

### **Section 1: Engineering Mathematics**

**Discrete Mathematics:** Propositional and first order logic. Sets, relations, functions, partial orders and lattices. Monoids, Groups. Graphs: connectivity, matching, coloring. Combinatorics: counting, recurrence relations, generating functions.

**Linear Algebra:** Matrices, determinants, system of linear equations, eigenvalues and eigenvectors, LU decomposition.

**Calculus:** Limits, continuity and differentiability. Maxima and minima. Mean value theorem. Integration.

**Probability and Statistics:** Random variables. Uniform, normal, exponential, poisson and binomial distributions. Mean, median, mode and standard deviation. Conditional probability and Bayes theorem.

Computer Science and Information Technology

### **Section 2: Digital Logic**

Boolean algebra. Combinational and sequential circuits. Minimization. Number representations and computer arithmetic (fixed and floating point).

### **Section 3: Computer Organization and Architecture**

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).

### **Section 4: Programming and Data Structures**

Programming in C. Recursion. Arrays, stacks, queues, linked lists, trees, binary search trees, binary heaps, graphs.

### **Section 5: Algorithms**

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

## **Section 6: Theory of Computation**

Regular expressions and finite automata. Context-free grammars and push-down automata. Regular and context-free languages, pumping lemma. Turing machines and undecidability.

## **Section 7: Compiler Design**

Lexical analysis, parsing, syntax-directed translation. Runtime environments. Intermediate code generation. Local optimisation, Data flow analyses: constant propagation, liveness analysis, common subexpression elimination.

## **Section 8: Operating System**

System calls, processes, threads, inter-process communication, concurrency and synchronization. Deadlock. CPU and I/O scheduling. Memory management and virtual memory. File systems.

## **Section 9: Databases**

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.

## **Section 10: Computer Networks**

Concept of layering: OSI and TCP/IP Protocol Stacks; Basics of 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.



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## GATE-2024 CUT OFF MARKS

STREAMS	Qualifying Marks				Toppers Marks		
	GATE 2024				GATE 2024		
	GEN	OBC	SC/ST/PH	Rank	GATE Marks(Score card)	GATE Marks(As per IISc List)	Score
CE	28.3	25.4	18.8	1	85.25	87.33	989
ME	28.6	25.7	19	1	84.67	84.67	1000
EE	25.7	23.1	17.1	1	77	77	1000
EC	25	22.5	16.6	1	84.67	84.67	1000
CS	27.6	24.8	18.4	1	91.07	90	1000
IN	32.7	29.4	21.8	1	82.67	82.67	984
PI	30.5	27.4	20.3	1	84.67	84.67	1000
XE	36.2	32.5	24.1	1	83	83	989
ES	37.9	34.1	25.2	1	77.33	77.3	965
DA	37.1	33.3	24.7	1	90	90	1000
CH	25.0	22.6	16.6	1	73.33	73.33	1000

## GATE-2023 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2023			GATE 2023		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	26.6	23.9	17.7	1	83.11	1000
ME	28.4	25.5	18.9	1	90.67	1000
EE	25.0	22.5	16.6	1	66.00	1000
EC	29.9	26.9	19.9	1	90.00	1000
CS	32.5	29.2	21.6	1	93.67	1000
IN	34.8	31.3	23.2	1	78.33	968
PI	44.2	39.7	29.4	1	87.33	938
CH	32.1	28.8	21.4	1	92.67	1000

## GATE-2022 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2022			GATE 2022		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	30.4	27.3	20.2	1	97.36	1000
ME	28.1	25.2	18.7	1	90.05	1000
EE	30.7	27.6	20.4	1	92.67	1000
EC	25.0	22.5	16.6	1	78.00	1000
CS	25.0	22.5	16.6	1	81.00	1000
IN	42.2	38.1	28.2	1	88.33	940
PI	43.7	39.3	29.1	1	95.00	986
CH	25.3	22.7	16.8	1	64.00	-----

# GATE-2021 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2021			GATE 2021		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	29.2	26.2	19.4	1	95.56	1000
ME	33.0	29.7	22.0	1	93.22	979
EE	30.3	27.2	20.2	1	85.33	974
EC	25.0	22.5	16.6	1	82.00	1000
CS	26.1	23.4	17.4	1	87.81	1000
IN	36.0	32.4	24.0	1	79.00	933
PI	35.7	32.1	23.8	1	83.67	939

# GATE-2020 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2020			GATE 2020		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	32.9	29.6	21.9	1	90.77	980
ME	34.0	30.6	22.6	1	86.88	987
EE	33.4	30.0	22.2	1	87.33	1000
EC	28.8	25.9	19.2	1	82.00	997
CS	28.5	25.6	19.0	1	91.00	1000
IN	34.6	31.1	23.0	1	82.33	943
PI	36.6	32.9	24.4	1	88.00	955

# GATE-2019 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2019			GATE 2019		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	28.2	25.4	18.8	1	87.70	1000
ME	34.1	30.7	22.7	1	94.75	1000
EE	39.6	35.6	26.4	1	97.33	961
EC	26.7	24.0	17.8	1	89.00	1000
CS	29.5	26.6	19.7	1	88.67	1000
IN	31.9	28.7	21.3	1	83.00	989
PI	32.2	29.0	21.5	1	78.00	947

# GATE-2018 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GATE 2018			GATE 2018		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	26.9	24.2	17.9	1	91.29	994
ME	34.7	31.2	23.1	1	96.83	1000
EE	29.1	26.1	19.4	2	90.33	1000
EC	25	22.5	16.6	3	73.67	1000
CS	25	22.5	16.6	1	83.33	1000
IN	37.1	33.3	24.7	1	92.67	944
PI	32	28.8	21.3	1	88	1000

# GATE-2017 CUT OFF MARKS

STREAMS	Qualifying Marks			Toppers Marks		
	GEN	OBC	SC/ST/PH	Rank	Marks	Score
CE	28.7	25.8	19.1	1	92.94	1000
EE	25.2	22.6	16.7	1	81.25	1000
ME	32.7	29.4	21.8	1	94.85	1000
EC	25	22.5	16.6	3	80.26	1000
CS	25	22.5	16.6	1	86.38	1000
IN	34.6	31.1	23	1	89.68	1000
PI	33.1	29.7	22	1	80.02	1000

# GATE-2016 CUT OFF MARKS

Stream	GEN	OBC	SC/ST/PH
CE	25.00	22.50	16.60
ME	29.60	26.60	19.70
EE	25.10	22.50	16.60
EC	25.00	22.50	16.60
CS	25.00	22.50	16.60
IN	31.60	28.40	21.00
PI	26.40	23.70	17.50

# GATE-2015 CUT OFF MARKS

Stream	GEN	OBC	SC/ST/PH
CE	25	22.5	16.67
ME	32.73	29.46	21.82
EE	25	22.5	16.67
EC	25	22.5	16.67
CS	25	22.5	16.67
IN	25.45	22.9	16.96
PI	26.82	24.14	17.88

# GATE 2014 CUT OFF MARKS

Stream	Total Candidates	GEN	OBC	SC/ST/PH
CE	90872	26.57	23.91	17.71
ME	185578	28.86	25.97	19.24
EE	141799	25	22.5	16.67
EC	216367	25.56	23.01	17.04
CS	155190	25	22.5	16.67
IN	22367	25	22.5	16.67

# GATE-2013 CUT OFF MARKS

Total Candidates Applied for GATE 2013	Total Candidates Appeared in GATE 2013	Total Candidates Qualified GATE 2013
12,00,728	9,84,855	1,36,699

Stream	Total Candidates	GEN	OBC	SC/ST/PH
EC	2,56,135	25	22.5	16.67
EE	1,52,381	25.74	23.17	17.16
ME	1,65,814	25	22.5	16.67
CS/IT	2,24,160	25	22.50	16.67
CE	67,472	27.13	24.42	18.09
IN	28,249	25	22.25	16.67

# GATE-2012 CUT OFF MARKS

Total Candidates Applied for GATE 2013	Total Candidates Appeared in GATE 2013	Total Candidates Qualified GATE 2013
7,77,134	6,86,614	1,08,526

Stream	Total Candidates	GEN	OBC	SC/ST/PH
EC	1,76,944	25	22.5	16.67
CS/IT	1,56,780	31.54	28.39	21.03
ME	1,12,320	27.14	24.42	18.09
EE	1,10,125	25	22.5	16.67
CE	36,156	33.03	29.73	22.02
IN	21,509	25	22.5	16.67

# GATE-2011 CUT OFF MARKS

GATE 2011 Cut-off Marks (Out of 100)				
Branch	Total Candidates	General	OBC	SC/ST/PH
Civil Engineering	29,347	25.00	22.50	16.67
Electronics & Communication Engineering	1,37,853	26.11	23.50	17.41
Mechanical Engineering	81,175	30.81	27.73	20.54
Electrical Engineering	72,680	26.08	23.47	17.39
Instrumentation Engineering	18,456	25.00	22.50	16.67
Computer Science/Information Technology	1,36,027	25.00	22.50	16.67
Production & Industrial Engineering	3,792	27.97	25.17	18.65

# GATE-2010 CUT OFF MARKS

GATE 2010 Cut-off Marks (Out of 100)			
Branch	General	OBC	SC/ST/PH
Mechanical Engineering	25.00	22.50	16.67
Electrical Engineering	25.20	22.68	16.80
Computer Science/IT	25.00	22.50	16.67
Electronics & Communication Engineering	25.00	22.50	16.67
Civil Engineering	25.01	22.51	16.67