

# TABLE OF CONTENTS

## Introduction to Test Taking, by FAA Learning Statement Codes - Airframe

### Chapter 01 - Aircraft Structures

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 02 - Aerodynamics, Assembly, Rigging

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 03 - Fabric Covering

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 04 - Metal Structural Repair

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 05 - Aircraft Welding

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 06 - Aircraft Wood

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 07 - Composite Materials

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 08 - Painting & Finishing

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 09 - Electrical Systems

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 10 - Aircraft Instruments

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 11 - Communications & Navigation

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 12 - Hydraulic & Pneumatic

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 13 - Landing Gear

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 14 - Fuel Systems

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 15 - Ice & Rain Protection

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 16 - Cabin Environment

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### Chapter 17 - Fire Protection

Written questions, answers, explanations, oral question samples, practical test and sample projects.

### FAA-S-8081-27 Practical Test Standards



# HOW TO USE THIS TEST GUIDE

This book is designed to help you pass your FAA knowledge test. But, even more important, it is designed to help reinforce your understanding of the subject which you have been studying in the classroom or with your textbooks and other tools. Rather than this being the first book you pick up, it should be the last. When you take that route, you will find the questions in this book both easy and an excellent reinforcement to your studies.

The process we suggest is: Learn first from the textbooks and your instructors. When you are comfortable with a subject, and can see problems from different sides, then it is time to prepare for the test. This Test Guide, if properly used, will serve as your proof that you know what you need to know or if a subject requires further study. If so, the explanation with each question may refresh your understanding, or the textbook reference given will point you to the right place for review.

## **WHERE THE QUESTIONS COME FROM:**

In 2011, FAA made the decision to stop publishing actual test questions. Previous test guides, where one could memorize questions are no more. Questions in this and other current FAA test guides now contain only examples of the type of question you will see on your actual FAA test.

Questions in this book come from two sources. First are previous FAA written questions which remain relevant to the curricula covered in the FAA 8083 Handbooks. Second are new questions written by Aircraft Technical Book Company and its team of authors to cover topics in the 8083s (the FAA required curricula) for which previous FAA samples did not exist.

Should you "make sure" and buy other test guides as well? In one sense it can't hurt. After all, our question on any particular topic may have different wording or may approach that topic slightly differently than another's. However, all will be different from the actual test questions, and different too from those asked by an examiner, or more important; by an employer.

So your first job is to learn in the classroom, study the textbooks, and understand the subject. With that, all questions, no matter how they are written will be easy and obvious, so making your career in aerospace rich and rewarding. Remember, its not the quick way; its the right way.

## **AIRCRAFT TECHNICAL BOOK COMPANY – AIRFRAME TEST GUIDE PEER REVIEW TEAM:**

We would like to thank the following schools and instructors for their assistance writing and reviewing the sample questions and explanations for this guide.

### 2018 Editing Team

Tulsa Tech - Jeffery Lowe

Tulsa Tech - John Rowell

Lively Tech - Joseph Garcia

### Original Editing Team

Principle Author - Rhonda Cooper

Pickens Community College - Dave Pickens

Aviation Education Consultants - Harry Whitehead

Greenville Technical College - Carl Washburn

Blue Ridge Community College - Fred Dyen

College of the Albemarle - Elton Stone

Florida State CC - David Dagenais

Embry Riddle Aeronautical Univ. - Chuck Horning

Sinclair Community College - Don Stark

Univ. Alaska; Fairbanks - Kevin Alexander

# INTRODUCTION TO FAA TESTING

## Excerpts from FAA-G-8082-3A

### KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

The general qualifications for an aviation maintenance technician certificate require a combination of experience, knowledge, and skill. If you are pursuing an aviation maintenance technician certificate with airframe and powerplant ratings, you should review the appropriate sections of Title 14 of the Code of Federal Regulations (14 CFR) part 65 for detailed information pertaining to eligibility requirements. Further information may be obtained from the nearest Flight Standards District Office (FSDO). Before taking the certification knowledge and practical tests, you must meet the eligibility requirements. The determination of eligibility of applicants for the general, airframe, and powerplant tests is made on the basis of one of the following options:

1. Civil and/or military experience. (See 14 CFR Part 65, Certification: Airmen Other Than Flight Crewmembers, Subpart A—General and Subpart D— Mechanics.) If you believe you are qualified to exercise this option, you must have your experience evaluated and certified by an FAA aviation safety inspector (airworthiness). If the inspector determines you have the required experience, two FAA Forms 8610-2, Airman Certificate and/or Rating Application, are completed. These forms are issued, and **MUST** be presented along with appropriate identification to take the corresponding knowledge tests. Your eligibility to test does not expire.
2. Graduation from an FAA-certificated aviation maintenance technician school (AMTS). Depending upon the testing facility affiliation, a graduation certificate, certificate of completion, or an FAA Form 8610-2, Airman Certificate and/or Rating Application (properly endorsed), is required, along with proper identification.

If you are taking the tests at a computer testing center and the practical testing is administered by a designated mechanic examiner (DME), and both are affiliated with the AMTS, a copy of the graduation certificate or certificate of completion (and proper identification) may be all you are required to present. In this case, the school, the testing center, the DME, and the local FSDO will all be involved and know what authorization is needed. On the other hand, if either or both the testing center and the DME are not affiliated with the AMTS, then FAA Form 8610-2 is required.

### KNOWLEDGE AREAS INCLUDED ON THE TESTS

Aviation maintenance technician tests are comprehensive because they must test your knowledge in many subject areas. The subject areas for the tests are the same as the required AMTS curriculum subjects listed in 14 CFR part 147, Aviation Maintenance Technician Schools, appendices B, C, and D. However, the subject area titled "Unducted Fans" (in appendix D) is not a tested subject at this time. The terms used in 14 CFR part 147, appendices B, C, and D, are defined in 14 CFR part 147, appendix A.

### DESCRIPTIONS OF THE TESTS

All test questions are objective, multiple-choice type. Each question can be answered by the selection of a single response. Each test question is independent of other questions; therefore, a correct response to one does not depend upon, or influence, the correct response to another.

1. The Aviation Maintenance Technician - General Test, contains 60 questions and you are allowed 2 hours to complete the test.
2. The Aviation Maintenance Technician—Airframe and Aviation Maintenance Technician— Powerplant Tests, contain 100 questions each and you are allowed 2 hours to complete each test.

**The minimum passing score is 70 percent.**

### TEST REGISTRATION

The first step in taking a knowledge test is the registration process. You may either call one of the computer testing designees, or simply walk-in. If you choose to phone, you will need to select a testing center, schedule a test date, and make financial arrangements for test payment. You may register for tests several weeks in advance, and you may cancel your appointment according to the CTD's cancellation policy. If you do not follow the CTD's cancellation policies, you could be subject to a cancellation fee.

The next step in taking a knowledge test is providing proper identification. An acceptable identification document includes a recent photograph, signature, and actual residential address, if different from the mailing address. This information may be presented in more than one form of identification. Acceptable forms of identification include, but are not limited to, drivers' licenses, government identification cards, passports, alien residency (green) cards, and military identification cards. Other forms of identification that meet the requirements of this paragraph are acceptable. Some applicants may not possess the identification documentation described. In any case, you should always check with your local FSDO or IFO if you are unsure of the kind of identification to bring to the interview. You also need to present authorization to test

Acceptable forms of authorization are:

- FAA Form 8610-2.
- Graduation certificate or certificate of completion to an affiliated testing center as previously explained.
- An original (not photocopy) failed Airman Knowledge Test Report, passing Airman Knowledge Test Report, or expired Airman Knowledge Test Report.

Before you take the actual test, you will have the option to take a sample test. The actual test is time limited; however, you should have sufficient time to complete and review your test.

## **TAKING THE TEST**

Communication between individuals through the use of words is a complicated process. In addition to being an exercise in the application and use of aeronautical knowledge, a knowledge test is also an exercise in communication since it involves the use of the written language. Since the tests involve written rather than spoken words, communication between the test writer and the person being tested may become a difficult matter if care is not exercised by both parties. Consequently, considerable effort is expended to write each question in a clear, precise manner. Make sure you read the instructions given with the test, as well as the statements in each test item. When taking a test, keep the following points in mind:

- Answer each question in accordance with the latest regulations and guidance publications.
- Read each question carefully before looking at the answer options. You should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which answer option corresponds with your answer. The answer you choose should completely resolve the problem.
- From the answer options given, it may appear that there is more than one possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete, erroneous, or derived from popular misconceptions.
- If you are unsure of the answer to a certain question, it is best to mark it for review and proceed to the next question. After you answer the remaining questions, return to those you marked for review and answer them. The review marking procedure will be explained to you prior to starting the test. Although the computer should alert you to unanswered questions, make sure every question has an answer recorded. This procedure will enable you to use the available time to maximum advantage.
- When solving a calculation problem, select the answer that most nearly matches your solution. The problem has been solved by various individuals and with different types of calculators; therefore, if you have solved it correctly, your answer will be closer to the correct answer than any of the other choices.

## **USE OF TEST AIDS AND MATERIALS**

You may use aids, reference materials, and test materials within the guidelines listed below if actual test questions or answers are not revealed. All models of aviation oriented calculators may be used, including small electronic calculators that perform only arithmetic functions (add, subtract, multiply, and divide). Simple programmable calculators, which allow addition to, subtraction from, or retrieval of one number from the memory, are permissible. Also, simple functions such as square root and percent keys are permissible.

**The following guidelines apply:**

1. You may use any reference materials provided with the test. In addition, you may use scales, straightedges, protractors, plotters, and electronic or mechanical calculators that are directly related to the test.
2. Manufacturer's permanently inscribed instructions on the front and back of such aids (e.g., formulas, conversions, and weight and balance formulas) are permissible.
3. Testing centers may provide a calculator to you and/or deny use of your personal calculator based on the following limitations:
  - a. Prior to and upon completion of the test while in the presence of the proctor, you must actuate the ON/OFF switch and perform any other function that ensures erasure of any data stored in memory circuits.

- b. The use of electronic calculators incorporating permanent or continuous type memory circuits without erasure capability is prohibited. The proctor may refuse the use of your calculator when unable to determine the calculator's erasure capability.
  - c. Printouts of data must be surrendered at the completion of the test if the calculator incorporates this design feature.
  - d. The use of magnetic cards, magnetic tapes, modules, computer chips, or any other device upon which prewritten programs or information related to the test can be stored and retrieved is prohibited.
  - e. You are not permitted to use any booklet or manual containing instructions related to use of test aids.
4. Dictionaries are not allowed in the testing area.
  5. The proctor makes the final determination relating to test materials and items you may take into the testing area.

### **CHEATING OR OTHER UNAUTHORIZED CONDUCT**

Computer testing centers are required to follow strict security procedures to avoid test compromise. The FAA has directed testing centers to terminate a test at any time a test proctor suspects a cheating incident has occurred. An FAA investigation will then be conducted. If the investigation determines that unauthorized conduct has occurred, then any airman certificate or rating that you hold may be revoked, and you will be prohibited for 1 year from applying for or taking any test for a certificate or rating.

### **KNOWLEDGE TEST REPORTS**

Upon completion of the knowledge test, you will receive your Airman Knowledge Test Report, which reflects your score. The Airman Knowledge Test Report lists the learning statement codes for questions answered incorrectly. The total number of learning statement codes shown on the Airman Knowledge Test Report is not necessarily an indication of the total number of questions answered incorrectly.

The Airman Knowledge Test Report must be presented to the examiner prior to taking the practical test. During the oral portion of the practical test, the examiner is required to evaluate the noted areas of deficiency. Should you require a duplicate Airman Knowledge Test Report due to loss or destruction of the original, send a signed request accompanied by a check or money order for \$1 payable to the FAA. Your request should be sent to:

Federal Aviation Administration  
Airmen Certification Branch, AFS-760  
P.O. Box 25082  
Oklahoma City, OK 73125

Airman Knowledge Test Reports are valid for the 24-calendar-month period preceding the month you complete the practical test. If the Airman Knowledge Test Report expires before completion of the practical test, you must retake the knowledge test.

### **RETESTING PROCEDURES**

You may retake the test after 30 days from the date your last test was taken by presenting your failed Airman Knowledge Test Report. You may retest sooner than 30 days if you present your failed Airman Knowledge Test Report and a signed statement from an airman holding the certificate and rating you seek certifying that you have been given additional instruction in each subject failed and that you are now ready for retesting.

If you decide to retake a test you passed in anticipation of a better score, you may retake the test after 30 days from the date your last test was taken. The FAA will not allow you to retake a passed test before the 30-day period has lapsed. Prior to retesting, you must give your current Airman Knowledge Test Report to the test proctor. The score from the last test taken will be the official score.

### **Knowledge Test Centers**

The following is a list of the computer testing designees authorized to give FAA airman knowledge tests. This list should be helpful in case you choose to register for a test or simply want more information.

LaserGrade Computer Testing  
16821 SE McGillivray Blvd., Suite 201  
Vancouver, WA 98683  
(360) 896-9111

## Learning Statement Codes A&P Mechanic — Airframe

Learning statement codes replace the old subject matter codes and are noted on the test report. They refer to measurable statements of knowledge that a student should be able to demonstrate following a defined element of training. The learning statement corresponding to the learning statement code is on the test report.

AMA001	Aerodynamic Fundamentals
AMA002	Air Conditioning System - Components / Operating Principles / Characteristics
AMA003	Aircraft Component Markings
AMA004	Aircraft Components Material - Flame Resistant
AMA005	Aircraft Cooling System - Charging / Leaking / Oil / Pressure / Water
AMA006	Aircraft Cooling System - Components / Operating Principles / Characteristics
AMA007	Aircraft Corrosion - Principles / Control / Prevention
AMA008	Aircraft Engines - Indicating System
AMA009	Aircraft Exterior Lighting - Systems / Components
AMA010	Aircraft Flight Indicator System
AMA011	Aircraft Hardware - Bolts / Nuts / Fasteners / Fittings / Valves
AMA012	Aircraft Heating System - Exhaust Jacket Inspection
AMA013	Aircraft Instruments - Install / Inspect / Adjust / Repair / Markings
AMA014	Aircraft Instruments - Types / Components / Operating Principles / Characteristics
AMA015	Aircraft Lighting - Install / Inspect / Repair / Service
AMA016	Aircraft Metals - Inspect / Test / Repair / Identify
AMA017	Aircraft Metals - Types / Tools / Fasteners
AMA018	Aircraft Warning Systems - Navigation / Stall / Takeoff
AMA019	Airframe - Inspections
AMA020	Airframe - Repair / Component Installation
AMA021	Airframe Design - Structures / Components
AMA022	Alternators - Components / Operating Principles / Characteristics
AMA023	Antenna System - Install / Inspect / Repair / Service
AMA024	Anti-Icing / Deicing - Methods / Systems
AMA025	Autopilot - Components / Operating Principles / Characteristics
AMA026	Autopilot - Install / Inspect / Repair / Service
AMA027	Avionics - Components / Operating Principles / Characteristics
AMA028	Avionics - Install / Inspect / Repair / Service
AMA029	Basic Hand Tools / Torque Values
AMA030	Batteries - Capacity / Charging / Types / Storage / Rating / Precautions
AMA031	Brake System - Components / Operating Principles / Characteristics
AMA032	Brake System - Install / Inspect / Repair / Service
AMA033	Carburetor - Icing / Anti-Icing
AMA034	Chemical Rain Repellant
AMA035	Combustion Heaters - Components / Operating Principles / Characteristics
AMA036	Compass - Components / Operating Principles / Characteristics
AMA037	Composite Materials - Types / Repairs / Techniques / Processes
AMA038	Control Cables - Install / Inspect / Repair / Service
AMA039	DC Electric Motors - Components / Operating Principles / Characteristics
AMA040	Dope And Fabric - Materials / Techniques / Hazards
AMA041	Electrical System - Components / Operating Principles / Characteristics / Symbols
AMA042	Electrical System - Install / Inspect / Repair / Service
AMA043	Electronic Test Equipment
AMA044	Emergency Locator Transmitter (ELT) - Operation / Battery / Testing
AMA045	Fiberglass - Install / Troubleshoot / Service / Repair
AMA046	Fire Detection System - Types / Components / Operating Principles / Characteristics
AMA047	Fire Detection Systems - Install / Inspect / Repair / Service
AMA048	Fire Extinguishing Systems - Components / Operating Principles / Characteristics
AMA050	Flight Characteristics - Longitudinal Stability / Instability
AMA051	Fluid Lines - Material / Coding
AMA052	Fuel - Types / Characteristics / Contamination / Fueling / Defueling / Dumping
AMA053	Fuel / Oil - Anti-Icing / Deicing
AMA054	Fuel System - Components / Operating Principles / Characteristics
AMA055	Fuel System - Install / Troubleshoot / Service / Repair



AMA056 Fuel System - Types  
 AMA057 Fuel/Air Mixture - Idle Rich Mixture - Rpm Rise  
 AMA058 Fundamental Material Properties  
 AMA059 Fuselage Stations  
 AMA060 Helicopter Control System  
 AMA061 Helicopter Control System - Collective  
 AMA062 Helicopter Drive System - Free Wheeling Unit  
 AMA063 Hydraulic Systems - Components / Operating Principles / Characteristics  
 AMA064 Hydraulic Systems - Fluids  
 AMA065 Hydraulic Systems - Install / Inspect / Repair / Service  
 AMA066 Instrument Panel Installation - Shock Mounts  
 AMA067 Instruments - Manifold Pressure Indicating System  
 AMA068 Landing Gear System - Components / Operating Principles / Characteristics  
 AMA069 Landing Gear System - Install / Inspect / Repair / Service  
 AMA070 Maintenance Publications - Service / Parts / Repair  
 AMA071 Navigation / Communication Systems - Types / Operational Characteristics  
 AMA072 Oxygen System - Components / Operating Principles / Characteristics  
 AMA073 Oxygen System - Install / Inspect / Repair / Service / Precautions  
 AMA074 Oxygen System - Quality / Types / Contamination / Cylinders / Pressure  
 AMA075 Physics - Work Forces  
 AMA076 Pitot-Static System - Components / Operating Principles / Characteristics  
 AMA077 Pitot-Static System - Install / Inspect / Repair / Service  
 AMA078 Plastic Fundamentals - Installation / Cleaning / Repair / Characteristics  
 AMA079 Pneumatic System - Components / Operating Principles / Characteristics  
 AMA080 Pressurization System - Components / Operating Principles / Characteristics  
 AMA081 Primary Flight Controls - Inspect / Adjust / Repair  
 AMA082 Primary Flight Controls - Types / Purpose / Functionality  
 AMA083 Radar Altimeter - Indications  
 AMA084 Radar Altimeter - Signals  
 AMA085 Radio System - Components / Operating Principles / Characteristics  
 AMA086 Radio System - Install / Inspect / Repair / Service  
 AMA087 Radio System - License Requirements / Frequencies  
 AMA088 Regulations - Airworthiness Requirements / Responsibilities  
 AMA089 Regulations - Maintenance Reports / Records / Entries  
 AMA090 Regulations - Privileges / Limitations Of Maintenance Certificates / Licenses  
 AMA091 Rotor System - Components / Operating Principles / Characteristics  
 AMA092 Secondary Flight Control System - Inspect / Adjust / Repair  
 AMA093 Secondary Flight Control System - Types / Purpose / Functionality  
 AMA094 Sheet Metal Fabrication - Blueprints / Shaping / Construction  
 AMA095 Smoke Detection Systems - Types / Components / Operating Principles / Characteristics  
 AMA096 Static Pressure System - Install / Inspect / Repair / Service  
 AMA097 Tires - Install / Inspect / Repair / Service / Storage  
 AMA098 Turbine Engines - Components / Operational Characteristics / Associated Instruments  
 AMA099 Type Certificate Data Sheet (TCDS) / Supplemental Type Certificate (STC)  
 AMA100 Weight And Balance - Equipment Installation / Cg / General Principles  
 AMA101 Welding / Soldering - Types / Techniques / Equipment  
 AMA102 Wooden Components - Failures / Decay / Patching / Gluing / Substitutions