



**Entrance Examination (EE)
For
M Tech In
Information Technology**

PREPARATION GUIDELINES

I. INTRODUCTION

1. Before appearing for the written examination you should strictly ensure that you fulfill the eligibility criteria in all respects. If at any stage, it is found that a candidate does not satisfy the eligibility criteria, or the information furnished by him/her in the application form is incorrect, his/her application for admission to the course, even if he/she is selected, will stand cancelled. Candidates appearing for the EE/Interview will do so at their own risk of eventually forfeiting their admission for want of meeting the eligibility criteria.
2. Canvassing in any form for admission will disqualify the candidate.
3. **Candidates will be shortlisted on the basis of their performance/rank in the EE for the subsequent selection process i.e. personal interview.**

II. GENERAL INSTRUCTIONS

1. **Particulars to be noted:** Please note carefully your **Roll Number, date, time** and **venue for the examination** given in the call letter. Please also note that this call letter does not constitute an offer of admission.
2. **Punctuality in Attendance:** You should be present at the examination hall at the time given in the call letter. Candidates arriving late will not be permitted to enter the Examination Hall.
3. **Call letter to be surrendered:** Please bring the call letter and identity card with photographs pasted in the spaces provided, when you appear for the Entrance Examination (EE). You have to make your signature on the line for Applicant's Signature **only in the presence of the Invigilator** in the Examination Hall. If you come to the examination hall without the call letter or without the photographs affixed on it, you will not be permitted to appear for the examination. You should hand over your call letter to the invigilator in the Examination Hall, when he collects the call letter from the candidates. You should retain your identity card after the invigilator signs it.



- 4. Compliance with Instructions:** You should scrupulously follow the instructions given by the test administrator and invigilators at the examination venue, at all stages of the examinations for which you have been called. If you violate the instructions, you will be disqualified and may also be asked to leave the Examination Hall.
- 5. Use of Calculators, Books, Notes and copying or Receiving/Giving Assistance Not Allowed:** No calculator (separate or with watch), books, note-books or written notes will be allowed inside the Examination Hall. Any candidate who is found either copying or receiving/giving assistance will be disqualified.

III. TAKING THE TEST

Test Introduction

The test is online (computer based) as described in our brochure, covering qualitative, quantitative, general aptitude, and very basic programming ability. The test has four sections with durations as indicated below. The candidates will not be allowed to return to a previous section after moving to a subsequent one.

Each of the four sections has a different time limit as mentioned below:

Test Name	Total Questions	Total Duration (In Minutes)
Verbal Ability	30	25
Analytical Ability	30	35
Quantitative Ability	30	30
Computing Aptitude	15	30
Total Duration: 2 hrs		

Each section has a minimum marks cut off that you must reach to pass this stage of the selection process.

Verbal Ability Section

Verbal Ability involves retrieval, formation, modification and processing of language. Verbal Ability is the cognitive ability to use words or use a language effectively.

Target Audience: The test-taking audience should have good proficiency in English Language.

Analytical Ability



The Analytical Ability test involves reasoning that helps in analyzing and synthesizing information, applying broad analysis to arrive at conclusions, understanding complex relationships, using systems perspectives while handling a problem or a situation.

Target Audience: The test-taking audience should have good problem solving and analytical skills.

Quantitative Ability

The Quantitative Ability tests a candidate on his/her numerical facility

Target Audience: The test-taking audience should have good mathematical knowledge.

Computing Aptitude

The Computing Aptitude test assesses the candidate's fundamentals in Computer Problem Solving using Algorithms, Array, Data structures, etc.

Target Audience: The test-taking audience should have knowledge of Computers and basic Programming.

Reference: "How to solve it by computers" by R G Dromey

How to take the test

1. You can change your answer as often as you like within a Section until the time for the Section runs out or you use the Finish button to submit the section. A timer for each section showing remaining time in minutes and seconds runs in the top left corner of your screen.
2. Once you are sure of having completed a section please click on the "START" Button to take you to the next Section. You cannot go back to a section if you have clicked the Finish Button.
- 3 After the expiry of the time limit for a section, the test automatically moves on to the next section.
4. For each question, there are four alternative choices. One of them is the correct answer. Mark your response by checking the appropriate check box. To change your response, please check the box that you think is appropriate. The previous response automatically gets updated with the new response. You have been provided with rough sheets and a pen for rough work.
5. Please click on "**Start**" and then click on "**Proceed**" to Continue.



IV. STRUCTURE OF THE TEST

The written examination will comprise an objective test of 105 questions covering Quantitative Aptitude, Reasoning Ability, Verbal Ability and Computing Aptitude. Composite time of two hours (120 minutes) will be given to attempt all the 105 questions.

Sample Questions on each of these areas are given later in this document.

If you read a question, mark its answer immediately. Do not waste your time in reading all the questions first and then deciding which one to answer, as many persons do in the actual school/college examinations. Start answering questions in the test. If you find a question difficult, skip it and go to the next question.

V. TEST ADMINISTRATION

1. You must be present at the Test Centre (venue) 30 minutes before the allocated exam time on the test day. Candidates reporting late may not be allowed to appear for the test. The pre-test proceedings will begin by the indicated time on the test day.
2. **No other instruments or devices like mobile phones, calculator, wristwatch-cum-calculator, watch alarms, statistical tables, notes, guides etc. will be allowed to be used in the examination.** The candidates should not therefore bring such articles to the Examination Hall.
3. The candidate must follow the instructions in the handout and those given at the time of the test by the Test Administration Staff, i.e. Chief Test Administrator (CTA), Invigilator, etc. Any violation of these may result in the cancellation of candidature.

VI. SAMPLE QUESTIONS

Verbal Ability

Fill in the Blanks

Q 1) We'll be in Australia for ____ year.

Choice 1 A

Choice 2 An

Choice 3 The

Choice 4 No article required

Q 2) She knows more _____ classical music than anyone I've ever met.

Choice 1 Of

Choice 2 About

Choice 3 From

Choice 4 With

Q 3) On the other side of the river, _____ the bridge, is the richer side of town.

Choice 1 Across

Choice 2 Along

Choice 3 Through

Choice 4 Above

Replace the word in italics with the best option

Q 4) Flowers have *conspicuous* petals so that they can attract birds for pollination.

Choice 1 Prominent

Choice 2 Beautiful

Choice 3 Colorful

Choice 4 Scented

Q 5) The tour was cancelled on account of *incessant* rain.

Choice 1 Constant

Choice 2 Heavy

Choice 3 intermittent

Choice 4 Unexpected

Analytical Ability

Q 1) In a class of 100, 64% of the students have opted for political science and 56% of the students have opted for history. How many students have opted for both subjects?

- A) 17
- B) 18
- C) 19
- D) 20

Q 2) Out of 120 musicians in a club, five can play all three instruments - guitar, violin and flute. The number of musicians who can play both the flute and the guitar is 20. The number of musicians who can play only the guitar is 40. The number of musicians who can play both the guitar and the violin is 10 and the number of musicians who can play both the flute and the violin is 10. The number of musicians who can play the flute is 45. What is the total number of musicians who can play only the violin?

- A) 25
- B) 30
- C) 35
- D) 45

Q 3) Johnny is playing with cubical building blocks. He begins building a giant cube and finds that he needs six more blocks to complete the cube. Next, Susan starts building a cube with the same building blocks, and has 85 building blocks left after completing her cube. How many blocks were they playing with?

- A) 155
- B) 210
- C) 270
- D) 189

Directions for questions 4 – 5:

In the following questions mark:

- 1, if the question can be answered with the help of statement I alone.
- 2, if the question can be answered with the help of statement II alone.
- 3, if the question can be answered with the help of both I and II.
- 4, if none of the above options is true

Q 4) Is the volume of the cylinder a whole number?

Statement I: The height is the reciprocal of the ratio of the circumference of the base to its base diameter.

Statement II: The base diameter is not a whole number.

- A) 1
- B) 2
- C) 3
- D) 4

Q 5) Is $X - Y$ even?

Statement I: X is even.

Statement II: $x*y = \text{odd}$.

- A) 1
- B) 2
- C) 3
- D) 4

Quantitative Ability

Q 1) A theft took place 9 p.m. and the thief started running at a speed of 30 kmph. The police was informed at 11 p.m., and they started chasing the thief at a speed of 40 kmph. If the theft took place on 20 June 2005, on which day of the week will the police be able to catch the thief?

- A) Sunday
- B) Tuesday
- C) Saturday
- D) Monday

Q 2) In a manufacturing plant for wrist watches, on a certain assembly line, the rejection rate for Monday's production was 4%. The rejection rate for Tuesday's production was 8%, and was 7% for the two days combined. What was the ratio of Tuesday's production to Monday's production?

- A) 3:1
- B) 2:1
- C) 1:3
- D) 1:2

Q 3) There were five questions in a question paper. 5% of the candidates answered all. 5% answered none. Of the rest, 25% answered only 1 and 20% answered only 4. If 24.5% of the entire group answered only 2 questions and the remaining 200 candidates answered only 3 questions, the total number of candidates was:

- A) 500
- B) 600
- C) 700
- D) 800

Q 4) Jaggu purchased 100 kites at Rs.10.30 per unit. He purchased another lot of 200 kites at Rs.10.40, a lot of 400 kites at Rs.10.50 and a further lot of 300 kites at Rs.10.80 per kite. Jaggu then observed a decrease in the price and desired to purchase as many

kites at Rs.10.25 per kite as would make the average cost of his holding come down to Rs.10.50. What is the number of kites purchased by him at Rs.10.25 per kite?

- A) 100
- B) 400
- C) 200
- D) 300

Q 5) A and B start their journey from Delhi to Agra. B overtakes A at 10 a.m. and reaches Agra at 1 p.m. On his way back, he meets A at 2 p.m. When will A reach Agra?

- A) 3 p.m.
- B) 3:30 p.m.
- C) 3:50 p.m.
- D) 4 p.m.

Computing Aptitude

1. Identify the correct option that has the valid iterative algorithm for generating fibonacci series

a. int fib(int n)
{
 int f[n+1];
 f[1] = f[2] = 1;
 for (int i = 3; i <= n; i++)
 f[i] = f[i-1] + f[i-2];
 return f[n];
}

b. int fib(int n)
{
 int f[n-1];
 f[1] = f[2] = 1;
 for (int i = 3; i <= n; i++)
 f[i] = f[i] + f[i-2];
 return f[n];
}

c. int fib(int n)
{
 int f[0];
 f[1] = f[2] = 0;
 for (int i = 2; i <= n; i++)
 f[i] = f[i] + f[i-2];
 return f[n];
}

```
d.    int fib(int n)
      {
      int f[n];
      f[0] = f[1] = 2;
      for (int i = 3; i <= n-1; i++)
          f[i] = f[i-1] + f[i-3];
      return f[n];
      }
```

2. Identify the pseudo code for Post Order implementation of Binary Search Trees

- a. postorder(node)
 if node.left = null then postorder(node.left)
 if node.right ≠ null then postorder(node.right)
 print node.value
- b. postorder(node)
 if node.left ≠ null then postorder(node.left)
 if node.right ≠ null then postorder(node.right)
 print node.value
- c. postorder(node)
 if node.left = null then postorder(node.root)
 print node.value
 if node.right = null then postorder(node.left)
 print node.value
- d. postorder(node)
 if node.left ≠ null then postorder(node.left)
 print node.value
 if node.right = null then postorder(node.right)
 print node.value

3. Identify the correct pseudocode for Quicksort algorithm

a. function quicksort(array)

var list less, greater

if length(array) \leq 1

return array

select and remove a pivot value pivot from array

for each x in array

if $x \leq$ pivot then append x to less

else append x to greater

return concatenate(quicksort(less), pivot, quicksort(greater))

b. function quicksort(array)

var list less, greater

if length(array) $>$ 1

return array

select and remove a pivot value pivot from array

for each x in array

if $x \leq$ pivot then append x to less

else append x to greater

return concatenate(quicksort(less), quicksort(greater))

c. function quicksort(array)

var list less, greater

if length(array) \geq 10

return array

select and remove a pivot value pivot from array

for each x in array

if $x \leq$ pivot then append x to less

else append x to less

return concatenate(quicksort(less), quicksort(greater))

d. function quicksort(array)

var list less, greater

if length(array) $<$ 0

return array

select and add a pivot value pivot from array

for each x in array

if $x \leq$ pivot then append x to greater

else append x to less

return concatenate(quicksort(greater), quicksort(less))

4. Identify the properties a tree must possess to become a binary search tree.

a. For all nodes y in left subtree of x , $\text{key}[\text{null}] < \text{key}[x]$

For all nodes y in right subtree of x , $\text{key}[y] > \text{key}[\text{null}]$

b. For all nodes y in left subtree of x , $\text{key}[y] < \text{key}[x]$

For all nodes y in right subtree of x , $\text{key}[y] > \text{key}[x]$

c. For all nodes y in left subtree of x , $\text{key}[y-1] < \text{key}[x]$

For all nodes y in right subtree of x , $\text{key}[y+1] > \text{key}[\text{null}]$

d. For all nodes x in right subtree of y , $\text{key}[\text{null}] < \text{key}[x]$

For all nodes x in right subtree of y , $\text{key}[x] > \text{key}[\text{null}]$

5. Number Guessing game can be mapped to which searching technique?

a. Binary Search

b. Ternary Search

c. Adjacency matrix search

d. Linear Search