

15 Tips to Cheat at MCQs in IIT JEE: Guessing Your Way to the IITs **BY TOP IIT ANALYST**

About a decade ago, IIT JEE preparation was for students who were in Class 11 and 12. A few started early and could be found with IIT JEE syllabus and books right from Class 9. Then started Foundation Programs for JEE for students from Class 6th onwards.

We are not going to talk about 14 lakh applicants trying out for JEE Main or the alleged 2% success rate of students in IIT JEE making it one of the tough test and most competitive exams of the world.

The Truth of the Engineering Entrance Exams

Truth #1

All the engineering exams in India have objective, multiple-choice questions (MCQs) with four answers to choose from. You have to just circle the correct bubble.

Nobody cares how you do it – whether you actually understand concepts, cheat your way through the exam or just guess the answers and they turn out to be correct.

Truth #2

In JEE Main, JEE Advanced and BITSAT, there is a devil called **Negative Marking** to discourage blind guessing. But sensible guessing can help you get the best of it.

If you don't know the correct answer, sensible guessing can help you eliminate all the wrong answers and gain marks.

Truth #3

Believe it or not, in all major exams, **answers are equally distributed among all the four options**: a, b, c and d. It means that 25% of answers have to be 'a', 25% will be 'b', 25% will be 'c' and 25% will be 'd'. This is done to make sure that students do not get marks merely because of probability.

Marking scheme of the exams gives you +3 marks for all corrects answer and -1 mark for all incorrect answers.

It means that if you only mark 'a' for all the questions – you will have at least 25% correct answers. Rest of the 75% answers will be incorrect. Hence, going by the formula below, you will get 'zero' marks in the exam.

$$[(X/4) \times (3)] - [(3X/4) \times (-1)] = 0$$

It means if you solve 100 questions, you will get $(100/4) = 25$ answers correct. Multiply it by 3 and you will get 75 marks. But now, $\frac{3}{4}$ of your answers will be incorrect, which will fetch you 75 penalty marks. Deducting one mark for each incorrect answer will mean that you lose 75 marks. The net difference will be Zero.

15 Tricks to Guess Correct Answers for MCQs in JEE Main & JEE Advanced

1) Steer away from the Highest and the Lowest

In questions which have answers in numerical values, stay away from the extremes. In 60% cases, the highest and the lowest values are not the correct answers.

2) Gamble on One of the Two Options

If you have already crossed out two incorrect answers, gamble on one of the two options in which you are confused. Use other tips here while choosing your pick such as the first one mentioned above.

3) No Negative Marking means you are in the Safe Zone

In case, there are questions like 'Match the Following' or other similar questions which do not carry negative marking, you are free to play. Never leave such questions un-attempted. Study the marking scheme closely and also read the instructions given in the question paper carefully.

4) Units and Values

There are questions where they play on units and values. Choose the unit mentioned in three options and choose the value that has been mentioned twice.

Let's say, in a question related to Heat or Thermodynamics, the options are:

- (a) 60 °K
- (b) 70 °C
- (c) 60 °C
- (d) 50 °C

Now since three options mention degree Celsius, the correct answer will definitely have °C in the unit part. Also see that the value 60 is mentioned in both Celsius and Kelvin. Hence, most probably it will be the right value.

Hence, we will choose (c) or 60 °C as our answer. This logic works in 80% of the cases!

5) Domain and Range of a Function

Questions related to finding domain of a function in IIT JEE are usually asked as below:

If $x = \{0, 1, 2, 3, 4\}$, $y = \{2, 3, 4, 5\}$ and $x \in X, y \in Y$, then which of the following is a function in the given set -

- (a) $f_1 = \{(x,y) : y = x + 1\}$
- (b) $f_2 = \{(x,y) : x + y = >5\}$
- (c) $f_3 = \{(x,y) : y \leq x\}$
- (d) None of these

In such questions, you do not have to solve the entire function.

Just put in the extreme values of the set in the function and see if they satisfy the answer. In this question, you can put 0 and 4 for x and 2 and 5 for y. You will be able to get the correct answer – (d) in this case.

6) Dimensional Analysis is your Friend in Crime

I wonder whether administrators put such questions only to mock students who actually solve them. Sometimes the options given as answers are just so laughable! Just the dimensional analysis of the weirdest questions will lead you to the correct answer – quickly and accurately.

Let's say, there is a question in which you have to find velocity of an electromagnetic field with weird orientation. Its field values are given as B and E. The options are given as:

- (a) $(2E/B)^{1/2}$
- (b) $(2B/E)$
- (c) $(2E/B)$
- (d) $(2B/E)^{1/2}$

Now, you already know:

- Dimensions of an Electric Field are $(M^1L^1T^{-3}A^{-1})$, and
- Dimensions of a Magnetic Field are $(M^1L^0T^{-2}A^{-1})$.

Hence, only E/B gives you the Dimension of Velocity, which is (L^1T^{-1}) . We do not need the square root as it will lead to the root of velocity too.

So, our answer is (c) in this case. You do not really need to check for '2E' as only one option gives you correct dimensions.

7) Putting Values to Narrow Down your Options

Use this trick for questions in which you have to find general expressions for certain scenarios.

Let's take an easy example. You have to find the expression for Pressure on a Bubble of Radius R in a container situated at H height from the ground level. The water in the container is up to height L .

Your options are:

- (a) $P + [\rho g (L-h)/LR]$
- (b) $P + [\rho g LR/(L-h)]$
- (c) $P + [\rho g R (L-h)/L]$
- (d) $P + [\rho g (L-h)(L-R)/L]$

The dimensional analysis will tell you that the first option is not correct. Similarly, the second option too gives you a dimension of Pressure per Unit Area and not just Pressure.

Now, we only have third and fourth options in hand.

We know that the Pressure on the surface of water must be P and $(P + \rho g L)$ at the base of the container.

At the surface of water, $h = L$ and Pressure = P . At the base of the container, $h = 0$ and Pressure = $(P + \rho g L)$. Put these two values in the equations and you will find the correct answer – (d) in this case.

8) Finding out n-terms in Mathematics

Perhaps the easiest questions in Math's, these either ask for the n^{th} term or the sum or product of n -terms. The value of ' n ' is mostly 1, 2 or at the most 3. Simply, put in these values and check whether they fit in.

If you have tried up to '3' and you still do not have the answer, leave it alone. It is most likely to be a high-level question.

Here's an example for you:

The sum of n natural numbers $(1+2+3+\dots +n)$ is:

(a) $n(n-1)/2$

(b) $n(n+1)/2$

(c) $n(n+2)/3$

(d) $(n+1)(n-1)$

Sum of 1 as a natural number should be 1 too.

Put 1 as the value of n . Solving the equations you will get 0 for (a), 1 for (b), 1 for (c) and 0 for (d). Hence, we can rule out (a) and (d).

Now we put 2 as the value of n . Solving (b) equation, we get 3 as the answer while (c) equation dissolves into $8/3$, which is not a natural number. Hence, the correct answer is (b).

9) Generalize Questions

These are the favorite questions of JEE administrators. They have complex orientation and you will have to find one of the variables.

Just assume that two or more of the arbitrary values are zero, one or some other easy value and check your options again.

Here's an example:

For positive real values, it is given that $m^3x^4 = n^3y^4$ and $m^2 < n^2$, then

(a) $m^3x^2 > n^3y^2$

(b) $m^3 < y^4$

(c) $m^3x^2 < n^3y^2$

(d) $m^3 > y^4$

Solving these will lead you to the hot soup of inequalities.

Hence, here's an alternative. Assume some easy values for m , x , and n . Let's say, $m = 2$, $n = 3$, and $x = 3$. You will get y as the fourth root of 24. Approximate it as the square root of 5 (since 5 is the square root of 25). Hence, it can be roughly calculated to be 2.2.

For such questions, approximating values is a good idea.

Put these values in the equation. Cancel out '3' wherever possible and you will soon find the correct answer as (b).

In questions where you get random inclinations of a plane (alpha, beta or whatever), check what will happen if the inclination is zero/90. Put zero or 90 as the value of the plan and see which of the answers satisfy the condition.

You can apply the same logic to find Moment of Inertia about a random axis. Here's an example:

Find Moment of Inertia (M.O.I) of a rod along an axis at theta degrees from its length passing through the centre:

- (a) $ML^2\sin^2\theta/12$
- (b) $ML^2\cos^2\theta/12$
- (c) $ML^2\sin\theta\cos^2\theta/12$
- (d) $ML^2\sin^2\theta\cos\theta/12$

We know that the M.O.I of a rod along its length is zero. So if $\theta = 0$, M.O.I = 0 too. Assume $\theta = 0$ and (a), (c) and (d) all turn out to be zero.

Also, the M.O.I of a rod perpendicular to its axis (for $\theta=90$) = $ML^2/12$. Using $\theta = 90$, only (a) gives you that answer. (c) and (d) turn out to be zero. So, (a) is the correct answer. Isn't it simple?

10) Easiest Topic that fetches you 20-25 Marks

Modern Physics with its atoms, nuclei, radiation and all cannot be just ignored. It fetches you as much 20-25 marks in IIT entrance level exams and you hardly need more than a day or two to understand it all.

Just cram up all the formulae. You just can't let these questions go. Strangely, it requires one-tenth of the preparation time you need for **Mechanics** but fetches you ten times the marks.

11) Diagrams for Co-ordinate Geometry

Even if you don't thoroughly understand a concept, drawing an approximate diagram according to the given scale can help you work out the radius, area, equations etc. easily. It might seem like a trivia but it really works in many cases.

12) You can delay practicing Kinematics and Trigonometry

Despite what they say about these topics, you need a number of hours or perhaps days and even weeks to really master these two topics. And what do they yield – only 2 or 3

questions at the most. In the same amount of time, you can probably master several other topics and get your hands on 20-25 marks worth of questions.

So, I will suggest you to touch these topics only when you have extra time and have finished with the rest of your preparation.

Many argue trigonometric methods can help you solve a number of questions. But what these main questions need are just the basics, which you will probably learn on your own between your school classes, homework, coaching classes, and assignments. For real expertise, you have to be really geeky and nerdy. So, keep your hands off it until you have mastered the rest.

13) Re-read Chapter 1 of Physics from your Class 11 NCERT Book

I wonder why no coaching institute pays much attention to this introductory chapter on Measurements. It is so easy and you get at least three questions from Dimensions, Approximation and finding Maximum Error sections.

Make sure you understand it clearly. Read the study material, go through the answer keys and check past year papers with solutions. It is easy and fetches you some 'free' marks.

14) NCERT for Chemistry

My teachers in Class XI and XII always used to say that NCERT books are the 'Bible' for all competitive entrance exams in India. And I, as usual, did not pay attention to what they said.

To my horror, I discovered what they said was so true!

So, here are my words of wisdom: Consider NCERT books as the books from where questions will be lifted from – directly. In Math and Physics, there might be some questions from other books but in Chemistry – every question asked in IIT JEE was from the NCERT book. In fact, in Inorganic Chemistry, some of the lines were directly quoted from the NCERT book – straight away Ctrl+C and Ctrl+V factor.

15) Let the Mind Rule for Once!

I know what they say about always listening to your heart. But IIT JEE is about testing your Intelligence and not your Intuition. So, let the mind decide which answer to tick and ask the Heart to just be the Motivator for the three hours when you are taking the test.

} Pull out some sample IIT JEE papers. Use these tricks to derive the answers to the questions in topics you have not studied yet and check your score! ~

I got an extra 30 marks in my IIT JEE exam by following this very approach!
No matter what happens, never lose your confidence. Whether it is during preparation, during exam, or after the exams, keep your spirits high. I had no understanding of concepts and yet I made it to the IITs only because I believed that I could do it. The truth is – If I can make it, anyone can make their way to the IITs too!

That reminds me to give you one more warning and one more tip:

F Warning: Never carry a book or revision notes to the exam centre. It will just confuse you and stress you out in the last minute. Just carry your admit card and a pencil box/geometry box with the necessary stationery. And get at least six hours of sleep the night before the exam.

All the best for your JEE exam!