

Syllabus for Paper 2 of Phase I in Information Technology Stream

Sr. No	Topic	Details	Weightage
1	Database Concepts	ER-model. Relational model: relational algebra, tuple calculus, Integrity constraints, normal forms. File organization, indexing (e.g., B and B+ trees), Transactions and concurrency control.	10
2	SQL Queries	Select, view, truncate, delete, update, alter, Inner join, different types of outer joins,, use of aggregate functions, Union, intersection, except, in and exist clauses, nested queries	10
3	Programming Concepts (Java /C C++)	Program control (iteration, recursion, Functions), Scope of variables, Binding of variables & functions, Parameter passing, Functional and Logic Programming, OOPS Concepts, Inheritance, Class and object, Constructors, Functions, Exception Handling	30
4	Data Analytics Languages (Python / R)	Regex, Slicing, Data reshaping, Dataframes, Dictionaries and Sets, File Management, Classes and Functions, Data Mining, Lists, Importing and exporting data, charts and graphs	10
5	Algorithms for problem solving	Tree and graph traversals, Connected components, Spanning trees, Shortest paths; hashing, Sorting, Searching; Design	10

		techniques (Greedy, Dynamic Programming, Divide-and-conquer)	
6	Networking Concepts	ISO/OSI stack, LAN Technologies (Ethernet, Token ring), TCP/UDP, IP, Basic concepts of switches, gateways, and routers, Application layer protocols (DNS, SMTP, POP, FTP, HTTP), Firewalls	10
7	Information & Cyber Security Concepts	Cyber Attacks, Software Development Security, Network security, Authentication, CIA - Confidentiality, Integrity and Availability, Network Audit, Systems Audit	10
8	Data Warehousing	Data Extraction, Data Cleaning, Data Transformation, Data Loading, Metadata, Data Cube, Data Mart, Data Models	5
9	Shell Programming	Shell Scripting Basics, Shell Variables, Shell Script Arguments, If Statement, Loop, Return, Basic UNIX commands	5
Total			100

Please note that Syllabus for Paper 2 of Phase II of Information Technology Stream shall be made available on SEBI website (www.sebi.gov.in) in due course.