

**Infosys Certified Software Programmer**  
**Python syllabus for the year 2020**

**Aptitude (Qualifier Round)**

Topic	Subtopic
Quantitative Aptitude	Algebra
	Alligation or Mixture
	Average
	Geometry
	Numbers
	Percentage
	Permutation and Combination
	Probability
	Ratios and Proportion
	Time and Distance
Reasoning	Analytical
	Blood relationship
	Data Interpretation
	Data sufficiency
	Logical Deductions
	Logical Sequence of Words
	Logical Venn Diagrams
	Statement and Arguments
	Statement and Assumptions
	Statement and Conclusions
	Syllogism

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## Python Programming, Data Structures and Algorithms

### Programming Fundamentals

Topic	Subtopic
Introduction to Programming	Why Programming?
	The Scenario
	What is a program?
	Problem Solving
Algorithms	Introduction and representation
Pseudo code	Variables and Operators
	Decision constructs
	Iteration constructs
Introduction to Programming	What is a programming language?
	Variables and Datatypes
	Operators
	Implicit/Explicit Type conversions
	Functions in Programs
Control Structures	Selection Control Structures
Unit Testing	Path Coverage
	Boundary Value Analysis
Eclipse Plug-in	Introduction
Control Structures	Iteration Control Structures
Debugging	Introduction to Debugging
Collections	Introduction to Collections
	List and Array
	Tuple
Eclipse Plug-in	Tip to handle infinite loop
Collections	String
	Set
	Dictionary
Functions	Revisiting Functions
	Argument behavior
	Types of arguments
	Variables and its scope
Exception Handling	Handling exceptions in code
Recursion	Recursive Functions
Code Organization	Modules and Packages
Libraries and Functions	Random Library
	Math Library
	String functions
	List functions

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Topic	Subtopic
	Dictionary functions
	Date and Time functions
File Handling	File Handling

**Object Oriented Programming**

Topic	Subtopic
Introduction	Introduction
	Need For OOP
OOP Basics	Class and Objects
	Constructor
	Class Diagram
	Coding Standards
Encapsulation	Need for Encapsulation
	Private Attributes
	Getter Setter Methods
	Class Diagram
OOP Basics	Reference Variable
Using Objects	Pass By Reference
	Self
	Collection of Objects
Static	Need for Static
	Static Attributes
	Static Methods
	Static Counter
Relationships	Introduction
	Aggregation
	Dependency
Inheritance	Need for Inheritance
	Overriding
	Super
	Types
Abstract Class	Need For Abstract
	Abstract Method
Exception Handling	Introduction
	Raise
	Custom Exceptions

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**Data Structures and Algorithms**

Topic	Subtopic
Introduction to Data Structures	Introduction
List Data Structure	Introduction to List
	List using Array - Operations
	List using Linked List - Introduction
	List using Linked List - Operations
	List using Linked List - Operations
	List using Array versus List using Linked List
Stack	Introduction
	Stack - Operations
	Stack - Application
Queue	Introduction
	Queue - Operations
Non-Linear Data Structures	Introduction
	Graphs
	Trees
Hashing and Hash Table	Introduction
	Hashing
	Hash Table
Algorithms	Introduction
Search Algorithms	Linear Search Algorithm
	Binary Search Algorithm
	Comparison
Sort Algorithms	Introduction
	Selection Sort Algorithm
	Bubble Sort Algorithm
	Merge Sort Algorithm
	Quick Sort Algorithm
	Comparison
Algorithm Technique	Greedy Approach
	Dynamic Programming
	Summary
Analysis of Algorithms	Introduction
	Analysis of Algorithms

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## Database Management System

Topic	Subtopic
Introduction to DBMS	Database Systems Overview
	Data Integrity and Constraints
	Entities and Relationships
SQL Basics	SQL Commands and Data Types
	Operators and Expressions
DDL Statements	Create and Drop Table
	Alter Table
DML Statements	Inserting Data
	Retrieving Data
	Updating Data
	Deleting Data
SQL Functions, Sorting and Grouping data	Functions
	Sorting Data
	Grouping Data
	Combining Data
Joins	Cartesian Product and Inner Join
	Self-Join
	Outer Join
Subquery	Independent Subquery
	Correlated Subquery
Transactions	Transactions
Normalization	Functional Dependency
	Normal Forms
Performance	Index
	Best Practices for Query Writing
NoSQL Databases	Introduction to NoSQL
	CAP Theorem
	Types of NoSQL Databases
	MongoDB