

KENDRIYA VIDYALAYA SANGATHAN
RAIPUR REGION
SPLIT-UP SYLLABUS
SESSION 2020-21

CLASS: XI

SUBJECT: COMPUTER SCIENCE (083)

S.NO.	Month	Name of Lesson	Tentative No. of Theory Periods Required	Tentative No. of Practical Periods Required	Tentative No. of Working days
1.	April-May	-----	-----		-----
2.	June	Unit 1: Computer Systems and Organization (CSO) <ul style="list-style-type: none"> • Basic computer organization: description of a computer system and mobile system, CPU, memory, hard disk, I/O, battery, power. • Types of software: application, System, utility. • Memory Units: bit, byte, MB, GB, TB, and PB. • Boolean logic: OR, AND, NAND, NOR, XOR, NOT, truth tables, De Morgan's laws difference between a compiler and an interpreter 	07	02	06
3.	July	<ul style="list-style-type: none"> • Information representation: numbers in base 2, 8, 16, unsigned integers, binary addition • Strings: ASCII, UTF8, UTF32, ISCII (Indian script code), UNICODE • Execution of a program: basic flow of compilation-program->binary-> execution • Interpreters (process one line at a time), • Running a program: Notion of an operating system, how an operating system runs a program, idea of loading, operating system as a resource manager. • Concept of cloud computers, cloud storage (public/private), and introduction to parallel computing. • PERIODIC TEST - I 	25	15	26
4.	August	Unit 2 : Programming and Computational Thinking (PCT-1) <ul style="list-style-type: none"> • Basics of Computational Thinking: Decomposition, Pattern Recognition/ Data representation, Generalization/ Data Abstraction and algorithm. Basic concepts of flowchart. • Familiarization with the basics of Python programming: a simple "hello world" program, process of writing a program, (Interactive & Script mode), running it, and print statements; simple data-types: integer, float, string. • Features of Python, Python Character Set, Token & Identifiers, Keywords, Literals, Delimiters, operators. • Comments: (Single line & Multiline/ Continuation statements), Clarity & Simplification of expression • Introduce the notion of a variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly) • Knowledge of data types and operators: accepting input from the console, assignment statement, expressions, operators and their precedence. • Operators & types: Binary operators-Arithmetic, Relational operators, Logical Operators, Augmented Assignment operators. 	25	24	22

5.	September	<ul style="list-style-type: none"> Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3 numbers, divisibility. Notion of iterative computation and control flow: for, while, flowcharts, decision trees and pseudo code; write a lot of programs: interest calculation, primarily testing, factorials etc. Idea of debugging: errors and exceptions; debugging: pdb, break points. 	23	22	21
6.	October	<ul style="list-style-type: none"> Lists, tuples and dictionary: finding the maximum, minimum, mean; linear search on list/tuple of numbers, and counting the frequency of elements in a list using a dictionary. Introduce the notion of accessing elements in a collection using numbers and names. HALF YEARLY EXAM 	10	06	18
7.	November	<ul style="list-style-type: none"> Sorting algorithm: bubble and insertion sort; count the number of operations while sorting Strings: Traversing, compare, concat, substring; Introduction to Python modules: Importing math (sqrt, cell, floor, pow, fabs, sin, cos, tan, random (random, randint, randrange), statistics (mean, median, mode) modules. 	20	10	20
8.	December	<p>Unit 3: Data Management (DM-1)</p> <ul style="list-style-type: none"> Relational databases: Concept of a database, relations, attributes and tuples, keys-candidate key, primary key, alternate key, foreign key; Degree and cardinality of a table. Use SQL – DDL/ DML commands to CREATE TABLE, INSERT INTO, UPDATE TABLE , DELETE FROM, 	12	06	20
9.	January	<ul style="list-style-type: none"> ALTER TABLE, MODIFY TABLE, DROP TABLE, keys, and foreign keys; to view content of a table: SELECT-FROM WHERE ORDER BY along with BETWEEN, IN, LIKE, (Queries only on single table) Aggregate functions – MIN, MAX, AVG, COUNT, SUM Basics of NoSQL databases. PERIODIC TEST - II 	18	18	25
10.	February	<p>Unit 4: Society, Law and Ethics (SLE-1) - Cyber safety</p> <ul style="list-style-type: none"> Cyber safety: safely browsing the web, identity protection, confidentiality, social networks, cyber trolls and bullying. Appropriate usage of social networks: spread of rumors , and common social networking sites (Twitter, LinkedIn, and Facebook) and specific usage rules. Safely accessing web sites: adware, malware, viruses, Trojans. Safely communicating data: secure connections, eavesdropping, and phishing and identity verification. Revision and Practice of Sample Question Papers, Project Work and Session Ending Practical Examination 	10		23
11.	March	SESSION ENDING EXAMINATION	08	10	

PRACTICALS:

S	Unit Name	Marks (Total=30)
1.	Lab Test (12 marks)	
	Python program (60% logic + 20% documentation + 20% code quality)	8
	SQL program (at least 4 queries)	4
2.	Report File + viva (10 marks)	
	Report file: Minimum 20 Python programs and 8 SQL commands	7
	Viva voce (based on the report file)	3
3.	Project (that uses most of the concepts that have been learnt) (See CS-XII for the rules regarding the projects)	8

1. Programming in Python: At least the following Python concepts should be covered in the lab sessions: expressions, conditionals, loops, list, dictionary, and strings. The following are some representative lab assignments.

- Find the largest and smallest numbers in a list.
- Find the third largest number in a list.
- Test for primality.
- Find whether a string is a palindrome or not.
- Given two integers x and n , compute x^n .
- Compute the greatest common divisor and the least common multiple of two integers.
- Test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such numbers.

2. Data Management: SQL Commands At least the following SQL commands should be covered during the labs: create, insert, delete, select, and join. The following are some representative assignments.

- Create a student table with the student id, name, and marks as attributes where the student id is the primary key.
- Insert the details of a new student in the above table.
- Delete the details of a particular student in the above table.
- Use the select command to get the details of the students with marks more than 80.
- Create a new table (name, date of birth) by joining two tables (student id, name) and (studentid, date of birth).
- Create a new table (order ID, customer Name, and order Date) by joining two tables (order ID, customer ID, and order Date) and (customer ID, customer Name, contact Name, country).