

KENDRIYA VIDYALAYA SANGATHAN BHUBANESWAR REGION
SPLITUP SYLLABUS FOR COMPUTER SCIENCE 2015-16
CLASS XII

MONTH	PORTION TO BE COVERED	THEORY	PRACTICAL
April-May 2015	<p>REVIEW: C++ covered In Class - XI,</p> <p>Object Oriented Programming: Concept of Object Oriented Programming - Data hiding, Data encapsulation, Class and Object, Abstract class and Concrete class, Polymorphism (Implementation of polymorphism using Function overloading as an example in C++); Inheritance, Advantages of Object Oriented Programming over earlier programming methodologies,</p> <p>Implementation of Object Oriented Programming concepts in C++: Definition of a class, Member of a class - Data Members and Member Functions (methods), Using Private and Public visibility modes, default visibility mode (private); Member function definition: inside class definition and outside class definition using scope resolution operator (::); Declaration of objects as instances of a class; accessing members from object (s), Objects as function arguments-pass by value and pass by reference;</p> <p>Function Overloading: Need for Function Overloading, Declaration and Definition, Restrictions on Overloaded Functions, Calling Overloaded Functions</p> <p>(Monthly Test 1)</p>	22	18
June-July 2015	<p>Constructor and Destructor: Constructor: special characteristics, declaration and definition of a constructor, default constructor, overloaded constructors, copy constructor, constructor with default arguments; Destructor: Special Characteristics, declaration and definition of destructor</p> <p>Inheritance (Extending Classes): Concept of Inheritances, Base Class, Derived classes, protected visibility mode; Single level inheritance, Multilevel inheritance and Multiple inheritance, Privately derived, publicly derived and Protectedly derived class, accessibility of members from objects and within derived class (es);</p> <p>Data File Handling: Need for a data file, Types of data files - Text file and Binary file;</p> <p>Text File: Basic file operations on text file: Creating/Writing text into file, Reading and Manipulation of text from an already existing text File (accessing sequentially).</p> <p>(Monthly Test 2)</p>	33	15
Aug-2015	<p>Binary File: Creation of file, Writing data into file, Searching for required data from file, Appending data to a file, Insertion of data in sorted file, Deletion of data from file, Modification of data in a file;</p> <p>Implementation of above mentioned data file handling in C++;</p> <p>Components of C++ to be used with file handling:</p> <p>Header file: fstream.h; ifstream, ofstream, classes;</p> <p>Opening a text file in in, out, and app modes;</p> <p>Using cascading operators (>><<) for writing text to the file and reading text from the file; open(), get (), read () put (), write(), getline() and close() functions; Detecting end-of-file (with or without using eof() function), tellg(), tellp(), seekg().seekp();</p> <p>Pointers:</p> <p>Introduction to Pointer, Declaration and Initialization of Pointer; Dynamic memory allocation/deallocation operators: new, delete; Pointers and Arrays: Array of Pointers, Pointer to an array (1 dimensional array), Function returning a pointer, Reference variables and use of alias; Function call by reference. Pointer</p>	23	9

	to structure: De-reference/Deference operator: *, ->; self-referential structure; (Monthly Test 3)		
Sep-2015	<p>Data Structures Introduction to data structure- array, stack queues primitive and non-primitive data structure, linear and non-linear structure, static and dynamic data structure. Arrays: One and two Dimensional arrays: Sequential allocation and address calculation;One dimensional array: Traversal, Searching (Linear, Binary Search), Insertion of an element in an array, deletion of an element from an array, Sorting (Insertion, Selection, Bubble) Two-dimensional arrays: Traversal Finding sum/difference of two NxM arrays containing numeric values, Interchanging Row and Column elements in a two dimensional array; Stack (Array and Linked implementation of Stack): Introduction to stack (LIFO_Last in First out Operations) Operations on stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression; Queue: (Array and Linked Implementation) Introduction to Queue (FIFO - First in First out operations) Operations on Queue (Insert and Delete and its Implementation in C++, circular queue using array. (Monthly Test 4) Distribution of Project to groups</p>	23	9
Oct-2015	<p>UNIT 3: DATABASES AND SQL Data base Concepts: Introduction to data base concepts and its need. Relational data model: Concept of domain, tuple, relation, key, primary key, alternate key, candidate key; Relational algebra : Selection, Projection, Union and Cartesian product; Structured Query Language: General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language; Data Types: NUMBER/DECIMAL, CHARACTER/VARCHAR/VARCHAR2, DATE; SQL COMMANDS: CREATE TABLE, DROP TABLE, ALTER TABLE, UPDATESET....., INSERT, DELETE; SELECT, DISTINCT, FROM, WHERE, IN, BETWEEN, GROUP BY, HAVING, ORDER BY; SQL functions: SUM (), AVG (), COUNT (), MAX () AND MIN (); Obtaining results (SELECT query) from 2 tables using equi-join, Cartesian product and Union Note: Implementation of the above mentioned commands could be done on any SQL supported software on one or two tables.</p> <p>UNIT 4: BOOLEAN ALGEBRA Role of Logical Operations in Computing. Binary-valued Quantities, Boolean Variable, Boolean Constant and Boolean Operators: AND, OR, NOT; Truth Tables; Closure Property, Commutative Law, Associative Law, Identity law, Inverse Law, Principle of Duality, Idempotent Law, Distributive Law, Absorption Law, Involution Law, DeMorgan's Law and their applications; (Monthly Test 5)</p>	17	9
Nov-2015	Obtaining Sum of Product (SOP) and Product of Sum (POS) form the Truth Table, Reducing Boolean Expression (SOP and POS) to its minimal form, Use of Karnaugh Map for minimization of Boolean expressions (up to 4 variables);	21	9

	<p>Application of Boolean Logic: Digital electronic circuit design using basic Logic Gates (NOT, AND, OR, NAND, NOR) Use of Boolean operators (NOT, AND, OR) in SQL SELECT statements Use of Boolean operators (AND, OR) in search engine queries.</p> <p>Communication Technologies Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching). Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps). Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link. Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, wifi card. Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN. Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, SMTP, POP3 Remote Login (Talent), and Internet Wireless/Mobile Communication protocol such as GSM, CDMA, GPRS, and WLL. Mobile Telecommunication Technologies : 1G, 2G, 3G and 4G Electronic mail protocols such as SMTP, POP3; Protocols for Chat and Video Conferencing VOIP Wireless technologies such as Wi-Fi and WiMax</p> <p>Network Security Concepts: Threats and prevention from Viruses, Worms, Trojan horse, Spams Use of Cookies, Protection using Firewall. India IT Act, Cyber Law, Cyber Crimes, IPR issues, hacking. Introduction To Web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Website, Web browser, Web Servers; Web Hosting, Web Scripting - Client side (Half Yearly Exam)</p>		
Dec-2015	Revision and Project Completion Pre-Board I	19	9
Jan-2016	Revision and Project Submission Pre-Board II	22	9
Feb-2016	Revision AISSCE Practicals	23	9

List of suggested Practicals for Class XII CS

S No	Name of Practical
1	Write a menu based C++ program to do the following (Use user defined functions in each case): 1. Check for Prime number 2.Reverse of a number 3.Sum of individual digits of a number
2	Write a menu based C++ program to do the following (Use user defined functions in each case): 1.Reversing the 1 D integer Array 2.Swapping the first half with the second half in an 1D integer array

3	<p>Write a menu based C++ program to do the following (Use user defined functions in each case):</p> <p>1. Swapping the top half rows with the bottom half rows in a 2D integer array 2. Swapping the left half columns with the right half columns in a 2D integer array.</p> <p>3. Transpose of a 2D integer array</p>
4	<p>Write a menu based C++ program to do the following (Use user defined functions in each case):</p> <p>1. Reverse of a String 2. Word count 3. Vowel count</p>
5	<p>Write a C++ function to return the largest string from an array of strings and implement in a program.</p>
6	<p>Write a c++ program to implement an array of structures for Student (rollno, name, marks). The program should contain functions to add a student, display the student list and display the student details having highest marks.</p>
7	<p>Write a class Hotel in c++ with following description:</p> <p>Private members:</p> <p>Rno // Data member to store Room No</p> <p>Name // Data member to store customer name</p> <p>Tarrif // Data member to store per day charges</p> <p>Days // Number of days of stay</p> <p>Calculate() // A function to calculate and return the amount days*tarrif. If the product is greater than 5000 then return 1.05*days*tarrif</p> <p>Public members:</p> <p>Checkin() // A function to enter Rno, Name, Tarrif and days</p> <p>Display() // A function to display Rno, Name, Tarrif, days and total amount as per the called Calculate() function</p> <p>Instantiate the class and write the main function as needed.</p>
8	<p>Write a class Student with the following description: Private members:</p> <p>Rollno Integer</p> <p>name String</p> <p>marks Integer</p> <p>getgrade() should return the grade as 'A' if marks is greater than 90 or else return 'B'</p> <p>Public members:</p> <p>Setdata() to insert the values to the private members.</p> <p>Display() to display the details along with grade.</p> <p>Write the main() function and invoke the object.</p>

9	<p>Write a menu driven program to do the following in text file handling:</p> <ul style="list-style-type: none"> • Write a C++ function to count the number of occurrence of character passed as the parameter of the function. • Write a C++ Function that counts the number of articles("A", "An" and "The") in a given text files. • Write a C++ function that transfers all the vowels from "source.txt" to "target.txt". • Write a C++ function to count the number of lines starting with an alphabet passed as parameters. • Write a C++ function that counts the number of lines starting with the word "the". • Write a C++ function that calculates the average word count in a text file
10	<p>Write a menu Based application to do the following on Binary file :-</p> <pre>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;}};</pre> <ul style="list-style-type: none"> • Write functions to insert objects in "student.dat" file. • Write function to display objects from the "student.dat" file • Search all the objects whose marks are between 28 and 32, apply givegrace() function and write back to the file.
11	<p>Write a program to perform the following in 1-D array.</p> <p>1.Linear search. 2.Binary search.</p>
12	<p>Write a program to perform the following in 1-D array.</p> <p>1. Selection sort. 2.Insertion sort. 3.Bubble Sort</p>
13	Array implementation of Stack and Queue.
14	Array implementation of Circular Queue.
15	Linked List implementation of Stack.
16	Linked list implementation of Queue.
17	<p>Questions on My SQL.</p> <p>My SQL queries based on student table.(10 Queries)</p> <p>My SQL queries based on staff table.(10 Queries)</p> <p>My SQL queries based on Employment(EMP) and Department(DEP) table.(10 Queries)</p> <p>My SQL queries based on Music store and album table.(10 Queries)</p>