MONTHLY SYLLABUS
SESSION-2017-18
CLASS-XII
SUBJECT : COMPUTER SCIENCE
LANGAUGE – C++

MONTH	CONTENT
April 2017	**REVIEW: C++ covered In Class -XI,** 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; **Practicals to the related topics:** **Implementation of Object Oriented Programming concepts in C++:** Definition of a class, Members of a class - Data Members and Member Functions (methods), Using Private and Public visibility modes, default visibility mode; 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; **Practicals to the related topics:** **Function Overloading:** Concept **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; **Practicals to the related topics:**

	Inheritance (Extending Classes): Concept of Inheritance, Base Class, Derived Class, Defining 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); **Practicals to the related topics:**
May 2017	**Data File Handling:** Need for a data file, Types of data files - Text file and Binary file; 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): **Practical's to the related topics:** **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; Implementation of above mentioned data file handling in C++: **Practicals to the related topics:** **UNIT TEST**
July 2017	**Components of C++ to be used with file handling**: Header file: fstream.h; ifstream, ofstream, fstream classes; Opening a text file in in, out. and app modes;Using cascading operators (>> <<)for writing text to the file and reading text from the file; open(), get(), put(), getline() and close() functions; Detecting end-of-file (with or without using eof() function); **Practical's to the related topics:** Opening a binary file using in, out, and app modes; open(), read(), write() and close() functions; Detecting end-of-file (with or without using eof() function): tellg(), tellp(), seekg(), seekp() functions. **Practical's to the related topics:** **Pointers:** Introduction to Printer. Declaration and Initialization of Pointers; Dynamic memory allocation/reallocation operators: new, delete; Pointers and Arrays: Array of Pointers, Pointer to

	an array (1 dimensional array): **Practical's to the related topics:** Function returning a pointer, Reference variables and use of alias; Function call by reference. Pointer to structures: Dereference operator *, >; self referential structures; **Practical's to the related topics:**
August 2017	**DATA STRUCTURES :** Introduction to data structure, 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: **Revision- 2 days:** **Practical's to the related topics:** **One dimensional array:** Traversal, Searching (Linear, Binary earch). Insertion of an element in an array, deletion of an element from an array, Sorting (Insertion, Selection, Bubble) **Two-dimensional arrays: Practical's to the related topics:** Traversal, Finding sum/difference of two N X M arrays containing numeric values, Interchanging Row and Column elements in a two dimensional array; **Practical's to the related topics:** **Stack** (Array and Linked List implementation of Stack): Operations on Stack (PUSH and POP) and its Implementation in C++. Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression; **Practical's to the related topics:**
September 2017	**Queue:** (Array, Circular Array and Linked List Implementation) Queue (FIFO - First in First out operations) Operations on Queue (Insert and Delete) and its Implementation in C++ . **Practical's to the related topics** **Revision for SA - I Exam.**
	Summative Assessment SA-I **Ist Term Examination (2017-18)** **Second Term October-2017 to March-2018**

October 2017	**Discussion of question paper of SA-I** **DATABASE AND SQL:** Database 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, DATE,VARCHARNARCHAR2 , **Practical's to the related topics:** **SQL commands:** CREATE TABLE, DROP TABLE, ALTER TABLE,UPDATE..SET.., 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; **Practical's to the related topics:** **BOOLEAN ALGEBRA:** Role of Logical Operations in Computing. Binary-valued Quantities, Logical Variable, Logical Constant and Logical Operators: AND, OR, NOT; Truth Tables; Closure Property, Commutative Law, Associative Law, Identity law, Inverse law, Principle of Duality, ldem potent Law, Distributive Law. Absorption Law. Involution law, Demerger's Law and their applications; Obtaining Sum of Product (SOP) and Product of Sum (POS) form from 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); Application of Computing Logic: Logic Gates (NOT, AND, OR, NAND. NOT), Use(AND, OR) in search engine queries;
November 2017	**COMMUNICATION AND OPEN SOURCE CONCEPTS:** Evolution of Networking: ARPANET, Internet. Interspace, Different ways of sending data across the network with reference to switching techniques (Circuit, Message and Packet switching) Data Communication terminologies: Concept of

	Channel, Baud. Bandwidth (Hz, KHz, MHz) and Data transfer ate (bps. kbps, Mbps, Gbps, Tbps) **Transmission media:** Twisted pair cable,coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link, Network devices: odem, RJ45 connector, Ethernet Card, Hub. Switch,Gateway Network Topologies and types: Bus, Star, Tree; PAN, LAN, WAN, MAN Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, Remote Login (Telnet), Internet Wireless/Mobile Communication protocol such as GSM. CDMA. GPRS. WLL; **Revision:** 1G, 2G and 3G Electronic mail protocols such as SMTP, POP3 Protocols for Chat and Video Conferencing VoIP protocols such as Wi-Fi and WiMax ; 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. **WebServices:** • WWW. Hyper Text Markup Language (HTML).eXtensible Markup Language (XML); Hyper Text Transfer Protocol (HTTP); Domain Names; URL; Protocol Address; **Revision:** Website, Web browser, WebServers: Web Hosting, Web Scripting -Client side (VB Script, Java Script, PHP) and Server side (ASP. JSP, PHP), Web 2.0 (for social networking)Open Standards Introduction to open standards and its advantage in development of inter-operable environment. Open Source Concepts Proprietary and Open Source Software, Freeware. Shareware, FLOSS/FOSS,GNU.FSF, OSI,W3C **Revision**
December 2017	Revision and Practice from Sample papers for Mock Test. **MOCK TEST** Mock Test paper discussion. Practice from CBSE sample papers. Remedial classes.
January to February 2018	**Common Pre-Board school Examination** Revision and Board Practical Examination.

March 2018	**Board Examination 2017-18**

Practical File :

Must have minimum 20 programs.
15 SQL commands along with the output based on any table/relation

Project Work :

The project has to be developed in C++ with Object Oriented Technology. (The project is required to be developed in a group of 2-3 students). Project report (Listing .Sample . Outputs , Documentation). Project for class XII should ensure the coverage of following areas of curriculum

a) Problem Solving.
b) Object Oriented Programming in C++.
c) File handling.