केंद्रीय विद्यालय संगठन

KENDRIYA VIDYALAYA SANGATHAN

कोलकाता संभाग / KOLKATA REGION

SESSION – 2019-20

पाठ्यक्रम विभाजन एवं प्रायोगिक कार्य हेतु दिशा निर्देश

SPLIT-UP SYLLABUS
&
GUIDELINES FOR PRACTICALS

[CLASS XI]

INFORMATICS PRACTICES (065)

(Based on CBSE Revised curriculum 2019-20)

KENDRIYA VIDYALAYA SANGATHAN, KOLKATA REGION

SPLIT-UP SYLLABUS FOR INFORMATICS PRACTICES (065)

CLASS - XI (NEW SYLLABUS)

(Session 2019-20 onward)

DISTRIBUTION OF MARKS

UNIT	UNIT NAME	MARKS
1	Introduction of Computer System	5
2	Introductory Python Programming	30
3	Data Handling	10
4	Data Management	15
5	Society, Law and Ethics	10
6	Practical	30
	TOTAL	100

MONTH- WISE DISTRIBUTION

Month	Topics to be covered	Th.	Pr.
June-July	**Unit 1: Introduction of Computer System** • Basic computer organization: Computer system – I/O Devices, CPU, memory, hard disk, battery, power, transition from a calculator to a computer and further to smart devices. • Trouble shooting with parts of computer and basic operations of operating system • Basic concept of Data representation: Binary, ASCII, Unicode	3	2
	Unit 2: Introduction to Python Programming • Familiarization with the basic of Python programming: a simple "hello world" program, process of writing a program, running it, and print statements; simple data-types: integer, float, string. Introduce the notion of variable, and methods to manipulate it (concept of L-value and R-value even if not taught explicitly). Tokens - keywords, identifiers, Literals, Delimiters. Knowledge of data type and operators: accepting input from the console, assignment statement, expressions, operators (assignment, arithmetic, relational and logical) and their precedence. • Conditional statements: if, if-else, if-elif-else; simple programs: e.g.: absolute value, sort 3 numbers, divisibility.	25	20
August	• Notion of iterative computation and control flow: for (range() , len()), while, flowcharts. • Suggested programs: finding average and grade for given marks, amount calculation for given cost-qty-discount, perimeter-wise/ area-wise cost calculation, interest calculation, profit-loss, EMI, tax calculation (example from GST/Income Tax). **First Periodic Test (26 – 31 August) –MM: 50**	15	15

September	• List and dictionary: finding the maximum, minimum, mean; linear search on a list of numbers, and counting the frequency of elements in a list using a dictionary. • Text handling: compare, concat, and substring operations (without using string module). • Introduction to Python modules: importing math (sqrt, ceil, floor, pow, fabs), random (random, randint, randrange), statistics (mean, median) modules.	15	10
	Unit 3: Data Handling • Numpy 1D array	05	05
October	**Unit 3: Data Handling** (Cont.) • 2D array Arrays: slices, joins, and subsets. Arithmetic operations on 2D arrays.	15	10
November	**Half Yearly Examination (04-09 November)- MM:70** **Unit 4: Data Management** • 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.	15	10
December	• Use SQL - DDL/DML commands to CREATE TABLE, INSERT INTO, UPDATE TABLE, DELETE FROM, ALTER TABLE, MODIFY TABLE, DROP TABLE, keys, and foreign keys; to view content of a table: SELECT-FROM-WHERE-ORDER BY alongwith BETWEEN, IN, LIKE. (Queries only on single table) • Aggregate Functions : MIN , MAX, AVG, COUNT, SUM	15	10
January	**2nd Periodic Test (16-22 Jan) – MM: 50** **Unit 5: Society, Law and Ethics** • Cyber safety: safely browsing the web, identity protection, confidentiality, social networks, netiquettes, digital footprint, cyber trolls and bullying. Appropriate usage of social networks: spread of rumours, 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.	10	
February	**Revision, Project Work , Session Ending Practical Examination**		
March	**Session Ending Examination (Full Syllabus)- Theory(70)+Practical(30)**		
		116	85

PRACTICAL WORK
CLASS – XI : INFORMATICS PRACTICES (065) DISTRIBUTION OF MARKS

S.No.	UNIT NAME	MARKS
1	**Lab Test (15 marks)**	
	Problem solving using Arithmetic operators, conditional statement & Iteration using Python (60% logic + 20% documentation +20% code quality)	6
	Problem solving using NumPy	4
	SQL program (at least 5 queries)	5
2	**Report File + viva (10 marks)**	
	Report file: Minimum 20 Python programs (PCT + DH) and at least 20 SQL queries	6
	Viva voce (based on the report file)	4
3	**Project Work (that uses most of the concepts that have been learnt)**	5

Programming in Python
(Sample problems to be solved using expressions, conditions, loops, list, dictionary and strings.)
● To find average and grade for given marks,
● To find amount for given cost-qty-discount,
● To calculate cost perimeter-wise/ area-wise,
● To calculate interest (Simple and Compound)
● To calculate profit-loss for given Cost and Sell Price
● To calculate EMI for Amount, Period and Interest,
● To calculate tax (examples from GST/Income Tax)
● To find the largest and smallest numbers in a list.
● To find the third largest number in a list.
● To find the sum of squares of the first 100 natural numbers.
● To find whether a string is a palindrome or not.
● To compute xn, for given two integers x and n,
● To compute the greatest common divisor and the least common multiple of two integers.
● To test if a number is equal to the sum of the cubes of its digits. Find the smallest and largest such numbers in the range of 100 to 1000.

Data Handling:
The following are some representative lab assignments.
● Import numpy as `np` and print the version number.
● To create an array of 1D containing numeric values 0 to 9
● To create a numPy array with all values as True
● To extract all odd numbers from numPy array
● To extract all even numbers from numPy array
● To copy the content of an array A to another array B, replacing all odd numbers of array A with -1 without altering the original array A
● To replace all odd numbers in numPyarr with -1
● To copy content of a 1D array into a 2D array with 2 rows
● To perform basic arithmetic operations on 1D and 2D array

Data Management:
SQL Commands At least the following SQL commands should be covered during the labs: create, insert, delete, select. The following are some representative assignments.
● To create a database

● To create student table with the student id, class, section, gender, name, dob, and marks as attributes where the student id is the primary key.
● To insert the details of at least 10 student in the above table.
● To delete the details of a particular student in the above table.
● To increase marks by 5% for those students, who have Rno more than 20
● To display the entire content of table on screen
● To display Rno, Name and Marks of those students, who are scoring marks more than 50.
● To find the average of marks from the student table
● To find the number of students, who are from section 'A'
● To add a new column email of appropriate data type
● To find the minimum and maximum marks obtained by students
● To modify email for each student.
● To display the information all the students, whose name starts with 'AN' (Examples: ANAND, ANGAD)
● To display Rno, Name, DOB of those students, who are born between '2005-01-01' and '2005-12-31'
● To display Rno, Name, DOB, Marks, Email of those male students in ascending order of their names.
● To display Rno, Gender, Name, DOB, Marks, Email in descending order of their marks.

Project
A complete solution of a problem stating the problem, objective, source code, output Students in group of 2-3 are required to work collaboratively to develop a project using Programming Skills learnt during the course. **(Sample Examples can be a combination of few problems illustrated above)**