

# AMCAT Syllabus

## Contents :

### 1. Language

1.1-English

### 2. Cognitive

2.1-Logical Ability

2.2-Quantitative Ability (Non-Technical)

2.3- Quantitative Ability (Technical)

### 3. Behavioral Test

3.1- AM Personality Inventory

### 4. Engineering Modules

- Computer Science
- Electronics & Semiconductor
- Electrical Engineering
- Mechanical Engineering
- Civil Engineering
- Telecommunications
- Instrumentation Engineering

### 5. Automata Modules

- Automata Fix

Please note: For details on AMCAT syllabus you can also visit :

<https://www.myamcat.com/amcat-syllabus>

## 1. Language:

### 11.1 English:

Familiarity with English Language in its various nuances is an essential skill, especially in the current climate of global networking. Ideally, any recruitment should involve a test of skills in handling the Language in ways that promote the objectives of a company and establish desired rapport. Needless to state, an appropriate test is necessary.

AMCAT English evaluation is ideal to evaluate written English skills of an individual. Our English Test uses a variety of internationally standardized resources for framing questions aimed at determining the candidate's ability to understand (a) the written text (b) the spoken word and (c) communicate effectively through written documents.

#### The test broadly covers the following areas:

- A wide-ranging Vocabulary to cope with general and specific terminology.
- Syntax and sentence structure, the incorrect use of which distorts meaning and becomes a communication hurdle.
- Comprehension exercises designed to test a candidate's ability to read fluently and understand correctly.
- The ability to understand and use suitable phrases, which enrich the meaning of what, is conveyed.



## 2. Cognitive:

### 2.1- Logical Ability:

The Logical Ability section assesses capacity of an individual to interpret things objectively, to be able to perceive and interpret trends to make generalizations and be able to analyze assumptions behind an argument/statement. These abilities are primary for success of a candidate in the industry. Specifically, these are divided into following sections:

- **Deductive Reasoning:** Assesses the ability to synthesize information and derive conclusions.
- **Inductive Reasoning:** Assesses the ability to learn by example, imitation or hit-and-trial. This also provides an indication of how creative the individual is.
- **Abductive Reasoning:** Assesses the critical thinking ability of an individual to see through loopholes in an argument or group of statements. All these abilities are tested both using numerical and verbal stimuli. Various case studies have shown AMCAT Logical Ability to strongly correlate to technical trainability, soft-skill trainability and process trainability. It also demonstrates strong correlation to performance in roles of analysts and knowledge processes. Certain thresholds of logical ability also correlate to sales and support related role performance.



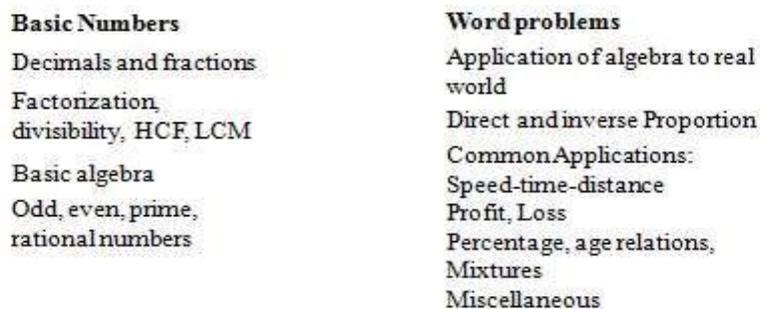
## 2.2-Quantitative Ability (Non-Technical) (1<sup>st</sup> Year & 2<sup>nd</sup> Year)

The Quantitative ability (Non Tech) section measures the candidate's numerical ability and accuracy in mathematical problems. The questions range from purely numeric calculations to problems of arithmetic reasoning, percentage analysis and quantitative analysis.

Specifically these are divided into following sections:

- **Basic Numbers:** This section tests whether the candidate has understanding of basic number system, i.e., fractions, decimals, negative, positive, odd, even numbers, rational numbers, etc. The candidate should know how to do basic operations on these numbers.
- **Number Theory:** This section requires a candidate to apply the concepts related arithmetic reasoning and basic algebra. It assesses the candidate's understanding on factors/divisibility and his/her ability to perform basic algebraic operations.
- **Applied Mathematics:** Apart from operations on numbers, the candidate should know how to convert a real-world problem into equations, which could be solved to find an unknown quantity. Students need to be competent in reading and using quantitative data, in understanding quantitative evidence and in applying basic quantitative skills to the solution of real-life problems in order to perform effectively as professionals and citizens. To assess the same, the candidates are tested on Word Problems representing various real world scenarios.

### Quantitative Ability (Non-Technical)



General Maths

### - Quantitative Ability (Technical) (Pre-Final Year & Final Year)

The Quantitative ability section measures the numerical ability and accuracy in mathematical calculations. The questions range from purely numeric calculations to problems of arithmetic reasoning, percentage analysis and quantitative analysis. Specifically these are divided into following sections -

- **Basic Mathematics:** This section tests whether the candidate has understanding of basic number system, i.e., fractions, decimals, negative, positive, odd, even numbers, rational numbers, etc. The candidate should know how to do basic operations on these numbers, understand concepts of factors/divisibility and have good practice on algebra.
- **Applied Mathematics:** Apart from operations on numbers, the candidate should know how to convert a real-world problem into equations, which could be solved to find an unknown quantity. Students need to be competent in reading and using quantitative data, in understanding quantitative evidence and in applying basic quantitative skills to the solution of real-life problems in order to perform effectively as professionals and citizens. To assess the same, the candidates are tested on Word Problems representing various real world scenarios.
- **Engineering Mathematics:** These are aspects of mathematics needed for Engineering disciplines and analysis of data. This includes permutation-combination, probability and understanding of logarithms.

## Quantitative Ability (Technical)

Basic Mathematics	Applied Mathematics	Engineering Mathematics
<ul style="list-style-type: none"><li>• Divisibility</li><li>• HCF and LCM</li><li>• Numbers</li><li>• Decimal Fractions</li><li>• Power</li></ul>	<ul style="list-style-type: none"><li>• Profit and Loss</li><li>• Simple and Compound Interest</li><li>• Time, Speed and Distance</li><li>• Inverse</li></ul>	<ul style="list-style-type: none"><li>• Logarithms</li><li>• Permutation and Combinations</li><li>• Probability</li></ul>

## 2. Behavioural

### 3.1 - AM Personality Inventory

AMPI, Aspiring Minds' flagship personality assessment is based on the contemporary five-factor model of personality also commonly known as the "Big Five" model. It measures five broad traits: Extraversion, Conscientiousness, Emotional Stability, Openness to Experience and Agreeableness. International studies have shown the Big Five model to be the most effective model to predict job performance.

AMPI is being deployed as a selection filter and for internal workforce evaluation. Being India's most deployed Personality tool, over quarter a million candidates have been evaluated on AMPI for various job roles across different sectors. It is also useful in being able to predict success in roles spanning from sales, customer service, relationship management, collections, technical support, managerial roles, leadership, etc.

AMPI is uniquely constructed to remove cultural and linguistic biases and is ideal for developing economies. The tool works effectively in evaluating individuals who would have not faced job situations in the past and hence effective in evaluating entry level talent as well.

## 4. Engineering Modules

### Computer Science

- This module evaluates the on basic knowledge and understanding of computer science including concepts of operating system and computer architecture, database management and computer networks.
- Befitting Job Functions/Profiles: This module will be relevant for profiles such as Database Administrator, Systems Analyst, Computer Network Architect, Information Security Analyst, Network Engineer, Web Developer, Software Developer, Technical Writer etc./td>
- Number of Questions: 20
- Module Duration: 20 minutes
- Detailed Syllabus:
  - Operating System and Computer Architecture
    - Basics of OS
    - Computer Architecture
    - I/O and File Management
  - Memory Management
  - Process Management and Synchronization
  - Process Management
- DBMS
  - Basic concept, Data model, Views, Operation, TRC, DRC, Architecture
  - Normalization, Generalization, ERD, Key, Database, SQL, Joins, Indexing
- Computer Networks
  - Basics of Computer Networks & Communication
  - Routing
  - Reference Network Model and Protocols
- 

### – Electronics & Semi Conductor

The Electronics and Semiconductor test assesses the suitability of the candidate for the SOC, Embedded Systems, VLSI design, etc. companies. The module has been designed to assess graduates from electronics and electrical engineering background. It tests a candidate's understanding on core concepts pertaining to semiconductors, analog and digital electronics.

The module draws upon knowledge about various semiconductor components like diodes and transistors, signals, amplification and filtering etc. The questions in this test are not just based on factual knowledge of various subject concepts but they also include numerical problems and inference based questions based on circuit based diagrams, designed to check if the candidate is able to extrapolate the concept to practical scenarios.

# Electronics and Semiconductors

## Semiconductors & Devices

- Basics of semiconductors
- Two terminal devices
- Three terminal devices

## Analog Electronics

- Basics of circuit analysis
- Small signal & large signal circuit analysis
- Feedback, stability & oscillators
- Op-amps
- Filters

## Digital Electronics

- Boolean algebra & minimization of Boolean functions
- Logic families
- Combinational circuits
- Sequential circuits
- VLSI basics

### – Electrical Engineering

The Electrical Engineering test is designed to assess a candidate's knowledge required to work in the power sector. The test checks the candidate's knowledge on the fundamentals of electrical engineering, concepts of instrumentation & control and electronics.

## Electrical Engineering

<b>Fundamentals of Electrical Engineering</b>
<ul style="list-style-type: none"><li>• Basic Electrical Engineering</li><li>• Electrical machines</li><li>• Power system</li></ul>
<b>Instrumentation &amp; Control</b>
<ul style="list-style-type: none"><li>• Instruments &amp; measurements</li><li>• Control system</li></ul>
<b>Electronics</b>
<ul style="list-style-type: none"><li>• Analog Electronics</li><li>• Digital Electronics</li><li>• Power Electronics</li></ul>

[www.aspiringminds.in](http://www.aspiringminds.in)  **amcat**  
Test for a dream job!

### – Mechanical Engineering

The test on Mechanical Engineering assesses a candidate's knowledge and understanding of core concepts like mechanics, kinematics, thermodynamics, material science, structural analysis etc. It requires a candidate to apply the principles of physics and material science for analysis, design, manufacturing and maintenance of mechanical systems.

## Mechanical Engineering

<b>Manufacturing Science</b>
<ul style="list-style-type: none"><li>• Engineering materials</li><li>• Production Engineering</li><li>• CAD/CAM</li><li>• Industrial Engineering</li></ul>
<b>Thermodynamics &amp; IC Engines</b>
<ul style="list-style-type: none"><li>• Thermodynamic cycles and steam generators</li><li>• IC engines</li><li>• Heat transfer, refrigeration &amp; air conditioning</li></ul>
<b>Fluid &amp; Machine Mechanics</b>
<ul style="list-style-type: none"><li>• Fluid mechanics &amp; fluid machinery</li><li>• Strength of materials</li><li>• Theory of machines</li><li>• Machine design</li></ul>

[www.aspiringminds.in](http://www.aspiringminds.in)  **amcat**  
Test for a dream job!

## – Civil Engineering

The Civil Engineering test assesses a student's knowledge and understanding of the core principles involved in the branch of civil engineering. The test includes concepts related to structural engineering, geotechnical and water resources engineering, transportation engineering and surveying.

# Civil Engineering

## Structural Engineering

- Applied mechanics
- Strength of materials
- Building materials & construction
- Theory of structures
- Steel structures
- Concrete technology
- R.C.C. design

## Geotechnical & Water Resources Engineering

- Soil mechanics
- Hydraulic Engineering
- Water supply Engineering

## Transportation Engineering & Surveying

- Highway Engineering
- Railway Engineering
- Estimation & costing
- Surveying

## – Telecommunications

This module has been designed to assess graduates from various engineering backgrounds such as B. Tech. in Electronics Engineering, Electronics & Communication Engineering and Electronics & Telecomm Engineering on their knowledge of analog and digital transmission, microwave engineering and electromagnetism. The Questions in this test are a mix of theoretical, numerical and conceptual based.

Industries dealing in manufacture and services of electronics consumer goods and appliances, private companies manufacturing radio equipment and electronics, sectors of digital tv, satellites, computer networking assess candidates with this test for the role of Electronics Engineer.

# Telecommunications

## Communication

- Analog communication
- Digital communication
- Optics

## Electromagnetism

- Electrostatics
- Magnetostatics
- Electromagnetic theory
- Microwave Engineering

## Microwave Engineering

- Transmission lines & waveguides
- Antennas & wave propagation
- Radar

## – Instrumentation Engineering

This test is designed to assess students on their knowledge of the uses and application of certain electronic devices and instruments in various industries and in instrumentation and control labs. It is mainly aimed at assessing graduates from various engineering backgrounds such as Instrumentation & Control Engineering, Applied Electronics & Instrumentation Engineering, Electronics & Instrumentation Engineering, Electronics Instrumentation & Control Engineering etc.

# Instrumentation Engineering

## Instrumentation & Control

- Transducers & industrial instrumentation
- Analytical & optical instrumentation
- Electronic instrumentation & measurements
- Control systems & process control

## Electronics

- Analog electronics
- Digital electronics
- Microprocessor & microcontroller

## Signals & Communication System

- Signal & systems
- Communications & fundamentals of network analysis & synthesis

## **5. Automata Modules**

### **5.1 Automata Fix**

In this module, the candidate has to fix logical/syntax error of the code or completes the given code by reusing existing functions.

Befitting Job Functions/Profiles: Full Stack Developer, Game Developer, Game Programmer, Mobile App Developer, Embedded Software Engineer, Software Architect, Software Developer, Computer and Information Research Scientist, Back End Developer, Software Quality Assurance Engineer.

Number of Questions: 7

Module Duration: 20 minutes

Detailed Syllabus:

- Basic programming
- Control Structures
- conditional statements
- Linear data structures
- Advanced data structures
- Sorting and searching algorithms