

SPLIT-UP SYLLABUS FOR INFORMATICS PRACTICES (065)

CLASS - XI (NEW SYLLABUS)

(SESSION 2018-19 ONWARD)

DISTRIBUTION OF MARKS

UNIT	UNIT NAME	MARKS
1	Programming and Computational Thinking	30
2	Data Handling-1	20
3	Data Management-1	10
4	Society, Law and Ethics-1	10
5	Practicals	30
	TOTAL	100

MONTH- WISE DISTRIBUTION

Month	Topics to be covered	Th.	Pr.
June-July	Unit 1: Programming and Computational Thinking (PCT-1) <ul style="list-style-type: none">Basic computer organization: describe a computer system and mobile system, CPU, memory, hard disk, I/O, battery, power, transition from a calculator to a computer.Familiarization with the basics 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 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.	30	20
August	<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, EMI, tax calculation (examples from GST), standard deviation, and correlation.	20	20
September	<ul style="list-style-type: none">Lists 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.Introduction to Python modules: creating and importing.	20	20
October	HALF YEARLY EXAMINATION		
	Unit 2: Data Handling (DH-1) Introduction to Python Pandas <ul style="list-style-type: none">Introduction to data structures in Pandas: Series, and Data FrameOperations on a Series: head, tail, vector operationsData Frame operations: create, display, iteration, select column, add column, delete columnBinary operations in a Data Frame: add, sub, mul, div, radd, rsub	10	05

November	<ul style="list-style-type: none"> • Matching and broadcasting operations • Missing data and filling values. • Comparisons, Boolean reductions, comparing Series, and combining Data Frames. <p>Transfer data between CSV files/SQL databases, and Data Frame objects.</p>	20	15
December	<p>UNIT 3: Data Management (DM-1)</p> <ul style="list-style-type: none"> • Relational databases: Idea of a database and the need for it, relations, keys, primary key, foreign key; • Use SQL commands to create a table, keys, and foreign keys; insert/delete an entry, delete a table. • Basic SQL: select, project, and join; indexes, and a lot of in-class practice. 	30	20
January	<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 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	<p>Revision, Project Work , Session Ending Practical Examination</p>		

GUIDELINES FOR PRACTICAL WORK INFORMATICS PRACTICES (065)

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DISTRIBUTION OF MARKS

S.No.	UNIT NAME	MARKS
1	Lab Test (12 marks)	
	Python programs to test PCT (60% logic + 20% documentation +20% code quality)	4
	Python programs to test data handling (same rules as above)	4
	SQL program (at least 4 queries)	4
2	Report File + viva (10 marks)	
	Report file: Minimum 20 Python programs (PCT + DH) and at least 8 SQL commands	7
	Viva voce (based on the report file)	3
3	Project Work (that uses most of the concepts that have been learnt) Project may be allotted to group of 2-3 students.	8

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.
- Find the sum of squares of the first 100 natural numbers.
- 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 in the range of 100 to 1000.

Data Handling: The following are some representative lab assignments.

- Subtract the mean of a row from each element of the row in a Data Frame.
- Filter out rows based on different criteria such as redundant rows (same data as the row above or below).
- Find the sum of each column, or find the column with the lowest mean.
- Locate the 3 largest values in a data frame.
- Replace all negative values in a data frame with a 0.

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 (student id, 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).

SUGGESTIVE LIST OF PROGRAMS (LAB WORK)

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[Minimum 20 Programs from Python Programming & 8 SQL queries - covering all the topics must be tested in the Lab and recorded on Practical copy with flow charts, as applicable.]

1. Write a Python program to accept two integers and print their sum.
2. Write a Python program that accepts radius of a circle and prints its area.
3. Write a Python program that inputs a student's marks in five subjects (out of 100) and prints the total marks and percentage of marks.
4. Write a Python program to accept length and width of a rectangle and compute its perimeter and area.
5. Write a Python program to compute simple interest for given Principal amount, time and rate of interest.
6. Write a Python program to find whether a given number is even or odd?
7. Write a Python program to find largest among three numbers.
8. Write a Python program to print roots of a quadratic equation $ax^2 + bx + c = 0$ (where $a \neq 0$).
9. Write a Python program to perform arithmetic calculation. This program accepts two operands and an operator then displays the calculated result.
10. Write a Python program to check whether a given year is leap year or not.
11. Write a Python program to print table of a given number.
12. Write a Python Program to print first n Natural numbers and their sum.
13. Write a Python Program to accept two integers X and N, compute X^N
14. Write a Python Program to calculate factorial of given number using while loop.
15. Write a program to print Fibonacci series. i.e. 0 1 1 2 3 5 8 ...
16. Write a Python program to test whether a given number is prime or not.
17. Write a Python program to check whether a given number is equal to the sum of the cubes of its digits.
18. Write a program to print following pattern on screen.
*
*
* *
* * *
19. Program to add the odd numbers up to (and including) a given value N and print the result.
20. Compute the greatest common divisor and the least common multiple of two integers.
21. Write a Python Program to read a sentence and count number of alphabets, digits, spaces and other characters.
22. Write a Python Program to check whether the given string is palindrome or not.
23. Write a Python program to calculate mean of a given list of numbers.
24. Write a Python program to count the frequency of a given number in a list.
25. Write a Python program to create Phone Directory (mobile number and name) using dictionary and search and display name for given mobile number.
26. Subtract the mean of a row from each element of the row in a Data Frame.
27. Filter out rows based on different criteria such as redundant rows (same data as the row above or below).
28. Find the sum of each column, or find the column with the lowest mean.

29. Locate the 3 largest values in a data frame.
30. Replace all negative values in a data frame with a 0.

SQL Commands (At least 15 SQL queries related to create, insert, delete, select, and join operation etc. should be covered during the lab activities: