KENDRIYA VIDYALAYA SANGATHAN, AHMEDABAD REGION

# TERM WISE SPLIT-UP SYLLABUS

**SUB: COMPUTER SCIENCE (083)** CLASS - XII (NEW SYLLABUS) **(SesSIOn 2022 - 23)**

# DISTRIBUTION OF MARKS

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| --- | --- | --- | --- | --- |
| **UNIT** | **UNIT NAME** | **THEORY MARKS** | **PERIODS** | |
| **THEORY** | **PRACTICAL** |
| 1 | Computational Thinking and Programming -2 | 40 | 70 | 50 |
| 2 | Computer Network | 10 | 15 | -- |
| 3 | Data Management | 20 | 25 | 20 |
|  | **TOTAL** | **70** | **110** | **70** |

**MONTH- WISE DISTRIBUTION**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Month** | **Topics to be covered** | | | **Th.** | | **Pr.** | |
|  | **TERM - 1** | | |  | |  | |
| **April** | **Unit I: Computational Thinking and Programming - 2**   * Revision of Python topics covered in Class XI. * Functions: types of function (built-in functions, functions defined in module, user defined functions), creating user defined function, arguments and parameters, default parameters, positional parameters, * function returning value(s), flow of execution, scope of a variable (global scope, local scope) | | | 25 | | 20 | |
| **May- June** | * Introduction to files, types of files (Text file, Binary file, CSV file), relative and absolute paths | | | 10 | | 5 | |
| **July** | * Text file: opening a text file, text file open modes (r, r+, w, w+, a, a+), closing a text file, opening a file using with clause, writing/appending data to a text file using write() and writelines(), reading from a text file using read(), readline() and readlines(), seek and tell methods, manipulation of data in a text file * Binary file: basic operations on a binary file: open using file open modes (rb, rb+, wb, wb+, ab, ab+), close a binary file, import pickle module, dump() and load() method, read, write/create, search, append and update operations in a binary file * CSV file: import csv module, open / close csv file, write into a csv file using csv.writerow() and read from a csv file using csv.reader( ) | | | 20 | | 15 | |
| **August** | | | * Data Structure: Stack, operations on stack (push & pop), implementation of stack using list. | 15 | | 10 | |
| **September** | | | * Test (Syllabus covered above) |  | |  | |
| **Unit III: Database Management**   * Database concepts: introduction to database concepts and its need * Relational data model: relation, attribute, tuple, domain, degree, cardinality, keys (candidate key, primary key, alternate key, foreign key) Structured Query Language: introduction, Data Definition Language and Data Manipulation Language, data type (char(n), varchar(n), int, float, date), constraints (not null, unique, primary key), create database, use database, show databases, drop database, show tables, create table, describe table, alter table (add and remove an attribute, add and remove primary key), drop table, insert, delete, | 10 | | 10 | |
| **October** | | | * select, operators (mathematical, relational and logical), aliasing, distinct clause, where clause, in, between, order by, meaning of null, is null, is not null, like, update command, delete command, aggregate functions (max, min, avg, sum, count), group by, having clause, joins: cartesian product on two tables, equi-join and   natural join   * Interface of python with an SQL database: connecting SQL with Python, performing insert, update, delete queries using cursor, display data by using fetchone(), fetchall(), rowcount, creating database connectivity applications | 15 | | 10 | |
| **Novemb er** | | | * Evolution of networking: introduction to computer networks, evolution of networking (ARPANET, NSFNET, INTERNET) * Data communication terminologies: concept of communication, components of data communication (sender, receiver, message, communication media, protocols), measuring capacity of communication media (bandwidth, data transfer rate), IP address, switching techniques (Circuit switching, Packet switching) * Transmission media: Wired communication media (Twisted pair cable, Co-axial cable, Fiber-optic cable), Wireless media (Radio waves, Micro waves, Infrared waves) * Network devices (Modem, Ethernet card, RJ45, Repeater, Hub, Switch, Router, Gateway, WIFI card) * Network topologies and Network types: types of networks (PAN, LAN, MAN, WAN), networking topologies (Bus, Star, Tree) * Network protocol: HTTP, FTP, PPP, SMTP, TCP/IP, POP3, HTTPS, TELNET, VoIP, wireless/mobile communication protocol such as GSM, GPRS and WLL * Mobile telecommunication technologies: 1G, 2G, 3G, 4G and 5G   Introduction to web services: WWW, Hyper Text Markup Language (HTML), Extensible Markup Language (XML), domain names, URL, website, web browser, web servers, web hosting   * **Revision, Project Work ,** | 15 | | 0 | |
| **Dec ember** | | | **Pre Board Exam** |  | |  | |
| **January**  **February** | | | **Revision and practical Exam** |  | | - | |
| **March** | | | CBSE BOARD EXAM 2022-23 |  | |  | |

**GUIDELINES FOR PRACTICAL WORK**

# COMPUTER SCIENCE (083) CLASS - XII (NEW SYLLABUS)

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| --- | --- | --- | --- | --- |
| **S.No** |  | **Marks (Total 30)** | **Term-1**  (15 Marks) | **Term-2**  (15 Marks) |
| 1 | **Lab Test:**  1. Python program | **8** | **6** | **2** |
| 2. 3 SQL Queries based on one/two table(s), 2 output questions based on SQL queries | **4** | **---** | **4** |
| 2 | Report file:  Term – 1 : Minimum 15 Python programs based on Term - 1 Syllabus  Term – 2 :   * Minimum 3 Python programs based on Term-2 Syllabus * SQL Queries – Minimum 5 sets using one table / two tables. * Minimum 2 programs based on Python - SQL connectivity. | **7** | **4** | **3** |
| 3 | Project (using concepts learnt in Classes 11 and 12) Term – 1 : Synopsis of the project to be submitted by the students (documentation only, may not submit the code during Term - 1)  Term - 2 : Final coding + Viva voce  (Student will be allowed to modify their Term 1 document and submit the final executable code.) | **8** | **3** | **5** |
| 4 | Viva voce | **3** | **2** | **1** |

1. **Suggested Practical List:**

**Python Programming**

* Read a text file line by line and display each word separated by a #.
* Read a text file and display the number of vowels/consonants/uppercase/lowercase characters in the file.
* Remove all the lines that contain the character 'a' in a file and write it to another file.
* Create a binary file with name and roll number. Search for a given roll number and display the name, if not found display appropriate message.
* Create a binary file with roll number, name and marks. Input a roll number and update the marks.
* Write a random number generator that generates random numbers between 1 and 6 (simulates a dice).
* Create a CSV file by entering user-id and password, read and search the password for given user- id.
* Write a Python program to implement a stack using list.

## Database Management

* Create a student table and insert data. Implement the following SQL commands on the student table:
  + ALTER table to add new attributes / modify data type / drop attribute
  + UPDATE table to modify data
  + ORDER By to display data in ascending / descending order
  + DELETE to remove tuple(s)
  + GROUP BY and find the min, max, sum, count and average
  + Joining of two tables.
* Similar exercise may be framed for other cases.
* Integrate SQL with Python by importing suitable module.

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