

- 5.5 This guide can be purchased from the GCAA Head Office, or downloaded from the GCAA web site at <http://www.gcaa-gy.org>. Comments and/or questions regarding this guide should be sent to the GCAA Head Office. See paragraph 4 above for GCAA contact information/address.

6. INTRODUCTION

- 6.1 What is required to become a skilled and effective pilot? Although some individuals possess more knowledge and skills than others, no one is a natural-born pilot. Pilots become competent through study, training, and experience.
- 6.2 This knowledge test guide should answer most questions about taking a pilot knowledge test by covering the following areas:
- a. knowledge test eligibility requirements;
 - b. knowledge areas on the tests;
 - c. descriptions of the tests;
 - d. process for taking a knowledge test;
 - e. validity of Airman Knowledge Test
 - f. Reports;
 - g. use of test aids and materials;
 - h. cheating or other unauthorised conduct;
 - i. retesting procedures;
 - j. airman knowledge test items;
 - k. computer testing supplements; and
 - l. reference materials

7. KNOWLEDGE TEST ELIGIBILITY REQUIREMENTS

- 7.1 Individuals pursuing a Guyana pilot licence should review the relevant sections of GARS Part 2, Section 2.2 – General Licensing Requirements and Section 2.3 – Pilot Licences, Categories, Ratings and Authorisations.
- 7.2 The age of the applicant for a Guyana pilot licence knowledge test must not be more than one (1) year below the age requirement for the pilot licence (except for the ATPL) and he/she must have the relevant class of medical assessment/certificate.

8. KNOWLEDGE AREAS ON THE TESTS

- 8.1 Pilot tests are comprehensive because they must test the applicant's knowledge in many subject areas.
- 8.2 The knowledge areas for PPL, CPL, ATPL and IR (Aeroplanes and Helicopter) are as follows:
- a. Air Law;
 - b. Aircraft General Knowledge;
 - c. Flight Performance, planning and loading;
 - d. Human performance;

- e. Meteorology;
- f. Navigation;
- g. Operational procedures;
- h. Principles of flight (not applicable to IR); and
- i. Radiotelephony.

9. DESCRIPTIONS OF THE TESTS

9.1 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.***

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

- a. Private Pilot — Aeroplane
- b. Private Pilot — Helicopter
- c. Commercial Pilot — Aeroplane
- d. Commercial Pilot — Helicopter
- e. Airline Transport Pilot — Aeroplane
- f. Airline Transport Pilot — Helicopter
- g. Instrument Rating — Aeroplane
- h. Instrument Rating — Helicopter

9.3 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.

9.4 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.

9.5 Test applicants should ensure that they carefully read the instructions given with each test, as well as the statements in each test item.

9.6 When taking a test, keep the following points in mind:

- a. Answer each question in accordance with the latest regulations and guidance publications.
- b. Read each question carefully before looking at the possible answers. Test applicants should clearly understand the problem before attempting to solve it.
- c. After formulating an answer, determine which choice corresponds with that answer. The answer chosen should completely resolve the problem.
- d. From the answers given, it may appear there is more than one (1) possible answer; however, there is only one answer that is correct and complete. The other answers are either incomplete, erroneous, or represent common misconceptions.

- e. 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. This procedure will enable test applicants to use the available time to maximum advantage.
- f. The computer program would indicate all unanswered questions, therefore, test applicants should make sure every question has an answer recorded.
- g. 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.

10. PROCESS FOR TAKING A KNOWLEDGE TEST

- 10.1** The *first step* in the process of taking a knowledge test is to contact the GCAA Licensing Office.
- 10.2** Licensing Officers are able to provide applicants with information relating to knowledge test prerequisites, required authorisations and endorsements, testing location, and the appropriate fees.
- 10.3** 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 approved aviation training organisation.
- 10.4** Acceptable forms of endorsement are:
 - a. 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 organization or an authorized instructor.
 - b. A passed or expired Airman Knowledge Test Report, provided the airman still has the original Airman Knowledge Test Report in his/her possession. (See paragraph 14.1 for retesting requirements.)
- 10.5** The *third step* in the process of taking a knowledge test is for the applicant to pay the required exam fee and receive a written booking from the GCAA Licensing Office.
- 10.6** The *fourth step* in taking a knowledge test is to proceed to the GCAA test center (Licensing Office) at least thirty (30) minutes before the exam is scheduled to start. An applicant for a knowledge test must present the written booking and proper photo identification. Testing center personnel will not begin the test until the test applicant's identification is verified. Acceptable photo identification may be a passport, a government-issued national identification card, a Guyana driver's licence or a pilot licence.
- 10.7** 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 or GCAA stamp to authenticate the validity of the document.
- 10.8** The Airman Knowledge Test Report shows the subject areas for 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 pilot licence.
- 10.9** 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.

10.10 Applicants requiring a duplicate Airman Knowledge Test Report due to loss or destruction of the original should send a signed request to the Guyana Civil Aviation Authority, Lot 73 High Street, Kingston, Georgetown.

11. VALIDITY OF AIRMAN TEST REPORTS

11.1 Airman Knowledge Test Reports for a pilot licence are valid for twenty-four (24) calendar months. The applicant should plan to complete the skill test during the twenty-four (24) calendar month validity period.

11.2 The applicant for an Airline Transport Pilot Licence should plan to complete the skill test during the twenty-four (24) calendar month validity period or seven (7) year period provided the applicant is and has been continuously employed as a flight crew member by an AOC holder under GARs Part 9 at the time of the airline transport pilot skill test.

11.3 If the Airman Knowledge Test Report expires before completion of the skill test, the applicant must retake the knowledge test.

12. USE OF TEST AIDS AND MATERIALS

12.1 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).

12.2 Simple programmable memories, which allow addition to, subtraction from, or retrieval of one (1) number from the memory, are permissible. Also, simple functions, such as square root and percent keys are permissible.

12.3 The following guidelines apply:

- a. 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.
- b. 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.
- c. GCAA personnel may provide a calculator to applicants and/or deny use of the applicant's personal calculator based on the following limitations:
 - 1) 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.
 - 2) 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.
 - 3) 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.

4) Applicants are not permitted to use any booklet or manual containing instructions related to use of test aids.

- d. Dictionaries are not permitted in the testing area.
- e. The GCAA test examiner makes the final determination relating to test materials and personal possessions the applicant may take into the testing area.

13. CHEATING OR OTHER UNAUTHORISED CONDUCT

13.1 Knowledge testing must be carried out in accordance with the strictest security procedures to avoid any compromise of the test.

13.2 The GCAA test examiner will terminate a test at any time that he/she suspects that a cheating incident has occurred. A GCAA 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 one (1) year from applying for or taking any test for a licence, certificate or rating under the Regulations.

14. RETESTING PROCEDURES

14.1 Applicants who receive a grade lower than seventy-five percent (75%) and who wish to retest must present the following to GCAA licensing personnel when appearing for the purpose of retesting:

- a. A failed Airman Knowledge Test Report.
- b. A written endorsement from an authorised instructor or approved training captain certifying that additional instruction has been given, and the instructor/training captain finds the applicant competent to pass the test.
- c. A written booking from GCAA to retake the test.

14.2 Applicants possessing an Airman Knowledge Test Report with a score of seventy-five percent (75%) or higher who decide to retake the test in anticipation of a better score, may retake the test after thirty (30) days from the date their last test was taken. GCAA 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 and report to the test examiner. The last test taken will reflect the official final score.

15. AIRMAN KNOWLEDGE TEST ITEMS

15.1 Sample questions 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.

15.2 The knowledge test is not designed to intimidate any prospective airman; it is designed to measure the level of competency required to receive a GCAA licence, authority or rating.

15.3 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.

16. COMPUTER TESTING SUPPLEMENTS

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

17. REFERENCE MATERIALS

- 17.1** The appendices of this guide contain the listings of reference materials and sample test questions.

Approved by:



Lt. Col (ret.) Egbert Field
Director General of Civil Aviation
Guyana Civil Aviation Authority

APPENDIX: 1

LIST OF PILOT REFERENCE MATERIALS

- 1.1** The publications listed below contain study material applicants need to be familiar with when preparing for pilot knowledge tests. Some of these publications can be purchased from GCAA. ICAO's publications can be purchased from ICAO at <http://www.icao.int>. Most of the Federal Aviation Administration (FAA) publications are available free online. The latest revision of the listed references should be requested.
- 1.2** List of recommended study materials:
- a. The Guyana Civil Aviation Act of 2000
 - b. Guyana Civil Aviation (Air Navigation) Regulations (GCARS) 2002
 - c. Guyana Aviation Requirements: Part 1—General Policies, Procedures, and Definition
 - d. Guyana Aviation Requirements: Part 2—Personnel Licensing
 - e. Guyana Aviation Requirements: Part 5—Airworthiness
 - f. Guyana Aviation Requirements: Part 7—Instruments and Equipment
 - g. Guyana Aviation Requirements: Part 8—Operations
 - h. Guyana Aviation Requirements: Part 11—Aerial Work
 - i. Guyana Aeronautical Information Publication (AIP)
 - j. Guyana Aeronautical Information Circulars
 - k. ICAO Annexes: 3, 10 Volume II, 11 and 14 (pertinent parts)
 - l. ICAO Document 4444: General provisions, Aero Control service, Approach control service, Aerodrome control service, and Flight information and alerting service.
 - m. Flight Theory for Pilots—IAP Inc. Publications
 - n. Transport Category Aircraft Systems – Jeppesen Sandersen
 - o. U.S. Terminal Procedures (DP)
 - p. FAA Accident Prevention Program Bulletins
 - q. FAA AC 00-6—Aviation Weather
 - r. FAA AC 00-30—Atmospheric Turbulence Avoidance
 - s. FAA AC 00-45—Aviation Weather Services
 - t. FAA AC 00-54—Pilot Wind Shear Guide
 - u. FAA AC 20-43—Aircraft Fuel Control
 - v. FAA AC 20-103—Aircraft Engine Crankshaft Failure
 - w. FAA AC 20-117—Hazards Following Ground Deicing
 - x. FAA AC 60-22—Aeronautical Decision Making
 - y. FAA AC 61-107—Operations of Aircraft at Altitudes Above 25,000 Feet
 - z. FAA AC 90-48—Pilot's Role in Collision Avoidance
 - aa. FAA AC 91-6—Water, Slush, and Snow on the Runway
 - bb. FAA AC 91-13—Cold Weather Operation of Aircraft
 - cc. FAA AC 91-43—Unreliable Airspeed Indication
 - dd. FAA AC 103-4—Hazard with Dry Ice Aboard Aircraft

- ff. FAA AC 120-58—Pilot Guide Large Aircraft Deicing
- gg. FAA-H-8083-1—Aircraft Weight and Balance
- hh. FAA-H-8083-3—Airplane Flying Handbook
- ii. FAA-H-8083-15—Instrument Flying Handbook
- jj. FAA-H-8083-21—Rotorcraft Flying Handbook
- kk. FAA-H-8083-25—Pilot’s Handbook of Aeronautical Knowledge
- ll. JAA/EASA ATPL Books by Oxford Aviation Academy
- mm. ATPL Computer Training by Oxford Aviation Academy
(Other Oxford publications are available at www.pilotsbooks.com)
- nn. Jeppesen Private Pilot Textbook
- oo. Jeppesen Instrument/Commercial Textbook
(Other Jeppesen pilot textbooks are available at <http://jeppdirect.jeppesen.com/index.jsp>)

APPENDIX: 2
PRIVATE PILOT – AEROPLANE AND HELICOPTER
SUBJECT MATTER OUTLINE

2.1 MAJOR TOPICS AND UNDERLYING CONTENT AREAS ON THE PRIVATE PILOT – AEROPLANE AND HELICOPTER KNOWLEDGE TEST

2.1.1 Air Law:

- a. Rules and regulations relevant to the holder of a PPL;
- b. Rules of the air;
- c. Appropriate air traffic services practices and procedures.

2.1.2 Aircraft General Knowledge:

- a. Principles of operation and functioning of powerplants, systems and instruments;
- b. Operating limitations of aeroplanes and helicopters and powerplants;
- c. Relevant operational information from the flight manual or other appropriate document.
- d. For helicopters, transmission (power trains) where applicable.

2.1.3 Flight Performance, Planning and Loading:

- a. Effects of loading and mass distribution on flight characteristics;
- 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 private operations under VFR;
- e. Preparation and filing of air traffic services flight plans;
- f. Appropriate air traffic services procedures, position reporting procedures;
- g. Altimeter setting procedures and operations in areas of high-density traffic.

2.1.4 Human Performance:

- a. Human performance relevant to the Private Pilot—aeroplanes and helicopters;
- b. Principles of threat and error management.

2.1.5 Meteorology:

- a. Application of elementary aeronautical meteorology;
- b. Use of, and procedures for obtaining, meteorological information, altimetry and hazardous weather conditions.

2.1.6 Navigation:

- a. Practical aspects of air navigation and dead-reckoning techniques;
- b. Use of aeronautical charts.

2.1.7 Operational Procedures:

- a. Application of threat and error management to operational procedures;
- b. Altimeter setting procedures;
- c. Use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;

- d. Appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence and other operating hazards.
- e. In the case of helicopters, settling with power; ground resonance; retreating blade stall; dynamic rollover and other operating hazards; safety procedures associated with flight in VMC.

2.1.8 Principles of Flight:

- a. Principles of flight relating to aeroplanes;
- b. Flight characteristics and forces acting on an aircraft.

2.1.9 Radiotelephony:

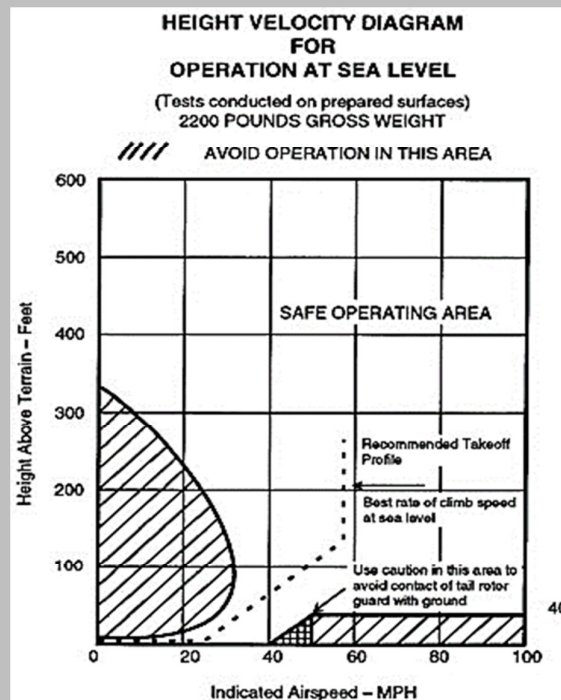
- a. Communication procedures and phraseology as applied to VFR operations;
- b. Action to be taken in case of communication failure.

2.2 PRIVATE PILOT—AEROPLANE SAMPLE QUESTIONS AND ANSWERS

1. **What minimum radio equipment is required for operation within controlled airspace?**
 A—Two-way radio communications equipment and a 4096-code transponder.
 B—Two-way radio communications equipment, a 4096-code transponder, and DME.
 C—Two-way radio communications equipment having the aeronautic emergency frequency
 121.5 MHz.
Answer C—Review regulations – controlled / restricted airspace requirements
2. **In the Northern Hemisphere, if an aircraft is accelerated or decelerated, the magnetic compass will normally indicate:**
 A—a turn momentarily.
 B—correctly when on a north or south heading.
 C—a turn toward the south.
Answer B—Review flight instruments – magnetic compass
3. **What is absolute altitude?**
 A—The altitude read directly from the altimeter.
 B—The vertical distance of the aircraft above the surface.
 C—The height above the standard datum plane.
Answer B—Review altitude – absolute / true / indicated / density / pressure
4. **The danger of spatial disorientation during flight in poor visual conditions may be reduced by:**
 A—shifting the eyes quickly between the exterior visual field and the instrument panel.
 B—having faith in the instruments rather than taking a chance on the sensory organs.
 C—leaning the body in the opposite direction of the motion of the aircraft.
Answer B—Review physiological factors – spatial disorientation
5. **How many Global Positioning System (GPS) satellites are required to yield a three dimensional position (latitude, longitude, and altitude) and time solution?**
 A—4.
 B—5.
 C—6.
Answer A—Review radio – GPS / RNAV / RAIM

2.3 PRIVATE PILOT – HELICOPTER SAMPLE QUESTIONS AND ANSWERS

- 1. Who is responsible for determining if an aircraft is in condition for safe flight?**
A—A licenced aircraft mechanic.
B—The pilot in command.
C—The owner or operator.
Answer B—Review regulations – pilot-in-command authority / responsibility
- 2. What type fuel can be substituted for an aircraft if the recommended octane is not available?**
A—The next higher octane aviation gas.
B—The next lower octane aviation gas.
C—Unleaded automotive gas of the same octane rating.
Answer A—Review fuel – types / characteristics / contamination / fueling / defueling / precautions
- 3. (Refer to Figure 1 below.) What is the best rate-of-climb speed for the helicopter?**
A—24 MPH.
B—40 MPH.
C—57 MPH.
Answer C—Review information on a Height Velocity Diagram (See Figure 1 below.)



(FIGURE 1)

- 4. To get a complete weather briefing for the planned flight, the pilot should request:**
A—a general briefing.
B—an abbreviated briefing.
C—a standard briefing.
Answer C—Review weather reporting systems – briefings / forecasts / reports
- 5. When operating at high forward airspeeds, retreating blade stalls are more likely to occur under which condition?**
A—Low gross mass and low density altitude.
B—High RPM and low density altitude.
C—Steep turns in turbulent air.
Answer C—Review stalls –characteristics / factors / recovery / precautions

2.4 MAJOR TOPICS AND UNDERLYING CONTENT AREAS ON THE COMMERCIAL PILOT – AEROPLANE AND HELICOPTER KNOWLEDGE TEST

2.4.1 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.

2.4.2 Aircraft General Knowledge:

- a. Principles of operation and functioning of powerplants, systems and instruments;
- b. Operating limitations of aeroplanes and helicopters and powerplants;
- c. Relevant operational information from the flight manual or other appropriate document;
- d. Use and serviceability checks of equipment and systems of aeroplanes and helicopters;
- e. Maintenance procedures for airframes, systems and powerplants of aeroplanes and helicopters;
- f. For helicopters, transmission (power trains) where applicable.

2.4.3 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.
- g. In the case of helicopters, effects of external loading on handling.

2.4.4 Human Performance:

- a. Human performance including principles of threat and error management.

2.4.5 Meteorology:

- a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
- b. Use of, and procedures for obtaining, meteorological information, pre-flight, and inflight;
- 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.

2.4.6 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.

2.4.7 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.
- i. In the case of helicopters, settling with power; ground resonance; retreating blade stalls, dynamic rollover and other operating hazards.

2.4.8 Principles of Flight:

- a. Principles of flight relating to aeroplanes and helicopters.

2.4.9 Radiotelephony:

- a. Communication procedures and phraseology as applied to VFR operations;
- b. Action to be taken in case of communication failure.

2.5 COMMERCIAL PILOT – AEROPLANE SAMPLE QUESTIONS AND ANSWERS

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—(Review regulations - ELT requirements)
2. **After take-off from a slushy runway, the freezing of landing gear mechanisms can be minimised by:**
A—recycling the gear.
B—delaying gear retraction.
C—increasing the airspeed to VLE before retraction.
Answer A—Review 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— Review 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— Review Human Performance - effects of alcohol on the body
- 5. Which is true regarding actual air temperature and dew point 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—Review weather conditions – temperature / moisture / dew point

2.6 COMMERCIAL PILOT – HELICOPTER SAMPLE QUESTIONS AND ANSWERS

- 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—Review 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—Review rotorcraft transmission - components / operating principle / 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—Review 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—Review 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—Review wind shear - characteristics / hazards / power management**

2.7 MAJOR TOPICS AND UNDERLYING CONTENT AREAS ON THE AIRLINE TRANSPORT PILOT – AEROPLANE AND HELICOPTER KNOWLEDGE TEST

2.7.1 Air Law:

- a. Rules and regulations relevant to the holder of an ATPL;
- b. Rules of the air;
- c. Appropriate air traffic services practices and procedures.

2.7.2 Aircraft General Knowledge:

- a. General characteristics and limitations of electrical, hydraulic, pressurization and other aircraft systems;
- b. Flight control systems, including autopilot and stability augmentation;
- c. Principles of operation, handling procedures and operating limitations of aircraft powerplants;
- d. Effects of atmospheric conditions on engine performance;
- e. Relevant operational information from the flight manual or other appropriate document;
- f. Operating procedures and limitations of aeroplanes and helicopter;
- g. Effects of atmospheric conditions on aircraft performance in accordance to the relevant operational information from the flight manual;
- h. Use and serviceability checks of equipment and systems of Aeroplanes and helicopters;
- i. Flight instruments;
- j. Compasses, turning and acceleration errors;
- k. Gyroscopic instruments, operational limits and precession effects;
- l. Practices and procedures in the event of malfunctions of various flight instruments and electronic display units;
- m. Maintenance procedures for airframes, systems and powerplants of Aeroplanes and helicopters.
- n. For helicopters, transmission (power trains) where applicable.

2.7.3 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, including procedures for cruise control;
- d. Pre-flight and en-route operational flight planning;
- e. Preparation and filing of air traffic services flight plans;
- f. Appropriate air traffic services procedures;
- g. Altimeter setting procedures.

2.7.4 Human Performance:

- a. Human performance relevant to aeroplanes and helicopters;
- b. Principles of threat and error management.

2.7.5 Meteorology:

- a. Interpretation and application of aeronautical meteorological reports, charts and forecasts;
- b. Codes and abbreviations;
- c. Use of, and procedures for obtaining, meteorological information, pre-flight and in-flight;
- d. Altimetry;
- e. Aeronautical meteorology;
- f. Climatology of relevant areas in respect of the elements having an effect upon aviation;
- g. The movement of pressure systems;
- h. The structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
- i. Causes, recognition and effects of icing;
- j. Frontal zone penetration procedures;
- k. Hazardous weather avoidance;
- l. In the case of aeroplanes practical high altitude meteorology, including interpretation and use of weather reports, charts and forecasts;
- m. Jet streams.

2.7.6 Navigation:

- a. Air navigation, including the use of aeronautical charts, radio navigation aids and area navigation systems;
- b. Specific navigation requirements for long-range flights;
- c. Use, limitation and serviceability of avionics and instruments necessary for the control and navigation of aircraft;
- d. Use, accuracy and reliability of navigation systems used in departure, en-route, approach and landing phases of flight;
- e. Identification of radio navigation aids;
- f. Principles and characteristics of self-contained and external-referenced navigation systems; operation of airborne equipment.

2.7.7 Operational Procedures:

- a. Application of threat and error management to operational performance;
- b. Interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;
- c. Precautionary and emergency procedures;
- d. Safety practices;
- e. Operational procedures for carriage of freight and dangerous goods;
- f. Requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;

- g. In the case of helicopters, settling with power; ground resonance; retreating blade stall; dynamic rollover and other operating hazards;
- h. Safety procedures, associated with flight in VMC.

2.7.8 Principles of Flight:

- a. Principles of flight relating to aeroplanes and helicopters.

2.7.9 Radiotelephony:

- a. Communication procedures and phraseology;
- b. Action to be taken in case of communication failure.

2.7.10 Other required knowledge areas:

- a. In case of aeroplanes, the knowledge requirements for the Instrument Rating (contained in this guide).

2.8 SAMPLE TEST QUESTIONS AND ANSWERS AIRLINE TRANSPORT PILOT – AEROPLANES

1. An ATC instruction:
 A—is the same as an ATC clearance.
 B—must be read back in full to the controller and confirmed before becoming effective.
 C—is a directive issued by ATC for the purpose of requiring a pilot to take a specific action.
Answer C—Review regulations - Air Traffic Control authorisation / clearances

2. When are inboard ailerons normally used?
 A—High-speed flight only.
 B—Low-speed flight only.
 C—Low-speed and high-speed flight.
Answer C—Review primary flight controls - types / purpose / functionality

3. Risk management, as part of the aeronautical decision making (ADM) process, relies on which features to reduce the risks associated with each flight?
 A—The mental process of analysing all information in a particular situation and making a timely decision on what action to take.
 B—Situational awareness, problem recognition, and good judgment.
 C—Application of stress management and risk element procedures.
Answer B—Review Define Aeronautical Decision Making (ADM)

4. Which of the following will decrease the holding time during anti-icing using a two-step process?
 A—Apply heated Type 2 fluid.
 B—Increase the viscosity of Type 1 fluid.
 C—Decrease the water content.
Answer A—Review aircraft anti-icing / deicing – methods / fluids

5. Within what Mach range do transonic flight regimes usually occur?
 A—1.20 to 2.50 Mach.
 B—.50 to .75 Mach.
 C—.75 to 1.20 Mach.
Answer C—Learning Statement: Define MACH speed regimes

2.9 AIRLINE TRANSPORT PILOT – HELICOPTER SAMPLE QUESTIONS AND ANSWERS

- 1. No person may operate an aircraft carrying passengers under VFR at night unless:**
A—it is equipped with a flashlight.
B—each flight crewmember has a flashlight.
C—each crewmember has a flashlight and a spare bulb.
Answer B—Review regulations - equipment / instrument / certificate requirements
- 2. As outside air pressure decreases, thrust output will:**
A—remain the same since compression of inlet air will compensate for any decrease in air pressure.
B—increase due to greater efficiency of jet aircraft in this air.
C—decrease due to higher density altitude.
Answer C—Review aircraft performance – density altitude
- 3. What corrective action can a pilot take to prevent a retreating blade stall at its onset?**
A—Reduce collective pitch and increase rotor RPM.
B—Reduce collective pitch and decrease rotor RPM.
C—Increase collective pitch and increase rotor RPM.
Answer A—Review rotor system – types / components / operating principles / characteristics
- 4. Sudden penetration of fog can create the illusion of:**
A—leveling off.
B—pitching up.
C—pitching down.
Answer B—Review inflight illusions - causes / sources
- 5. Select the true statement pertaining to the life cycle of a thunderstorm.**
A—Updrafts continue to develop throughout the dissipating stage of a thunderstorm.
B—The beginning of rain at the Earth’s surface indicates the mature stage of the thunderstorm.
C—The beginning of rain at the Earth’s surface indicates the dissipating stage of the thunderstorm.
Answer B—Review thunderstorms - types / characteristics / formation / hazards

2.10 MAJOR TOPICS AND UNDERLYING CONTENT AREAS ON THE INSTRUMENT RATING – AEROPLANE AND HELICOPTER KNOWLEDGE TEST

2.10.1 Air Law:

- a. Rules and regulations relevant to flight under IFR;
- b. Related air traffic services practices and procedures.

2.10.2 Aircraft General Knowledge:

- a. Use, limitation and serviceability of avionics, electronic devices and instruments necessary for the control and navigation of aeroplanes under IFR and in instrument meteorological conditions;
- b. Use and limitations of autopilot;
- c. Compasses, turning and acceleration errors;
- d. Gyroscopic instruments, operational limits and precession effects;
- e. Practices and procedures in the event of malfunctions of various flight instruments.

2.10.3 Flight Performance and Planning:

- a. Pre-flight preparations and checks appropriate to flight under IFR;
- b. Operational flight planning;
- c. Preparation and filing of air traffic services flight plans under IFR;
- d. Altimeter setting procedures.

2.10.4 Human Performance:

- a. Human performance relevant to instrument flight;
- b. Principles of threat and error management.

2.10.5 Meteorology:

- a. Application of aeronautical meteorology;
- b. Interpretation and use of reports, charts and forecasts;
- c. Codes and abbreviations;
- d. Use of, and procedures for obtaining, meteorological information;
- e. Altimetry;
- f. Causes, recognition and effects of icing;
- g. Frontal zone penetration procedures;
- h. Hazardous weather avoidance.
- i. In the case of helicopters, effects of rotor icing.

2.10.6 Navigation:

- a. Practical air navigation using radio navigation aids;
- b. Use, accuracy and reliability of navigation systems used in departure, en-route, approach and landing phases of flight;
- c. Identification of radio navigation aids.

2.10.7 Operational Procedures:

- a. Application of threat and error management to operational performance;
- b. Interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations, and instrument procedure charts for departure, en-route, descent and approach;
- c. Precautionary and emergency procedures;
- d. Safety practices associated with flight under IFR;
- e. Obstacle clearance criteria.

2.10.8 Radiotelephony:

- a. Communication procedures and phraseology as applied to aircraft operations under IFR;
- b. Action to be taken in case of communication failure.

2.11 INSTRUMENT RATING – AEROPLANE SAMPLE QUESTIONS AND ANSWERS

- 1. Which flight time may be logged as instrument time when on an instrument flight plan?**
A—All of the time the aircraft was not controlled by ground references.
B—Only the time you controlled the aircraft solely by reference to flight instruments.
C—Only the time you were flying in IFR weather conditions.
Answer B—Review regulations – flight / duty time
- 2. What does the miniature aircraft of the turn coordinator directly display?**
A—Rate of roll and rate of turn.
B—Angle of bank and rate of turn.
C—Angle of bank.
Answer A—Review basic instrument flying – turn coordinator / turn and slip indicator
- 3. Where does wind shear occur?**
A—Exclusively in thunderstorms.
B—Wherever there is an abrupt decrease in pressure and/or temperature.
C—With either a wind shift or a wind speed gradient at any level in the atmosphere.
Answer C—Review wind shear – characteristics / hazards / power management
- 4. Which DME indication should you receive when you are directly over a VORTAC site at approximately 6,000 feet AGL?**
A—0.
B—1.
C—1.3.
Answer B—Review DME – characteristics / accuracy / indications / Arc
- 5. What minimum aircraft equipment is required for operation within Class C airspace?**
A—Two-way communications and Mode C transponder.
B—Two-way communications.
C—Transponder and DME.
Answer B—Review airspace classes – limits / requirements / restrictions /airspeeds / equipment

2.12 INSTRUMENT RATING – HELICOPTER SAMPLE QUESTIONS AND ANSWERS

- 1. Aircraft being operated under IFR are required to have, in addition to the equipment required for VFR and night, at least:**

 - A—distance measuring equipment.
 - B—dual VOR receivers.
 - C—a slip skid indicator.

Answer C—Review regulations – equipment / instrument / certificate requirements

- 2. Which practical test should be made on the electric gyro instruments prior to starting an engine?**

 - A—Check that the electrical connections are secure on the back of the instruments.
 - B—Check that the attitude of the miniature aircraft is wings level before turning on electrical power.
 - C—Turn on the electrical power and listen for any unusual or irregular mechanical noise.

Answer C—Review aircraft instruments – gyroscopic

- 3. Which primary source should be used to obtain forecast weather information at your destination for the planned ETA?**

 - A—Area Forecast.
 - B—Radar Summary and Weather Depiction Charts.
 - C—Terminal Aerodrome Forecast (TAF).

Answer C—Review information on a Terminal Aerodrome Forecast (TAF)

- 4. Which distance is displayed by the DME indicator?**

 - A—Slant range distance in NM.
 - B—Slant range distance in SM.
 - C—Line of sight direct distance from aircraft to VORTAC in SM.

Answer A—Review DME – characteristics / accuracy / indications / Arc

- 5. When installed with the ILS and specified in the approach procedures, DME may be used:**

 - A—in lieu of the OM.
 - B—in lieu of visibility requirements.
 - C—to determine distance from TDZ.

Answer A—Review approach – ILS

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