1. **REMAINING PYTHON CONCEPTS:**
2. PIP TOOL: Upgrading PIP version,
3. JOIN() METHOD OF STRING
4. SWITCHER WITH ARITHMETIC OPERATIONS
5. File handling: separating cities, numbers, etc.
6. Explain the process of database connectivity with Python. Write a Python script for Creating db/table, removing db/table
7. Threading – If specified 2 different tasks then only develop 2 different functions otherwise for same type of operation only one function should contain the thread logic

Example: Display prime numbers and numbers divisible by 7 from 1 to 300 using multithreading.

While inserting a record into a data table, we have to specify %s code only. Value will be stored into the table column as per the data type of a column automatically.

**Important Topics:**

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| --- | --- | --- | --- |
| **Sr.No.** | **TOPIC/Sub-Topics** | **Marks**  **(70)** | **Marks**  **With option**  **(104)** |
| 1 | **Python Basics**   * Python Features , Advantages(merits) and Disadvantage(demerits/issues) * Introduction to PIP – PIP commands * Operators: Arithmetic Operators , Relational Operators, Logical Operators , Membership Operators , Identity Operators, Bitwise Operators , Assignment Operators , Type Conversion | 7 | 10 |
| 2 | **Control Flow**   * Conditional Statements: The if Statement ,The if-else Statement ,The if-else if Statement * Looping and Iteration: The For Loop, The While Loop ,Loop else Statement, Nested Loops, Pass, Break and Continue, Loop using range() function ,Types of range() function   **Program: Electricity bill of n customers, banking** | 7 | 10 |
| 3 | **String, List, Tuple, and Dictionary and Set Manipulations (syntax, examples, mutable/non mutable)**   * String: Introduction to Python String, Accessing Individual Elements, String Operators, String Slices, String Functions and Methods * List: Introduction to Python List, Creating List, Accessing List, Joining List, Replicating List , List Slicing * Tuple: Introduction to Tuple, Creating Tuples, Accessing Tuples, Joining Tuples, Replicating Tuples, Tuple Slicing * Dictionary: Introduction to Dictionary, Accessing values in dictionaries, working with dictionaries, Properties * Set: Introduction to Set, Iteration over Sets, Set Methods, Set Operations, Union of sets, Built-in Functions with Set, **Frozenset & difference with set** * **If not comfortable with comprehension then don’t prepare** | 13 | 19 |
| 4 | Functions, Modules And Packages   * Functions: Built-In Functions ,Python Function Types ,Structure of Python Functions ,E.g. – **map(), reduce(), filter(),** any(), chr(), ord(),all(), etc. * Defining User Defined Functions: **Default Arguments, Returning multiple values from a function, Named Arguments ,variable arguments, Kwargs,** **Lambda function** * Modules:Built-in Modules ,Importing Modules in Python Programs ,Working with Random Modules ,e.g. - built-ins, os, time, datetime (basic), calendar, sys, etc.- Organizing python projects into modules - Importing own module as well as external modules- * Packages: package concept, package initialization, importing packages in python | 8 | 12 |
| 5 | OOP , Exception Handling and Multithreading   * OOP: Creating a Class, Self Variables, Constructors, Access Modifiers, Inheritance, Polymorphism, The super() Method, Method Resolution Order (MRO), Operator Overloading, Method Overloading & Overriding, Interfaces in Python. * Exceptions:Default Exception and Errors, Catching Exceptions, Raise an exception, try.... except statement, Raise, Assert, Finally blocks, User defined exception * Multithreading: Thread and Process, starting a thread, Threading module, Multiple threads, Synchronizing threads   Program: **Inheritance (6M/8M), Multithreading(6/8)** | 15 | 23 |
| 6 | Regular Expression and File Processing   * Regular Expressions: Pattern matching and searching, Real time parsing of networking or system data using regex, Password, email, url validation using regular expression -Pattern finding programs using regular expression * File Processing: Reading config files in python , Writing log files in python, Understanding read functions, read(), readline() and readlines() , write functions, write() and writelines(), Manipulating file pointer using seek, Programming using file operations   **Concept/Program: Email Validation, Password Validation** | 8 | 12 |
| 7 | GUI Programming with Database Connectivity   * GUI Programming: Writing a GUI with Python: GUI Programming Toolkits, Creating GUI Widgets with Tkinter, Creating Layouts, Frames, Labels, Radio Buttons and Checkboxes, Dialog Boxes. * Database Connectivity: Python’s Database Connectivity, Types of Databases Used with Python, Mysql database Connectivity with Python, Performing Insert, Deleting & Update operations on database. * **Important : database connectivity process, geometry managers, widgets, Program**   **Login/Registartion/Data retrieval (8)** | 12 | 18 |
|  | TOTAL | 70 | 104 |