

Gate CSE syllabus

GATE Syllabus comprises two sections. The first one is the General Aptitude Section which is of 15 marks, and the other one is the Computer Science, and Information Technology Section which is of 85 marks.

General Aptitude (GA) For 15 marks

Verbal Aptitude	Basic English Grammar: Tenses, Articles, Adjectives, Prepositions, Conjunctions, Verb-noun Agreement, and Other Parts of Speech Basic Vocabulary: Words, Idioms, and Phrases in Context Reading and Comprehension Narrative Sequencing
Quantitative Aptitude	Data interpretation: Data Graphs (Bar Graphs, Pie Charts, and Other Graphs Representing Data), 2- and 3-dimensional Plots, Maps, and Tables Numerical Computation and Estimation: Ratios, Percentages, Powers, Exponents, Exponents Formula, and Logarithms, Logarithm Formula, Permutations and Combinations, and Series Mensuration and Geometry, Elementary Statistics and Probability
Analytical Aptitude	Deduction and Induction, Analogy, Numerical Relations, and Reasoning
Spatial Aptitude	Transformation of shapes: Translation, Rotation, Scaling, Mirroring, Assembling, and Grouping Paper Folding, Cutting, and Patterns in 2 and 3 Dimensions

Computer Science and Information Technology for 85 marks

Engineering Mathematics	<p>Discrete Mathematics</p> <ul style="list-style-type: none">• Propositional and First-Order Logic• Sets, Relations, Functions, Partial Orders, and Lattices• Monoids, Groups• Graphs: Connectivity, Matching, Coloring• Combinatorics: Counting, Recurrence Relations, Generating Functions <p>Linear Algebra</p> <ul style="list-style-type: none">• Matrices• Determinants• System of Linear Equations• Eigenvalues and Eigenvectors• LU Decomposition <p>Calculus</p> <ul style="list-style-type: none">• Limits, Continuity, and Differentiability• Maxima and Minima• Mean Value Theorem• Integration
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	Probability and Statistics <ul style="list-style-type: none"> • Random Variables • Uniform, Normal, Exponential, Poisson, and Binomial Distributions • Mean, Median, Mode, and Standard Deviation • Conditional Probability and Bayes Theorem
Digital Logic and Design	<ul style="list-style-type: none"> • Boolean Algebra • Combinational and Sequential Circuits • Minimization • Number Representations and Computer Arithmetic (Fixed and Floating Point)
Computer Organization and Architecture	<ul style="list-style-type: none"> • Machine Instructions and Addressing Modes. • ALU, Data Path, and Control Unit. • Instruction Pipelining, Pipeline Hazards. • Memory Hierarchy: Cache, Main Memory, and Secondary Storage • I/O Interface (Interrupt and DMA Mode)
Programming and Data Structures	<ul style="list-style-type: none"> • Programming in C • Recursion • Arrays, Stacks, Queues • Linked Lists, Trees, Binary Search Trees, Binary Heaps • Graphs
Algorithms	<ul style="list-style-type: none"> • Searching, Sorting, Hashing. • Asymptotic Worst Case Time and Space Complexity • Algorithm Design Techniques: Greedy, Dynamic Programming, and Divide-and-Conquer • Graph Traversals, Minimum Spanning Trees, Shortest Paths
Theory of Computation	<ul style="list-style-type: none"> • Regular Expressions and Finite Automata • Context-Free Grammar and Push-Down Automata • Regular and Context-Free Languages, Pumping Lemma • Turing Machines and Undecidability
Compiler Design	<ul style="list-style-type: none"> • Lexical Analysis • Parsing, Syntax-Directed Translation • Runtime Environments • Intermediate Code Generation • Local Optimization • Data Flow Analyses: Constant Propagation, Liveness Analysis, Common Subexpression Elimination
Operating System	<ul style="list-style-type: none"> • System Calls, Processes, Threads • Inter-Process Communication, Concurrency, and Synchronization • Deadlock • CPU and I/O Scheduling • Memory Management and Virtual Memory

	<ul style="list-style-type: none"> • File Systems
Databases	<ul style="list-style-type: none"> • ER-Model • Relational Model: Relational Algebra, Tuple Calculus • SQL • Integrity Constraints, Normal Forms • File Organization, Indexing (e.g., B and B+ Trees) • Transactions and Concurrency Control
Computer Networks	<ul style="list-style-type: none"> • Concept of Layering: OSI and TCP/IP Protocol Stacks • Basics of the Packet, Circuit, and Virtual Circuit Switching • Data Link Layer: Framing, Error Detection, Medium Access Control, Ethernet Bridging • Routing Protocols: Shortest Path, Flooding, Distance Vector, and Link State Routing • Fragmentation and IP Addressing, IPv4, CIDR Notation • Basics of IP Support Protocols (ARP, DHCP, ICMP), Network Address Translation (NAT) • Transport Layer: Flow Control and Congestion Control, UDP, TCP, Sockets • Application Layer Protocols: DNS, SMTP, HTTP, FTP, Email

GATE 2024 Expected Subject-Wise Weightage

Topics	GATE 2024
General Aptitude	15
Engineering Mathematics Discrete Mathematics	13
Digital Logic	6
Computer Organization and Architecture	8
Programming and Data Structure	15
Algorithms	7
Theory of Computation	6
Compiler Design	4
Operating System	9
Databases	7
Computer Networks	10

ISRO syllabus

There is no syllabus officially released by ISRO but as per the previous year's papers, the syllabus is mostly similar to that of GATE. Some of the most important topics are listed below:

- Data Structures and Algorithms
- C language

- Operating System
- DBMS
- Computer Networks
- Compiler Design
- Theory of Computation
- Digital Logic Design
- Engineering Mathematics
- Discrete Mathematics and Graph Theory
- Software Engineering
- Network Security
- Web Technology