

Inspection Authorization Test Prep

Eighth Edition

Based on the original text by **Dale Crane** Edited by **Terry Michmerhuizen**

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A comprehensive study tool to prepare for the FAA Inspection Authorization Knowledge Exam

Inspection Authorization Test Prep

Eighth Edition

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Based on the original text by **Dale Crane** Edited by **Terry Michmerhuizen**

READER TIP:
The FAA Knowledge Exam can change throughout the year. Stay current with test changes; sign up for ASA's free email update service at www.asa2fly.com/testupdate

Aviation Supplies & Academics, Inc.
Newcastle, Washington

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Inspection Authorization Test Prep
Eighth Edition
By Dale Crane
Edited by Terry Michmerhuizen

Aviation Supplies & Academics, Inc.
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Newcastle, Washington 98059-3153

ASA has online resources for this IA Test Prep: go to the ASA Product Updates pages to check for the latest question updates: **www.asa2fly.com/updates**.

See also the "Reader Resources" page at **www.asa2fly.com/reader/ia** — this dedicated IA Test Prep reader webpage will provide additional resources and information applicable to the IA certificate (see explanation on Page vii).

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Preface
How to Use This IA Test Prep

This IA Test Prep has been prepared to provide you with the information you will need to pass the IA Knowledge Test and help you become familiar with the privileges and limitations of this, the highest level of maintenance airman certification.

The knowledge test for IA is different from other FAA certification tests in that you are furnished with a more extensive supplement with which to take the test — the latest revision of the *Computer Testing Supplement for Inspection Authorization* (CT-8080-8). This lengthy supplement contains excerpts from the Federal Regulations, Advisory Circulars, Type Certificate Data Sheets, charts and figures from AC 43.13-1B and AC 43.13-2A, and examples of FAA forms. However, there are questions on the IA Knowledge Test regarding the core knowledge the FAA expects of an airframe and powerplant mechanic that are not covered by the reference material included in the latest revision of CT-8080-8. As it is explained in the FAA's *IA Knowledge Test Guide* (FAA-G-8082-11):

"The inspection authorization knowledge test has been considered by some as an open book test because of the use of reference material during the test. To view the test in this manner is a misconception. There has always been a core knowledge requirement for which no reference material was provided. Therefore, it should be noted that, during the tests, there are subject areas for which reference material is not included in the test supplement. These areas will draw on skills acquired as an airframe and powerplant mechanic and which are necessary to properly inspect work performed by others."

Therefore the IA Knowledge Test also differs from the other FAA tests in that it remains a "closed test," which means the exact database of questions is not available to the public. The sample questions included in this book have been derived based on history and experience with the IA testing process, and the Learning Statement Codes (LSC) from both the latest revision of CT-8080-8 and the airframe and powerplant mechanics LSC listing. For this reason, it is recommended that in addition to studying this *Inspection Authorization Test Prep*, you also study the *General Test Guide* (ASA-AMG), the *Airframe Test Guide* (ASA-AMA), and the *Powerplant Test Guide* (ASA-AMP).

A Reader Resources page at the ASA website (**www.asa2fly.com/reader/ia**) dedicated to this *IA Test Prep* has been created to provide additional helpful resources, such as links to copies of pertinent FAA Advisory Circulars, and most importantly, a PDF of the most recent test supplement (the FAA-CT-8080-8). To become familiar with the contents of this FAA test supplement, review this downloadable PDF. If you know ahead of time how the supplement is organized and how to access it while answering questions, this will help you prepare to take the actual exam.

The Federal Regulations that should be studied for the IA knowledge test have been reprinted by ASA and are available in one volume, ***FAR-AMT: Federal Aviation Regulations for Aviation Maintenance Technicians***.

The Advisory Circulars that contain information required for the IA knowledge test are reprinted either in ASA's FAR-AMT book, or in this IA Test Prep. An exception to this is that AC 43.13-1B *Acceptable Methods, Techniques, and Practices—Aircraft Inspection and Repair* and AC 43.13-2B *Acceptable Methods, Techniques, and Practices—Aircraft Alterations* have been reprinted and bound into a single volume as **AC 43.13-1B/2B *Acceptable Methods, Techniques, and Practices—Aircraft Inspection, Repair, and Alterations***, reprinted by ASA and sold separately.

Continued

The proven effective ASA "Fast-Track" format is used for this test guide and the questions and their answer alternatives are similar to those in the FAA Knowledge Test. Examine the question and the alternatives carefully, then select the alternative that is the best answer for the question. Read the explanation directly below the alternatives to verify your answer. At the bottom of the page in smaller type are the question number, the chosen answer alternative, the LSC, and the actual reference from which the question is derived. There is also a complete answer key in the Appendix, beginning on Page A-1, that shows the question number, chosen answer alternative, LSC, and the reference source from which the answer was derived.

Dale Crane

Terry Michmerhuizen

Note: Although the IA Knowledge Exam is based upon FAA documentation (i.e. regulations, Orders, and Advisory Circulars), the actual FAA documents change more frequently than the agency updates the CT-8080-8 Testing Supplement. The answers to the FAA test questions are based upon the information in the CT-8080-8 Testing Supplement. Additionally, the AC 43.13-2B was released in March 2008, but the CT-8080-8D continues to reference the AC 43.13-2A.

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Introduction

The questions in this manual are typical of those asked on an IA Knowledge Test, and therefore their primary purpose is to help you become familiar with the reference materials. However, ASA's *Inspection Authorization Test Prep* is not merely an aid to passing the FAA test, but has been prepared to help you understand the materials used by an IA in his/her daily conduct of business.

What You Should Know About IA Certification

Maintenance Airmen

The regulations regarding certification of maintenance airmen are included in Title 14 of the Code of Federal Regulations (14 CFR) Part 65, *Certification: Airmen Other Than Flight Crewmembers*, §65.91. This regulation identifies three categories of maintenance airmen: mechanic, inspector, and repairman.

Mechanic is the basic certification, and there are two ratings available for it: Airframe and Powerplant.

The Inspection Authorization is available to the holder of a Mechanic certificate with both Airframe and Powerplant ratings who meets certain additional experience and knowledge requirements.

Repairman certification is issued to persons who have specialized experience and who work at a specific job in an FAA-certificated facility, such as a repair station or an air carrier. There is another category of Repairman certification that allows the builder of an amateur-built aircraft to perform condition inspections on the aircraft he or she has built.

Basic Privileges of an IA

With the exception of aircraft maintained on a Continuous Airworthiness Program under 14 CFR Part 121 (*Operating Requirements: Domestic, Flag, and Supplemental Operations*), an IA may inspect and approve for return to service any aircraft or related part or appliance after a major repair or major alteration. Also the holder of an IA may perform an annual inspection and may supervise or perform a progressive inspection.

Eligibility Requirements for an IA

Eligibility is established at the local FAA Flight Standards District Office (FSDO) prior to taking the Inspection Authorization Knowledge Test.

You are eligible for the Inspection Authorization Knowledge Test if you meet the requirements of 14 CFR Part 65, §65.91(c).

§65.91 Inspection Authorization

(c) To be eligible for an inspection authorization, an applicant must —

(1) Hold a currently effective mechanic certificate with both an airframe rating and a powerplant rating, each of which is currently effective and has been in effect for a total of at least 3 years;

(2) Have been actively engaged, for at least the two-year period before the date he applies, in maintaining aircraft certificated and maintained in accordance with this chapter;

(3) Have a fixed base of operations at which he may be located in person or by telephone during a normal working week, but it need not be the place where he will exercise his inspection authority;

(4) Have available to him the equipment, facilities, and inspection data necessary to properly inspect airframes, powerplants, propellers, or any related part or appliance; and

(5) Pass a written test on his ability to inspect according to safety standards for returning aircraft to service after major repairs and major alterations and annual and progressive inspection performed under Part 43 of this chapter.

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Duration of an Inspection Authorization

Each IA expires on March 31 of each odd-numbered year. However, the holder may exercise the privileges of that authorization only while he holds a currently effective mechanic certificate with both a currently effective airframe and powerplant rating.

An IA ceases to be effective whenever any of the following occurs:

- The authorization is surrendered, suspended, or revoked.
- The holder no longer has a fixed base of operation.
- The holder no longer has the equipment, facilities, and inspection data required for the issuance of the authorization.

Renewal of an Inspection Authorization

To be eligible for renewal of an inspection authorization for a two-year period, an applicant must present evidence at renewal, during the month of March in odd-numbered years, at an FAA FSDO or International Field Office that the applicant still meets the requirements of §65.91(c)(1) through (4) for each year they have held the IA certificate. The applicant must show that during the current period the inspection authorization has been held, the applicant has —

- Performed at least one annual inspection for each 90 days the applicant has held the current authority; or
- Performed inspections of at least two major repairs or major alterations for each 90 days the applicant has held the current authority; or
- Performed or supervised and approved at least one progressive inspection in accordance with standards prescribed by the Administrator; or
- Attended and successfully completed a refresher course, acceptable to the Administrator of not less than 8 hours of instruction during each 12-month period; or
- Passed an oral test by an FAA inspector to determine that the applicant's knowledge of applicable regulations and standards is current.

The holder of an inspection authorization that has been in effect for less than 90 days before the expiration date need not comply with these requirements.

Change of Fixed Base of Operation

If the holder of an IA changes his fixed base of operation, he may not exercise the privileges of the authorization until he has notified, in writing, the FAA FSDO or International Field Office for the area in which the new base is located, of the change.

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What You Should Know About the IA Knowledge Test

The Knowledge Test for Inspection Authorization is different from any of the other FAA certification test in that you must get permission to take the test by having a personal interview with an Aviation Safety Inspector (ASI) in your local FSDO.

Steps For Taking the Inspection Authorization Knowledge Test

We appreciate feedback from individuals who have taken their Inspection Authorization test so we may continually make improvements to this publication.

1. Contact your local FSDO to make an appointment to interview with an ASI (airworthiness) to determine your eligibility to take the test.
2. When the ASI is satisfied that you have met all of the requirements for IA, furnish positive proof of identification and complete FAA Form 8610-1, *Mechanic's Application for Inspection Authorization*.
3. Register with the computer testing designee at the test center indicated by the ASI to schedule a test and make financial arrangements for test payment.
4. You will not need to take (nor will you be allowed to carry in) any of your IA reference material to the test center; however, you will need proper identification.
5. Before you take the actual test, you will have the option to take a sample test. Since there is no time limit on the sample test, be sure to work through it completely. It will not only help you become familiar with the computer testing, but will also provide valuable information concerning charts and graphs referenced on the test and included in the *Computer Testing Supplement for Inspection Authorization*. Finally, it will help you understand how to "flag" questions you want to research and return to later. This is an important feature that prevents you from getting bogged down on a particular question, and instead allows you to keep up your momentum. The actual test is time-limited; however, you should have sufficient time to complete and review your test.
6. Make a chart of your progress as you go through the test. This chart has four columns with the first labeled "***Question Number***" and runs 1–50. The second is labeled "***Finished***." The third is labeled "***Review In***." The last column is labeled "***Calculation Required***." The object is to help you keep track of what you have completed and which questions need more attention. If you run through the actual test using this method without stopping to research anything, you may find you have a large portion of the test completed with a high degree of confidence. For questions that you know you must research such as ADs or TCDS data, put that reference information in the third column and come back to it later. Sometimes, more than one question will direct you to the same reference material. This way you minimize lost time in redundant searches. Finally, you should use any remaining time for doing the computation questions, such as weight and balance, and rivet-spacing.
7. Upon completion of the test, you will receive your Airman Test Report with the testing center's embossed seal, which reflects your score. This test report lists the learning statement codes (LSC) for questions answered incorrectly. Study the LSC subjects to increase your knowledge of the subject matter.
8. You will be given 10 minutes to review any questions you missed (without the answer choices or your selected answer). This is helpful for determining where future study and learning can be focused.
9. The minimum passing score is 70; however, if you fail the test you must wait 90 days before you are allowed to retest. Because the 8610-1 form is only good for a period of 30 days, you will have to complete a new form and have your local FSDO again approve you for testing. You must also pay the testing center for this second test.
10. After passing the test, present your Airman Test Report to an ASI at the FSDO where you interviewed. It is best to return to the original interviewer if possible; however, any available ASI can complete the authorization process. At that time, the ASI will again review your application and discuss any questions you may have. When the ASI is satisfied that you have met all of the requirements, your IA certificate will be issued.

Description of the IA Knowledge Test

The test contains 50 objective multiple-choice type questions, each of which can be answered by the selection of a single response. Each test question is independent of any other questions; therefore, a correct response to one does not depend upon, or influence the correct response to another.

The maximum time allowed for the test is 3 hours. This time is based on previous experience and is considered more than adequate if you are properly prepared.

At the test center, you will be provided with the latest revision of CT-8080-8. This supplement is the ***only*** reference you may use and contains excerpts from the applicable parts of the Federal Regulations (14 CFR), representative Airworthiness Directives, charts and diagrams from pertinent Advisory Circulars, and examples of Type Certificate Data Sheets and Specifications and pertinent FAA forms. Before you start the test, take a few minutes to look through the supplement to familiarize yourself with its contents.

Carefully read the information and instructions given with the tests, as well as the introductory 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 procedures, unless the data provided in the computer testing supplement differs.
- Read each question carefully before looking at the possible answer choices. You should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which of the alternatives most closely corresponds with that answer. The answer chosen should resolve the problem *completely*.
- From the answers given, it may appear that there is more than one possible answer; however, only one answer is correct and complete. The other answers are either incomplete, or they reflect popular misconceptions.
- If a certain question is difficult for you, it is best to mark it for review and proceed to the other questions. After you answer the less difficult questions, return to those which you marked for review and answer them. The review-marking procedure will be explained to you prior to starting the test. When you have finished taking the test, make sure an answer has been recorded for each question — the computer will alert you to all unanswered questions. This procedure will enable you to use the available time to the maximum advantage.
- When solving a calculation problem, select the answer closest to your solution. The problem has been checked with various 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.

Note: Sometimes a test will have more than 50 questions. This occurs when the FAA includes additional new “sample” questions for determining user understanding and validating properly-worded questions. Usually there are no more than five of these. Do not assume that the last five questions are the additional sample questions. Instead, they are randomly placed throughout the test, so you must answer ***all*** questions to the best of your ability. These additional questions will not count towards your final score, but if you leave any blank they will be counted against you.

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Test Aids You May Use

The IA Knowledge Test requires you to analyze all of the variables needed to solve the problems. When solving problems involving mathematical calculation you are tested on concepts rather than rote calculation ability. This allows you to use certain calculators, computers, or similar devices designed for aviation-related activities provided they are used within these guidelines.

- Applicants may use test aids, such as scales, straightedges, protractors, plotters, navigation computers, log sheets, and all models of aviation-oriented calculating devices that are directly related to the test. In addition, applicants may use any test materials provided with the test.
- Manufacturer's permanently inscribed instructions on the front and back of these test aids such as formulas, conversions, regulations, signals, weather data, holding pattern diagrams, frequencies, weight and balance formulas, and air traffic control procedures are permissible.
- The test proctor may provide calculating devices to applicants and deny them use of their personal calculating devices if the applicant's device does not have a screen that indicates all memory has been erased. The test proctor must be able to determine the calculating device's erasure capability. You are not allowed to use calculating devices incorporating permanent or continuous-type memory circuits without erasure capability.
- 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 are not allowed. Printouts of data will be surrendered at the completion of the test if the calculating device used incorporates this design feature.
- The use of any booklet or manual containing instructions related to the use of the applicant's calculating device is not permitted.
- Dictionaries are not allowed in the testing area.
- The test proctor makes the final determination relating to test materials and personal possessions that the applicant may take into the testing area.

Cheating or Other Unauthorized Conduct

Computer testing centers follow strict security procedures to avoid test compromise. These procedures are established by the FAA and are covered in FAA Order 8080.6, *Conduct of Airman Knowledge Tests.* The FAA has directed all testing centers to terminate a test at any time a test proctor suspects a cheating incident has occurred. An FAA investigation will then follow. If the investigation determines that cheating or other unauthorized conduct has occurred, any airman certificate that you hold may be revoked, and you may not be allowed to take a test for one year.

Retesting Procedures

If you fail the IA Knowledge Test, you may not apply for retesting until 90 days after the date that you failed the test. Any attempt to retest prior to the 90-day waiting period is contrary to 14 CFR Part 65, and could result in revocation of any airman certificates that you hold.

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Preparation for the IA Knowledge Test

Aviation Supplies & Academics has a comprehensive array of books to prepare you for the IA test:

ASA-FAR-AMT *Federal Aviation Regulations for Aviation Maintenance Technicians*

This volume contains reprints of pertinent parts of 14 CFR and ACs that apply to aviation maintenance.

ASA-IA *Inspection Authorization Test Prep*

Contains explanations of the documents used in the IA Knowledge Test with example questions similar to those that will be on the test.

AC 43.13-1B/2B *Acceptable Methods, Techniques, and Practices — Aircraft Inspection, Repair, and Alterations*

This single volume contains reprints of both of these essential Advisory Circulars. The procedures and techniques described are *acceptable* for inspections, repairs, and alterations but may not necessarily be used as *approved* data unless specifically approved by an FAA Aviation Safety Inspector.

FAA-H-8083-1 *Aircraft Weight and Balance Handbook*

Provides information on determining the empty weight and EWCG of an aircraft, and information on loading and operating an aircraft to keep the weight and CG within allowable limits.

ASA-DAT *Dictionary of Aeronautical Terms*

A comprehensive dictionary of aeronautical terms and abbreviations.

ASA-MHB *Aviation Mechanics Handbook*

A handy toolbox-sized reference manual of charts, tables, diagrams, formulas, and other information useful to the aircraft mechanic.

ASA-AMG *General Test Guide*

ASA-AMA *Airframe Test Guide*

ASA-AMP *Powerplant Test Guide*

These three volumes contain answers, and explanations for all the questions that may be asked on the mechanic knowledge tests. They are a good source of review for the basic core knowledge questions that may be asked on the IA test.

CT-8080-8 *Computer Testing Supplement for Inspection Authorization*

This large loose-leaf notebook is the same as that furnished for use during the IA Knowledge Test, and contains the necessary excerpts and figures for the test questions. All of the pertinent information, tables, charts, and figures in this expensive test supplement are included in the other materials listed here. *Note:* Read the instructions on Pages ii and vii regarding how to download a PDF version of this supplement.

Visit **www.asa2fly.com/reader/ia** to access documents important to your IA test preparation.

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Studying for the IA Knowledge Test

The computer-based IA test is straightforward, but you should prepare for it to the best of your ability. Here are some specific suggestions for studying for this test.

- Study all of the regulations and technical data listed in the FAA Learning Statement Codes subject listing (*see* next page).
- Learn to use the indexes in the publications efficiently, especially those for the Type Certificate Data Sheets and Specifications.
- Learn to identify the revision dates and change numbers for all FAA publications.
- Study 14 CFR Part 43 and its Appendixes, for detailed information regarding major repairs, major alterations, and annual inspections.
- Learn the use of graphs and tables in AC 43.13-1B, *Acceptable Methods, Techniques and Practices—Aircraft Inspection and Repair*, and in AC 43.13-2B *Acceptable Methods, Techniques and Practices—Aircraft Alterations*.*
- Practice researching ADs, Type Certificate Data Sheets, and Specification Sheets on different makes and models of aircraft, engines, and propellers.
- Practice filling out FAA Form 337, *Major Repair and Alteration (Airframe, Powerplant, Propeller, or Appliance).* Guidance is provided in AC 43.9-1F, *Instructions for Completion of FAA Form 337*.
- Practice filling out maintenance and inspection record entries in accordance with 14 CFR §43.11.
- Practice making changes to an aircraft weight and balance report by simulating installation or removal of equipment, then computing the forward, aft, and empty-weight center of gravity (CG).
- Practice the use of the CT-8080-8 supplement prior to taking the actual test.*

* See the Reader Resources page on the ASA website for free downloadable PDFs of the AC 43.13-1B/2B, and the current CT-8080-8: **www.asa2fly.com/reader/ia**

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Learning Statement Codes (LSC)

When you take the applicable airman knowledge test required for an airman pilot certificate or rating, you will receive an Airman Knowledge Test Report. The test report will list "learning statement codes" (LSC) for questions you answered incorrectly. Match the code given on your test report to the ones in the list of official FAA Learning Statement Codes (shown below). The Airman Knowledge Test Report must be presented to the examiner conducting the practical test. This examiner may evaluate the noted areas of deficiency.

The expression "learning statement," as used in airman testing, refers to measurable statements of knowledge that a student should be able to demonstrate following a certain segment of training. In order that each learning statement may be read and understood as a complete sentence, precede each LSC with the words: "Upon the successful completion of training the student should be able to…" — then complete the phrase with the subject indicated by the LSC given in your knowledge test results.

FAA Learning Statement Codes are prefixed with a letter-identifier (for example, IAR031). For the purposes of reference within this IA Test Prep, the letter prefix is omitted; therefore throughout the book in the reference lines, LSCs are referred to by their number-identifiers only, in parantheses.

The FAA appreciates testing experience feedback. You can contact the branch responsible for the FAA Knowledge Exams directly at:

Federal Aviation Administration
AFS-630, Airman Test Standards Branch
P.O. Box 25082
Oklahoma City, OK 73125
Email: AFS630comments@faa.gov

LSC	Subject area
IAR001	Calculate alteration specification
IAR002	Calculate center of gravity
IAR003	Calculate electrical load
IAR004	Calculate proof loading
IAR005	Calculate repair specific
IAR006	Calculate sheet metal repair
IAR007	Calculate temperature conversion
IAR008	Calculate weight and balance — adjust weight / fuel
IAR009	Determine alteration parameters
IAR010	Determine alteration requirements
IAR011	Determine correct data
IAR012	Determine data application
IAR013	Determine design specific
IAR014	Determine fabrication specification
IAR015	Determine process specific
IAR016	Determine regulatory requirement
IAR017	Determine regulatory requirements
IAR018	Determine repair parameters
IAR019	Determine repair requirements
IAR020	Interpret data
IAR021	Interpret regulations
IAR022	Recall alteration / design fundamentals
IAR023	Recall engine repair fundamentals
IAR024	Recall fundamental inspection principles — airframe / engine
IAR025	Recall MEL requirements
IAR026	Recall principles of corrosion control
IAR027	Recall principles of sheet metal forming
IAR028	Recall principles of system fundamentals
IAR029	Recall principles of weight and balance
IAR030	Recall regulatory requirements
IAR031	Recall regulatory specific
IAR032	Recall repair fundamentals

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Chapter 3
Title 14 of the Code of Federal Regulations (14 CFR)

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14 CFR Part 43
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14 CFR Part 45
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Introduction

The documents in Title 14 of the Code of Federal Regulations (14 CFR), formerly called the Federal Aviation Regulations, are the actual legal documents that govern civil aviation operations. Throughout this book the term "14 CFR" is directly interchangeable with the former "FAR."

It is the responsibility of an IA to have current copies of all the applicable parts of 14 CFR that pertain to aviation maintenance. IAs should refer to **rgl.faa.gov** to determine the currency of any document they are using.

This chapter contains typical questions taken from applicable Federal Regulations.

Note: On October 16, 2009, the FAA released major amendments to a number of regulations —14 CFR Parts 1, 21, 43 and 45 were affected by these revisions. Although the *effective* date for these in the Federal Register (FR) was April 14, 2010, only a portion of the changes became effective on that date. The remaining amendments have compliance dates of 18 months after the FR publication date. Currently it is not known when the FAA will update the IA test database and computer testing supplement accordingly with this amendment; therefore the proactive IA applicant will be prepared to answer questions that deal with the regulations as they currently exist as well as those affected by the new amendments. For further information, see the "Reader Resources" page on the ASA website (details are contained in a downloadable PDF of this October 2009 FR).

14 CFR Part 1
Definitions and Abbreviations

This part of 14 CFR contains a number of definitions and abbreviations that pertain to aviation operation. These are the legal definitions that take precedence over all others.

1. An alteration made in accordance with an aircraft specification would be

A— a minor alteration.
B— a major alteration.
C— accomplished with acceptable data.

A major alteration is an alteration not listed in the aircraft, aircraft engine, or propeller specifications—

(1) That might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

A minor alteration is an alteration other than a major alteration. Therefore, an alteration made in accordance with an aircraft specification is a minor alteration.

2. An alteration was done that normally would be considered a major alteration. How could this be signed off as a minor alteration?

A— If you, as the inspecting IA, determine that the repair will not appreciably change the aircraft's flight characteristics.
B— If the alteration is listed in the appropriate aircraft specification.
C— If the alteration is done in accordance with a Supplemental Type Certificate.

A major alteration is an alteration not listed in the aircraft, aircraft engine, or propeller specifications—

(1) That might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

(2) That is not done according to accepted practices or cannot be done by elementary operations.

A minor alteration is an alteration other than a major alteration. Therefore, an alteration made in accordance with an aircraft specification is a minor alteration.

Answers *All answer references in this chapter are to Title 14 of the Code of Federal Regulations (14 CFR)*

1 [A] (022) 14 CFR Part 1 2 [B] (022) 14 CFR Part 1

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3. As the holder of an inspection authorization, you are performing an annual inspection on a fabric-covered airplane. During the review of the aircraft records you notice that the cover was recently replaced with a synthetic cover. The aircraft documents indicate only grade-A cotton material was certificated for the aircraft. The change in covering material would constitute a

A— minor repair.
B— major repair.
C— major alteration.

A major alteration is an alteration not listed in the aircraft, aircraft engine, or propeller specifications that might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or that is not done according to accepted practices or cannot be done by elementary operations.

The material used for covering can affect structural strength, and this alteration was not listed in the specifications. Therefore, this is a major alteration.

3a. What would ***not*** be considered maintenance?

A— Inspection.
B— Preservation.
C— Preventive maintenance.

Maintenance means inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.

4. "Time in Service," where turbo-propeller powered airplanes are concerned, is defined in the regulation as

A— engine startup to engine shutdown.
B— airborne to touchdown.
C— the time the aircraft first begins to move until it comes to a final stop after the flight (chock to chock).

Time in service, with respect to maintenance time records, means the time from the moment the aircraft leaves the surface of the earth until it touches down at the next point of landing.

5. What is meant by the abbreviation TCAS?

A— Total Corrected Air Speed.
B— Terrain Clearance Activation System.
C— Traffic Alert and Collision Avoidance System.

The abbreviation and symbols section of 14 CFR Part 1 defines TCAS as Traffic Alert and Collision Avoidance System.

6. What is meant by the abbreviation V_2?

A— Stalling speed.
B— Takeoff safety speed.
C— Speed for best rate of climb.

The abbreviation and symbols section of 14 CFR Part 1 defines V_2 as takeoff safety speed.

6a. What is meant when the FAA uses the word "shall" in a regulation?

A— It is "advisable" to accomplish the action.
B— It is "permissible" to accomplish the action.
C— It is required that you accomplish the action.

When the word "shall" is used, it is in the imperative sense. It is required you accomplish the action.

6b. A mechanic replaces the engine on a Cessna 182 with another engine, which is listed on the aircraft TCDS. The mechanic should complete which of the following?

A— A logbook entry as this is only a minor alteration.
B— A 337 form, and get IA approval for this major alteration.
C— A 337 form, and get local FSDO "field approval."

The definition of "major alteration" is "...an alteration not listed in the aircraft…specifications." Since the engine was listed, it is only a minor alteration and nothing more than the logbook entry is required.

Answers Note: *All Learning Statement Codes in parentheses are preceded by "IAR"— see explanation on Page 1–10.*

3 [C] (022) 14 CFR Part 1
3a [C] (030) 14 CFR Part 1
4 [B] (030) 14 CFR Part 1
5 [C] (031) 14 CFR Part 1
6 [B] (031) 14 CFR Part 1
6a [C] (031) 14 CFR Part 1
6b [A] (031) 14 CFR Part 1

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6c. The term "consensus standard"

A— means everybody agrees with the FAA's interpretation.
B— is not an FAA-recognized term.
C— is an industry-developed standard that applies to LSA certification.

Consensus standard means, for the purpose of certificating light-sport aircraft, an industry-developed consensus standard that applies to aircraft design, production, and airworthiness. It includes, but is not limited to, standards for aircraft design and performance, required equipment, manufacturer quality assurance systems, production acceptance test procedures, operating instructions, maintenance and inspection procedures, identification and recording of major repairs and major alterations, and continued airworthiness.

14 CFR Part 21
Certification Procedures for Products, Articles and Parts

This part of 14 CFR prescribes the procedural requirements for the issue of type certificates and changes to those certificates: the issue of airworthiness certificates and the issue of export airworthiness approvals.

7. "Certification Procedures for Products, Articles and Parts" are found in which Part of Title 14 of the CFR?

A— Part 23.
B— Part 21.
C— Part 121.

14 CFR Part 21 is entitled "Certification Procedures for Products, Articles and Parts."

8. Aircraft certificated after what date were required to have an approved flight manual?

A— July 18, 1978.
B— November 1, 1981.
C— March 1, 1979.

With each airplane or rotorcraft that was not type-certificated with an Airplane or Rotorcraft Flight Manual and that has had no flight time prior to March 1, 1979, the holder of a type certificate (including a supplemental type certificate) or the licensee of a type certificate shall make available to the owner at the time of delivery of the aircraft a current approved Airplane or Rotorcraft Flight Manual.

9. If a person alters an aircraft by installing special wing tips, he or she may get approval to duplicate this alteration on other aircraft by the issuance of a

A— Provisional Type Certificate.
B— Supplemental Type Certificate.
C— Production Certificate.

Any person who alters a product by introducing a major change in type design, not great enough to require a new application for a new application for a type certificate under §21.19, shall apply to the Administrator for a supplemental type certificate, except that the holder of a type certificate for the product may apply for an amendment of the original type certificate.

10. An aircraft with a standard airworthiness certificate could be in which of the following categories?

A— Utility, acrobatic, and commuter.
B— Primary, restricted, and experimental.
C— Normal, provisional and Transport

Standard airworthiness certificates are airworthiness certificates issued for aircraft that are type-certificated in the normal, utility, acrobatic, commuter, or transport category and for unmanned free balloons and for aircraft designated by the Administrator as special classes of aircraft.

11. An aircraft with a special airworthiness certificate would be in which of the following categories?

A— Utility, acrobatic, and commuter.
B— Primary, restricted, and experimental.
C— Normal, provisional, and transport.

Special airworthiness certificates are primary, restricted, limited, and provisional airworthiness certificates, special flight permits, and experimental certificates.

Answers

6c [C] (031) 14 CFR Part 1
7 [B] (030) 14 CFR Part 21
8 [C] (030) 14 CFR Part 21
9 [B] (022) 14 CFR Part 21
10 [A] (030) 14 CFR Part 21
11 [B] (030) 14 CFR Part 21

SAMPLE

12. Which section of 14 CFR provides for the fabrication of aircraft replacement and modification parts (PMA)?

A— 14 CFR §21.303.
B— 14 CFR, section 23, Appendix B.
C— 14 CFR, section 45.21.

Part 21 is titled "Certification Procedures for Products and Articles" and contains regulations for certifying products and articles ranging from small PMA replacement parts to complete aircraft products and parts.

13. Before a new type of oil filter for a type certificated aircraft engine, manufactured by a person other than the original engine manufacturer, can be sold for installation on that engine, the manufacturer of the filter must be issued a

A— Parts Manufacturer Approval.
B— Supplemental Type Certificate.
C— Production Certificate.

Except as provided in paragraph (b) of this section no person may produce a modification or replacement part for sale for installation on a type certificated product unless it is produced pursuant to a Parts Manufacturer Approval issued under this subpart.

14. An export certificate of airworthiness may be issued for

A— a new or used aircraft if it meets the requirements of 14 CFR Part 21, Subpart E.
B— an engine, propeller or article, only if it meets the definition of being airworthy.
C— an engine or propeller that is not airworthy, if the importing country accepts the deviation from approved design or condition for safe operation on a form acceptable to the FAA.

Part 21 is titled "Certification Procedures for Products and Articles" and contains regulations for certifying products and articles ranging from small PMA pieces to complete aircraft, including export certificates. Normally the exported product or article must meet the requirements of being airworthy. However, the country seeking the import may waive that requirement if they specify the acceptance of the deviation on a form and in a manner acceptable to the FAA.

15. An altimeter that has been approved for installation on a civil aircraft may be manufactured under a

A— Supplemental Type Certificate.
B— Technical Standard Order.
C— Production Certificate.

A Technical Standard Order (TSO) is issued by the Administrator and is a minimum performance standard for specified articles (for the purpose of this subpart, articles means materials, parts processes, or appliances) used on civil aircraft.

Answers

12 [A] (030) 14 CFR Part 21 13 [A] (016) 14 CFR Part 21 14 [C] (016) 14 CFR Part 21
15 [B] (016) 14 CFR Part 21