

DDC No. 7-2006-PEL Revision 1

# Commercial Pilot Licence Knowledge Test Guide

Revision 1  
January 20<sup>th</sup>, 2009





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Paramaribo, January 20<sup>th</sup>, 2009

**No. 7-2006-PEL Revision 1**

**Decision Director CASAS**

**Subject: Commercial Pilot Knowledge Test Guide**

## **PREFACE**

This Decision Director CASAS No. 7-2006-PEL Revision 1, dated January 20<sup>th</sup>, 2009, Commercial Pilot Knowledge Test Guide, provides information for applicants preparing to take a commercial pilot knowledge test. Appendices provide lists for each aircraft category of commercial pilot licensing with subject matter outlines, reference materials, and sample questions with learning codes. This guide can be purchased from the Civil Aviation Safety Authority Suriname, P.O. Box 12587, Airfield Zorg & Hoop. Paramaribo, Suriname or downloaded from the CASAS web site at <http://www.casas.sr>.

Comments and/or questions regarding this guide should be sent to the following address: Civil Aviation Safety Authority Suriname, P.O. Box 12587, Airfield Zorg & Hoop. Paramaribo, Suriname.

/s/ January 20<sup>th</sup>, 2009

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V. Hanenberg  
Director CASAS

# COMMERCIAL PILOT KNOWLEDGE TEST GUIDE

## PURPOSE

The purpose of this Decision Director CASAS (DDC) is to provide guidance for applicants preparing to take the Commercial Pilot knowledge tests. Appendices provide subject matter outlines, reference material, and sample questions with learning statements.

Civil Aviation Regulations Suriname (CARS) can be obtained from the Civil Aviation Safety Authority Suriname, P.O. Box 12587, Airfield Zorg & Hoop. Paramaribo, Suriname. CARS Part 2 Personnel Licensing regulations cover the requirements for personnel licensing.

This DDC can be purchased from the Civil Aviation Safety Authority Suriname, P.O. Box 12587, Airfield Zorg & Hoop. Paramaribo, Suriname or downloaded from the CASAS website at <<http://www.casas.sr>>.

Comments and/or questions regarding this DDC should be sent to Civil Aviation Safety Authority Suriname, P.O. Box 12587, Airfield Zorg & Hoop. Paramaribo, Suriname.

## INTRODUCTION

What is required to become a skilled and effective commercial pilot? Although some individuals possess more knowledge and skills than others, no one is a natural-born pilot. Competent pilots become so through study, training, and experience.

This knowledge test guide should answer most questions about taking a commercial pilot knowledge test by covering the following areas: knowledge test eligibility requirements; knowledge areas on the tests; descriptions of the tests; process for taking a knowledge test; validity of Airman Knowledge Test Reports; use of test aids and materials; cheating or other unauthorised conduct; retesting procedures; and obtaining training and testing publications and general information.

This guide will help applicants in preparing to take one or all of the following tests:

- |  |     |
|--|-----|
| • Commercial Pilot – Aeroplane             | CAX |
| • Commercial Pilot – Aeroplane Validation  | CVL |
| • Commercial Pilot – Aeroplane Conversion  | CCL |
| • Commercial Pilot – Helicopter            | CRH |
| • Commercial Pilot – Helicopter Validation | CVH |
| • Commercial Pilot – Helicopter Conversion | CCH |
| • Commercial Pilot – Airship               | CLA |
| • Commercial Pilot – Airship Validation    | CVA |
| • Commercial Pilot – Airship Conversion    | CCA |
| • Military Competency – Aeroplane          | MCA |
| • Military Competency – Helicopter         | MCH |

This guide is not offered as an easy way to obtain the necessary information for passing the knowledge tests. Rather, the intent of this guide is to define and narrow the field of study to the required knowledge areas included in the tests.

CASAS airman knowledge tests are a very effective instrument for aviation safety and regulatory compliance. However, these tests can only sample the vast amount of knowledge every pilot needs to operate safely in an ever increasingly complex airspace system.

## KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

Individuals pursuing a commercial pilot licence should review: Civil Aviation Regulations Suriname (CARS), Part 2, section 2.2.1 General; section 2.2.3, Validity; and section 2.2.4, Requirements for issue or validation. The applicant for a commercial pilot licence knowledge test must be at least 18 years old and have a CASAS Class 1 medical certificate.

## KNOWLEDGE AREAS ON THE TESTS

Commercial pilot tests are comprehensive because they must test the applicant's knowledge in many subject areas.

Applicants pursuing a commercial pilot licence should review CARS Part 2, section 2.3.3.3 (c) Knowledge areas, for the knowledge areas on the tests.

## DESCRIPTIONS OF THE TESTS

All test questions are the objective, multiple-choice type. Each question can be correctly 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. **The minimum passing score is 75 percent.**

The following tests each contain **100 questions**, and applicants are allowed a **maximum of 3.0 hours** to complete each test.

- Commercial Pilot – Aeroplane
- Commercial Pilot – Helicopter
- Commercial Pilot – Airship

The following tests each contain **50 questions**, and applicants are allowed a **maximum of 2.0 hours** to complete each test.

- Commercial Pilot – Aeroplane Validation / Conversion
- Commercial Pilot – Helicopter Validation / Conversion
- Commercial Pilot – Airship Validation / Conversion
- Military Competency – Aeroplane
- Military Competency – Helicopter

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. Test applicants should be sure to carefully read the instructions given with each 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 possible answers. Test applicants should clearly understand the problem before attempting to solve it.
- After formulating an answer, determine which choice corresponds with that answer. The answer chosen should completely resolve the problem.
- From the answers given, it may appear 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 represent common misconceptions.
- If a certain question is difficult, it is best to mark it for review and proceed to the next question. After answering the less difficult questions, return to those marked for review and answer them. The review marking procedure will be explained to test applicants prior to starting the test. Although the computer should alert test applicants to unanswered questions, test applicants should make sure every question has an answer recorded. This procedure will enable test applicants to use the available time to maximum advantage.
- When solving a calculation problem, the answer closest to the applicant's solution should be selected. The problem has been checked with various types of calculators; therefore, if the problem has been solved correctly, the applicant's answer will be closer to the correct answer than any of the other choices.

## **PROCESS FOR TAKING A KNOWLEDGE TEST**

The first step in the process of taking a knowledge test is to contact the CASAS office. They can provide applicants with information relating to knowledge test prerequisites, required authorisations and endorsements, testing locations, and the appropriate fees. In addition, applicants should visit the CASAS website at <<http://www.casas.sr>>.

The second step in the process of taking a knowledge test is for the applicant to complete the required training and receive an endorsement from an authorised instructor or aviation training organisation.

Acceptable forms of endorsement are:

- A certificate of graduation or a statement of accomplishment certifying the satisfactory completion of the ground school portion of a course for the licence or rating sought. The certificate or statement may be issued by an approved aviation training organisation.
- A written statement or logbook endorsement from an authorised ground or flight instructor certifying the applicant has completed an applicable ground training or home study course and is prepared to take the knowledge test.
- A failed, passed, or expired Airman Knowledge Test Report, provided the airman still has the original Airman Knowledge Test Report in his/her possession.
- An "expired test/credit" letter issued by the CASAS (in lieu of a duplicate Airman Knowledge Test Report).

The third step in the process of taking a knowledge test is for the applicant to receive written authorisation from CASAS.

The fourth step in taking a knowledge test is to proceed to the CASAS test center. An applicant for a knowledge test must provide proper identification. Testing center personnel will not begin the test until the test applicant's identification is verified.

Upon completion of the knowledge test, the applicant will receive an Airman Knowledge Test Report showing the test score. The Airman Knowledge Test Report is certified with an embossed seal to authenticate the validity of the document.

The Airman Knowledge Test Report lists the learning statement codes for questions answered incorrectly. The total number of codes shown on the Airman Knowledge Test Report is not necessarily an indication of the total number of questions answered incorrectly.

The Appendices of this Knowledge Test Guide contain a list of reference materials for applicants to study during their training for a commercial pilot licence. The questions on the knowledge test will come from these reference materials. Decision Director CASAS, No 2-2006-PEL Revision 1, Learning Statement Reference Guide for Airman Knowledge Testing, contains learning statements and their corresponding codes for airman knowledge testing. Applicants should match the learning statement codes on the Airman Knowledge Test Report to these codes to review their areas of deficiency.

A list of reference materials has been prepared by CASAS to establish specific references for all knowledge standards and is to be used when preparing for an airman knowledge test. The list of reference materials is contained in the appendices to this Knowledge Test Guide.

An applicant's instructor is required to provide instruction on each of the knowledge areas listed on the Airman Knowledge Test Report and to complete an endorsement of this instruction. The Airman Knowledge Test Report must be presented to the test examiner prior to taking the skill test. During the oral portion of the skill test, the test examiner is required to evaluate the noted areas of deficiency.

Applicants requiring a duplicate Airman Knowledge Test Report due to loss or destruction of the original should send a signed request to Civil Aviation Safety Authority Suriname, Personnel Licensing Division, P.O. Box 12587, Paramaribo, Suriname.

## **VALIDITY OF AIRMAN TEST REPORTS**

Airman Knowledge Test Reports for a commercial pilot licence are valid for 24 calendar months. The applicant should plan to complete the skill test during the 24 calendar month validity period. If the Airman Knowledge Test Report expires before completion of the skill test, the applicant must retake the knowledge test.

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

Knowledge test applicants may use aids, reference materials, and test materials within the guidelines listed below. 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 memories, 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. Applicants may use any reference materials provided with the test. In addition, applicants may use scales, straightedges, protractors, plotters, navigation computers, log sheets, holding pattern entry aids, and electronic or mechanical calculators that are directly related to the test.
2. Manufacturers permanently inscribed instructions on the front and back of such aids, e.g., formulas, conversions, regulations, signals, weather data, holding pattern diagrams, frequencies, mass and balance formulas, and air traffic control procedures are permissible.
3. CASAS personnel may provide a calculator to applicants and/or deny use of the applicant's personal calculator based on the following limitations:
  - (a) Prior to, and upon completion of the test, while in the presence of the test examiner, applicants must actuate the ON/OFF switch and perform any other function that ensures erasure of any data stored in memory circuits, including removal of batteries.
  - (b) The use of electronic calculators incorporating permanent or continuous type memory circuits without erasure capability is prohibited. The test examiner may refuse the use of the applicant's 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 pre-written programs or information related to the test can be stored and retrieved is prohibited.
  - (e) Applicants are not permitted to use any booklet or manual containing instructions related to use of test aids.
4. Dictionaries are not permitted in the testing area.
5. The CASAS test examiner makes the final determination relating to test materials and personal possessions the applicant may take into the testing area.

## **CHEATING OR OTHER UNAUTHORISED CONDUCT**

Knowledge testing must be carried out in accordance with the strictest security procedures to avoid test compromise. The CASAS test examiner will terminate a test at any time that he/she suspects that a cheating incident has occurred. A CASAS investigation will be conducted. If the investigation determines that cheating or unauthorised conduct has occurred, any airman licence, certificate, or rating that the applicant holds may be revoked, and the applicant will be prohibited for 1 year from applying for or taking any test for a licence, certificate or rating under CARS Part 2.

## **RETESTING PROCEDURES**

Applicants who receive a grade lower than 75 percent and who wish to retest must present the following to CASAS testing center personnel when appearing for the purpose of retesting:

- A failed Airman Knowledge Test Report.
- A written endorsement from an authorised instructor certifying that additional instruction has been given, and the instructor finds the applicant competent to pass the test.
- A written authorisation from CASAS to retake the test.

Applicants possessing an Airman Knowledge Test Report with a score of 75 percent or higher who decide to retake the test in anticipation of a better score, may retake the test after 30 days from the date their last test was taken. CASAS will not allow applicants to retake a passed test before the 30-day period has lapsed. Prior to retesting, applicants will be required to surrender their current Airman Knowledge Test Report to the test examiner. The last test taken will reflect the official final score.

## **OBTAINING TRAINING AND TESTING PUBLICATIONS AND GENERAL INFORMATION**

Most of the current CASAS airman training and testing publications can be obtained in electronic format from CASAS at the CASAS website at <<http://www.casas.sr>>.

## **AIRMAN KNOWLEDGE TEST ITEMS**

Sample questions and their corresponding learning statements and codes are contained in the appendices to this test guide. They are representative of questions for airman knowledge tests. These will help airmen become familiar with similar questions found on the airman knowledge tests. The knowledge test is not designed to intimidate any prospective airman; it is designed to measure the level of competency required to receive a CASAS licence, authority or rating. The list of reference materials contained in the appendices to this test guide is provided to ensure that instructors and students are able to determine the importance of the subject matter to be taught and learned.

## **COMPUTER TESTING SUPPLEMENTS**

The computer testing supplements contain the graphics, legends, and maps that are needed to successfully respond to certain knowledge test items. These supplements will be provided by CASAS test center personnel during the airman knowledge test.

## **KNOWLEDGE TEST GUIDES**

The knowledge test guides describe the knowledge testing policy and procedures for each licence area.

## **OTHER KNOWLEDGE TESTING INFORMATION**

Other knowledge testing information provides specific test information, such as test name, test code (three-digit test identifiers), number of questions, and the time (hours) allotted for each knowledge test. The test identifiers will assist airmen in selecting the proper test for the licence or rating being sought.

## **REFERENCE MATERIALS / LEARNING STATEMENT CODES**

The appendices of this guide contain the listings of reference materials and sample test questions with related learning statements used for airman knowledge testing. The listings of reference materials and sample questions have been prepared by CASAS to establish specific references for all knowledge standards. The listings contain reference materials to be used when preparing for all airman knowledge tests. The learning statements contained in Decision Director CASAS, No. 2-2006-PEL Revision 1, should be referred to when reviewing areas of deficiency on airman knowledge test reports.



## APPENDIX 1

### LIST OF COMMERCIAL PILOT REFERENCE MATERIALS FOR ALL CERTIFICATIONS

The publications listed below contain study material applicants need to be familiar with when preparing for commercial pilot knowledge tests. Most of these publications can be purchased from CASAS or be downloaded from the CASAS web site at <http://www.casas.sr>. ICAO publications can be purchased from ICAO at <http://www.icao.int>. The latest revision of the listed references should be requested.

- ❑ The Suriname Civil Aviation Safety and Security Act of March 12, 2002
- ❑ Civil Aviation Regulations Suriname (CARS), in particular:
  - CARS Part 1 – General Policies, Procedures, and Policies
  - CARS Part 2 – Personnel Licensing
  - CARS Part 5 – Airworthiness
  - CARS Part 7 – Instruments and Equipment
  - CARS Part 8 – Operations
  - CARS Part 11 – Aerial Work
- ❑ Implementing Standards Part 8
- ❑ ICAO Annexes: 3, 10 Volume II, 11 and 14 (pertinent parts)
- ❑ ICAO Document 4444: General provisions, Aero Control service, Approach control service, Aerodrome control service, and Flight information and alerting service.
- ❑ Aeronautical Information Manual (AIM)
- ❑ Aeronautical Information Publication (AIP) for Suriname
- ❑ Airport/Facility Directory
- ❑ Enroute High Altitude Chart
- ❑ Enroute Low Altitude Chart
- ❑ Flight Theory for Pilots – IAP Inc. Publications
- ❑ GA 42 Airship Training Manual – Jeppesen Sanderson
- ❑ Goodyear Airship Operations Manual – Goodyear Publications

## APPENDIX 1 (CONTINUED)

### LIST OF COMMERCIAL PILOT REFERENCE MATERIALS FOR ALL CERTIFICATION

- ❑ Instrument Approach Procedure Chart
- ❑ Pilot's Handbook for Navy Model ZP2K Airship and Handling Rigid Airships on the Ground
- ❑ Sectional Aeronautical Chart
- ❑ Transport Category Aircraft Systems - Jeppesen Sandersen
- ❑ U.S. Terminal Procedures (DP) (adopted in cooperation with FAA)
- ❑ FAA Accident Prevention Program Bulletins (adopted in cooperation with FAA)
- ❑ FAA AC 00-6 – Aviation Weather (adopted in cooperation with FAA)
- ❑ FAA AC 00-30 – Atmospheric Turbulence Avoidance (adopted in cooperation with FAA)
- ❑ FAA AC 00-45 – Aviation Weather Services (adopted in cooperation with FAA)
- ❑ FAA AC 00-54 – Pilot Wind Shear Guide (adopted in cooperation with FAA)
- ❑ FAA AC 20-43 – Aircraft Fuel Control (adopted in cooperation with FAA)
- ❑ FAA AC 20-103 – Aircraft Engine Crankshaft Failure (adopted in cooperation with FAA)
- ❑ FAA AC 20-117 – Hazards Following Ground Deicing (adopted in cooperation with FAA)
- ❑ FAA AC 60-22 – Aeronautical Decision Making (adopted in cooperation with FAA)
- ❑ FAA AC 61-107 – Operations of Aircraft at Altitudes Above 25,000 Feet (adopted in cooperation with FAA)
- ❑ FAA AC 90-48 – Pilot's Role in Collision Avoidance (adopted in cooperation with FAA)
- ❑ FAA AC 91-6 – Water, Slush, and Snow on the Runway (adopted in cooperation with FAA)
- ❑ FAA AC 91-13 – Cold Weather Operation of Aircraft (adopted in cooperation with FAA)
- ❑ FAA AC 91-43 – Unreliable Airspeed Indication (adopted in cooperation with FAA)
- ❑ FAA AC 103-4 – Hazard with Dry Ice Aboard Aircraft (adopted in cooperation with FAA)
- ❑ FAA AC 120-58 – Pilot Guide Large Aircraft Deicing (adopted in cooperation with FAA)

## APPENDIX 1 (CONTINUED)

### LIST OF COMMERCIAL PILOT REFERENCE MATERIALS FOR ALL CERTIFICATION

- FAA-H-8083-1 – Aircraft Weight and Balance (adopted in cooperation with FAA)
- FAA-H-8083-3 – Airplane Flying Handbook (adopted in cooperation with FAA)
- FAA-H-8083-15 – Instrument Flying Handbook (adopted in cooperation with the FAA)
- FAA-H-8083-21 – Rotorcraft Flying Handbook (adopted in cooperation with FAA)
- FAA-H-8083-25 – Pilot’s Handbook of Aeronautical Knowledge (adopted in cooperation with FAA)

## APPENDIX 2

### COMMERCIAL PILOT - AEROPLANE (CAX)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot - Aeroplane knowledge test.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Aircraft General Knowledge:
  - a. Principles of operation and functioning of powerplants, systems and instruments;
  - b. Operating limitations of the appropriate category of aircraft and powerplants;
  - c. Relevant operational information from the flight manual or other appropriate document;
  - d. Use and serviceability checks of equipment and systems of appropriate aircraft;
  - e. Maintenance procedures for airframes, systems and powerplants of appropriate aircraft.
  
3. Flight Performance, Planning and Loading:
  - a. Effects of loading and mass distribution on aircraft handling, flight characteristics and performance;
  - b. Mass and balance calculations;
  - c. Use and practical application of take-off, landing and other performance data;
  - d. Pre-flight and en-route flight planning appropriate to operations under VFR;
  - e. Preparation and filing of air traffic services flight plans;
  - f. Appropriate air traffic services procedures, position reporting procedures, altimeter setting procedures, and operations in areas of high-density traffic.
  
4. Human Performance:
  - a. Human performance relevant to the appropriate aircraft type;
  - b. Principles of threat and error management.
  
5. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of, and procedures for obtaining, meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.

**APPENDIX 2 (CONTINUED)**  
**COMMERCIAL PILOT - AEROPLANE (CAX)**  
**SUBJECT MATTER OUTLINE**

6. Navigation:
  - a. Air navigation, including the use of aeronautical charts, instruments and navigation aids;
  - b. Understanding of the principles and characteristics of appropriate navigation systems.
  - c. Operation of airborne equipment.
  
7. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Safety procedures, associated with flight under VFR.
  
8. Principles of Flight:
  - a. Principles of flight relating to the appropriate category of aircraft.
  
9. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 2 (CONTINUED)

COMMERCIAL PILOT - AEROPLANE (CAX)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. When are non-rechargeable batteries of an emergency locator transmitter (ELT) required to be replaced?**

A – Every 24 months.

B – When 50 percent of their useful life expires.

C – At the time of each 100-hour or annual inspection.

**Answer B – Learning Statement: Recall regulations - ELT requirements**

**2. After take off from a slushy runway, the freezing of landing gear mechanisms can be minimized by**

A – recycling the gear.

B – delaying gear retraction.

C – increasing the airspeed to  $V_{LE}$  before retraction.

**Answer A – Learning Statement: Recall aircraft performance - cold weather operations**

**3. With respect to using the mass information given in a typical aircraft owner's manual for computing gross mass, it is important to know that if items have been installed in the aircraft in addition to the original equipment, the**

A – allowable useful load is decreased.

B – allowable useful load remains unchanged.

C – maximum allowable gross mass is increased.

**Answer A – Learning Statement: Recall performance planning - aircraft loading**

**4. Which is true regarding the presence of alcohol within the human body?**

A – A small amount of alcohol increases vision acuity.

B – An increase in altitude decreases the adverse effect of alcohol.

C – Judgment and decision-making abilities can be adversely affected by even small amounts of alcohol.

**Answer C – Learning Statement: Recall effects of alcohol on the body**

**5. Which is true regarding actual air temperature and dewpoint temperature spread? The temperature spread**

A – decreases as the relative humidity decreases.

B – decreases as the relative humidity increases.

C – increases as the relative humidity increases.

**Answer B – Learning Statement: Recall weather conditions - temperature / moisture / dewpoint**

## APPENDIX 3

### COMMERCIAL PILOT - AEROPLANE VALIDATION (CVL) COMMERCIAL PILOT - AEROPLANE CONVERSION (CCL)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot - Aeroplane Validation and Conversion knowledge tests.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of, and procedures for obtaining, meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.
  
3. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Safety procedures, associated with flight under VFR.
  
4. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

**APPENDIX 3 (CONTINUED)**

**COMMERCIAL PILOT - AEROPLANE VALIDATION (CVL)  
COMMERCIAL PILOT - AEROPLANE CONVERSION (CCL)**

**SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS**

**1. What minimum flight visibility is required for VFR flight operations on an airway below 10,000 feet MSL?**

A – 2 statute miles.

B – 5 kilometers.

C – 8 kilometers.

**Answer B – Learning Statement: Recall regulations - visual flight rules and limitations**

**2. Which conditions are favorable for the formation of a surface based temperature inversion?**

A – Clear, cool nights with calm or light wind.

B – Area of unstable air rapidly transferring heat from the surface.

C – Broad areas of cumulus clouds with smooth, level bases at the same altitude.

**Answer A – Learning Statement: Recall inversion layer - characteristics**

**3. The numbers 9 and 27 on a runway indicate that the runway is oriented approximately**

A – 009° and 027° true.

B – 090° and 270° true.

C – 090° and 270° magnetic.

**Answer C – Learning Statement: Recall aerodrome operations - markings / signs / lighting**

**4. When a distress or urgency condition is encountered, the pilot of an aircraft with a transponder, who desires to alert a ground radar facility, should squawk code**

A – 7700.

B – 7600.

C – 7500.

**Answer A – Learning Statement: Recall emergency conditions / procedures**



## APPENDIX 4

### COMMERCIAL PILOT - HELICOPTER (CRH)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot—Helicopter knowledge test.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
2. Aircraft General Knowledge:
  - a. Principles of operation and functioning of powerplants, systems and instruments;
  - b. Operating limitations of the appropriate category of aircraft and powerplants;
  - c. Relevant operational information from the flight manual or other appropriate document;
  - d. Use and serviceability checks of equipment and systems of appropriate aircraft;
  - e. Maintenance procedures for airframes, systems and powerplants of appropriate aircraft.
3. Flight Performance, Planning and Loading:
  - a. Effects of loading and mass distribution on aircraft handling, flight characteristics and performance;
  - b. Mass and balance calculations;
  - c. Use & practical application of take-off or launching, landing & other performance data;
  - d. Pre-flight and en-route flight planning appropriate to operations under VFR;
  - e. Preparation and filing of air traffic services flight plans;
  - f. Appropriate air traffic services procedures, position reporting procedures, altimeter setting procedures, and operations in areas of high-density traffic;
  - g. Effects of external loading.
4. Human Performance:
  - a. Human performance relevant to the appropriate aircraft type;
  - b. Principles of threat and error management.
5. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of and procedures for obtaining meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.

## APPENDIX 4 (CONTINUED)

### COMMERCIAL PILOT - HELICOPTER (CRH)

#### SUBJECT MATTER OUTLINE

6. Navigation:
  - a. Air navigation, including the use of aeronautical charts, instruments and navigation aids;
  - b. Understanding of the principles and characteristics of appropriate navigation systems.
  - c. Operation of airborne equipment.
  
7. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Settling with power, ground resonance, retreating blade stall, dynamic roll-over and other operational hazards;
  - i. Safety procedures, associated with flight under VFR.
  
8. Principles of Flight:
  - a. Principles of flight relating to the appropriate category of aircraft.
  
9. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

**APPENDIX 4 (CONTINUED)**

**COMMERCIAL PILOT - HELICOPTER (CRH)**

**SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS**

**1. With certain exceptions, safety belts are required to be secured about passengers during**

A – taxi, takeoffs, and landings.

B – all flight conditions.

C – flight in turbulent air.

**Answer A – Learning Statement: Recall regulations - use of seats / safety belts / harnesses (passenger)**

**2. What is the primary purpose of the clutch?**

A – It allows the engine to be started without driving the main rotor system.

B – It provides disengagement of the engine from the rotor system for autorotation.

C – It transmits engine power to the main rotor, tail rotor, generator/alternator, and other accessories.

**Answer A – Learning Statement: Recall rotorcraft transmission - components / operating principles / characteristics**

**3. During a normal approach to a hover, the collective pitch control is used primarily to**

A – maintain RPM.

B – control the rate of closure.

C – control the angle of descent.

**Answer C – Learning Statement: Recall pitch control - collective / cyclic**

**4. Which is true regarding the presence of alcohol within the human body?**

A – A small amount of alcohol increases vision acuity.

B – An increase in altitude decreases the adverse effect of alcohol.

C – Judgment and decision-making abilities can be adversely affected by even small amounts of alcohol.

**Answer C – Learning Statement: Recall effects of alcohol on the body**

**5. During departure, under conditions of suspected low-level wind shear, a sudden decrease in headwind will cause**

A – a loss in airspeed equal to the decrease in wind velocity.

B – a gain in airspeed equal to the decrease in wind velocity.

C – no change in airspeed, but groundspeed will decrease.

**Answer A – Learning Statement: Recall windshear - characteristics / hazards / power management**

## APPENDIX 5

### COMMERCIAL PILOT - HELICOPTER VALIDATION (CVH) COMMERCIAL PILOT - HELICOPTER CONVERSION (CCH)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot - Helicopter Validation and Conversion knowledge tests.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of, and procedures for obtaining, meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.
  
3. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Settling with power, ground resonance, retreating blade stall, dynamic roll-over and other operational hazards;
  - i. Safety procedures, associated with flight under VFR.
  
4. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 5 (CONTINUED)

COMMERCIAL PILOT - HELICOPTER VALIDATION (CVH)  
COMMERCIAL PILOT - HELICOPTER CONVERSION (CCH)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. With certain exceptions, safety belts are required to be secured about passengers during**

A – taxi, takeoffs, and landings.

B – all flight conditions.

C – flight in turbulent air.

**Answer A – Learning Statement: Recall regulations - use of seats / safety belts / harnesses (passenger)**

**2. During departure, under conditions of suspected low-level wind shear, a sudden decrease in headwind will cause**

A – a loss in airspeed equal to the decrease in wind velocity.

B – a gain in airspeed equal to the decrease in wind velocity.

C – no change in airspeed, but groundspeed will decrease.

**Answer A – Learning Statement: Recall windshear - characteristics / hazards / power management**

**3. Which technique should a pilot use to scan for traffic to the right and left during straight-and-level flight?**

A – Systematically focus on different segments of the sky for short intervals.

B – Concentrate on relative movement detected in the peripheral vision area.

C – Continuous sweeping of the windshield from right to left.

**Answer A – Learning Statement: Recall collision avoidance - scanning techniques**

**4. Which conditions are favorable for the formation of a surface based temperature inversion?**

A – Clear, cool nights with calm or light wind.

B – Area of unstable air rapidly transferring heat from the surface.

C – Broad areas of cumulus clouds with smooth, level bases at the same altitude.

**Answer A – Learning Statement: Recall inversion layer - characteristics**

## APPENDIX 6

### COMMERCIAL PILOT - AIRSHIP (CLA)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot - Airship knowledge test.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Aircraft General Knowledge:
  - a. Principles of operation and functioning of powerplants, systems and instruments;
  - b. Operating limitations of the appropriate category of aircraft and powerplants;
  - c. Relevant operational information from the flight manual or other appropriate document;
  - d. Use and serviceability checks of equipment and systems of appropriate aircraft;
  - e. Maintenance procedures for airframes, systems and powerplants of appropriate aircraft.
  
3. Flight Performance, Planning and Loading:
  - a. Effects of loading and mass distribution on aircraft handling, flight characteristics and performance;
  - b. Mass and balance calculations;
  - c. Use and practical application of launching, landing and other performance data;
  - d. Pre-flight and en-route flight planning appropriate to operations under VFR;
  - e. Preparation and filing of air traffic services flight plans;
  - f. Appropriate air traffic services procedures, position reporting procedures, altimeter setting procedures, and operations in areas of high-density traffic;
  
4. Human Performance:
  - a. Human performance relevant to the appropriate aircraft type;
  - b. Principles of threat and error management.
  
5. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of, and procedures for obtaining meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.

**APPENDIX 6 (CONTINUED)**  
**COMMERCIAL PILOT - AIRSHIP (CLA)**  
**SUBJECT MATTER OUTLINE**

6. Navigation:
  - a. Air navigation, including the use of aeronautical charts, instruments and navigation aids;
  - b. Understanding of the principles and characteristics of appropriate navigation systems.
  - c. Operation of airborne equipment.
  
7. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Safety procedures, associated with flight under VFR.
  
8. Principles of Flight:
  - a. Principles of flight relating to the appropriate category of aircraft.
  
9. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 6 (CONTINUED)

COMMERCIAL PILOT - AIRSHIP (CLA)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. To determine pressure altitude prior to takeoff, the altimeter should be set to**

A – the current altimeter setting.

B – 1013.2 Hp and the altimeter indication noted.

C – the field elevation and the pressure reading in the altimeter setting window noted.

**Answer B – Learning Statement: Recall altimeter - settings / setting procedures**

**2. If clouds form as a result of very stable, moist air being forced to ascend a mountain slope, the clouds will be**

A – cirrus type with no vertical development or turbulence.

B – cumulus type with considerable vertical development and turbulence.

C – stratus type with little vertical development and little or no turbulence.

**Answer C – Learning Statement: Recall cloud types - formation / resulting weather**

**3. True course measurements on a Sectional Aeronautical Chart should be made at a meridian near the midpoint of the course because the**

A – values of isogonic lines change from point to point.

B – angles formed by isogonic lines and lines of latitude vary from point to point.

C – angles formed by lines of longitude and the course line vary from point to point.

**Answer C – Learning Statement: Interpret information on a Sectional Chart**

**4. Which take-off procedure is considered to be most hazardous?**

A – Failing to apply full engine power properly on all takeoffs, regardless of wind.

B – Maintaining only 50 percent of the maximum permissible positive angle of inclination.

C – Maintaining a negative angle of inclination during takeoff after elevator response is adequate for controllability.

**Answer C – Learning Statement: Recall flight operations - takeoff / landing maneuvers**

**5. Critical factors affecting the flight characteristics and controllability of an airship are**

A – airspeed and power.

B – static and dynamic trim.

C – temperature and atmospheric density.

**Answer B – Learning Statement: Recall forces acting on aircraft - stability / controllability**



## APPENDIX 7

### COMMERCIAL PILOT - AIRSHIP VALIDATION (CVA) COMMERCIAL PILOT - AIRSHIP CONVERSION (CCA)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Commercial Pilot - Airship Validation and Conversion knowledge tests.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of, and procedures for obtaining, meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures.
  - h. Hazardous weather avoidance.
  
3. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Safety procedures, associated with flight under VFR.
  
4. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 7 (CONTINUED)

COMMERCIAL PILOT - AIRSHIP VALIDATION (CVA)  
COMMERCIAL PILOT - AIRSHIP CONVERSION (CCA)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. Pilots who change their permanent mailing address and fail to notify CASAS of this change, are entitled to exercise the privileges of their pilot licence for a period of**

A – 30 days.

B – 60 days.

C – 90 days.

**Answer A – Learning Statement: Recall regulations - change of address**

**2. If clouds form as a result of very stable, moist air being forced to ascend a mountain slope, the clouds will be**

A – cirrus type with no vertical development or turbulence.

B – cumulus type with considerable vertical development and turbulence.

C – stratus type with little vertical development and little or no turbulence.

**Answer C – Learning Statement: Recall cloud types - formation / resulting weather**

**3. Which take-off procedure is considered to be most hazardous?**

A – Failing to apply full engine power properly on all takeoffs, regardless of wind.

B – Maintaining only 50 percent of the maximum permissible positive angle of inclination.

C – Maintaining a negative angle of inclination during takeoff after elevator response is adequate for controllability.

**Answer C – Learning Statement: Recall flight operations - takeoff / landing maneuvers**

**4. When a distress or urgency condition is encountered, the pilot of an aircraft with a transponder, who desires to alert a ground radar facility, should squawk code**

A – 7700.

B – 7600.

C – 7500.

**Answer A – Learning Statement: Recall emergency conditions / procedures**

## APPENDIX 8

### MILITARY COMPETENCY - AEROPLANE (MCA)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Military Competency - Aeroplane knowledge test.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of and procedures for obtaining meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures;
  - h. Hazardous weather avoidance.
  
3. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Safety procedures associated with flight under VFR.
  
4. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 8 (CONTINUED)

MILITARY COMPETENCY - AEROPLANE (MCA)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. When are non-rechargeable batteries of an emergency locator transmitter (ELT) required to be replaced?**

A – Every 24 months.

B – When 50 percent of their useful life expires.

C – At the time of each 100-hour or annual inspection.

**Answer B – Learning Statement: Recall regulations - ELT requirements**

**2. What wind conditions would you anticipate when squalls are reported at your destination?**

A – Rapid variations in windspeed of 15 knots or more between peaks and lulls.

B – Peak gusts of at least 35 knots combined with a change in wind direction of 30° or more.

C – Sudden increases in windspeed of at least 16 knots to a sustained speed of 22 knots or more for at least 1 minute.

**Answer C – Learning Statement: Recall squall lines - formation / characteristics / resulting weather**

**3. When departing behind a heavy aircraft, the pilot should avoid wake turbulence by maneuvering the aircraft**

A – below and downwind from the heavy aircraft.

B – above and upwind from the heavy aircraft.

C – below and upwind from the heavy aircraft.

**Answer B – Learning Statement: Recall wake turbulence - characteristics / avoidance techniques**

**4. Hazardous attitudes which contribute to poor pilot judgment can be effectively counteracted by**

A – taking meaningful steps to be more assertive with attitudes.

B – early recognition of hazardous thoughts.

C – redirecting that hazardous attitude so that appropriate action can be taken.

**Answer C – Learning Statement: Recall Aeronautical Decision Making (ADM) - hazardous attitudes**

## APPENDIX 9

### MILITARY COMPETENCY - HELICOPTER (MCH)

#### SUBJECT MATTER OUTLINE

The following outlines the major topics and underlying content areas on the Military Competency - Helicopter knowledge test.

1. Air Law:
  - a. Rules and regulations relevant to the holder of a CPL;
  - b. Rules of the air;
  - c. Appropriate air traffic services practices and procedures.
  
2. Meteorology:
  - a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
  - b. Use of and procedures for obtaining meteorological information, pre-flight, and in-flight;
  - c. Altimetry;
  - d. Aeronautical meteorology;
  - e. Climatology of relevant areas in respect of the elements having an effect upon aviation;
  - f. The movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
  - g. Causes, recognition and effects of icing; frontal zone penetration procedures;
  - h. Hazardous weather avoidance.
  
3. Operational Procedures:
  - a. Application of threat and error management to operational procedures;
  - b. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
  - c. Altimeter setting procedures;
  - d. Appropriate precautionary and emergency procedures;
  - e. Operational procedures for carriage of freight;
  - f. Potential hazards associated with dangerous goods;
  - g. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;
  - h. Settling with power, ground resonance, retreating blade stall, dynamic roll-over and other operational hazards;
  - i. Safety procedures associated with flight under VFR.
  
4. Radiotelephony:
  - a. Communication procedures and phraseology as applied to VFR operations;
  - b. Action to be taken in case of communication failure.

APPENDIX 9 (CONTINUED)

MILITARY COMPETENCY - HELICOPTER (MCH)

SAMPLE QUESTIONS, ANSWERS AND LEARNING STATEMENTS

**1. With certain exceptions, safety belts are required to be secured about passengers during**

A – taxi, takeoffs, and landings.

B – all flight conditions.

C – flight in turbulent air.

**Answer A – Learning Statement:** Recall regulations - use of seats / safety belts / harnesses (passenger)

**2. What wind conditions would you anticipate when squalls are reported at your destination?**

A – Rapid variations in windspeed of 15 knots or more between peaks and lulls.

B – Peak gusts of at least 35 knots combined with a change in wind direction of 30° or more.

C – Sudden increases in windspeed of at least 16 knots to a sustained speed of 22 knots or more for at least 1 minute.

**Answer C – Learning Statement:** Recall squall lines - formation / characteristics / resulting weather

**3. When departing behind a heavy aircraft, the pilot should avoid wake turbulence by maneuvering the aircraft**

A – below and downwind from the heavy aircraft.

B – above and upwind from the heavy aircraft.

C – below and upwind from the heavy aircraft.

**Answer B – Learning Statement:** Recall wake turbulence - characteristics / avoidance techniques

**4. Hazardous attitudes which contribute to poor pilot judgment can be effectively counteracted by**

A – taking meaningful steps to be more assertive with attitudes.

B – early recognition of hazardous thoughts.

C – redirecting that hazardous attitude so that appropriate action can be taken.

**Answer C – Learning Statement:** Recall Aeronautical Decision Making (ADM) - hazardous attitudes

**5. For IFR operations off established airways, ROUTE OF FLIGHT portion of an IFR flight plan should list VOR navigational aids which are no more than**

A – 40 miles apart.

B – 70 miles apart.

C – 80 miles apart.

**Answer C – Learning Statement:** Recall flight plan - IFR