BHARATHIAR UNIVERSITY: COIMBATORE-641 046
B.Sc. COMPUTER SCIENCE
(For the students admitted from the academic year **2010-2011** and onwards)

SCHEME OF EXAMINATION - CBCS PATTERN

Part	Study Components	Course title	Ins. hrs/ week	Dur.Hrs	CIA	Marks	Total Marks	Credit
	Semester I							
I	Language – I		6	3	25	75	100	4
II	English – I		6	3	25	75	100	4
III	Core 1: C Programming		4	3	25	75	100	4
	Core 2: Digital Fundamentals and Architecture		4	3	25	75	100	4
	Core Lab 1: Programming Lab - C		3	3	40	60	100	4
	Allied 1: Mathematical Structures for Computer Science		5	3	25	75	100	4
IV	Environmental Studies #		2	3	-	50	50	2
	Semester II							
I	Language – II		6	3	25	75	100	4
II	English – II		6	3	25	75	100	4
III	Core 3: COBOL Programming		5	3	25	75	100	4
	Core Lab 2: Programming Lab – COBOL		4	3	40	60	100	4
	Core Lab 3: Programming Lab –Internet Basics		2	3	20	30	50	2
	Allied 2: Discrete Mathematics		5	3	25	75	100	4
IV	Value Education – Human Rights #		2	3	-	50	50	2
	Semester III							
	Core 4: Data Structures		6	3	25	75	100	4
III	Core 5: C++ Programming		6	3	25	75	100	4
III	Core Lab 3: Programming Lab - C++		5	3	40	60	100	4
III	Allied 3: Operation Research		6	3	25	75	100	4
IV	Skill based Subject I –- Software Engineering		5	3	20	55	75	3
IV	Tamil @ / Advanced Tamil# (OR) Non-major elective - I (Yoga for Human Excellence)# / Women's Rights#		2	3	50		50	2

	Semester IV						
III	Core 6: System Software and Operating System	6	3	25	75	100	4
	Core 7: Graphics and Multimedia	6	3	25	75	100	4
	Core Lab 4: Programming Lab - Graphics and Multimedia	6	3	40	60	100	4
	Allied 4: Business Accounting	6	3	25	75	100	4
IV	Skill based Subject 2 – Software Testing	4	3	20	55	75	3
IV	Tamil @ /Advanced Tamil # (OR) Non-major elective -II (General Awareness #)	2	3	50		50	2

Note :
1. The Syllabus for the above papers (except **Core 1 : C Programming, Core 2: Digital Fundamentals and Architecture, Core 4 : Data Structures, Core Lab 1 : Programming Lab C & Core Lab 3: Programming Lab –Internet Basics**) be the same as prescribed for the academic year 2008-09.

2. The syllabus for the Core 1 : C Programming, Core 2: Digital Fundamentals and Architecture, Core 4 : Data Structures, Core Lab 1 : Programming Lab C & Core Lab 3: Programming Lab – Internet Basics are furnished below :

CORE 1: C PROGRAMMING

Subject Description:

This subject deals with the concepts of C programming language.

Goal: To learn about C programming language concepts.

Objective:

On successful completion of this subject the students should have writing programming ability in C Programming

UNIT - I:

Overview of C - Introduction - Character set - C tokens - keyword & Identifiers - Constants - Variables - Data types - Declaration of variables - Assigning values to variables - Defining Symbolic Constants - Arithmetic, Relational, Logical, Assignment, Conditional, Bitwise, Special, Increment and Decrement operators - Arithmetic Expressions - Evaluation of expression - precedence of arithmetic operators - Type conversion in expression - operator precedence & associativity - Mathematical functions - Reading & Writing a character - Formatted input and output.

UNIT - II:

Decision Making and Branching : Decision Making with IF statement - Simple IF statement - The IF ELSE Statement – Nesting of IF ... ELSE statements - The ELSE IF ladder - The Switch statement - The ?: operator - The GOTO statement - Decision Making and Looping - The WHILE statement - The DO statement - The FOR statement - Jumps in Loops - Arrays - One Dimensional - Two Dimensional - Multidimensional arrays – Character & String Handling - Declaring and initializing string variables - Reading Strings from Terminal - Writing strings to Screen - Arithmetic operation on Character - Putting strings together -Comparison of two strings - String handling Functions - Table of Strings.

UNIT – III:

User-defined Functions - Need for user Defined functions – A Multi-function program – Elements of user defined functions – Definition of functions - Return values and their types - Function calls & declaration - Category of functions - No Arguments and no return values - Arguments but no return values - Arguments with return values- No Arguments but Returns a value- Functions that return multiple values - Nesting of functions - Recursion - Functions with Arrays & Strings - The scope,Visibility and lifetime of Variables in functions - ANSI C functions.

UNIT – IV:

Structure definition - Giving values to members - Structure initialization –Copying & Comparing structure variables – Operations on individual members - Arrays of structures - Arrays within structures - Structures within structures - Structures and functions - unions - size of structures - Bit fields.

Pointers - Understanding pointers - Accessing the Address of a variable - Declaring and initializing pointers - accessing a variable through its pointers – Chain of pointers - pointer expressions - pointer increments and scale factor - pointers and arrays - pointers and character strings – Array of pointers - pointers and functions - pointers and structures.

UNIT – V:

File management in C - Defining and opening a file - closing a file - I/O operations on files - Error handling during I/O operations - Random access to files - Command line arguments - The Preprocessor.

TEXT BOOK:
 1. E. Balagurusamy Programming in ANSI C - Tata Mc Graw Hill – 4th edition-2008.

REFERENCE BOOK:
1. Ashok N Kamthane: Programming with ANSI and Turbo C, Pearson Edition Publ, 2002.

2. Henry Mullish & Huubert L.Cooper: The Sprit of C, Jaico Pub. House, 1996.

B.Sc. Comp. Sci. 2010-11 revised   Annexure :42 A

Page 4 of 6   SCAA Dt. 23.03.2011

PRACTICAL LIST- PROGRAMMING LAB - C

1. Write a C program to find the sum, average, standard deviation for a given set of numbers.

2. Write a C program to generate "n" prime numbers.

3. Write a C program to generate Fibonacci series.

4. Write a C program to print magic square of order n where n > 3 and n is odd.

5. Write a C program to sort the given set of numbers in ascending order.

6. Write a C program to check whether the given string is a palindrome or not using pointers.

7. Write a C program to count the number of Vowels in the given sentence.

8. Write a C program to find the factorial of a given number using recursive function.

9. Write a C program to print the student's Mark sheet assuming rno, name, and marks in 5 subjects in a structure. Create an array of structures and print the mark sheet in the university pattern.

10. Write a function using pointers to add two matrices and to return the resultant matrix to the calling function.

11. Write a C program which receives two filenames as arguments and check whether the file contents are same or not. If same delete the second file.

12. Write a program which takes a file as command line argument and copy it to another file. At the end of the second file write i) no. of chars ii) no. of words and iii) no. of lines.

CORE 2 : DIGITAL FUNDAMENTALS AND ARCHITECTURE

Subject Description: This subject deals with fundamentals of digital computers, Microprocessors and System architecture.
Goal: To learn about Computer Fundamentals and its Architecture.
Objective: On successful completion of this subject the students should have Knowledge on Digital circuits, Microprocessor architecture, and Interfacing of various components.

UNIT-I: Number System and Binary Codes: Decimal, Binary, Octal, Hexadecimal – Binary addition, Multiplication, Division – Floating point representation, Complements, BCD, Excess3, Gray Code. Arithmetic Circuits: Half adder, Full adder, Parallel binary adder, BCD adder, Halfsubtractor, Full subtractor, Parallel binary subtractor - Digital Logic: the Basic Gates – NOR, NAND, XOR Gates.

UNIT-II: Combinational Logic Circuits: Boolean algebra – Karnaugh map – Canonical form 1 – Construction and properties – Implicants – Don't care combinations - Product of sum, Sum of products, simplifications. Sequential circuits: Flip-Flops: RS, D, JK, and T - Multiplexers – Demultiplexers – Decoder Encoder – shift registers-Counters.

UNIT-III: Input – Output Organization: Input – output interface – I/O Bus and Interface – I/O Bus Versus Memory Bus – Isolated Versus Memory – Mapped I/O – Example of I/O Interface. Asynchronous data transfer: Strobe Control and Handshaking – Priority Interrupt: Daisy-Chaining Priority, Parallel Priority Interrupt. Direct Memory Access: DMA Controller, DMATransfer. Input – Output Processor: CPU-IOP Communication.

UNIT-IV: Memory Organization: Memory Hierarchy – Main Memory- Associative memory: Hardware Organization, Match Logic, Read Operation, Write Operation. Cache Memory: Associative, Direct, Set-associative Mapping – Writing into Cache Initialization. Virtual Memory: Address Space and Memory Space, Address Mapping Using Pages, Associative Memory, Page Table, Page Replacement.

UNIT-V:
CASE STUDY: Pin out diagram, Architecture, Organization and addressing modes of 80286-80386-80486-Introduction to microcontrollers.

 TEXT BOOKS:
1. **Digital principles and applications, Albert Paul Malvino, Donald P Leach**, TMH,1996.
2.COMPUTER SYSTEM ARCHITECTURE - **M. Morris Mano**, PHI.
*3.***MICROPROCESSORS AND ITS APPLICATIONS-RAMESH S.GOANKAR**

REFERENCE BOOKS:
1. **DIGITAL ELECTRONICS CIRCUITS AND SYSTEMS - V.K. Puri**, TMH.
2. **COMPUTER ARCHITECTURE**, M.**Carter**, Schaum's outline series, TMH.

Core Lab 3: Programming Lab –Internet Basics

 List of Practical
1.To create an email-id.
2.To compose and send a mail.
3.To forward a mail and to reply for a mail.
4. To send a mail with an attachment.
5. To download the attached document of a mail received.
6. To send a mail to a large number of recipients using cc and bcc options.
7. To search a thing using a search engine.
8. To open and read newspaper sites, TV programmes schedules using   Internet.
9. To verify a university /college details by opening their websites.
10. To upload your resume with any one job portal.

CORE 4: DATA STRUCTURES

Subject Description: This subject deals with the data structures, the sorting algorithms and the concepts of files.

Goal: To learn about the various data structures and algorithms and their applications.

Objective: On successful completion of this subject the students should have:
- Understanding the concepts of data structures and algorithms
- Learning applications of data structures.

Objective: To make the students to understand the basic concepts of Data Structures
                And Algorithms.

UNIT - I: Introduction – Overview – *How to Create Programs* Analyze Them. Arrays – Structure – Ordered Lists – Representation of Arrays – Simple Applications.

UNIT - II: Stacks and Queues – Fundamentals – Structure – Operations – Multiple Stacks and Queues. Stack Applications: Evaluation of Expressions, Mazing Problem – Queue Application: Time Sharing.

UNIT- III: Linked lists: Singly Linked Lists – Linked Stacks and Queues – The Storage Pool – Applications: Polynomial Addition, Sparse Matrices. **Doubly Linked Lists:** Dynamic Storage Management – Garbage Collection and Compaction.

UNIT - IV: Trees: Basic Terminology – Binary Trees – Binary Tree Representation – *Binary Tree Traversal* – More on Binary Tree – Threaded Binary Trees – Binary Tree Representation of Trees – **Application of Tree:** Decision Trees. **Symbol Tables** – Static Tree – Dynamic Tree – Hash Tables: Hashing Functions Overflow Handling.

UNIT- V: Internal Sorting: Searching – Insertion Sort – Quick Sort – Two way Merge Sort – Heap Sort – Radix Sort: Files – Queries and Sequential Organizations – File Organizations – Sequential, Random, Linked Organizations, Inverted Files, Cellular Partitions.

TEXT BOOKS:
Ellis Horowitz and Sartaj Sahani, *Fundamentals of Data Structure*, Galgothia book source, 1999.
REFERENCE BOOKS:
Samanta, **D.** *Classic Data structure,* Prentice- Hall of India Pvt Ltd, Ninth edition, 2007.
Trembly & Sorenson, *Data Structures with Applications*, Tata McGraw Hill Company, 2nd Edition, 1991 (only for Queue application).