quick sort – Selection sort.

UNIT V:

Greedy Method: The general method – Optimal storage on tapes – knapsack problem – Job sequencing with deadlines – Optimal merge patterns – Minimum spanning trees – single source shortest paths.

Text Books:

- 1. Fundamentals of data structure Ellis Horowitz and Sartaj Sahini Chapters 2,3,4,5,6.1 to 6.3 (Excluding 2.3,3.2,4.5,4.6,5.8.3,5.9,4.7,4.10,4.12,6.4,6.5).
- 2. Fundamental of Computer Algorithms Elliz Horowitz and sartaj sahini Galgotia Publications.

Reference Book:

- 1. Data Structures LIPSCHUTA, Tata McGraw Hill, Schaum's Outline Series.
- Introduction to Design & Analysis of Algorithms Goodman(S.E), Hedetniemi (S.T).

<u>III Semester – Core Paper VI</u>

Computer graphics and animation lab (Flash, Coreldraw, Adobe Photoshop)

FLASH

Develop an image(s) and do the following.

- 1. Basic Drawing and Painting.
- 2. Working with Strokes and Fills
- 3. Creating Custom Colors, Gradients, and Line Styles Transforming and Grouping Objects
- 4. Converting Text into Shapes
- 5. Animate using motion, shape, Tweening, and actions

ADOBE PHOTOSHOP

- 1. Study of Pixel graphics .
- 2. Layer system, different layouts (Development of boards)
- 3. Photo editing, Drawing toots
- 4. Study of different colour modes, colour adjustment etc

COREL DRAW

- Study of vector graphics
- Working with shapes and curves and colour
- Creating artistic text and graphic
- Creating logos and branding
- Layout of magazine, brochures
- Printing techniques

IV Semester – Core Paper- VII

PROGRAMMING WITH JAVA

Unit I:Java Evolution: Java History – Java Features – How Java Differs from c and c++ - Java and Internet – Java and World Wide Web – Web Browsers – Hardware and Software Requirements – Java Support Systems – Java Environment - **Overview of Java Language**: Introduction – Simple Java Program – More of Java – An Application with Two Classes – Java Program Structure – Java Tokens – Java Statements – Implementing a java program – Java virtual machine – Command line arguments – Programming Style – **Constants, Variables and Data types**: Introduction – Constants – Variables – Data Types – Declaration of Variables – Giving values to variables – Scope of variables – Symbolic Constants – Type casting – Getting values of Variables – Standard default values.

Unit II:Operators and Expressions: – Arithmetic operators – Relational Operators – Logical Operators – Assignment Operators – Increment and decrement operators – Conditional operators – Bitwise Operators – Special operators – Arithmetic Expressions – Evaluation of Expressions – Precedence of Arithmetic Operators – Type conversion in Expressions- Operator Precedence and Associativity – Mathematical Functions – Decision making and branching - Decision making and Looping.

Unit III:Classes, Objects and Methods: Defining a class – Fields Declaration – Methods Declaration – Creating Objects – Accessing Class Members – Constructors – Methods Overloading – Static members – Nesting of methods – Inheritance: Extending a class – Overloading Methods – Final Variables and methods – Final Classes – Finalizer Methods – Abstract methods and classes – Methods with Varargs – Visibility Control- Arrays, Strings and Vectors: Introduction – One Dimensional Arrays – Creating an Array – Two – dimensional Arrays – Strings – Vectors – Wrapper Classes – Enumerated Types – Annotations – Interfaces: Multiple Inheritance – Defining Interfaces – Extending Interfaces – Implementing Interfaces – Accessing Interface variables.

Unit IV:Packages - Java API Packages – Using System Packages – Naming Conventions – Creating Packages – Accessing A package – Using a Package – Adding a class to a package – Hiding classes - Static Import – **Multithreaded Programming** : Creating Threads – Extending the Thread class – Stopping and Blocking a Thread – Life cycle of a Thread – Using Thread Methods – Thread Exceptions – Thread Priority – Synchronization – Implementing the "Runnable" Interface – **Managing Errors and Exceptions**: Types of Errors – Exceptions – Syntax of Exception Handling Code – Multiple Catch statements – Using Finally Statement – Throwing Our Own Exceptions – Using Exceptions for Debugging.

Unit V: Applet Programming : How applets differ from Applications – Preparing to write applets – Building applet code – Applet life cycle – Creating an Executable applet – designing a web Page – Applet Tag – Adding Applet to Html File – Running the applet – More about Applet Tag – Passing parameters to applets – Aligning the display – More about Html tags - Displaying Numerical values – Getting input from the user – Graphics Programming: The Graphics Class – Lines and Rectangles – Circles and Ellipses – Drawing Arcs – Drawing Polygons – Line Graphs – Using Control loops in applets – Drawing bar charts. Managing Input/Output Files in Java: Concept of Streams – Stream classes - Byte Stream Classes – Character stream classes – using streams – other useful I/O classes – Using the file Class – Input / Output Exceptions – Creation of Files – Reading/Writing characters – Reading/Writing Bytes – Handling primitive data types – Concatenating and Buffering files – Random access files – Interactive input and output – other stream classes.

Text Book

"Programming with Java" – E.Balagurusamy, Tata McGraw Hill Publishing Company Ltd, Third Edition.

Reference Book

Java 2 Complete Reference", Herbert Schildt, Tata Mc Graw HILL, 4th edition

Semester IV - Core Paper VIII- Practical - 4

Programming in JAVA lab

- 1. Simple programs using For, While, Ternary and Switch
- 2. String handling using String and String Buffer.
- 3. Inheritance
- 4. Polymorphism
- 5. Interfaces and packages
- 6. Text files (Copy, Display, counting characters, words and lines)
- 7. Data Files (Creating, Processing)
- 8. Vector manipulation
- 9. Simple Programs Applet and AWT
- 10. Exercises using Predefined and User Defined Exception
- 11. Graphics Programs for drawing Lines, Rectangle, Oval, String using Applet.

V – Semester – Core Paper-IX

OPERATING SYSTEMS

UNIT I:

Evolution of Operating Systems – Types of Operating system – Different views of OS – Design and Implementation of Operating Systems – I/O programming concepts – Interrupt structure & processing.

UNIT II:

Memory Management: Single contiguous Allocation – Partitioned Allocation – Relocatable Partitioned Allocation – Paged and Demand paged Memory management – Segmented Memory Management – Segmented and Demand paged memory management – Swapping and overlay techniques.

UNIT III:

Processor Management: Job scheduling – process scheduling – functions and policies – Evaluation of Round Robin Multiprogramming performance – Process Synchronization – Race condition – synchronization mechanism – deadly embrace prevention and detect and recover methods.

UNIT IV:

Device Management: Techniques for Device management – Device characteristics – I/O Traffic controller, I/O scheduler, I/O device handlers – Virtual devices – Spooling.

UNIT V:

File Management: Simple File System – General model of a File system, Physical and Logical File systems.

Case studies: DOS, UNIX/LINUX Operating systems.

Text Book:

1. "Operating Systems" – E. Madnick and John J. Donavan, Tata McGraw Hill Book Company Ltd.,

Reference Book:

 "Operating Systems (concepts and design) Milan Milenkovic – McGraw Hill International Edition.

<u>V Semester – Core Paper - X</u>

COMPUTER ARCHITECTURE & FUNDAMENTALS OF MICROPROCESSOR

UNIT-I

Digital Logic Circuits – Digital Computers – Logic Gates – Boolean Algebra – Map Simplification Combinational Circuits – Flip Flops – Sequential Circuits – Digital Components – Integrated Circuits – Decoders – Multiplexers - Registers – shift registers – Binary Counters – Memory Unit

UNIT-II

Register transfer and Micro operations - Register Transfer Language - Register Transfer -Bus and Memory Transfer - Arithmetic Micro operations - Logic Micro operations - Shift Micro operations - Arithmetic Logic Shift Unit.

UNIT-III

Central Processing Unit – Introduction - General Register organization - Stack organization - Instruction formats - Addressing modes - Data Transfer and Manipulation - Program Control -Reduced Instruction Set Computer (RISC) Computer Arithmetic – Introduction – Addition and Subtraction – Multiplication Algorithm – Division Algorithms.

UNIT-IV

Microprocessor Architecture – Intel 8085 - Instruction Cycle - Timing Diagram –Intel 8085 Instructions - Programming of microprocessors: Introduction – Assembly language – High level language – Areas of Applications of various languages – MACRO – Microprogramming.

UNIT-V

Assembly Language Programming - Simple Examples - Addition and Subtraction of Binary and Decimal Numbers- Complements - Shift – Masking - Microprocessor Applications – 7-Segment LED Display – Measurement of physical Quantities – Temperature measurement & control – Water level indicator - Microprocessor Based Traffic Control.

Text Book

1. For unit 1, 2, 3

Computer System Architecture, M. Morris Mano Pearson Education, 3rd Edition, 4tg Indian Reprint,2004.

2. For unit 4, 5 Fundamentals of Microprocessor and Microcomputers - Badri Ram-5th revised and enlarged edition-Dhanpat Rai Publication-2001.

I Unit: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7. II Unit: 4.1, 4.2, 4.3, 4. 4, 4.5, 4.6, 4.7 III Unit: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 10.1, 10.2, 10.3, 10.4 IV Unit: 3.1, 3.2, 3.3, 4.6, 5.1, 5.2, 5.3, 5.4, 5.14 V Unit: 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17, 6.18-9.3-9.6-9.6.1, 9.6.4, 9.8.

V Semester – Core Paper – XI

CC- DATABASE SYSTEM CONCEPTS

UNIT I:

Introduction : Database system Applications – Database System versus File Systems – View of Data – Data Models – Database Languages – Database Users and Administrators – Transaction Management – Database System Structure – Application Architectures - Entity Relationship Model : Basic Concepts – Constraints - Keys – Design Issues - ER Diagram – Weak Entity Sets - Relational Model : Structure of Relational Databases – The Relational Algebra – Modification Of the Database - The Tuple Relational Calculus – The Domain Relational Calculus – Views.

UNIT II:

Integrity and security : Domain Constraints – Referential Integrity – Security and Authorization – Encryption and Authentication - Relational Database Design : Normalization Using Functional Dependencies – Normalization Using Multivalued Dependencies – Normalization Using Join Dependencies.

UNIT III:

Storage and File Structure : Overview of Physical Storage Media – File Organization – Organization of Records in Files - Data Dictionary Storage – Indexing and Hashing : Basic Concepts – Ordered Indices – B+ Tree Index Files – B- Tree Index Files - Static Hashing – Dynamic Hashing.

UNIT IV:

Transaction Management : Transaction Concept – Transaction State – Concurrent Executions – Serializability – Testing for Serializability - Recoverability – Concurrency Control : Lock Based Protocols – Timestamp Based Protocols – Validation Based Protocols - Recovery System : Failure Classification – Recovery and Atomicity – Log-Based Recovery.

UNIT V:

Database System Architectures : Centralized Systems – Distributed Systems - Distributed Databases : Homogeneous and Heterogeneous Databases – Distributed Data Storage – Distributed Transactions - Commit Protocols – Distributed Query Processing.

Text Book:

1. "DATABASE SYSTEM CONCEPTS" – Abraham Silberschatz, Henry F. Korth, S. Sudarshan.

Reference Book :

"An introduction to database system "- Bipin C desai

<u>V Semester – Core Paper – XII - Practical – 5</u>

MICROPROCESSOR LAB

Microprocessors Experiments :

- 1. 8-bit addition, subtraction, multiplication and division.
- 2. 16 bit addition.
- 3. BCD subtraction.
- 4. Data transfer from one part of the memory to another.
- 5. Maximum and minimum values.
- 6. Searching element in the given numbers.
- 7. Sorting (Ascending and Descending order).
- 8. Hexadecimal to decimal and decimal to hexadecimal conversion(simple logic only)
- 9. Reversing an array element.

V Semester – Elective – I – Paper -1

COMPUTER GRAPHICS

UNIT I –**Overview of graphics Systems** – Video Display Devices – Raster scan systems – Random scan systems – Monitors and Workstations – Input Devices- Hard-Copy Devices-Graphics software.OUTPUT PRIMITIVES – Points and Lines – Line – Drawing Algorithms-Loading the Frame Buffer-Line function- Circle-Generating Algorithms –Ellipse-Generating Algorithms-Filled-Area Primitives-Fill Area Functions- Cell Array-Character Generation.

UNIT II : Attributes of output primitives :Line Attributes – Curve Attributes-Color and Grayscale Levels – Area-Fill Attributes – Character Attributes-Bundled Attributes-Inquiry Functions-Antialiasing.TWO-DIMENSIONAL GEOMETRIC TRANSFORMATIONS –Basic Transformations – Matrix Representations and Homogeneous Coordinates – Composite Transformations – Other Transformations .

UNIT III – **Two Dimensional Viewing** – The viewing pipeline-Viewing coordinate Reference Frame-Window-to-viewport Coordinate Transformation-Two-Dimensional Viewing Functions-Clipping Operations – Point Clipping-Line Clipping-Polygon Clipping – Curve Clipping-Text Clipping – Exterior Clipping-GRAPHICAL USER INTERFACES AND INTERACTIVE INPUT METHODS – The User Dialogue-Input of Graphical Data-Input Functions-Initial Values for Input-Device Parameters-Interactive Picture-Construction Techniques.

UNIT IV-**Three Dimensional concepts** – Three- Dimensional Display Methods-Three- Dimensional Graphics Packages-THREE-DIMENSIONAL GEOMETRIC AND MODELING TRANSFORMATIONS –Translation-Rotation-Scaling-Other Transformations –Composite Transformations –Three Dimensional Transformation Functions- Modeling and Coordinate Transformations.

UNIT V-Visible Surface Detection Methods – Classification of Visible-Surface Detection Algorithms – Back Face Detection-Depth-Buffer Method-A-Buffer Method-Scan-Line Method-Depth-Sorting Method-BSP-Tree Method-Area-Subdivision Method-Octree Methods-Ray-Casting Method-Curved Surfaces-Wireframe Methods-Visibility Detection Functions.

TEXT BOOK : "COMPUTER GRAPHICS"-DONALD HEARN , M.PAULINE BAKER 2^{nd} EDITION, PHI PRIVATE LIMITED .

UNIT 1 – Chap 2 (2.1 to 2.7), Chap 3 (3.1 to 3.6, 3.11 to 3.14). UNIT II – Chap 4 (4.1 to 4.8), Chap 5 (5.1 to 5.4). UNIT III – Chap 6 (6.1 to 6.11), Chap 8 (8.1 to 8.5). UNIT IV – Chap 9 (9.1 to 9.2), Chap 11 (11.1 to 11.7), UNIT V – Chap 13 (13.1 to 13.13)

Reference Book : "Principles of interactive Computer Graphics" – William M.Newman and Sproull.

V Semester – Elective I - Paper – 2

MULTIMEDIA SYSTEMS

UNIT I : Elements of Multimedia systems – Needs – Benefits – Converging of Multimedia application development, multimedia building blocks - Text – Sound – images – video – animation.

UNIT II : PC Platform – SCSI, MCI(Media control interface), Storage for Multimedia – DVD &CD, Input devices and Output Hardware, communication devices, multimedia workstation.

UNIT III : Hypertext – hypermedia – document architecture – MPEG, Basic tools – image forming, painting and drawing tools – sound editing programs, Video formats – quick time, Linking multimedia objects – OLE , DDE. Office suites – presentation tools- User interface design.

UNIT IV: Application Subsystem, Transport subsystem, QOS, Synchronization, Presentation, Multimedia Synchronization- single user – multimedia on networks

UNIT V : Multimedia OS – Process Management – File handling , Multimedia DBMS – Data structures for storage – Indexing techniques – Information retrieval, Search Engine – Case study.

Text Book :

Tay Vaughnan, "Multimedia: Making it work" 5th Edition, *Tata McGraw-Hill* 2001

Reference Books :

- 1. Steinmetz and Klara Nahrstedt, "Multimedia Computing, communication and application", *Pearson Education Asia, 1995*
- 2. Jeffcoat, "Multimedia in Practice- Technology and applications", PHI 1995

V Semester - Elective I – Paper 3

DIGITAL IMAGE PROCESSING

UNIT I

INTRODUCTION AND DIGITAL IMAGE FUNDAMENTALS: Introduction - What is Image Processing- examples of fields that uses DIPFundamentals step in DIP. Digital image fundamentals – image sensing and acquisition, Image sampling and quantization – Basic relationship between pixels.

UNIT II

IMAGE ENHANCEMENT TECHNIQUES: Some basic intensity transformation functions – Histogram processingFundamental steps of spatial filtering – smoothing spatial filters.

UNIT III

IMAGE RESTORATION: Model of Image Degradation/restoration process – noise models – restoration in the presence of Noise only Spatial filtering.

UNIT IV

IMAGE COMPRESSION: Fundamentals – Coding redundancy – Spatial and temporal redundancy – Irrelevant information. Some basic compression methods: Huffman coding – arithmetic coding – LZW coding – Run Length coding – Bit-plane coding.

UNIT V

IMAGE SEGMENTATION AND REPRESENTATION: Morphological image processing: preliminaries – Erosion and Dilation. Fundamentals – point, line, and Edge detection: Line Detection – Basic edge detection – More advanced techniques for Edge detection – Edge linking and boundary detection – Thresholding

Text Book:

Digital Image Processing, Third Edition, Rafel C.Gonzalez and Richard E. Woods, Pearson Education, 2008. Chapters:1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 3.2-3.5, 5.1-5.3, 8.1.1, 8.1.2, 8.2.3-8.2.5, 8.2.7, 9.1, 9.2, 10.1, 10.2.3, 10.2.5-10.2.7, 10.3

Reference Books:

1. Fundamentals of Digital Image Processing, Anil K. Jain, Prentice Hall of India, 1989.

2. Digital Image Processing and Analysis, B. Chandra and D. Dutta Majumder, PHI, New Delhi, 2006.

PART-IV

V SEMESTER

SKILL BASED ELECTIVE COURSE- III

Hardware concepts

- Unit I : Introduction to computer Types of computer computer case sizes and types Layout Appearance Microprocessor Inside a microprocessor Microprocessor performance.
- Unit II : Computer memory Introduction Types of Memory Management of memory Memory Management bugs - Protected memory - DRAM - Cache memory - Operations - Applications -Flash memory - SRAM - Virtual memory - BIOS
- Unit III : Motherboard History Design CPU sockets Peripheral card slots Temperature and Reliability - Chipset - Hard Disk Drive – overview – components - performance characteristics – SCSI – SCSI network - Sound card – Applications - Digital signal Processor - Graphics card.
- Unit IV : Computer monitor Monitor types Color monitors Types of monitors CRT monitor LCD Monitor-Advantages of LCD - Monitor specifications - TV monitors – LED - Flat panel Displays - HDTV-Curved monitors.
- Unit V : Keyboard Functioning of computer keyboard Mouse variants of mouse Optical mouse Interface circuits-Parallel ports-Serial ports- USB features- USB system description.

Reference books:

"Hardware" - P.Karthikeyan,

"Hardware BiBle", Winn L.Rosch

Referenced sites:

www.wikipedia.org, www.atariarchieves.org

<u>Semester 6 - Core Paper –XIII</u>

PHP Scripting Language

Unit I

Introduction to XHTML : Introduction – Editing XHTML – First XHTML example- W3C XHTML validation service – Headings – Linking c- Images – Special characters and horizontal rules – Lists – Tables – Forms – Internal linking – Meta elements – Web resources.

Unit II

JavaScript : Introduction to Scripting – JavaScript Control statements – Control structures – if selection statement – if- else selection statement – while repetition statement – Assignment operators – Increment and Decrement operators – for repetition statement – Examples using for statement – Switch multiple - selection statement – do – while repetition statement – break and continue statements – labeled break and continue statements – Logical operators – Functions – Arrays.

Unit III

Essentials of PHP - Operators and Flow Control - Strings and Arrays.

Unit IV

Creating Functions - Reading Data in Web Pages - PHP Browser - Handling Power.

Unit V

File Handling - Working with Databases - Sessions, Cookies, and FTP

Text Book:

1. Internet and World Wide Web- How to program 4th Edition– P.J.Deitel, H.M.Deitel, Pearson Edition.(Unit I & II) 2.The PHP Complete Reference – Steven Holzner – Tata McGraw-Hill Edition. (Unit III,IV,V)

Reference Books:

1. Spring into PHP5 – Steven Holzer, Tata McGraw Hill Edition.

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Semester 6 - Core Paper - XIV

Programming in PHP lab

- 1. Write a program using controls and functions
- 2. Develop a program and check message passing mechanism between pages.
- 3. Design a program using String function and Arrays.
- 4. Develop a program using parsing functions (use Tokenizing)
- 5. Write a program and check Regular Expression, HTML functions, Hashing functions.
- 6. Develop a program and check File System functions, Network functions, Date and time functions.
- 7. Design a program using session
- 8. Develop a program using cookie and session.

Semester 6 - Elective II- Paper 1

Data and Computer Communications

UNIT-I

Data communication-Networks-Protocols and standards –Standards Organizations-Basic concepts-Line configuration – Topology-Transmission mode – Categories of Networks.

UNIT-II

The OSI Model -The Modal -Functions of the Layers -TCP/IP protocol suite. Signals: Analog and digital - Periodic and Aperiodic signals-Analog signals-Time and frequency domains - Composite signals-Digital signals-Encoding and modulating-Analog to digital conversion-Digital to analog conversion-Transmission of digital data: Interfaces &modems- Digital data Transmission-Modems-Cable modem.

UNIT-III

Transmission Media-Guided media-Unguided media-Transmission Impairment -Multiplexing-Many to one/one to many-frequency -division multiplexing(FDM)-Wave division multiplexing(WDM)-Time division multiplexing(TDM) Multiplexing application:-The telephone system-Error detection Types of errors-Detection-Vertical redundancy check(VRC)-Longitudinal correction:and Redundancy check(LRC)-Cyclic redundancy check(CRC)-Checksum-Error correction. **UNIT –IV**

Local Area networks Project 802-Ethernet-Token Bus-Token Ring-Switching-Circuit Switching-Packet Switching Message Switching -Networking and internetworking devices-Repeaters-Bridges-Routers –Gateways-Other devices-Routing algorithms-Distance vector routing –Link state routing.

UNIT –V

TCP/IP Protocal Suite :Part 2, Application layer -client ,Server model-Domain name system-Telnet-File Transfer Protocol:-Trivial File Transfer Protocol(TFTP)-Simple Mail Transfer Protocol(SMTP)-Simple network Management Protocol(SNMP)-Hypertext Transfer Protocol(HTTP)-World Wide Web- VLANs and VPNs-VPN-Network Security-Four aspects of security – Privacy-Digital signature.

Text Book:

1. "Data communications and Networking" –2nd Edition - Behrouz A Forouzan.

Reference Book:

1. Computer Networks - Tanen Baum

2. Computer Networks - William Stallings

UNIT - I : Chapter 1,2 (2.1 to 2.4)

UNIT – II : Chapter 3, 4, 5 (5.2, 5.3), 6 (6.1, 6.4, 6.6)

UNIT – III: Chapter 7 (7.1 to 7.3), 8 (8.1 to 8.5), 9 (9.1 to 9.7)

UNIT – IV: Chapter 12 (12.1 to 12.5), 14 (14.1 to 14.3), 21 (21.1 to 21.8)

UNIT – V : Chapter 25 (25.1 to 25.10), 26 (26.2), 27 (27.1 to 27.3).

Semester 6-Elective II – Paper 2

COMPUTER NETWORKS

Unit I

Introduction to digital networks – WAN –WAN standards – Introduction TCP/IP and Internet – network technologies – TCP/IP features, protocol standards Internetworking concepts and Architectural model – Network interface layer.

Unit II

IP layer: Internet Address – Mapping Internet Address to physical Address – Determining an Internet address at startup – Transparent gateways and subnet addressing – multicast addressing – client server model of interaction – bootstrap protocol – domain name system – address discovery and binding.

Unit III

Internet Protocol: Connectionless Datagram delivery – data Structures and input processing. Routing IP datagrams – error and control messages – protocol layering – user datagram protocol – reliable stream transport service – fragmentation and reassembly. Routing: cores –peers and algorithms – autonomous systems – interior gateways protocols – routing table and routing algorithms.

Unit IV

UDP: User data grams. TCP: Data Structures and Input processing – finite state machine implementation – output processing – timer management – flow control and adaptive retransmission – urgent data processing and the push function – socket level interfaces.

Unit V

Application layer: Remote login – File transfer Access – electronic mails – Internet management. X.25 networks and support networks.

Reference Books:

- 1. Douglas E. Comer, "Internetworking with TCP/IP Volume I", Prentice Hall, 1991.
- 2. Douglas E. Comer, David L. Stevens, "Internetworking with TCP/IP Volume II", Prentice Hall, 1991.
- 3. Uyless Black, "TCP/IP & Related Protocols" McGraw Hill, 1995. Anx.31 J - M Sc CS (SDE) 2007-08 with MQP Page 7 of 16

<u>Semester 6-Elective II – Paper 3</u>

NETWORK SECURITY

UNIT I

Introduction – Primer on a Networking – Active and Passive Attacks – Layers and Cryptography – authorization – Viruses, worms. The Multi level Model of Security – Cryptography – Breaking an Encryption Scheme – Types of Cryptographic functions – secret key Cryptography – Public key Cryptography – Hash algorithms.

Secret key cryptography – Data encryption standard – International Data Encryption Algorithm (IDEA) Modes 4 Operations – Encrypting a Large message – Electronic code book, cipher block chaining, OFB, CFB, CTR – Generating MACs – Multiple Encryption DES.

UNIT II

Introduction to public key algorithms – Model of arithmetic – Modular addition, Multiplication, Exponentiation. RSA – RSA Algorithm – RSA Security – Efficiency of RSA – Public Key cryptography Standard (PKCS) - Digital Signature Standard – DSS Algorithm – Working of Verification procedure – Security and DSS – DSS controversy – Zero Knowledge proof systems.

UNIT III

Authentication – Overview of authentication systems – password based authentication – Add nets based authentication – cryptographic authentication protocols – who is seeing authenticate – passwords as cryptographic keys – Eaves dropping and server database reading – Trusted intermediaries – Session key establishment. Authentication of people – passwords – online – off line password of using – Eavesdropping – passwords and careless users – Initial Password distribution – Authentication tokens.

UNIT IV

Standards and IP security – Introduction to Kerberos – Tickets and Ticket granting tickets. Configuration - logging into the network – replicated KDCs. Overview of IP security – security associations – security association database – security policy database, AH and ESP – Tunnel Transport mode why protect - IP Header IPV4 and IPV6, NAT, Firewalls, IPV4, IPV6 Authentication Header – ESP - reason for having Authentication Header.

UNIT V

Network Security Application – Email Security – distribution lists – store and forward - security services for email – establishing keys privacy – authentication of the source – massage Integrity – Non - Repudiation – Proof of submission – Proof of delivery. Message flow confidentially – Anonymity – Names and Addresses. Firewalls – packet filters – application level gateway – encrypted tunnels – comparisons why firewalls don't work – denial of service attacks. Web security – Introduction – URLs / URIs – HTTP – HTTP digest authentication. Cookies – other web security problems.

TEXT BOOK

1. Charlie Kaufman, Radia Perlman and Mike Speciner "Network Security : Private Communication in a Public Work", Second Edition, Pearson Education, 2002.

REFERENCES

1. William Stallings, "Network Security : Essentials Applications and Standards",

Semester 6 - Elective III- Paper -1

SOFTWARE ENGINEERING

UNIT I:

Introduction – Definitions – Size factors – Quality and productivity factors – Managerial issues -Planning a software project – Introduction – Defining the problem – Developing a solution strategy – Planning the development process – Planning an Organizational structure – Other planning activities.

UNIT II:

Software requirements definition – Software requirement specification – Formal specification techniques – Languages and Processors for requirements.

UNIT III:

Software design – Fundamental design concepts – Modules and modularization criteria – Design notations – Design techniques – Detailed design considerations – Real time and distributed system design – Test plans – Milestones, Walkthroughs and Inspections – Design guidelines.

UNIT IV:

Verification and validation techniques – Quality assurance – Walkthroughs and Inspections – Static analysis – Symbolic execution – Unit testing and debugging – System testing – Formal verification.

UNIT V:

Software maintenance – Enhancing maintainability during development – Managerial aspects – Configuration management – Source code metrics – Other maintenance tools and techniques.

Text Book:

1. "Software Engineering Concepts" – Richard Fairley.

For Unit I – chapters I & II. For Unit II – chapters IV For Unit III – chapter V For Unit IV – chapter VIII For Unit V – chapter IX

Reference Book :

1. Software Engineering a practitioners Approach - Roger S.Pressman

Semester 6- Elective III- Paper 2

SYSTEM ANALYSIS AND DESIGN

Unit I

Conceptual Foundations: Overview of Systems Development - Concepts of Systems.

Unit II

Concepts of Information and Organizations - Concepts of Data processing.

Unit III

Techniques and Technologies for Systems Analysis and Design: Problem and Opportunity Recognition – Systems and Information Analysis – Information System Design – Selecting Technology and personnel – Systems Development – Implementation and Evaluation – Project Management for Systems Development.

Unit IV

Strategic, Administrative, and Higher-level Concepts and Techniques: Systems Administration – Strategic Planning for MIS.

Unit V

Analysis and Design of Decision Support Systems – End user computing – Future Considerations of Systems Analysis.

<u>Text Book</u>

System Analysis and Design - James C.Wetherbe, Galgotia Publications Pvt Ltd, , Third Edition 1990.

Reference Book

System Analysis and Design - Elias M.Awad

Semester 6-Elective III – Paper 3

SOFTWARE TESTING

UNIT-I: Software Development Life Cycle models: Phases of Software project – Quality, Quality Assurance, Quality control – Testing, Verification and Validation – Process Model to represent Different Phases - Life Cycle models. **White-Box Testing**: Static Testing – Structural Testing – Challenges in White-Box Testing.

UNIT-II: Black-Box Testing: What is Black-Box Testing? - Why Black-Box Testing? - When to do Black-Box Testing? - How to do Black-Box Testing? - Challenges in White Box Testing - Integration Testing: Integration Testing as Type of Testing - Integration Testing as a Phase f Testing - Scenario Testing - Defect Bash.

UNIT-III: System and Acceptance Testing: system Testing Overview – Why System testing is done? – Functional versus Non-functional Testing - Functional testing - Nonfunctional Testing – Acceptance Testing – Summary of Testing Phases.

UNIT-IV: Performance Testing: Factors governing Performance Testing – Methodology of Performance Testing – tools for Performance Testing – Process for Performance Testing – Challenges. **Regression Testing:** What is Regression Testing? – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

UNIT-V: Test Planning, Management, Execution and Reporting: Test Planning – Test Management – Test Process – Test Reporting –Best Practices. **Test Metrics and Measurements:** Project Metrics – Progress Metrics – Productivity Metrics – Release Metrics.

TEXTBOOKS:

1. SOFTWARE TESTING Principles and Practices – Srinivasan Desikan & Gopalswamy Ramesh, 2006, Pearson Education. (UNIT-I: 2.1-2.5, 3.1-3.4 UNIT-II: 4.1-4.4, 5.1-5.5 UNIT III: 6.1-6.7 (UNIT IV: 7.1-7.6, 8.1-8.5 UNIT-V: 15.1-15.6, 17.4-17.7)

<u>REFERENCE BOOKS</u>:

1. EFFECTIVE METHODS OF SOFTWARE TESTING–William E.Perry, 3rd ed, Wiley India.

2. SOFTWARE TESTING - Renu Rajani, Pradeep Oak, 2007, TMH.

Non-Major Elective Paper-I Programming in C

Unit I: Overview of C - Basic Structure of C Programs- **Constants, Variables, and Data Types:** Introduction- Character Set- C Tokens- Keywords and Identifiers- Constants- Variable- Data Types-Declaration of Variables- Assigning Values to Variable- Defining Symbolic Constants.

Unit II: Operators and Expressions Introduction- Arithmetic Operators- Relational Operators-Logical Operators- Assignment Operators- Increment and Decrement Operators- Conditional Operators-Bitwise Operators- Special Operators - Evaluation of Expressions- Precedence of Arithmetic Operators-**Decision making and Branching-** Introduction - Decision Making with IF Statement - Simple IF Statement - The IF....ELSE Statement- Nesting of IF.....ELSE Statement- The Switch Statement - The ?: Operator- The GOTO Statement.

Unit III:- Decision Making and Looping- Introduction - The WHILE Statement- The DO Statement-The FOR Statement- **Arrays:** Introduction- One-dimensional Arrays- Two-dimensional Arrays-Initializing Two-dimensional Arrays.

Unit IV:- Handling of Character Strings - Introduction - Declaring and Initializing String Variables-Reading String from Terminal- Writing Strings to Screen - String handling Function- User-defined Functions- Introduction - Need for User-defined Function- A multi-function Program- Form of C function – Return values and Their types – Calling Function.

Unit V: Structures and Unions- Introduction – Structure Definition – Giving Values to members – structure initialization – Comparison of structure variables – Arrays of structures – Arrays within structures – Unions.

TEXT BOOK : "Programming in C" – E.Balagurusamy-2nd Edition Unit – I (1.4,2.1-2.10) Unit – II (3.1-3.9,3.11,3.12,5.1-5.5,5.7-5.9) Unit – III (6.1-6.4,7.1-7.4) Unit – IV (8.1-8.4,8.8,9.1-9.6) Unit – V(10.1 – 10.7,10.10)

REFERENCE BOOK : "Programming in C" – Ashok N.Kamthane

Allied Paper for B.Sc Mathematics PROGRAMMING IN C

UNIT-I

Overview of C : Introduction-Important of C-Sample C Programs-Basic Structure of C Program-Programming Style- Executing a C Program-**Constants**, **Variables ,and Data Types :** Introduction-Character Set-C tokens- Keywords and Identifiers- Constants-Variables-Data types- Declaration of Variables-Assigning values to Variables-Defining Symbolic Constants-**Operators and Expressions :** Introduction-Arithmetic of Operators-Relational Operators-Assignment Operators-Increment and Decrement Operators-Conditional Operators-Bitwise Operators-Special Operators-Arithmetic Operators-Evaluation of Expressions-Precedence of Arithmetic Operators-Some Computational Problems-Types Conversation in Expressions-Operator Precedence and Associativity-Mathematical Functions.

UNIT-II

Decision Making and Branching : Introduction-Decision making with IF Statement-Simple If Statement-The IF ElSE statement- Nesting of IF ...ElSE statement-The ELSE IF Ladder-The Switch statement-The ?: Operator-The GOTO statement-**Decision Making and Looping :** Introduction-The WHILE statement-The DO statement-The FOR statement-Jumps in loops-**Arrays :** Introduction-One Dimensional Array-Two Dimensional Arrays-Initializing two Dimensional Arrays – Multidimensional Array

UNIT-III

Handling of Character Strings : Introduction- Declaring and Initializing String Variable – Reading String from Terminal – Writing String to Screen – String Handling Function – **User-Defined Function :** Introduction -Need for User Defined Function – A Multi-Function Program – Form of C Function – Return Values and their types – Calling a Function – Category of Function – No argument and no return values – Argument but no return values – Argument with return values – Recursion.

UNIT-IV

Structures and Unions : Introduction- Structure Definition – Giving values of members – Structure Initialization – Comparison of Structure Variables- Arrays of Structures – Introduction to Pointers – Understanding Pointers – Accessing the address of Variable – Declaring and Initialization Pointer – Accessing a Variable through its Pointer – Pointer Expression- Pointer Increment and Scale Factor- Pointer and Arrays.

UNIT-V

Introduction of File Management in C- Defining and opening a file- Closing a file- Input/ output operation on file-Error Handling during I/O operations- Random access to files- Command Line arguments.

Text Book

1. Programming in C-E BALAGURUSAMY 2nd Edition

Reference Book-:

1. Programming in C Ashok N. Kamthane

Allied Paper for B.Sc Mathematics

OBJECT ORIENTED PROGRAMMING WITH C++

UNIT-I

A Look at Procedure oriented programming – Object Oriented Programming Paradigm – Basic Concepts of Object Oriented Programming - Benefits of OOPS-Object oriented languages-Applications of OOPS-What is C++?-Simple c++ program.

UNIT-II

Tokens-Keywords-Identifiers and constants-Basic data types-Use defined datatypes-derived data typessymbolic constants-Declaration of variables-operators in c++-Scope resolution operators-manipulatorscontrol structures-main functions –function prototyping-call by reference-return by reference.

UNIT-III

Specifying a class-defining member functions-c++ programs with class-constructors-parameterised constructors-Inheritence-defining derived classes-single level inheritence.

UNIT-IV

Multilevel inheritence-Multiple inheritance-hierarchial inheritance-hybrid inheritence-Basics of exception handling-exception handling mechanism-throwing mechanism.

UNIT-V

Introduction to pointers-pointers to objects-creating string objects-manipulating string objects-relational operations-string characteristics.

Text Book:

OBJECT ORIENTED PROGRAMMING WITH C++ - E.BALAGURUSWAMY. (2nd Edition). For unit I – chapter 1,2. For unit II – chapter 3,4. For unit III – chapter 5,6,8 For unit IV – chapter 8,13. For unit V – chapter 9,15.

REFERENCE BOOK; C++-Robert Lafore.