

## Class XI Practical INFORMATICS PRACTICES

S. No	Description	Marks
1	Problem solving using arithmetic operations, conditional statements and iterations with the help of a Python program 60% logic + 20% documentation + 20% code quality (To be tested on the day of the final exam)	6
2	Problem solving using numPy (To be tested on the day of the final exam)	4
3	SQL - 5 Queries based on single table (To be tested on the day of the final exam)	5
4	Report File *Minimum 20 Python Programs * Minimum 20 SQL Queries	6
5	Viva	4
6	Project using the concepts learnt in the course	5
<b>Total</b>		<b>30</b>

(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  $x^n$ , 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)