

KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION
SPLIT-UP SYLLABUS (2017-18)
CLASS – XII : COMPUTER SCIENCE (THEORY)

MONTH	PORTION TO BE COVERED	THEORY	PRACTICAL
APRIL- MAY	<p><u>Unit 1 Object Oriented Programming in C++</u> 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, Function Overloading: Need for Function Overloading, Declaration and Definition, Restrictions on Overloaded Functions, Calling Overloaded Functions 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; 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>	20	20
JUNE-JULY	<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); 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). Binary File: Creation of file, Writing data into file, Searching</p>	22	16

	<p>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++;</p> <p>Components of C++ to be used with file handling: Header file: fstream.h; ifstream, ofstream, 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 (), read () put (), write(), getline() and close() functions; Detecting end-of-file (with or without using eof() function), tellg(), tellp(), seekg().seekp());</p>		
<p>PERIODIC TEST – I PORTION: 1. REVIEW: C++ covered In Class – XI, Function Overloading (14) 2. Implementation of Object Oriented Programming concepts in C++ (02 + 04 = 06) 3. Constructor and Destructor (02 + 02 = 04) 4. Inheritance (06) 5. Data File Handling(10)</p> <p>MAXIMUM MARKS: [14 + 6 + 4 + 6 + 10 = 40 Marks] DURATION: 90 Minutes</p>			
AUG	<p>Pointers: Introduction to Pointer, Declaration and Initialization of Pointer; Dynamic memoryallocation/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 to structure: De-reference/Deference operator: *, ->; self-referential structure;</p> <p><u>UNIT-2 Data Structures</u> 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</p>	8	4
		22	18

	and Column elements in a two dimensional array;		
PERIODIC TEST – II PORTION: 1. Data File Handling (10) 2. Pointers(10) 3. Arrays (20) MAXIMUM MARKS: [10 + 10 + 20 = 40 Marks] DURATION: 90 Minutes			
<u>SEP</u>	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. <u>UNIT-3 DATABASES AND SQL</u> 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;	20	18
		6	2
<u>OCT</u>	<u>STRUCTURED QUERY LANGUAGE:</u> General Concepts: Advantages of using SQL, Data Definition Language and Data Manipulation Language; DataTypes: 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 (SELECTquery) 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. <u>UNIT-4 BOOLEAN ALGEBRA</u> Role of Logical Operations in Computing. Binary-valued	14	18
		16	0

	<p>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;</p> <p>Obtaining Sum of Product (SOP) and Product of Sum (POS) 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);</p> <p>Application of Boolean Logic: Digital electronic circuit design using basic Logic Gates (NOT, AND, OR, NAND, NOR)</p> <p>Use of Boolean operators (NOT, AND, OR) in SQL SELECT statements</p> <p>Use of Boolean operators (AND, OR) in search engine queries.</p>		
<p>HALF YEARLY EXAMINATION PORTION</p> <p>1. Up to Unit – 4 (Boolean Algebra)</p> <p>MAXIMUM MARKS: 70</p> <p>DURATION: 180 Minutes</p>			
<p><u>NOV</u></p>	<p><u>UNIT-5 COMMUNICATION TECHNOLOGIES</u></p> <p>Evolution of Networking: ARPANET, Internet, Interspace Different ways of sending data across the network with reference to switching techniques (Circuit and Packet switching).</p> <p>Data Communication terminologies: Concept of Channel, Bandwidth (Hz, KHz, MHz) and Data transfer rate (bps, Kbps, Mbps, Gbps, Tbps).</p> <p>Transmission media: Twisted pair cable, coaxial cable, optical fiber, infrared, radio link, microwave link and satellite link.</p> <p>Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, wifi card.</p> <p>Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN.</p> <p>Network Protocol: TCP/IP, File Transfer Protocol (FTP), PPP, SMTP, POP3 Remote Login (Telnet), and Internet Wireless/Mobile Communication protocol such as GSM, CDMA, GPRS, and WLL.</p>	<p>16</p>	<p>3</p>

	<p>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.</p> <p>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 (VB Script, javascript, PHP) and server side (ASP, JSP, PHP), Web 2.0 (for social networking)</p>		
<u>NOV-DEC</u>	Revision and Project Completion		
PRE BOARD – I (Whole Syllabus)			
<u>JAN</u>	Revision and Project Submission		
PRE BOARD – II (Whole Syllabus)			
<u>FEB</u>	Revision AISSCE Practical		

SPLIT-UP SYLLABUS
COMPUTER SCIENCE –PRACTICAL

MONTH	PORTION TO BE COVERED	PRACTICAL
APRIL-MAY	<u>Unit 1: Object Oriented Programming in C++</u> Class Creation and object implementation in C++ Constructor and Destructor	20
JUNE-JULY	Inheritance Data File Handling: Text File, Binary File Header file: fstream.h; ifstream, ofstream, 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 (), read () put (), write(), getline() and close() functions; Detecting end-of-file (withor without using eof() function), tellg(), tellp(), seekg().seekp());	16
AUG	Pointers: Introduction to Pointer, Declaration and Initialization of Pointer; Dynamic memoryallocation/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 to structure: De-reference/Deference operator: *, ->; self-referential structure;	4
	<u>UNIT-2 Data Structures</u> Arrays 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;	18
<u>SEP</u>	<u>Stack (Array and Linked implementation of Stack):</u> Operations on stack (PUSH and POP) and its Implementation in C++, Converting expressions from INFIX to POSTFIX notation and evaluation of Postfix expression; <u>Queue: (Array and Linked Implementation)</u> Operations on Queue (Insert and Delete and its Implementation in C++, circular queue using array.	20
<u>OCT</u>	<u>STRUCTURED QUERY LANGUAGE:</u> General Concepts: Advantages of using SQL, Data Definition	18

	<p>Language and Data Manipulation Language; DataTypes: 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 (SELECTquery) 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>Use of Boolean operators (NOT, AND, OR) in SQL SELECT statements Use of Boolean operators (AND, OR) in search engine queries.</p>	
<u>NOV</u>	<p><u>UNIT-5 COMMUNICATION TECHNOLOGIES</u></p> <p>Network devices: Modem, RJ45 connector, Ethernet Card, Router, Switch, Gateway, wifi card.</p> <p>Network Topologies and types: Bus, Star, Tree, PAN, LAN, WAN, MAN.</p> <p>Showing and setting up LAN Architecture and Client Server Architecture.</p> <p>Mobile Telecommunication Technologies :Email and other communication technologies such as Chatting and Video Conferencing using VOIPWireless 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.</p> <p>Introduction To Web services: Hyper Text Markup Language (HTML), Extensible Markup Language (XML); Domain Names; URL; Website,Web browser, Web Servers; Web Hosting, Web Scripting - Client side(VB Script,java script,PHP) and server side(ASP,JSP,PHP),Web 2.0(for social networking)</p>	3
<u>NOV-DEC</u>	Revision and Project Completion	
<u>JAN</u>	Revision and Project Submission	
<u>FEB</u>	Revision AISSCE Practical	