

**KENDRIYA VIDYALAYA SANGATHAN BHUBANESWAR REGION**  
**SPLITUP SYLLABUS FOR COMPUTER SCIENCE 2015-2016**  
**CLASS XI**

Month	Portion to be covered	Th	Prac
July 2015	<p><b>Computer Fundamentals</b>  <b>Classification of computers:</b> Basics of computer and its operation; Functional Components and their interconnections, concept of Booting.  <b>Software concepts:</b> Types of Software – System Software, Utility Software and Application Software  <b>System Software:</b> Operating System, Compiler, Interpreter and Assembler;  <b>Operating System:</b> 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.  <b>Utility Software:</b> Anti Virus, File Management tools, Compression tools and Disk Management tools(Disk Cleanup, Disk Defragmenter, Backup).  <b>Open Source Concepts:</b> Open Source Software, Freeware, Shareware, and Proprietary Software.  <b>Application Software:</b> 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.  <b>Number System:</b> Binary, Octal, Decimal, Hexadecimal and conversion between different number systems.  <b>Internal Storage encoding of Characters:</b> ASCII, ISCII (Indian Scripts Standard Code for Information Interchange), and UNICODE (for multilingual computing)  <b>Microprocessor:</b> 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).  <b>Memory Concepts:</b> Units: Byte, Kilo Byte, Mega Byte, Giga Byte, Tera Byte, Peta Byte, Exa Byte, Zetta Byte, Yotta Byte.  <b>Primary Memory:</b> Cache, RAM, ROM  <b>Secondary Memory:</b> Fixed and Removable storage – Hard Disk Drive, CD/DVD Drive, Pen Drive, Blue Ray Disk.  <b>Input Output Ports/ Connections:</b> Serial, Parallel and Universal Serial Bus, PS-2 port, Infrared port, Bluetooth, Firewire.  <b>Programming Methodology:</b>  <b>General Concepts:</b> 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  <b>Problem Solving Methodologies:</b> 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).  <b>Problem Solving:</b> Introduction to Algorithms/Flowcharts.</p>	25	8
Aug-2015	<p><b>Introduction to C++</b>  <b>Getting Started:</b> C++ character set, C++ Tokens (Identifiers, Keywords, Constants, Operators, ), Structure of a C++ Program (include files, main function), Header files – iostream.h, iomanip.h, <b>cout, cin</b>; use of I/O operators (&lt;&lt;and&gt;&gt;), Use of endl and setw ( ), Cascading of I/O operators, compilation , Error Messages; Use of editor, basic commands of editor, compilation, linking and execution.  <b>Data Types, Variables and Constants:</b> Concept of Data types; Built-in Data types: <b>char, int, float and double</b>; Constants: Integer Constants, Character constants (- \n, \t, \b), Floating Point Constants, String Constants; Access modifier: <b>const</b>; Variables of built-in-data types, Declaration/Initialization of variables, Assignment statement, Type modifier: <b>signed, unsigned, long</b>  <b>Operator and Expressions:</b> Operators: Arithmetic operators (-, +, *, /, %), Assignment operator (=), c++ shorthands (+=, -=, *=, /=, %=) Unary operators (-), Increment (++) and Decrement (--)  Operators, Relation operator (&gt;, &gt;=, &lt;=, =, !=), Logical operators (!, &amp;&amp;,   ), Conditional operator: &lt;condition&gt;?&lt;if false&gt;; Precedence of</p>	23	9

	Operators; Automatic type conversion in expressions, Type casting;		
Sep-2015	<b>PROGRAMMING IN C++</b> <b>Flow of control</b> <b>Conditional statements:</b> <b>if else</b> , Nested <b>if</b> , <b>switch..case..default</b> , use of conditional operator, Nested <b>switch..case</b> , <b>break</b> statement (to be used in <b>switch..case only</b> ); <b>Loops:</b> <b>while</b> , <b>do-while</b> , <b>for</b> and Nested loops Inbuilt Functions: gets (), puts (), isalnum (), isalpha (), isdigit (), islower (), isupper (), tolower (), toupper (), strcpy (), strcat (), strlen (), strcmp (), strcmpi (), strev (), strupur (), strlwr (), fabs (), pow (), sqrt (), sin (), cos (), abs (), randomize (), random ()	23	9
Oct-2015	<b>Introduction to user-defined function and its requirements.</b> 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 functions and variables local and global variables. Relating to Parameters and return type concepts in built-in functions.	17	9
Nov-2015	<b>Structured Data Type</b> <b>Arrays:</b> Introduction to Array and its advantages. <b>One Dimensional Array:</b> Declaration/initialization of One-dimensional array, Inputting array elements, accessing array elements, manipulation of array elements (sum of elements, product of elements, average of elements, linear search, finding 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)	21	9
Dec-2015	<b>Two-dimensional Array:</b> 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)	19	9
Jan-2016	<b>User-defined Data Types:</b> Introduction to user defined data types. <b>Structure:</b> 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/ aparameter to a function. Defining a symbol name using <b>typedef</b> keyword and defining a macro using <b>#define preprocessor</b> directive.	22	9
Feb-2016	<b>Revision and SE Practical</b>	23	9

**List of suggested Practical for Class XI CS 2015-16**

Sl.No.	Name of Practical
	Flow of control ( If Else ) :
1	To Find the greater number between given two numbers.
2	Find the greatest number between give three numbers.
3	To check if the given number is even or odd.
4	To find the grade of a student from his/her marks using if statements.
5	Temperature converter.
6	To check if the given input is a number, character or a special character.
	Flow Of Control ( Switch Case ) :
7	Arithmetic Calculator.
8	Day Of the week.
	Flow Of Control ( For Loop ) :
9	To print 'n' natural numbers.
10	To print 'n' Even numbers.
11	To print 'n' odd numbers.
12	To find the sum of 'n' natural numbers.
13	To find the sum of 'n' even numbers.

14	To find the sum of 'n' odd numbers.
15	To find the factorial of a number.
	Flow Of Control ( While Loop ) :
16	Check for Armstrong Numbers.
17	Reverse of a number.
18	Sum of individual digits of a number.
19	Binary to Decimal
20	Decimal to Binary.
21	Check for Prime number.
22	Print Fibonacci Series.
23	HCF of two numbers.
24	Check for Armstrong Number
	Nested Loops :
25	<p>Write a menu based c++ program using functions to do the following:</p> <p>(i) Print the pyramid:  1  1 2  1 2 3  1 2 3 4  1 2 3 4 5</p> <p>(ii) Print the pyramid:  1 2 3 4 5  1 2 3 4  1 2 3  1 2  1</p> <p>(iii) Print the pyramid:  5 4 3 2 1  5 4 3 2  5 4 3  5 4  5</p> <p>(iv) Print the pyramid:  5  5 4  5 4 3  5 4 3 2  5 4 3 2 1</p>
26	<p>Write a C ++ program to print the pyramid</p> <pre>       1      1 2     1 2 3 </pre>
	Library Functions
27	Write a C++ program to check whether an input character is Alphabet, numeric or special character.
28	Write a C++ program to change the case of a character from lower case to upper case and vice-versa.
	User Defined Functions
29	Print the series of factorials of natural numbers up to n.
30	Print the series of Prime numbers up to n.
31	Print the series of Armstrong numbers up to n.
	Arrays
32	Maximum and minimum of an integer array.
33	Sum of the elements of an integer array.
34	Reversing the integer array.
	Array of Characters (Strings)
35	Reverse of a String.
36	Check for Palindrome.

37	Conversion to sentence case
38	Word Count of a string.
	2 D Array of Integers
39	Print the diagonals of a 2D integer array.
40	Print the upper half of a 2D integer array
41	Print the lower half of a 2D integer array
42	Print the row-sum
43	Print the Column Sum
44	Row swap
45	Column Swap
	Array of Strings
46	Write a C++ program to find the largest string from an array of strings.
	Structures
47	Write a menu base c++ application to do the following: To create a Structure named student with rollno, name, dob(dd-mm-yyyy) and marks. To Accept the data for array of structures (n elements).To print the data for all the elements in an organized way. To display the student details with highest marks.
48	Write a class Student with the following description: Private members: Rollno Integer, name String, marks Integer getgrade() should return the grade as 'A' if marks is greater than 90 or else return 'B' Public members: Setdata() to insert the values to the private members., Display() to display the details along with grade. Write the main() function and invoke the object.
49	Write a menu driven program to do the following in text file handling: <ul style="list-style-type: none"> <li>• Write a C++ function to count the number of occurrence of character passed as the parameter of the function.</li> <li>• Write a C++ Function that counts the number of articles("A", "An" and "The") in a given text files.</li> <li>• Write a C++ function that transfers all the vowels from "source.txt" to "target.txt".</li> <li>• Write a C++ function to count the number of lines starting with an alphabet passed as parameters.</li> <li>• Write a C++ function that counts the number of lines starting with the word "the".</li> <li>• Write a C++ function that calculates the average word count in a text file</li> </ul>
50	Write a menu Based application to do the following on Binary file :- class Student{ int rollno; char name[20]; int marks; public: void setdata();//to acquire data for the student from user void showdata();// to display the student data for all students int getmarks(){ return marks;} void givegrace(){marks=33;}; <ul style="list-style-type: none"> <li>• Write functions to insert objects in "student.dat" file.</li> <li>• Write function to display objects from the "student.dat" file</li> <li>• Search all the objects whose marks are between 28 and 32, apply givegrace() function and write back to the file.</li> </ul>

51	Write a program to perform the following in 1-D array. <ul style="list-style-type: none"><li>• Linear search.</li><li>• Binary search.</li></ul>
52	Write a program to perform the following in 1-D array. <ul style="list-style-type: none"><li>• Selection sort.</li><li>• Insertion sort.</li><li>• Bubble Sort</li></ul>
53	Array implementation of Stack and Queue.
54	Array implementation of Circular Queue.
55	Linked List implementation of Stack.
56	Linked list implementation of Queue.
57	Questions on My SQL. My SQL queries based on student table.(10 Queries) My SQL queries based on staff table.(10 Queries) My SQL queries based on Employment(EMP) and Department(DEP) table.(10 Queries) My SQL queries based on Music store and album table.(10 Queries)