MONTHLY SYLLABUS

SESSION-2017-18

CLASS-XI

SUBJECT : COMPUTER SCIENCE (083)

LANGUGE-C++

MONTH	CONTENT
July 2017	**Classification of computers:** Basics of computer and its operation; Functional Components and their interconnections, concept of Booting. **Software concepts:** Types of Software — System Software, Utility Software and Application Software **System Software:** Operating System, Compiler, Interpreter and Assembler; **Operating System:** Need for Operating System, Functions of Operating System (Processor Management, Memory Management, File Management and Device Management), Types of Operating System-Interactive (GUI based), Time Sharing, Real Time and Distributed, Commonly used Operating System: UNIX, LINUX, Windows, Solaris, BOSS (Bharat Operating System Solutions); Mobile OS — Android, Symbian, 10S. **Utility Software:** Anti Virus, File Management tools, Compression tools and Disk Management tools (Disk Cleanup, Disk Defragmenter, Backup). **Open Source Concepts:** Open Source Software. Freeware. Shareware, and Proprietary Software. **Application Software:** Office Tools — Word Processor, Presentation Tool, Spreadsheet Package, Database Management System: Domain Specific tools — School Management System, Inventory Management System. Payroll System, Financial Accounting. Hotel Management, Reservation System and Weather Forecasting System.

	Number System: Binary, Octal, Decimal, Hexadecimal and conversion between different number systems. **Internal Storage encoding of Characters:** ASCII. ISCII (Indian Scripts Standard Code for Information Interchange). and UNICODE (for multilingual computing)
August 2017	**Microprocessor:** Basic concepts. Clock speed (MHz, GHz), 16 bit, 32 bit. 64 bit. 128 bit processors; Types — CISC Processors (Complex Instruction Set Computing), RISC Processors (Reduced Instruction Set Computing), and EPIC (Explicitly Parallel Instruction Computing). **Memory Concepts:** Units: Byte. Kilo Byte, Mega Byte, Giga Byte, Tera Byte, Peta Byte. Exa Byte, Zetta Byte, Yotta Byte. **Primary Memory:** Cache, RAM. ROM **Secondary Memory:** Fixed and Removable storage — Hard Disk Drive, CD/DVD Drive, Pen Drive, Blue Ray Disk. **Input Output Ports/ Connections:** Serial, Parallel and Universal Serial bus, PS-2 port, Infrared port. Bluetooth, Firewire. **Programming Methodology** **General Concepts:** Modular Approach. Clarity and Simplicity of Expressions, Use of proper names for Identifiers, Comments, Indentation; Documentation and Program Maintenance: Running and Debugging programs, Syntax Errors, Run-Time Errors, Logical Errors. **Problem Solving Methodologies:** Understanding of the problem, Solution for the problem, Identifying minimum number of inputs required for output, Writing code to optimizing execution time and memory storage, step by step solution for the problem, breaking down solution into simple steps (modular approach), Identification of arithmetic and logical operations required for solution; Control Structure-Conditional control and looping (finite and infinite).

	Problem Solving: Introduction to Algorithms/Flowcharts **UNIT TEST**
September 2017	Introduction to C++ **Getting Started:** C++ character set, C++ Tokens (Identifiers. Keywords, Constants, Operators,), Structure of a C++ Program (include files, main function), Header files — iostream.h, iomanip.h, cout, cin; use of I/O operators (<<and>>), Use of endl and setw ( ), Cascading of I/O operators, compilation, Error Messages; Use of editor, basic commands of editor, compilation, linking and execution. **Practical's to the related topics** **Revision for SA - I Exam.**
	Summative Assessment SA-1 **1st Term Examination(2017-18)**
October 2017	**Discussion of question paper of SA-1** **Data Types, Variables and Constants:** Concept of Data types; Built-in Data types: **char, int , float** and **double**; Constants: Integer Constants Character constants (- 1n, 1t, 1b), Floating Point Constants, String Constants; Access modifier: const; Variables of built-in-data types, Declaration/Initialization of variables, Assignment statement, Type modifier: **signed, unsigned, long** **Operator and Expressions:** Operators: Arithmetic operators (-,+,*,/,%), Assignment operator (=), c++ shorthands (+=, -=,*=,/=,%=) Unary operators (-), Increment (++) and Decrement (--) Operators, Relational operator (>,>=,<=,=,!=), Logical operators (!,&&,II), Conditional operator: <condition>?<if—true>:<if false>: Precedence of Operators: Automatic type conversion in expressions, Type casting: **PROGRAMMING IN C++** **Flow of control** **Conditional statements: if else,** Nested **if, switch.. case..default**, use of conditional operator. Nested **switch..case, break** statement (to be used in **switch..case only**); **Loops:**

	while, do – while, for and Nested loops

Header File Categorization	Header File	Function
Standard input/output function	Stdio.h	gets ( ), puts ( )
Character Functions	Ctype.h	isalnum ( ). isalpha ( ), isdigit ( ), islower ( ), isupper ( ), tolower ( ), Toupper ( )
		stropy ( ), strcat ( ), Strien ( ), Stromp ( ),
String Function	String. h	strompi ( ), strrev ( ), Strupr ( ), striwr ( )
Mathematical functions	Math.in	fabs ( ), pow ( ), sqrt ( ), sin ( ), cos ( ), abs ( )

November 2017	**Introduction to user-defined function and its requirements**. Defining a function: function prototype. Invoking/calling a function, passing arguments to function, specifying argument data types, default argument, constant argument. call by value, call by reference. returning values from a function, calling functions with arrays. scope rules of variables: local and global variables. Relating to Parameters and return type concepts in built-in functions.
December 2017	**Structured Data Type** **Arrays:** Introduction to Array and its advantages. **One Dimensional Array:** Declaration/initialization of One-dimensional array, Accepting array elements, accessing array elements, manipulation of array elements (sum of elements, product of elements, average of elements, linear search, finding

4

	maximum/minimum value).
	Declaration / Initialization of a String, string manipulations (counting vowels/ consonants/ digits/ special characters, case conversion. reversing a string, reversing each word of a string)

Two-dimensional Array: Declaration/initialization of a two-dimensional array, inputting array elements, accessing array elements, manipulation of Array elements (sum of row element. column elements. diagonal elements, finding maximum / minimum values) |
| | **WINTER BREAK** |
| January to February 2018 | **User-defined Data Types:** Introduction to user defined data types.
Structure: Defining a Structure (Keyword Structure). declaring structure variables, accessing structure elements, passing structure to functions as value and reference, argument/parameter, function returning structure, array of structure, passing an array of structure as an argument/ a parameter to a function.
Defining a symbol name using **typedef** keyword and defining a macro using **#define preprocessor** directive.
Revision for SA-II Examination. |
| March 2018 | **SA-II Examination 2017-18** |

Note :- SA-II Examination will include the syllabus covered in SA-I

Class- XI (Practical)- C++

Duration : 3 Hours   **Total Marks : 30**

1.   Programming in C++   **10**
One programming problem in C++ to be developed and tested on Computer during the examination Marks are allotted on the basis of following:

    Logic   : 6 Marks
    Documentation   : 2 Marks

Output Presentation   : 2 Marks

2.   Project Work   6+4*

Problems using String, Number, array and structure manipulation General
Guidelines: Initial Requirement, developing an interface for user (it is advised to use text based interface screen), developing logic for playing the game and developing logic for scoring points.

Memory game: A number guessing game with application of 2 dimensional arrays containing randomly generated numbers in pairs hidden inside boxes.

Hollywood/Hangman: A word Guessing game

Cows 'N Bulls: A word/number Guessing game

Random Number Guessing Game (High\Low)

A game to check whether a word does not use any of the forbidden letters

Cross 'N knots game: A regular tic-tac —toe game.

                                    Or

Similar projects may be undertaken in other domains. (As mentioned in general guidelines for project, given at the end of the curriculum in a group of 2-4 students)

* Collaboration and Presentation of the project

3. Practical File   5+1*
a) Record of the configuration of computer system used by the student in the computer lab (by exploring inside computer system in the first 2 lab classes).
 b) Must have minimum 20 programs from the topics covered in class XI course.
Programs on Control structures
Programs on String manipulations
Programs on array manipulations (10 & 2D)
Programs on structures.
*1 mark is for innovating while developing programmes.

4. Viva Voce 4

Viva will be asked from the syllabus covered in class XI and the project developed by the student(s). *1 mark is for innovating while developing programme.