Syllabus
for
Computer Science and Information Technology (SCQP09)

Computer Science and InformationTechnology (SCQP09)

Note:

  i. *The Question Paper will have 75 questions.*

  ii. *All questions will be based on Subject-Specific Knowledge.*

  iii. *All questions are compulsory.*

  iv. *The Questions will be Bilingual (English/Hindi).*

<u>Computer Science and Information Technology (SCQP09)</u>

Thinking and Decision Making: Creative thinking, unfamiliar relationships, verbal reasoning, finding patterns trends and Assessment of figures & diagrams.

- Geometrical designs &Identification
- Selection of related letters / words / numbers /figures
- Identification of odd thing / item out from a group
- Completion of numerical series based on the pattern /logic
- Fill in the blanks of the series based on the numerical pattern and logic of the series
- Syllogisms (logic-based questions), Identification of logic & selection of correct answers based on the logic

Mathematics:

- Set Theory: Concept of sets – Union, Intersection, Cardinality, Elementary counting; permutations and combinations. • Probability and Statistics: Basic concepts of probability theory, Averages, Dependent and independent events, frequency distributions, measures of central tendencies and dispersions.
- Algebra: Fundamental operations in algebra, expansions, factorization, simultaneous linear /quadratic equations, indices, logarithms, arithmetic, geometric and harmonic progressions, determinants and matrices.
- Coordinate Geometry: Rectangular Cartesian coordinates, distance formulae, equation of a line, and intersection of lines, pair of straight lines, equations of a circle, parabola, ellipse and hyperbola.
- Calculus: Limit of functions, continuous function, differentiation of function, tangents and normal, simple examples of maxima and minima. Integration of functions by parts, by substitution and by partial fraction, definite integrals, applications of definite integrals to areas.

Computer :

- Operating System: Main functions of operating systems, Processes, Threads, Interprocess communication, concurrency, Synchronization, Deadlock, CPU scheduling, I/O scheduling, Resource scheduling. Deadlock and scheduling algorithms, banker's algorithm for deadlock handling. Memory management and virtual memory. File Systems, I/O systems, DOS, UNIX and Windows.
- Data Structure: Arrays and their Applications; Sparse Matrix, Stacks, Queues, Priority Queues, Linked Lists, Trees, Forest, Binary Tree, Threaded Binary Tree, Binary Search Tree, AVL Tree, B Tree, B+ Tree, B* Tree, Data Structure for Sets, Graphs, Sorting and Searching Algorithms; Hashing. Functions, Recursion, Parameter passing.
- Digital Fundamentals: Data Types, Number Systems and Conversion, Complements, Fixed Point Representation, Floating Point Representation, Error Detection Codes, Computer Arithmetic - Addition, Subtraction, Multiplication and Division Algorithms, Digital Computers, Logic Gates, Boolean Algebra, Map Simplifications, Combinational Circuits, Flip-Flops, Sequential Circuits, Integrated Circuits, Decoders, Multiplexers, Registers and Counters, Memory Unit.