GATE 2010

GATE OVERVIEW

What is GATE?

- The Graduate Aptitude Test in Engineering (GATE) is an all-India examination administered and conducted in eight zones across the country by the GATE Committee comprising faculty from Indian Institute of Science, Bangalore and seven Indian Institutes of Technology on behalf of the National Coordinating Board - GATE, Department of Education, Ministry of Human Resources Development (MHRD), Government of India.

Objective

- To identify meritorious and motivated candidates for admission to Post Graduate Programmes in Engineering, Technology, Architecture and Pharmacy at the National level. To serve as benchmark for normalization of the Undergraduate Engineering Education in the country.

Why should we take GATE?

❖ M.Tech degree leads to specialization and furthering of interest in a certain area which may lead to Ph.D

❖ M.Tech degree is best for those wishing to apply for Faculty/Research positions in educational Institutes/R&D centers.

❖ More and better companies recruit from leading institutes.

❖ Higher salaries are offered to MTech holders as compared to BTech.

❖ Scholarship is paid during MTech, so student can easily afford his needs.

- ❖ MTech programme is a 4 semester programme ; so we get more time to work out career opportunities.

- ❖ Some colleges/Institutes specify GATE as mandatory qualification even for admission of self financing students.

- ❖ Some industries and foreign universities have indicated their interest in GATE qualified candidates.

- ❖ GATE qualified candidates in Engineering discipline are also eligible for the award of Junior Research Fellowship in CSIR

Who are Eligible to Appear for GATE ?

1. Bachelor's degree holders in Engineering/Technology/Architecture/Pharmacy and those who are in the final or pre-final year of such programmes.

2. Master's degree holders in any branch of Science/Mathematics/Statistics or equivalent and those who are in the final or pre-final year of such programmes.

   However, if the degree is MCA, the candidate should have had courses in Mathematics at the Bachelor's or Master's level.

4. Candidates in the second or higher year of the(Post BSc) Four-Year Integrated Master's degree/Dual degree programme in Engineering/Technology.

5. Candidates with qualifications obtained through examination conducted by professional societies recognized by UPSC/AICTE as equivalent to B.E./B.Tech.

GATE Exam

- The examination is a single paper of three-hour duration of the objective type. Negative marking is adopted for some questions in the paper. The results of qualifying candidates will be ranked on an all-India basis and indicate a percentile score. A percentile score of 99 means one is in the top one per cent category of the candidates who appeared for GATE.

- Candidates who get less than 70 percentile get no score card.

- GATE scores are valid for 1 year. One can reappear for the GATE exam if one is not satisfied with the earlier score. The new score (if better than the old one) will be used for admission.

- Students have to apply to individual institutes and get application forms after the GATE results are out. M.Tech. course admission details are advertised in leading newspapers from April 1 till July end. However, some institutes do not advertise and students should approach them directly for the forms. The concerned institute may conduct a written test and/or interview for admission.

- Students of M.Tech. are paid scholarships by the Government of India for the entire 18-month period.

- The examination is a single paper of 3 hours duration and of 100 marks. There will be 20 questions of 1 mark each and 40 questions of 2 marks.

- A candidate is expected to answer the paper appropriate to the discipline of his/her qualifying degree. However, the candidate is free to choose any of the papers as his/her admission plan.

EXAM IN DETAIL

GATE Syllabus: Computer Science and Engineering(CS)

ENGINEERING MATHEMATICS

- *Mathematical Logic*: Propositional Logic; First Order Logic.

- *Probability*: Conditional Probability; Mean, Median, Mode and Standard Deviation; Random Variables; Distributions; uniform, normal, exponential, Poisson, Binomial.

- *Set Theory & Algebra*: Sets; Relations; Functions; Groups; Partial Orders; Lattice; Boolean Algebra.

- *Combinatorics*: Permutations; Combinations; Counting; Summation; generating functions; recurrence relations; asymptotics.

- *Graph The*ory: Connectivity; spanning trees; Cut vertices & edges; covering; matching; independent sets; Colouring; Planarity; Isomorphism.

- *Linear Algebra*: Algebra of matrices, determinants, systems of linear equations, Eigen values and Eigen vectors.

- *Numerical Methods*: LU decomposition for systems of linear equations; numerical solutions of non-linear algebraic equations by Secant, Bisection and Newton-Raphson Methods; Numerical integration by trapezoidal and Simpson's rules.

- *Calculus:* Limit, Continuity & differentiability, Mean value Theorems, Theorems of integral calculus, evaluation of definite & improper integrals, Partial derivatives, Total derivatives, maxima & minima.

COMPUTER SCIENCE AND ENGINEERING

- **_Theory of Computation:_** Regular languages and finite automata, Context free languages and Push-down automata, Recursively enumerable sets and Turing machines, Undecidability; NPcompleteness.

- **_Digital Logic_**: Logic functions, Minimization, Design and synthesis of combinational and sequential circuits; Number representation and computer arithmetic (fixed and floating point).

- **_Computer Organization and Architecture_**: Machine instructions and addressing modes, ALU and data-path, CPU control design, Memory interface, I/O interface (Interrupt and DMA mode), Instruction pipelining, Cache and main memory, Secondary storage.

- **_Programming and Data Structures_**: Programming in C; Functions, Recursion, Parameter passing, Scope, Binding; Abstract data types, Arrays, Stacks, Queues, Linked Lists, Trees, Binary search trees, Binary heaps.

- **_Algorithms_**: Analysis, Asymptotic notation, Notions of space and time complexity, Worst and average case analysis; Design: Greedy approach, Dynamic programming, Divide-and-conquer; Tree and graph traversals, Connected components, Spanning trees, Shortest paths; Hashing, Sorting, Searching.

- **_Compiler Design_**: Lexical analysis, Parsing, Syntax directed translation, Runtime environments, Intermediate and target code generation, Basics of code optimization.

- **_Operating System_**: Processes, Threads, Inter-process communication, Concurrency, Synchronization, Deadlock, CPU scheduling, Memory management and virtual memory, File systems, I/O systems, Protection and security.

- **_Databases_**: ER-model, Relational model (relational algebra, tuple calculus), Database design (integrity constraints, normal forms), Query languages (SQL), File structures (sequential files, indexing, B and B+ trees), Transactions and concurrency control.

- **_Computer Networks_**: ISO/OSI stack, LAN technologies (Ethernet, Token ring), Flow and error control techniques, Routing algorithms, Congestion control, TCP/UDP and sockets, IP(v4), Application layer protocols (icmp, dns, smtp, pop, ftp, http); Basic concepts of hubs, switches, gateways, and routers.

- **_Information systems and Software Engg:_** information gathering, requirement and feasibility analysis, data flow diagrams, process specifications, input/output design, process life cycle, planning and managing the project design, coding, testing, implementation, mainteneance.

- **_Web Tehnologies:_** HTML, XML, basic concepts of client- server computing.

Few Recommended Books

- *Discrete Mathematics :- Tremblay, Manohar*
- *Probability, Statistics and Queuing Theory :- S.C. Gupta and V.K. Kapoor*
- *Graph Theory :- Narsingh Deo*
- *Higher Engineering Mathematics :- B.S.Grewal*
- *Numerical Methods :- S.S.Sastry*
- *Formal Language and Automata Theory :- J.D. Ullman Etal*
- *Analysis of Algorithms and Computational Complexity :-*
- *Introduction to Algorithms :- Cormen Etal*
- *Computer Algorithms :- Horowitz and Sahani*
- *Digital Logic Circuits and Design :- Morris Mano*
- *Computer Organization :- Morris Mano*

Other Important Books are :-

- *Multiple Choice Questions :- Timothy.J.Williams, TMH Publications*
- *Gate Questions Papers :- G.K.Publishers*

Exam centers in Kerala

- Calicut
- Ernakulam
- Kannur
- Kollam
- Kottayam
- Palakkad
- Thiruvananthapuram
- Thrissur

GATE Question Paper Pattern

Paper Code	Patterns of Question papers	Negative Marks for wrong Answer
AE,AG,AR,CE, CH,CSCY,EC, EE,IN,MA,ME, MN,MT,PH,PI, PY,TF	Q.1 to Q.20 : Will carry one mark each (sub-total 20 marks).	1/3 mark will be deducted for each wrong answer.
	Q.21 to Q.50 : Will carry two marks each (sub-total 60 marks)	2/3 mark will be deducted for each wrong answer.
	Q.51 through Q.56 (3 pairs) will be common data questions. Each question will carry two marks	2/3 mark will be deducted for each wrong answer.
	Question pairs (Q.57, Q.58) and (Q.59, Q.60) will be linked answer questions. The answer to the second question of the last two pairs will depend on the answer to the first question of the pair. If the first question in the linked pair is wrongly answered or is un-attempted, then the answer to the second question in the pair will not be evaluated. Each question will carry two marks	There will be negative marks only for wrong answer to the first question of the linked answer question pair i.e. for Q.57 and Q.59, 2/3 mark will be deducted for each wrong answer. There is no negative marking for Q.58 and Q.60.

General instructions on GATE question paper:

١. All questions in this paper are of objective type.

٣. Questions must be answered on Optical Response Sheet(ORS) by darkening the appropriate bubble using HB pencil against the question number on the left hand side of the ORS. Each question has only one correct answer. In case you wish to change an answer, erase the old answer completely. More than one answer bubbled against a question will be treated as an incorrect response.

٥. There are a total of 60 questions carrying 100 marks. Questions 1 through 20 are 1-mark questions, questions 21 through 60 are 2-mark questions.

1. Questions 51 through 56(3 pairs) are common data questions and question pairs(57, 58) and (59, 60) are linked answer questions. The answer to the second question of the above 2 pairs depends on the answer to the first question of the pair. If the first question in the linked pair is wrongly answered or is un-attempted, then the answer to the second question in the pair will not be evaluated.

٣. Un-attempted questions will carry zero marks.

٥. Wrong answers carry NEGATIVE marks. (distribution of negative marks was discussed in previous slides).

1. Calculator(without data connectivity) is allowed in the examination hall.

3. Charts, graph sheets or tables are NOT allowed in the examination hall.

5. Rough work can be done on the question paper itself. Additionally, blank pages are given at the end of the question paper for rough work.

About Results

❖ Results of qualified candidates in GATE will get All India Rank and percentile score.

❖ Score Card will be sent only to the qualified candidates. No information will be sent to the candidates who have not qualified.

❖ The score card of qualified candidates will give Percentile Score for the discipline and the Performance Index.

Percentile Score is,

$$P = \frac{N - \sum\limits_{c=1}^{r} n_c}{N} \times 100$$

Where   P=percentile score
        N=total number of candidates appearing in the discipline
        n_c = number of candidates having the same All India rank in the   same discipline.
        r= All India rank

Performance Index(PI) in a discipline is calculated as follows :

Performance Index = K1 + K2 (m-a)/s

Where m = marks obtained by candidate

a = average marks in the paper

s = standard deviation in the paper.

K1 and K2 = constants which are same for all disciplines.

After GATE Exam, What Next?

❖ After declaration of GATE results, students must apply to individual institutes to get their application forms.

❖ Institutes advertise for the MTech admissions in leading newspapers from 1st April till the end of July. However some institutes do not advertise and therefore students have to send request for the applications directly.

❖ Admission in the institute is based on GATE percentile.

❖ The concerned institute may conduct written test and/or interview for the purpose of admission.

❖ If your GATE score is 96 you can go for admission in NITs, Roorkie, BITS Pilani etc. If less than 85 you have to look for other appropriate institutes.

Scholarships

During the pursuit of M.Tech, you are paid a scholarship of **Rs. 8000** a month by the government of India. This amount is enough for living expenses including purchase of books etc. The scholarship is paid for entire period of MTech which is 24 months.

PLAN FOR SUCCESS AT EXAM

- Normally 3 to 4 months of serious study should be sufficient for preparation.
  Students in final year have to properly schedule their studies as semester exam in winter and other engagements may absorb lot of time.

- In the first run study all topics as per syllabus.

- In the revision stage concentrate more on selected topics.

- Try to solve papers of previous years. This will give you an idea about the mismatch between the actual paper and your level of preparation.

- Fill up the gap by extra study.

- Try to take up practice tests.

IMPORTANT DATES

- **Availability of GATE forms :** October 1st week

- **Last date for submission of forms** : Nov 1st week

- **Examination date :** 2nd Sunday of February

- **Results :** March 31st

A few Suggestions About the Schedule for Studies at college

❖ Utilize our free hours for the preparation.

❖ On days when there are no free hours the GATE coaching should be from 5pm to 5:50 or 6pm.

❖ Divide into groups and make sure to work out maximum questions during free time. Help each other with tough problems.

❖ Each one take up a part of the syllabus. Study those topics well and take a class for the rest.

❖ Maintain a common document where each person's choice will be published and an efficient schedule can be prepared.

❖Just a few months of effort can get us an admission in one of the pioneer institutes in India.

❖Always remember :

NO PAIN, NO GAIN !!

Questions and Suggestions!