

# Alumni Speak: GATEway-I

Program coordinator  
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ME 2009



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# **General overview of GATE**

## **Speaker: Satyam Gupta**



# General overview of GATE exam (exam format, score validity, etc.)

## GATE overview

GATE - GRADUATE APTITUDE TEST in ENGINEERING (Computer based test)

Conducted by 7 IIT's and IISC ( Started from 1983)

Eligibility - third year/final year engg. student/ Graduates in engineering

Format -No. of questions, duration, total marks, pattern of questions, negative marking

Score validity - 3 years

Exam Date - First or second week of February

## Additional information

Qualification rate - 17.82% (year 2021)

GATE score shows relative performance

Easiest way to get into an IIT



# Various options available through GATE

## M.Tech

- **India:** Top 7 IITs, new IITs, NITs, other top universities (e.g. IIT Delhi, IIT Kanpur, NIT Bhopal, DTU)
- **Foreign:** Technical University of Germany, RWTH Germany, NUS and NTU in Singapore

## MS

- Research oriented programme
- Colleges like IIT Madras, IIT Delhi etc. offer such course

## PSU jobs

- More than 50 PSUs for engineers like IOCL, PGCIL, POSOCO, BEL, NPCIL, NTPC, etc.

## M.Tech + PhD dual course

- Generally a 5 year course.
- E.g. IIT Kanpur, IIT Kharagpur etc.

## IIM fellowship program

- Fellowship management programme by various IIMs
- E.g. IIM Banglore, IIM Ranchi, IMT Hyderabad etc.

# Pros and Cons of M.Tech Vs working in PSUs

M.Tech	PSUs
<p><b>Pros</b></p> <ul style="list-style-type: none"><li>Specialization programme</li><li>Enhance knowledge</li><li>Market need</li><li>More demand</li><li>Pursue Doctoral degree</li><li>Desired working profile in job</li><li>Stipend for two years</li></ul>	<p><b>Pros</b></p> <ul style="list-style-type: none"><li>Handsome salary</li><li>Good allowances</li><li>Job security</li><li>Less stress</li><li>Good working environment</li><li>Stability</li></ul>
<p><b>Cons</b></p> <ul style="list-style-type: none"><li>Low package jobs ( for some branch)</li><li>Higher job stress .</li><li>Lesser job security</li></ul>	<p><b>Cons</b></p> <ul style="list-style-type: none"><li>Not always your desired working profile</li><li>Remote posting location in most PSU like PGCIL,COAL INDIA etc.</li><li>Repetitive work in most cases</li></ul>



**GATE preparation**

**Speaker: Deepti Tripathi**



# Planning your preparation timeline, optimum study hours and study habits

- **Do I need to study 8 hours daily :(**
  - QUALITY, NOT QUANTITY MATTERS
  - PROPER MANAGEMENT IS THE KEY
  - DO NOT LET FEAR OF FAILURE OVERPOWER YOU
- **My Techniques -**
  - Fix a goal in the night and try to complete it the next day.
  - Make short notes, very helpful at the end.





# Planning your preparation timeline, optimum study hours and study habits (cont.)

- How to tackle so many subjects, it is intimidating

Let's apply a for loop

1. Take two subjects at a time.
2. Complete it.
3. Next again take two subjects and keep the two already prepared subjects for revision in morning.
4. Repeat til all subjects are completed.

## ATTENTION!:

Simultaneously start giving part tests once you complete a topic.

Make short notes only once you have revised the subjects at least two times.

Never get bothered by low marks in test series ; rather include it in your improvement strategy.





# Choosing preparation material and test series

**1** Take at least two test series and focus on analysing and improving it.

**2** Try to go for made easy written notes.

**3** One can go for standard books at early stage.

**4** Focus on numerical part and practise it regularly; try to make your own tricks.

**5** Solve previous year at least 3 times.

# Making notes

## Example 1

**CONTROL SYSTEM**

→ DC gain or steady state gain is not s=0 in T.F.  
 → Pole is reciprocal of time constant.  
 → Settling time → speed & stability & transient region ↑  
 steady state region →

→ C(t) for unit step response of 10% →

**FIRST ORDER**

$C(s) = 1 - e^{-4t}$

$C(t=0) = 0.632$   
 $C(t=2\tau) = 0.86$   
 $C(t=3\tau) = 0.95$   
 $C(t=4\tau) = 0.98$   
 $C(t=5\tau) = 0.99$

- $t_d \rightarrow 50\%$  of steady state value
- $t_d = 0.693\tau$
- $t_r = 2.2\tau$
- BW  $\propto$  gain = constant
- BW  $\rightarrow$  noise  $\uparrow$
- BW stability  $\propto$  Accuracy
- $t_s = 4\tau$  for 2% TB
- $t_s = 5\tau$  for 1% TB
- $t_s = 3\tau$  for 3% TB

•  $t_r = 2.2\tau = \frac{2.2}{2\pi RC}$   
 $= \frac{2.2}{(BW)t_r}$  →  $t_r \propto \frac{1}{BW}$

Time constant is reciprocal of location of real part of CLP

**SECOND ORDER SYSTEM**

•  $C(s) = \frac{\omega_n^2}{s^2 + 2\zeta\omega_n s + \omega_n^2}$  •  $s_1, s_2 = -\zeta\omega_n \pm j\omega_n\sqrt{1-\zeta^2}$   
 $R(s) = \dots$  •  $= -\alpha \pm j\omega_d$   
 •  $\cos\theta = \zeta/\omega_n$  •  $\tan\theta = \sqrt{1-\zeta^2}/\zeta$   
 •  $t_s = 4\tau = \frac{4}{\zeta\omega_n}$  •  $t_{sri} < t_{sundr} \rightarrow t_{sri} < t_{sundr}$

•  $C(t) = A \left[ 1 - \frac{e^{-\zeta\omega_n t}}{\sqrt{1-\zeta^2}} \left( \sin(\omega_n\sqrt{1-\zeta^2}t + \tan^{-1} \frac{\sqrt{1-\zeta^2}}{\zeta}) \right) \right]$

For unit step input:

- $\zeta = 0$  underdamped (purely imag)
- $0 < \zeta < 1$  underdamped (negative complex conjugate)
- $\zeta = 1$  critically damped (negative real)
- $\zeta > 1$  overdamped

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## Example 2

$k = \frac{M}{\sqrt{L_1 L_2}}$   $M \leq \sqrt{L_1 L_2}$   $k=1$  tightly coupled  
 $k=0$  isolated coils

Not Connected:

→  $i_1$   $i_2$   
 $M$  is +ve  $M$  is -ve  $M$  is +ve

Series Addy =  $L_1 + L_2 + 2M$   
 Series Opposy =  $L_1 + L_2 - 2M$   
 Parallel Addy =  $\frac{L_1 L_2 - M^2}{L_1 + L_2 + 2M}$   
 Parallel Opposy =  $\frac{L_1 L_2 - M^2}{L_1 + L_2 - 2M}$

Series Addy:  $V_1 = L_1 \frac{di_1}{dt} + M \frac{di_2}{dt}$   
 $V_2 = L_2 \frac{di_2}{dt} + M \frac{di_1}{dt}$

Series Opposy:  $V_1 = L_1 \frac{di_1}{dt} - M \frac{di_2}{dt}$   
 $V_2 = L_2 \frac{di_2}{dt} - M \frac{di_1}{dt}$

Parallel Addy:  $V_1 = (L_1 + M) \frac{di}{dt}$   
 $V_2 = (L_2 + M) \frac{di}{dt}$

Parallel Opposy:  $V_1 = (L_1 - M) \frac{di}{dt}$   
 $V_2 = (L_2 - M) \frac{di}{dt}$

$\frac{N_1}{N_2} = \frac{V_1}{V_2} = \frac{I_2}{I_1}$  for voltage sign - See dots  
 for current sign - See current direction from dots

Max<sup>m</sup> power transfer:

DC Variable	Cond <sup>n</sup>	AC Variable	Condition
$R_L$	$R_2 = R_S$	$Z_L = R_L$	$R_L =  Z_S $
$R_S$	$R_S = 0$	$Z_L = R_L + jX_L$	$R_L = [Z_S + jX_S]$
		$Z_L = R_L + jX_L$	$X_L = -X_S$
		$Z_L = R_L + jX_L$	$Z_L = Z_S^*$
		$ Z_L  = R_L + X_L^2$	$ Z_L  =  Z_S $

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# How to manage both college and GATE preparation

- Combine the two.
- Make it an advantage - You can take an initial push from college by reading standard books.
- **Let's do some analysis**

Technically if you take 5 hours class max, u still have  $24-5=19$  hours to dedicate to gate prep.

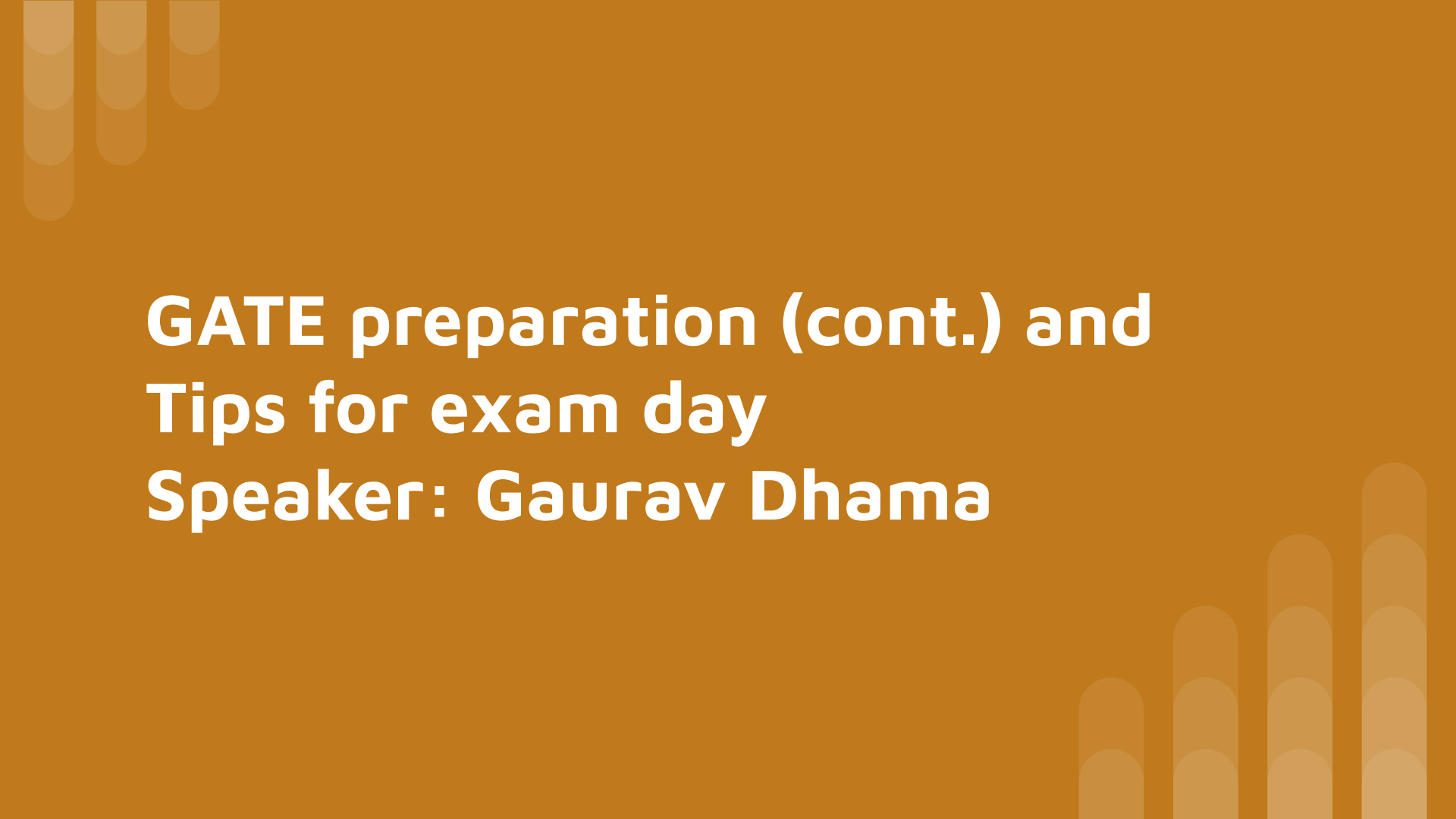
And if you take 8 hours sleep  $19-8=11$  hours.

3 hours misc. gives  $11-3=8$  hours and *if you dedicate even half of this time, I am sure you will ace it.*




# Last minute preparation tips and revision

- **Don't get affected by the test series marks.**
- **Avoid last day revision.**
- **Trust your hard work and keep practising.**
- **Most of the people study hard, what makes the difference is your attitude towards exam.**
- **Be calm, enjoy your surroundings, go for a ride in the campus, take a good sleep.**
- **Avoid reading any new topics before 60 days of the exam.**

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**GATE preparation (cont.) and  
Tips for exam day  
Speaker: Gaurav Dhama**



# How to know whether you need to join coaching or not

- Compatible and comfortable with coaching schedule after college hours??
- What do you like, **your own pace** or a well prepared schedule?
- **Your own way of developing and understanding concepts** or pre fed concepts by coaching institutes?
- **Would you trust your self confidence** or take crowd`s walk instead?
- Welcome !!

**You are sorted now!!**




# How to keep yourself focused - meditation, role of sports, etc.

- Keep taking short breaks (like once in a week, sometimes twice also)
- Woah!! Here we go, Sports.....!!

Let`s take a break from those cuboidal dimensions. We`ll embrace some physical tiredness to get rid of mental saturation/ stress/monotonicity/tiredness.

- Merriments!! Come on!! You are a hosteler. At times, keep your mind GATE free.
- But.....

**On some good day make sure to put some extra efforts to keep yourself synchronised with the machine called TIME.**



# During GATE exam: General test taking strategies, How to manage time, speed and accuracy

- Try different methods of attempting test series in your test taking phase.  
Methods like, **1 mark questions first** or 2 marks first , aptitude section in the very start, in the end or **in between of the two**.
- Figure out the best from tried ones and go for the same method on D-Day.
- Your calmness saves you the time and your best method gives you the calmness.
- For accuracy, have frequent watch over calculator screen to ensure if you are typing correct digits. This will help in ensuring that you have taken all the terms of formula also.





# Tips for the EXAM day

- Your confidence will go to your computer screen.
- Aptitude section is your saviour out there, use it wisely to keep yourself confident and calm
- 1 mark questions are your confidence`s source and 2 marks questions will test your confidence.
- Aptitude section is your source of calmness. This will help you to be more effective in technical part.
- A perfect blend of aforementioned will fetch you a perfect rank.