

# **FLIGHT INSTRUCTOR Skill Test Standards**

**for**

**Helicopter**



**January 2009**



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

**No. 06-2009-PEL**

## **Decision Director CASAS**

**Subject: The Flight Instructor Skill Test Standards for Helicopter**

### **FOREWORD**

The Flight Instructor Skill Test Standards for Helicopter book has been published by the CASAS to establish the standards for flight instructor licensing skill test for the helicopter category. CASAS inspectors and designated pilot examiners shall conduct SKILL TESTS in compliance with these standards. Applicants and Examiners should find these standards helpful in SKILL TEST preparation.

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

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V.L.Hanenberg  
Director CASAS

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RESERVED

## SECTION ONE

### General Information

The Civil Aviation Safety Authority Suriname (CASAS) has developed this document as the standard that shall be used by CASAS inspectors and designated pilot examiners when conducting flight instructor—helicopter (FI-H) skill tests. Flight instructors are expected to use this document when preparing applicants for skill tests. Applicants should be familiar with this document and refer to these standards during their training.

Terms, such as "shall" and "must" are directive in nature and when used in this document indicate that an action is mandatory. Guidance information is described in terms of "should" and "may" indicating the actions are desirable or permissive, but not mandatory.

The CASAS gratefully acknowledges the valuable assistance provided by many individuals and organizations throughout the aviation community who contributed their time and talent in assisting with the revision of these Skill Test Standards (STS).

This STS may be downloaded from the CASAS website at <http://www.casas.sr>. Subsequent changes to this STS will also be available on CASAS web site and then later incorporated into a printed revision.

Comments regarding this publication should be sent to:

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### Skill Test Standards Concept

Civil Aviation Regulations Suriname (CARS) Part 2 specifies the AREAS OF OPERATION in which knowledge and skill must be demonstrated by the applicant before the issuance of a Flight Instructor licence or rating. The CARS provide the flexibility to permit the CASAS to publish skill test standards containing the AREAS OF OPERATION and specific TASKS in which pilot competency shall be demonstrated. The CASAS shall revise this STS whenever it is determined that changes are needed in the interest of safety. ***Adherence to the provisions of the CARS and the STS is mandatory for the evaluation of commercial pilot applicants.***

## Skill Test Book Description

This test book contains the Flight Instructor Skill Test Standards for helicopter

The Flight Instructor - Helicopter STS includes the AREAS OF OPERATION and TASKS for the issuance of an initial Flight Instructor - Helicopter licence and for the addition of a helicopter category rating to an existing Flight Instructor licence.

AREAS OF OPERATION are phases of the skill test arranged in a logical sequence within each standard. They begin with Preflight Preparation and end with Postflight Procedures. The inspector or examiner may conduct the skill test in any sequence that will result in a complete and efficient test; however, the ground portion of the skill test shall be accomplished before the flight portion.

TASKS are titles of knowledge areas, flight procedures, or manoeuvres appropriate to an AREA OF OPERATION.

NOTE is used to emphasize special considerations required in the AREA OF OPERATION or TASK.

REFERENCE identifies the publication(s) that describe(s) the TASK. Descriptions of TASKS are not included in these standards because this information can be found in the current issue of the listed reference. Publications other than those listed may be used for references if their content conveys substantially the same meaning as the referenced publications.

These skill test standards are based on the following references, some of which have been adopted in cooperation with the FAA.

CARS Part 2	Personnel Licensing
CARS Part 8	Operations
FAA-H-8083-3A	Airplane Flying Handbook
FAA-H-8083-21	Rotorcraft Flying Handbook
FAA-H-8083-15	Instrument Flying Handbook
FAA AC 00-6	Aviation Weather
FAA AC 00-45	Aviation Weather Services
FAA AC 60-22	Aeronautical Decision Making
FAA AC 61-84	Role of Preflight Preparation
FAA AC 120-51	Crew Resource Management Training
FAA AC 120-63	Helicopter Simulator Qualification
FAA AC 91-13	Cold Weather Operations of Aircraft
FAA AC 91-32	Safety in and Around Helicopters
FAA AC 91-42	Hazards of Rotating Propeller and Helicopter Rotor Blades
AFD	Airport Facility Directory
AIM	Aeronautical Information Manual – United States
IAP	Instrument Approach Procedures Charts

NOTAMS	Notices to Airmen
POH	Pertinent Pilot's Operating Handbooks
RFM	Rotorcraft Flight Manual
SID	Standard Instrument Departure
STAR	Standard Terminal Arrivals

The Objective lists the elements that must be satisfactorily performed to demonstrate competency in a TASK. The Objective includes:

1. instructional knowledge of the elements of a TASK. This is accomplished through descriptions, explanations, and simulated instruction;
2. instructional knowledge of common errors related to a TASK, including their recognition, analysis, and correction;
3. the ability to demonstrate and simultaneously explain the key elements of a TASK. The TASK demonstration must be to the COMMERCIAL PILOT skill level; the teaching techniques and procedures should conform to those set forth in FAA-H-8083-9, Aviation Instructor's Handbook, FAA-H-8083-3, Airplane Flying Handbook, and FAA-H-8083-21, Rotorcraft Flying Handbook; and
4. the ability to analyze and correct common errors related to a TASK.

### Abbreviations

ADM	Aeronautical Decision Making
AGL	Above Ground Level
AMEL	Aeroplane Multi Engine Land
AMES	Aeroplane Multi Engine Sea
ASEL	Aeroplane Single Engine Land
ASES	Aeroplane Single Engine Sea
ASOS	Automated Surface Observing System
ATC	Air Traffic Control
ATIS	Automated Terminal Information System
ATS	Air Traffic Service
AWOS	Automated Weather Observing System
CARS	Civil Aviation Regulations Suriname
CASAS	Civil Aviation Safety Authority Suriname
CFIT	Controlled Flight into Terrain
CRM	Crew Resource Management
ETA	Estimated Time of Arrival
FA	Area Weather Forecast
FAA	Federal Aviation Administration
FDC	Flight Data Center
ILS	Instrument Landing System
MEL	Minimum Equipment List
METAR	Aviation Routine Weather Report
NOTAM	Notice to Airmen

RAIM	Receiver Autonomous Integrity Monitoring
RPM	Revolutions Per Minute
STS	Skill Test Standards
TAF	Terminal Area Forecast
VFR	Visual Flight Rules

### Use of Skill Test Standards

The tasks in this STS are for helicopters. These tasks apply to the applicant who seeks an Flight Instructor Licence with a Helicopter Rating the addition of a helicopter category rating on an existing Flight Instructor license.

The CASAS requires that all skill tests be conducted in accordance with the appropriate STS and the policies set forth therein.

All of the procedures and manoeuvres in the Private Pilot and Commercial Pilot Practical Test Standards have been included in the Flight Instructor STS. However, to permit completion of the skill test for initial licensing within a reasonable timeframe, the examiner shall select one or more TASKs in each AREA OF OPERATION. In certain AREAS OF OPERATION, there are **required** TASKs which the examiner must select. These required TASKs are identified by a **NOTE** immediately following each AREA OF OPERATION.

In preparation for the skill test, the examiner shall develop a written “plan of action.” The examiner will vary each “plan of action” to ensure that all TASKs in the appropriate practical test standard are evaluated during a given number of practical tests. Except for required TASKs, the examiner should avoid using the same optional TASKs in order to avoid becoming stereotyped. The “plan of action” for a skill test for initial licence shall include one or more TASKs in each AREA OF OPERATION and shall **always** include the required TASKs. The “plan of action” for a skill test for the addition of an aircraft category and/or class rating to a flight instructor certificate shall include the required AREAS OF OPERATION as indicated in the table at the beginning of each standard. The required TASKs appropriate to the additional rating(s) sought shall be included. Any TASK selected for evaluation during the skill test shall be evaluated in its entirety.

The flight instructor applicant shall be prepared in **all** knowledge and skill areas and demonstrate the ability to instruct effectively in **all** TASKs included in the AREAS OF OPERATION of the appropriate skill test standard. Throughout the flight portion of the skill test, the examiner shall evaluate the applicant's ability to demonstrate and simultaneously explain the selected procedures and manoeuvres, and to give flight instruction to students at various stages of flight training and levels of experience.

The term “instructional knowledge” means the “what,” “why,” and “how” of a subject matter topic, procedure, or manoeuvre. It also means that the flight instructor

applicant's discussions, explanations, and descriptions should follow the recommended teaching procedures and techniques explained in FAA-H-8083-9, Aviation Instructor's Handbook.

The purpose for including common errors in certain TASKs is to assist the examiner in determining that the flight instructor applicant has the ability to recognize, analyze, and correct such errors. **The examiner shall not simulate any condition that may jeopardize safe flight or result in possible damage to the aircraft.** The common errors listed in the TASK Objectives may or may not be found in the TASK References. However, the CASAS considers their frequency of occurrence justification for their inclusion in the TASK Objectives.

### Special Emphasis Areas

Examiners shall place special emphasis upon applicant's demonstrated ability to teach areas of aircraft operations considered critical to flight safety. Among these are:

1. positive aircraft control;
2. positive exchange of the flight controls procedure (who is flying the aircraft);
3. spatial disorientation;
4. collision avoidance;
5. wake turbulence avoidance;
6. low level wind shear avoidance;
7. land and hold short operations (LAHSO);
8. controlled flight into terrain (CFIT);
9. aeronautical decision making (ADM) and risk management;
10. wire strike avoidance;
11. checklist usage;
12. temporary flight restrictions (TFR);
13. special use airspace (SUA);
14. aviation security; and
15. any other directed special emphasis areas.

NOTE: Evaluation of the applicant's ability to teach judgment shall be accomplished by asking the applicant to describe the oral discussions and the presentation of practical problems that would be used in instructing students in the exercise of sound judgment.

Although these areas may not be specifically addressed under each TASK, they are essential to flight safety and will be evaluated during the skill test. In all instances, the applicant's actions will relate to the complete situation.

### **Skill Test Prerequisites: Flight Instructor - Helicopter, Initial Issue**

An applicant for the initial issuance of a Flight Instructor Licence with a Helicopter rating is required by CARs 2.3.4 to

- be at least 18 years of age;
- demonstrate the ability to speak and understand the English language used for radio telephony communications in SURINAME;
- hold either a commercial/instrument pilot or airline transport pilot licence with an aircraft category rating appropriate to the flight instructor rating sought;
- have an endorsement from an authorized instructor on the fundamentals of instructing appropriate to the required knowledge test;
- have passed the appropriate flight instructor knowledge test(s) since the beginning of the 24th month before the month in which he or she takes the skill test; and
- have an endorsement from an authorized instructor certifying that the applicant has been given flight training in the AREAS OF OPERATION listed in CARs Part 2, section 2.3.4.2(e)(1)(2) and a written statement from an authorized flight instructor within the preceding 60 days, in accordance with CARs Part 2, section 2.3.4.2(f)(1)(2), that instruction was given in preparation for the skill test. The endorsement shall also state that the instructor finds the applicant prepared for the required skill test, and that the applicant has demonstrated satisfactory knowledge of the subject area(s) in which the applicant was deficient on the airman knowledge test.

### **Skill Test Prerequisites: Flight Instructor - Helicopter, Added Rating**

An applicant holding a flight instructor licence who applies for an additional rating on that licence is required by CARs to:

- hold a valid pilot licence with ratings appropriate to the flight instructor rating sought;
- have at least 15 hours as pilot-in-command in the category and class aircraft appropriate to the rating sought;
- have passed the appropriate knowledge test prescribed for the issuance of a flight instructor licence with the rating sought since the beginning of the 24th month before the month in which he/she takes the skill test;
- have an endorsement from an authorized instructor certifying that the applicant has been given flight training in the AREAS OF OPERATION listed in CARs Part 2, section 2.3.4.2(e)(1)(2); and
- a written statement from an authorized flight instructor within the preceding 60 days, in accordance with CARs Part 2, section 2.3.4.2(f)(1)(2), that instruction was given in preparation for the skill

test. The endorsement shall also state that the instructor finds the applicant prepared for the required skill test, and that the applicant has demonstrated satisfactory knowledge of the subject area(s) in which the applicant was deficient on the airman knowledge test.

### **Aircraft and Equipment Required for the Skill Test**

The applicant for a skill test is required by CARS Part 2 to provide an appropriate and airworthy aircraft for use during the skill test.

The CARS further require that the aircraft must:

1. be of National, foreign or military registry of the same category, class, and type, if applicable, for the licence and/or rating for which the applicant is applying;
2. have fully functioning dual controls and;
3. be capable of performing **all** appropriate TASKs for the flight instructor rating sought and have no operating limitations that would prohibit the performance of any TASK. (**NOTE:** A touchdown autorotation is a required TASK for the flight instructor - helicopter practical test.)

### **Use of CASAS-Approved Flight Simulator or Flight Training Device**

All flight instructor practical tests shall be conducted in accordance with CARS and in an actual aircraft. Use of an approved simulator or flight training device (FTD) is not authorized for any in-flight TASK of a flight instructor practical test. However, such devices may be used to assist in evaluating the instructional ability of an applicant during any TASK not involving a flight manoeuvre.

### **Flight Instructor Responsibility**

An appropriately rated flight instructor is responsible for training the flight instructor applicant to acceptable standards in **all** subject matter areas, procedures, and manoeuvres included in the TASKs within each AREA OF OPERATION in the appropriate flight instructor skill test standard. Flight instructors shall use a written training syllabus containing, as a minimum, every TASK in the practical test standard when training applicants. This will not only ensure coverage of all TASKs that may be evaluated during a practical test but also satisfy the requirement for maintaining a copy of the training syllabus used to train each applicant.

Because of the impact of their teaching activities in developing safe, proficient pilots, flight instructors should exhibit a high level of knowledge, skill, and the ability to impart that knowledge and skill to students. The flight instructor shall certify that the applicant is:

1. able to make a practical application of the fundamentals of instructing;

2. competent to teach the subject matter, procedures, and manoeuvres included in the standards to students with varying backgrounds and levels of experience and ability;
3. able to perform the procedures and manoeuvres included in the standards to at least the COMMERCIAL PILOT skill level while giving effective flight instruction; and
4. competent to pass the required practical test for the issuance of the flight instructor certificate with the associated category and class ratings or the addition of a category and/or class rating to a flight instructor certificate.

Throughout the applicant's training, the flight instructor is responsible for emphasizing the performance of, and the ability to teach, effective visual scanning and collision avoidance procedures.

### **Examiner Responsibility**

The examiner conducting the skill test is responsible for determining that the applicant meets the acceptable standards of teach ability, knowledge and skill of each TASK within the appropriate STS. The examiner makes this determination by accomplishing an OBJECTIVE that is appropriate to each selected TASK, and includes an evaluation of the applicant's:

1. ability to apply the fundamentals of instructing;
2. knowledge of, and ability to teach, the subject matter, procedures, and manoeuvres covered in the TASKs;
3. ability to perform the procedures and manoeuvres included in the standards to at least the COMMERCIAL PILOT skill level while giving effective flight instruction; and
4. ability to analyze and correct common errors related to the procedures and manoeuvres covered in the TASKs.

It is intended that oral questioning be used at any time during the skill test to determine that the applicant can instruct effectively and has a comprehensive knowledge of the TASKs and their related safety factors.

During the flight portion of the skill test, the examiner shall act as a student during selected manoeuvres. This will give the examiner an opportunity to evaluate the flight instructor applicant's ability to analyze and correct simulated common errors related to these manoeuvres.

### **Satisfactory Performance**

The skill test is passed if, in the judgment of the examiner, the applicant demonstrates satisfactory performance with regard to:

1. knowledge of the fundamentals of instructing;
2. knowledge of the technical subject areas;
3. knowledge of the flight instructor's responsibilities concerning the pilot certification process;
4. knowledge of the flight instructor's responsibilities concerning logbook entries and pilot certificate endorsements;
5. ability to demonstrate the procedures and manoeuvres selected by the examiner to at least the COMMERCIAL PILOT skill level while giving effective instruction;
6. competence in teaching the procedures and manoeuvres selected by the examiner;
7. competence in describing, recognizing, analyzing, and correcting common errors simulated by the examiner; and
8. knowledge of the development and effective use of a course of training, a syllabus, and a lesson plan.

The word "examiner" is used throughout the standards to denote either the CASAS inspector or CASAS designated pilot examiner or other authorised person who conducts an official skill test.

### **Unsatisfactory Performance**

If, in the judgment of the examiner, the applicant does not meet the standards of performance of any TASK performed, the associated AREA OF OPERATION is considered unsatisfactory and, therefore, the skill test is failed. The examiner or applicant may discontinue the test at any time when the failure of an AREA OF OPERATION makes the applicant ineligible for the licence or rating sought. The test may be continued only with the consent of the applicant. If the test is discontinued, the applicant is entitled to credit for only those AREAS OF OPERATION satisfactorily performed. However, during the retest and at the discretion of the examiner, any TASK may be re-evaluated including those previously considered satisfactory. Specific reasons for disqualification are:

1. failure to perform a procedure or manoeuvre to the COMMERCIAL PILOT skill level while giving effective flight instruction;
2. failure to provide an effective instructional explanation while demonstrating a procedure or manoeuvre (explanation during the demonstration must be clear, concise, technically accurate, and complete with no prompting from the examiner);
3. any action or lack of action by the applicant which requires corrective intervention by the examiner to maintain safe flight;
4. failure to use proper and effective visual scanning techniques to clear the area before and while performing manoeuvres.

This STS uses the terms “AREA OF OPERATION” and “TASK” to denote areas in which competency must be demonstrated. When a notice of disapproval is issued, the examiner shall record the applicant's unsatisfactory performance in terms of the AREA OF OPERATION and specific TASK(S) not meeting the standard appropriate to the skill test conducted. The AREA(S) OF OPERATION/TASK(S) not tested and the number of skill test failures shall also be recorded.

If the applicant fails the skill test because of a special emphasis area, the Notice of Disapproval shall indicate the associated TASK. For example, AREA OF OPERATION VIII, Manoeuvring During Slow Flight, failure to use proper collision avoidance procedures.

### **Discontinuance of a Skill Test**

When a skill test is discontinued for reasons other than unsatisfactory performance (i.e., equipment failure, weather, or illness) CASAS, Airman Licence and/or Rating Application, and, if applicable, the Airman Knowledge Test Report, shall be returned to the applicant. The examiner at that time shall prepare, sign, and issue a Letter of Discontinuance to the applicant. The Letter of Discontinuance should identify the AREAS OF OPERATION and their associated TASKS of the skill test that were successfully completed. The applicant shall be advised that the Letter of Discontinuance shall be presented to the examiner when the skill test is resumed, and made part of the certification file.

### **Aeronautical Decision Making and Risk Management**

The examiner shall evaluate the applicant's ability throughout the skill test to use good aeronautical decision making procedures in order to evaluate risks. The examiner shall accomplish this requirement by developing scenarios that incorporate as many TASKs as possible to evaluate the applicants risk management in making safe aeronautical decisions. For example, the examiner may develop a scenario that incorporates weather decisions and performance planning.

The applicant's ability to utilize all the assets available in making a risk analysis to determine the safest course of action is essential for satisfactory performance. The scenarios should be realistic and within the capabilities of the aircraft used for the practical test.

### **Crew Resource Management (CRM)**

CRM refers to the effective use of all available resources; human resources, hardware, and information. Human resources includes all other groups routinely working with the cockpit crew (or pilot) who are involved in decisions that are

required to operate a flight safely. These groups include, but are not limited to: flight operations officers, cabin crewmembers, maintenance personnel, and air traffic controllers. CRM is not a single TASK. CRM is a set of skill competencies which must be evident in all TASKS in this skill test standard as applied to either the single pilot or the multicrew operation.

### **How the Examiner Applies CRM**

Examiners are required to exercise proper CRM competencies in conducting tests as well as expecting the same from applicants.

Pass/Fail judgments based solely on CRM issues must be carefully chosen since they may be entirely subjective. Those Pass/Fail judgments which are not subjective apply to CRM-related procedures in FAA-approved operations manuals that must be accomplished, such as briefings to other crewmembers. In such cases, the operator (or the aircraft manufacturer) specifies what should be briefed and when the briefings should occur. The examiner may judge objectively whether the briefing requirement was or was not met. In those cases where the operator (or aircraft manufacturer) has not specified a briefing, the examiner shall require the applicant to brief the appropriate items from the following note. The examiner may then judge objectively whether the briefing requirement was or was not met.

**NOTE:** The majority of aviation accidents and incidents are due to resource management failures by the pilot/crew; fewer are due to technical failures. Each applicant shall give a crew briefing before each takeoff/departure and approach/landing. If the operator or aircraft manufacturer has not specified a briefing, the briefing shall cover the appropriate items, such as runway, SID/STAR/IAP, power settings, speeds, abnormals or emergency prior to or after takeoff, emergency return intentions, missed approach procedures, FAF, altitude at FAF, initial rate of descent, DH/MDA, time to missed approach, and what is expected of the other crewmembers during the takeoff/SID and approach/landing. If the first takeoff/departure and approach/landing briefings are satisfactory, the examiner may allow the applicant to brief only the changes, during the remainder of the flight.

### **Single-Pilot Resource Management**

Single-Pilot Resource Management refers to the effective use of ALL available resources: human resources, hardware, and information. It is similar to Crew Resource Management (CRM) procedures that are being emphasized in multi-crewmember operations except that only one crewmember (the pilot) is involved. Human resources includes all other groups routinely working with the pilot who are involved in decisions that are required to operate a flight safely. These groups include, but are not limited to: dispatchers, weather briefers, maintenance

personnel, and air traffic controllers. Single-pilot Resource Management; is a set of skill competencies that must be evident in all TASKs in this practical test standard as applied to single-pilot operation.

### **Applicant's Use of Checklists**

Throughout the skill test, the applicant is evaluated on the use of an appropriate checklist. Proper use is dependent on the specific TASK being evaluated. The situation may be such that the use of the checklist, while accomplishing elements of an Objective, would be either unsafe or impractical, especially in a single-pilot operation. In this case, a review of the checklist after the elements have been accomplished would be appropriate. Division of attention and proper visual scanning should be considered when using a checklist.

### **Use of Distractions during Skill Tests**

Numerous studies indicate that many accidents have occurred when the pilot has been distracted during critical phases of flight. To evaluate the applicant's ability to utilize proper control technique while dividing attention both inside and/or outside the cockpit, the examiner shall cause realistic distractions during the flight portion of the skill test to evaluate the applicant's ability to divide attention while maintaining safe flight.

### **Positive Exchange of Flight Controls**

During flight training, there must always be a clear understanding between students and flight instructors of who has control of the aircraft. Prior to flight, a briefing should be conducted that includes the procedure for the exchange of flight controls. A positive three-step process in the exchange of flight controls between pilots is a proven procedure and one that is strongly recommended.

When the instructor wishes the student to take control of the aircraft, he or she will say, "You have the flight controls." The student acknowledges immediately by saying, "I have the flight controls." The flight instructor again says, "You have the flight controls." When control is returned to the instructor, follow the same procedure. A visual check is recommended to verify that the exchange has occurred. There should never be any doubt as to who is flying the aircraft.

## SECTION TWO

### APPLICANT'S PRACTICAL TEST CHECKLIST (HELICOPTER)

#### APPOINTMENT WITH EXAMINER:

EXAMINER'S NAME \_\_\_\_\_

LOCATION \_\_\_\_\_

DATE/TIME \_\_\_\_\_

#### ACCEPTABLE AIRCRAFT

Aircraft Documents:

Airworthiness Certificate

Registration Certificate

Operating Limitations

Aircraft Maintenance Records:

Logbook Record of Airworthiness Inspections and AD Compliance

#### PERSONAL EQUIPMENT

Practical Test Standard

Lesson Plan Library

Current Aeronautical Charts

Computer and Plotter

Flight Plan and Flight Log Forms

Current AIM, Airport Facility Directory, and Appropriate Publications

#### PERSONAL RECORDS

- Identification-Photo/Signature ID
- Pilot Licence Currently Held
- Current and Appropriate Medical Certificate
- Completed CASAS Form PEL002, Application For Flight Crew Licence, Rating, Authorization or Validation Certificate with authorized instructor's signature (If applicable)
- Original Aviation Knowledge Test Report
- Pilot Logbook or Aviation Training Organization (ATO) document containing an authorized instructor's endorsement certifying the applicant is prepared for the required skill test.
- CASAS Form PEL004, Notice of Denial (if applicable)
- Examiner's Fee (if applicable)

**EXAMINER'S PRACTICAL TEST CHECKLIST  
FLIGHT INSTRUCTOR - ROTORCRAFT  
(HELICOPTER)**

**APPLICANT'S NAME** \_\_\_\_\_

**LOCATION** \_\_\_\_\_

**DATE/TIME** \_\_\_\_\_

**A. APPLICANT'S CREDENTIALS, DOCUMENTATION AND RECORDS**

- Identification - Photo/Signature ID
- Pilot Licence, if applicable
- Current First Class Medical Certificate
- Completed CASAS Form PEL002, Application for Flight Crew Licence, Rating, Authorization or Validation Certificate with Authorized Instructor's Signature (if applicable)
- Current Aviation Knowledge Test Report, if applicable
- (Pilot) Logbook with appropriate Instructor endorsements, if applicable, or other appropriate documentation, as applicable
- CASAS PEL004, Notice of Denial (if applicable)
- Approved Training Organization (ATO) Graduation Certificate (if applicable)
- Examiner's Fee (if applicable)

**B. ACCEPTABLE AIRCRAFT**

- Approved Aircraft, with appropriate documents and manuals, as approved by the Director

**I. FUNDAMENTALS OF INSTRUCTING**

- A.** The Learning Process
- B.** Human Behavior
- C.** The Teaching Process
- D.** Teaching Methods
- E.** Critique and Evaluation
- F.** Flight Instructor Characteristics and Responsibilities
- G.** Planning Instructional Activity

**II. TECHNICAL SUBJECTS**

- A.** Aeromedical Factors
- B.** Visual Scanning and Collision Avoidance

- C. Use of Distractions During Flight Training
- D. Principles of Flight
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- G. Navigation and Flight Planning
- H. Night Operations
- I. Regulations and Publications
- J. Airworthiness Requirements
- K. National Airspace System
- L. Logbook Entries and Certificate Endorsements

**III. PREFLIGHT PREPARATION**

- A. Certificates and Documents
- B. Weather Information
- C. Operation of Systems
- D. Performance and Limitations

**IV. PREFLIGHT LESSON ON A MANEUVER TO BE PERFORMED IN FLIGHT**

- A. Manoeuvre Lesson

**V. PREFLIGHT PROCEDURES**

- A. Preflight Inspection
- B. Single-Pilot Resource Management
- C. Engine Starting and Rotor Engagement
- D. Before Takeoff Check

**VI. AIRPORT AND HELIPORT OPERATIONS**

- A. Radio Communications and ATC Light Signals
- B. Traffic Patterns
- C. Airport and Heliport Markings and Lighting

**VII. HOVERING MANEUVERS**

- A. Vertical Takeoff and Landing
- B. Surface Taxi
- C. Hover Taxi
- D. Air Taxi
- E. Slope Operation

**VIII. TAKEOFFS, LANDINGS, AND GO-AROUNDS**

- A. Normal and Crosswind Takeoff and Climb
- B. Maximum Performance Takeoff and Climb
- C. Rolling Takeoff
- D. Normal and Crosswind Approach
- E. Steep Approach
- F. Shallow Approach and Running/Roll-On Landing
- G. Go-Around
- H. Approach and Landing with Simulated Powerplant Failure – Multiengine Helicopter

**IX. FUNDAMENTALS OF FLIGHT**

- A. Straight-and-Level Flight
- B. Level Turns
- C. Straight Climbs and Climbing Turns
- D. Straight Descents and Descending Turns

**X. PERFORMANCE MANEUVERS**

- A. Rapid Deceleration
- B. Straight-In Autorotation
- C. 180° Autorotation

**XI. EMERGENCY OPERATIONS**

- A. Power Failure at a Hover
- B. Power Failure at Altitude
- C. Settling-With-Power
- D. Low Rotor RPM Recovery
- E. Anti-torque System Failure
- F. Dynamic Rollover
- G. Ground Resonance
- H. Low "G" Conditions
- I. Systems and Equipment Malfunctions
- J. Emergency Equipment and Survival Gear

**XII. SPECIAL OPERATIONS**

- A. Confined Area Operation
- B. Pinnacle/Platform Operation

**XIII. POSTFLIGHT PROCEDURES**

- A. After-Landing and Securing

ADDITIONAL RATING TABLE								
ADDITION OF A HELICOPTER CLASS RATING (AND A ROTORCRAFT CATEGORY RATING, IF APPROPRIATE) TO A FLIGHT INSTRUCTOR CERTIFICATE								
Required Areas of Operation	Flight Instructor Licence and Rating Held							
	ASE	AME	GP	GNP	IA	IH	BALLOON	AIRSHIP
I	N	N	N	N	N	N	N	N
II	Y	Y	Y	Y	Y	Y	Y	Y
III	Y	Y	Y	Y	Y	Y	Y	Y
IV	N	N	N	N	N	N	N	N
V	Y	Y	Y	Y	Y	Y	Y	Y
VI	N	N	N	Y	N	N	Y	N
VII	Y	Y	Y	Y	Y	Y	Y	Y
VIII	Y	Y	Y	Y	Y	Y	Y	Y
IX	Y	Y	Y	Y	Y	Y	Y	Y
X	Y	Y	Y	Y	Y	Y	Y	Y
XI	Y	Y	Y	Y	Y	Y	Y	Y
XII	Y	Y	Y	Y	Y	Y	Y	Y
XIII	Y	Y	Y	Y	Y	Y	Y	Y

**LEGEND**

ASE Airplane Single-Engine  
 AME Airplane Multiengine  
 GP Glider Powered  
 GNP Glider Non-Powered  
 IA Instrument Airplane  
 IH Instrument Helicopter

### FLIGHT INSTRUCTOR RENEWAL TASK TABLE

REQUIRED AREAS OF OPERATION	NUMBER OF TASKS
II	1
III	1
V	1
VI	1
VII	1
VIII	2 Takeoffs and 2 Landings
IX	1

The renewal or reinstatement of one rating on a Flight Instructor Licence renews or reinstates all privileges existing on the licence. (14 CFR part 61, sections 61.197 and 61.199)

## **I. AREA OF OPERATION: FUNDAMENTALS OF INSTRUCTING**

**NOTE:** The examiner shall select at least TASKs E and F.

### **A. TASK: THE LEARNING PROCESS**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of the learning process by describing:

1. The definition and characteristics of learning.
2. Practical application of the laws of learning.
3. Factors involved in how people learn.
4. Recognition and proper use of the various levels of learning.
5. Principles that are applied in learning a skill.
6. Factors related to forgetting and retention.
7. How the transfer of learning affects the learning process.
8. How the formation of habit patterns affects the learning process.

### **B. TASK: HUMAN BEHAVIOR**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to human behaviour by describing:

1. Control of human behaviour.
2. Development of student potential.
3. Relationship of human needs to behaviour and learning.
4. Relationship of defence mechanisms to student learning and pilot decision making.
5. General rules which a flight instructor should follow during student training to ensure good human relations.

### **C. TASK: THE TEACHING PROCESS**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of the teaching process by describing:

1. Preparation of a lesson for a ground or flight instructional period.
2. Presentation of knowledge and skills, including the methods, which are suitable in particular situations.
3. Application, by the student, of the knowledge and skills presented by the instructor.
4. Review of the material presented and the evaluation of student performance and accomplishment.

### **D. TASK: TEACHING METHODS**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of teaching methods by describing:

1. The organization of a lesson, i.e., introduction, development, and conclusion.
2. The lecture method.
3. The guided discussion method.
4. The demonstration-performance method.
5. Computer/video assisted instruction.

### **E. TASK: CRITIQUE AND EVALUATION**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of critique and evaluation by describing:

1. Purpose and characteristics of an effective critique.
2. Difference between critique and evaluation.
3. Characteristics of effective oral questions and what type to avoid.
4. Responses to student questions.
5. Characteristics and development of effective written tests.
6. Characteristics and uses of performance tests, specifically, the FAA practical test standards.

## **F. TASK: FLIGHT INSTRUCTOR CHARACTERISTICS AND RESPONSIBILITIES**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of flight instructor characteristics and responsibilities by describing:

1. Major characteristics and qualifications of a professional flight instructor.
2. Role of the flight instructor in dealing with student stress, anxiety, and psychological abnormalities.
3. Flight instructor's responsibility with regard to student pilot supervision and surveillance.
4. Flight instructor's authority and responsibility for endorsements and recommendations.
5. Flight instructor's responsibility in the conduct of the required FAA flight review.

## **G. TASK: PLANNING INSTRUCTIONAL ACTIVITY**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to the planning of instructional activity by describing:

1. Development of a course of training.
2. Content and use of a training syllabus.
3. Purpose, characteristics, proper use, and items of a lesson plan.
4. Flexibility features of a course of training, syllabus, and lesson plan required to accommodate students with varying backgrounds, levels of experience, and ability.

## II. AREA OF OPERATION: TECHNICAL SUBJECTS

**NOTE:** The examiner shall select TASK L and at least one other TASK.

### A. TASK: AEROMEDICAL FACTORS

REFERENCES: FAA-H-8083-25; National Aeromedical Publications.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to aeromedical factors by describing:

1. Hypoxia, its symptoms, effects, and corrective action.
2. Hyperventilation, its symptoms, effects, and corrective action.
3. Middle ear and sinus problems, their causes, effects, and corrective action.
4. Spatial disorientation, its causes, effects, and corrective action.
5. Motion sickness, its causes, effects, and corrective action.
6. Effects of alcohol and drugs, and their relationship to safety.
7. Carbon monoxide poisoning, its symptoms, effects, and corrective action.
8. How evolved gas from scuba diving can affect a pilot during flight.
9. Fatigue, its effects and corrective action.

### B. TASK: VISUAL SCANNING AND COLLISION AVOIDANCE

REFERENCES: FAA-H-8083-25; AC 90-48; AIM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to visual scanning and collision avoidance by describing:

1. Relationship between a pilot's physical or mental condition and vision.
2. Environmental conditions and optical illusions that affect vision.
3. "See and avoid" concept.
4. Practice of "time sharing" of attention inside and outside the cockpit.
5. Proper visual scanning technique.
6. Relationship between poor visual scanning habits, aircraft speed differential and increased collision risk.
7. Appropriate clearing procedures.
8. Situations which involve the greatest collision risk.

### **C. TASK: USE OF DISTRACTIONS DURING FLIGHT TRAINING**

REFERENCE: FAA-H-8083-9.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to use of distractions during flight training by describing:

1. Flight situations where pilot distraction can be a causal factor related to aircraft accidents.
2. Selection of realistic distractions for specific flight situations.
3. Relationship between division of attention and flight instructor use of distractions.
4. Difference between proper use of distractions and harassment.

### **D. TASK: PRINCIPLES OF FLIGHT**

REFERENCE: FAA-H-8083-21.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to principles of flight by describing:

1. Characteristics of different rotor systems.
2. Effect of lift, weight, thrust, and drag during various flight maneuvers.
3. Retreating blade stall.
4. Torque effect.
5. Dissymmetry of lift.
6. Blade flapping and coning.
7. Coriolis effect.
8. Translating tendency.
9. Translational lift.
10. Transverse flow effect.
11. Pendular action.

### **E. TASK: HELICOPTER FLIGHT CONTROLS**

REFERENCE: FAA-H-8083-21.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to flight controls of the helicopter used for the practical test by describing:

1. Collective pitch control.
2. Cyclic pitch control.
3. Anti-torque control.
4. Throttle control.

## **F. TASK: HELICOPTER WEIGHT AND BALANCE**

REFERENCES: FAA-H-8083-1, FAA-H-8083-21.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to weight and balance by describing:

1. Weight and balance terms.
2. Effect of weight and balance on performance.
3. Determination of total weight, centre of gravity (longitudinal and lateral), and changes that occur when adding, removing, or shifting weight.

## **G. TASK: NAVIGATION AND FLIGHT PLANNING**

REFERENCES: FAA-H-8083-25.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to navigation and flight planning by describing:

1. Terms used in navigation.
2. Features of aeronautical charts.
3. Importance of using proper and current aeronautical charts.
4. Identification of various types of airspace.
5. Method of plotting a course, selection of fuel stops and alternates, and appropriate actions in the event of unforeseen situations.
6. Fundamentals of pilotage and dead reckoning.
7. Fundamentals of radio navigation.
8. Diversion to an alternate.
9. Lost procedures.
10. Computation of fuel requirement.
11. Importance of preparing and properly using a flight log.
12. Importance of a weather check and the use of good judgment in making a "go/no-go" decision.
13. Purpose of, and procedure used in, filing a flight plan.
14. Global positioning system (GPS).

## H. TASK: NIGHT OPERATIONS

REFERENCES: FAA-H-8083-21, FAA-H-8083-25; FAA-S-8081-15; National Aeromedical Publications.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to night operations by describing:

1. Factors related to night vision, disorientation, and optical illusions.
2. Weather considerations specific to night operations.
3. Preflight inspection, including windshield and window cleanliness.
4. Proper adjustment of interior lights, including availability of flashlight.
5. Use of position and anticollision lights prior to, during, and after engine start.
6. Hover taxiing and orientation on an airport or heliport.
7. Takeoff and climb-out.
8. Inflight orientation.
9. Importance of verifying the helicopter's attitude by visual references and flight instruments.
10. Recovery from critical flight attitudes by visual references and flight instruments.
11. Emergencies such as electrical failure, engine malfunction, and emergency landings.
12. Traffic patterns.
13. Approaches and landings with and without landing lights.

## I. TASK: REGULATIONS AND PUBLICATIONS

REFERENCES: CARS Parts 2 and 8; AIP, RFM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to pertinent regulations and publications, their purpose, general content, availability, and method of revision, by describing:

1. CARs Parts 2 and 8.
3. Flight information publications.
4. Skill Test Standards.
5. Rotorcraft Flight Manual (as applicable).

## J. TASK: AIRWORTHINESS REQUIREMENTS

REFERENCES: CARs Parts 5 and 8; FAA-H-8083-21.

**Objective.** To determine that the applicant exhibits knowledge of the elements related to airworthiness requirements by:

1. Explaining—
  - a. required instruments and equipment for day/night VFR.
  - b. procedures and limitations for determining airworthiness of the helicopter with inoperative instruments and equipment with and without an MEL.
  - c. requirements and procedures for obtaining a special flight permit.
2. Locating and explaining—
  - a. airworthiness directives.
  - b. compliance records.
  - c. maintenance/inspection requirements.
  - d. appropriate record keeping.

## K. TASK: AIRSPACE SYSTEM

REFERENCES: CARs Part 8; FAA-S-8081-12, FAA-S-8081-14; AIP; AIM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of the airspace system by describing:

1. Basic VFR Weather Minimums—for all classes of airspace.
2. Airspace classes—the operating rules, pilot certification, and airplane equipment requirements for the following—
  - a. Class A.
  - b. Class B.
  - c. Class C.
  - d. Class D.
  - e. Class E.
  - f. Class G.
3. Special use airspace and other airspace areas.
4. Temporary flight restrictions (TFRs).

## L. TASK: LOGBOOK ENTRIES AND CERTIFICATE ENDORSEMENTS

REFERENCES: CARS Part 8.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to logbook entries and certificate endorsements by describing:

1. Required logbook entries for instruction given.
2. Required student pilot certificate endorsements, including appropriate logbook entries.
3. Preparation of a recommendation for a pilot practical test, including appropriate logbook entry.
4. Required endorsement of a pilot logbook for the satisfactory completion of an FAA flight review.
5. Required flight instructor records.

### **III. AREA OF OPERATION: PREFLIGHT PREPARATION**

**NOTE:** The examiner shall select at least one TASK.

#### **A. TASK: CERTIFICATES AND DOCUMENTS**

REFERENCES: CARS Parts 2, 5, and 8; FAA-H-8083-21, FAA-H-8083-25; RFM

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to certificates and documents by describing:

1. Requirements for the issuance of pilot and flight instructor certificates and ratings, and the privileges and limitations of those certificates and ratings.
2. Medical certificates, class, duration, and how to obtain them.
3. Airworthiness and registration certificates.
4. Helicopter handbooks and manuals.
5. Helicopter maintenance requirements and records.

#### **B. TASK: WEATHER INFORMATION**

REFERENCES: FAA-H-8083-25; AIP; AIM; AC 00-6, FAA AC 00-45, FAA AC 61-84.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to weather information by describing:

1. Importance of a thorough weather check.
2. Various sources for obtaining weather information.
3. Use of weather reports, forecasts, and charts.
4. Use of PIREPs, SIGMETs, and AIRMETs.
5. Recognition of aviation weather hazards to include wind shear.
6. Factors to be considered in making a "go/no-go" decision.

### **C. TASK: OPERATION OF SYSTEMS**

REFERENCES: FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to operation of systems, as applicable to the helicopter used for the practical test, by describing:

1. Powerplant, including controls, indicators, cooling, and fire detection.
2. Main rotor system.
3. Anti-torque system.
4. Landing gear, brakes, and steering system.
5. Fuel, oil, and hydraulic systems.
6. Electrical system.
7. Environmental system.
8. Pitot static/vacuum system and associated instruments.
9. Anti-icing systems.
10. Avionics equipment.

### **D. TASK: PERFORMANCE AND LIMITATIONS**

REFERENCES: FAA-H-8083-1, FAA-H-8083-21; RFM; FAA AC 61-84,.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to performance and limitations by describing:

1. Determination of weight and balance condition.
2. Use of performance charts and other data for determining performance in various phases of flight.
3. Effects of density altitude and other atmospheric conditions on performance.
4. Factors to be considered when operating within "avoid" areas of the height/velocity diagram.
5. Conditions that may cause loss of tail rotor effectiveness/ unanticipated loss of directional control.
6. Other factors to be considered in determining that required performance is within the helicopter's capabilities.

**IV. AREA OF OPERATION: PREFLIGHT LESSON ON A MANEUVER TO BE PERFORMED IN FLIGHT**

**NOTE:** Examiner shall select at least one manoeuvre from AREAS OF OPERATION VII through XII, and ask the applicant to present a preflight lesson on the selected manoeuvre as the lesson would be taught to a student. Previously developed lesson plans from the applicant's library may be used.

**A. TASK: MANEUVER LESSON**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the selected manoeuvre by:

1. Using a lesson plan that includes all essential items to make an effective and organized presentation.
2. Stating the objective.
3. Giving an accurate, comprehensive oral description of the manoeuvre, including the elements and associated common errors.
4. Using instructional aids, as appropriate.
5. Describing the recognition, analysis, and correction of common errors.

**V. AREA OF OPERATION: PREFLIGHT PROCEDURES**

**NOTE:** The examiner shall select at least one TASK.

**A. TASK: PREFLIGHT INSPECTION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a preflight inspection, as applicable to the helicopter used for the practical test, by describing—
  - a. reasons for the preflight inspection, items that should be inspected, and how defects are detected.
  - b. importance of using the appropriate checklist.
  - c. removal of control locks, rotor blade tie-down, and wheel chocks, if applicable.
  - d. determination of fuel, oil, and hydraulic fluid quantity, possible contamination and/or leaks.
  - e. inspection of flight controls.
  - f. detection of visible structural damage.
  - g. importance of proper loading and securing of baggage and equipment.
  - h. use of sound judgment in determining whether the helicopter is in condition for safe flight.
2. Exhibits instructional knowledge of common errors related to a preflight inspection by describing—
  - a. failure to use or improper use of checklist.
  - b. hazards which may result from allowing distractions to interrupt a preflight inspection.
  - c. inability to recognize discrepancies.
  - d. failure to ensure servicing with the proper fuel and oil.
3. Demonstrates and simultaneously explains a preflight inspection from an instructional standpoint.

## **B. TASK: SINGLE-PILOT RESOURCE MANAGEMENT**

REFERENCES: CARs Part 8; FAA-H-8083-9, FAA-S-8081-15, FAA-S-8081-16; RFM; FAA AC 91-32.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of crew resource management by describing—
  - a. proper arranging and securing of essential materials and equipment in the cockpit.
  - b. proper use and/or adjustment of such cockpit items as safety belts, shoulder harnesses, anti-torque pedals, and seats.
  - c. occupant briefing on emergency procedures, rotor blade avoidance, and use of safety belts and shoulder harnesses.
  - d. utilization of all available human resources, maintenance personnel, weather briefers, and air traffic control, and other groups routinely working with the pilot who are involved in decisions that are required to operate a flight safely.
2. Exhibits instructional knowledge of common errors related to crew resource management by describing—
  - a. failure to place and secure essential materials and equipment for easy access during flight.
  - b. improper adjustment of equipment and controls.
  - c. failure to brief occupants on emergency procedures, rotor blade avoidance, and use of safety belts and shoulder harnesses.
  - d. failure to utilize all available human resources, maintenance personnel, weather briefers, air traffic control, and other groups routinely working with the pilot who are involved in decisions that are required to operate a flight safely.
3. Demonstrates and simultaneously explains crew resource management from an instructional standpoint.

### **C. TASK: ENGINE STARTING AND ROTOR ENGAGEMENT**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM; FAA AC 91-42

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of engine starting and rotor engagement, as appropriate to the helicopter used for the practical test, by describing—
  - a. safety precautions related to engine starting and rotor engagement.
  - b. proper positioning of helicopter to avoid hazards.
  - c. use of external power.
  - d. effect of atmospheric conditions on engine starting and rotor engagement.
  - e. importance of proper friction adjustment.
  - f. importance of following the appropriate checklist.
  - g. adjustment of engine and flight controls during engine start and rotor engagement.
  - h. prevention of undesirable helicopter movement during and after engine start and rotor engagement.
2. Exhibits instructional knowledge of common errors related to engine starting and rotor engagement by describing—
  - a. failure to use or improper use of checklist.
  - b. exceeding starter time limitations.
  - c. excessive engine RPM and/or temperatures during start.
  - d. failure to ensure adequate main rotor or tail rotor clearance.
3. Demonstrates and simultaneously explains engine starting and rotor engagement from an instructional standpoint.

#### **D. TASK: BEFORE TAKEOFF CHECK**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of the before takeoff check by describing—
  - a. division of attention inside and outside the cockpit.
  - b. importance of following the checklist and responding to each item.
  - c. reasons for ensuring suitable engine temperatures and pressures for run-up and takeoff.
  - d. method used to determine that the helicopter is in safe operating condition.
  - e. importance of reviewing emergency procedures.
  - f. method used for ensuring that takeoff area or path is free of hazards.
  - g. method used for ensuring adequate clearance from other traffic.
2. Exhibits instructional knowledge of common errors related to the before takeoff check by describing—
  - a. failure to use or the improper use of the checklist.
  - b. acceptance of marginal helicopter performance.
  - c. an improper check of controls.
3. Demonstrates and simultaneously explains a before takeoff check from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a before takeoff check.

**VI. AREA OF OPERATION: AIRPORT AND HELIPORT OPERATIONS**

**NOTE:** The examiner shall select at least one TASK.

**A. TASK: RADIO COMMUNICATIONS AND ATC LIGHT SIGNALS**

REFERENCES: CARS Part 8: AIP.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of radio communications and ATC light signals by describing—
  - a. selection and use of appropriate radio frequencies.
  - b. recommended procedure and phraseology for radio voice communications.
  - c. receipt, acknowledgment of, and compliance with, ATC clearances and other instructions.
  - d. prescribed procedure for radio communications failure.
  - e. interpretation of, and compliance with, ATC light signals.
2. Exhibits instructional knowledge of common errors related to radio communications and ATC light signals by describing—
  - a. use of improper frequencies.
  - b. improper techniques and phraseologies when using radio voice communications.
  - c. failure to acknowledge, or properly comply with, ATC clearances and other instructions.
  - d. use of improper procedures for radio communications failure.
  - e. failure to understand, or to properly comply with, ATC light signals.

## **B. TASK: TRAFFIC PATTERNS**

REFERENCES: CARS Part 8; FAA-H-8083-9, FAA-H-8083-21; AIP;  
FAA AC 90-48, FAA AC 90-66

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of traffic pattern operations by describing—
  - a. operations at controlled and uncontrolled airports and heliports.
  - b. adherence to traffic pattern procedures, instructions, and appropriate regulations.
  - c. how to maintain appropriate spacing from other traffic.
  - d. how to maintain desired ground track.
  - e. wind shear and wake turbulence.
  - f. orientation with landing area or heliport in use.
  - g. how to establish an approach to the landing area or heliport.
  - h. use of checklist.
2. Exhibits instructional knowledge of common errors related to traffic patterns by describing—
  - a. failure to comply with traffic pattern instructions, procedures, and rules.
  - b. improper correction for wind drift.
  - c. inadequate spacing from other traffic.
  - d. improper altitude or airspeed control.
3. Demonstrates and simultaneously explains traffic patterns from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to traffic patterns.

**C. TASK: AIRPORT AND HELIPORT MARKINGS AND LIGHTING**

REFERENCES: AIP; FAA-H-8083-25; ICAO Annex 14

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of airport and heliport markings and lighting by describing:

1. Identification and proper interpretation of airport and heliport markings.
2. Identification and proper interpretation of airport and heliport lighting.

## **VII. AREA OF OPERATION: HOVERING MANEUVERS**

**NOTE:** The examiner shall select at least one TASK.

### **A. TASK: VERTICAL TAKEOFF AND LANDING**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a vertical takeoff and landing by describing—
  - a. how to establish and maintain proper RPM.
  - b. proper position of collective pitch, cyclic, and anti-torque pedals prior to initiating takeoff.
  - c. ascending vertically, at a suitable rate, to the recommended hovering altitude, in headwind, crosswind, and tailwind conditions.
  - d. descending vertically, at a suitable rate, to a selected touchdown point.
  - e. touching down vertically in headwind, crosswind, and tailwind conditions.
  - f. how to maintain desired heading during the manoeuvre.
2. Exhibits instructional knowledge of common errors related to a vertical takeoff and landing by describing—
  - a. improper RPM control.
  - b. failure to ascend and descend vertically at a suitable rate.
  - c. failure to recognize and correct undesirable drift.
  - d. improper heading control.
  - e. terminating takeoff at an improper altitude.
  - f. overcontrol of collective pitch, cyclic, or anti-torque pedals.
  - g. failure to reduce collective pitch to the full-down position, smoothly and positively, upon surface contact.
3. Demonstrates and simultaneously explains a vertical takeoff and landing from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a vertical takeoff and landing.

## **B. TASK: SURFACE TAXI**

**NOTE:** This TASK applies only to helicopters equipped with wheel-type landing gear.

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; AIP; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of surface taxi by describing—
  - a. positioning of cyclic and collective to begin forward movement.
  - b. proper use of cyclic, collective, and brakes to control speed while taxiing.
  - c. use of anti-torque pedals to maintain directional control.
  - d. use of brakes during minimum radius turns.
  - e. proper position of tailwheel (if applicable) locked or unlocked.
  - f. positioning of controls to slow and stop helicopter.
2. Exhibits instructional knowledge of common errors related to surface taxi by describing—
  - a. improper positioning of cyclic and collective to start and stop movement.
  - b. improper use of brakes.
  - c. hazards of taxiing too fast.
  - d. improper use of anti-torque pedals.
3. Demonstrates and simultaneously explains surface taxi from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to surface taxi.

### **C. TASK: HOVER TAXI**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; AIP; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of hover taxi by describing—
  - a. how to maintain proper Revolutions Per Minute (RPM).
  - b. maintaining desired ground track and heading.
  - c. how to make precise turns to headings.
  - d. holding recommended hovering altitude.
  - e. appropriate groundspeed.
2. Exhibits instructional knowledge of common errors related to hover taxi by describing—
  - a. improper RPM control.
  - b. improper control of heading and track.
  - c. erratic altitude control.
  - d. misuse of flight controls.
3. Demonstrates and simultaneously explains hover taxi from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to hover taxi.

#### **D. TASK: AIR TAXI**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; AIP; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of air taxi by describing—
  - a. how to maintain proper RPM.
  - b. selection of an altitude and airspeed appropriate for the operation.
  - c. proper use of collective pitch, cyclic, and anti-torque pedals to maintain desired track and groundspeed in headwind and crosswind conditions.
  - d. compensation for wind effect.
2. Exhibits instructional knowledge of common errors related to air taxi by describing—
  - a. improper RPM control.
  - b. erratic altitude and airspeed control.
  - c. improper use of collective pitch, cyclic, and anti-torque pedals during operation.
  - d. improper use of controls to compensate for wind effect.
3. Demonstrates and simultaneously explains air taxi from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to air taxi.

## **E. TASK: SLOPE OPERATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a slope operation by describing—
  - a. factors to consider in selection of slope.
  - b. planning and performance of a slope operation, considering wind effect, obstacles, and discharging of passengers.
  - c. effect of slope surface texture.
  - d. how to maintain proper RPM.
  - e. control technique during descent to touchdown on a slope.
  - f. use of brakes (if applicable).
  - g. factors that should be considered to avoid dynamic rollover.
  - h. technique during a slope takeoff and departure.
  
2. Exhibits instructional knowledge of common errors related to a slope operation by describing—
  - a. improper planning selection of, approach to, or departure from the slope.
  - b. failure to consider wind effects.
  - c. improper RPM control.
  - d. turning tail of the helicopter upslope.
  - e. lowering downslope skid or wheels too rapidly.
  - f. sliding downslope.
  - g. improper use of brakes (if applicable).
  - h. conditions that, if allowed to develop, may result in dynamic rollover.
  
3. Demonstrates and simultaneously explains a slope operation from an instructional standpoint.
  
4. Analyzes and corrects simulated common errors related to a slope operation.

## **VIII. AREA OF OPERATION: TAKEOFFS, LANDINGS, AND GO-AROUNDS**

**NOTE:** The examiner shall select at least one takeoff TASK and one approach TASK.

### **A. TASK: NORMAL AND CROSSWIND TAKEOFF AND CLIMB**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a normal and crosswind takeoff and climb by describing—
  - a. consideration of wind conditions.
  - b. factors affecting takeoff and climb performance.
  - c. how to maintain proper RPM.
  - d. how to establish a stationary position on the surface or a stabilized hover, prior to takeoff in headwind and crosswind conditions.
  - e. presence of effective translational lift.
  - f. acceleration to a normal climb.
  - g. climb airspeed and power setting.
  - h. crosswind correction and ground track during climb.
2. Exhibits instructional knowledge of common errors related to a normal and crosswind takeoff and climb by describing—
  - a. improper RPM control.
  - b. improper use of cyclic, collective pitch, or anti-torque pedals.
  - c. failure to use sufficient power to avoid settling prior to entering effective translational lift.
  - d. improper coordination of attitude and power during initial phase of climb-out.
  - e. failure to establish and maintain climb power and airspeed.
  - f. drift during climb.
3. Demonstrates and simultaneously explains a normal or a crosswind takeoff and climb from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a normal or a crosswind takeoff and climb.

**B. TASK: MAXIMUM PERFORMANCE TAKEOFF AND CLIMB**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a maximum performance takeoff and climb by describing—
  - a. importance of considering performance data, to include height/velocity diagram.
  - b. factors related to takeoff and climb performance of the aircraft.
  - c. how to establish and maintain proper RPM.
  - d. preparatory technique prior to increasing collective pitch to initiate takeoff.
  - e. technique to initiate takeoff and establish a forward climb attitude to clear obstacles
  - f. transition to normal climb power and airspeed.
  - g. crosswind correction and track during climb.
2. Exhibits instructional knowledge of common errors related to a maximum performance takeoff and climb by describing—
  - a. failure to consider performance data, including height/velocity diagram.
  - b. improper RPM control.
  - c. improper use of cyclic, collective pitch, or anti-torque pedals.
  - d. failure to use the predetermined power setting for establishing attitude and airspeed appropriate to the obstacles to be cleared.
  - e. failure to resume normal climb power and airspeed after obstacle clearance.
  - f. drift during climb.
3. Demonstrates and simultaneously explains a maximum performance takeoff and climb from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a maximum performance takeoff and climb.

### **C. TASK: ROLLING TAKEOFF**

**NOTE:** This TASK applies only to helicopters equipped with wheel-type landing gear.

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a rolling takeoff by describing—
  - a. situations where this manoeuvre is recommended.
  - b. factors related to takeoff and climb performance of the aircraft.
  - c. how to establish and maintain proper RPM.
  - d. preparatory technique prior to initiating takeoff.
  - e. how to initiate forward accelerating movement on the surface.
  - f. indication of reaching effective translational lift.
  - g. transition to a normal climb airspeed and power setting.
  - h. crosswind correction and track during climb.
2. Exhibits instructional knowledge of common errors related to a rolling takeoff by describing—
  - a. improper RPM control.
  - b. improper use of cyclic, collective pitch, or anti-torque pedals.
  - c. failure to maintain heading and ground track.
  - d. failure to attain effective translational lift prior to attempting transition to flight.
  - e. use of excessive forward cyclic during the surface run.
  - f. settling back to the takeoff surface after becoming airborne.
  - g. excessive altitude prior to attaining climb airspeed.
  - h. failure to establish and maintain climb power and airspeed.
3. Demonstrates and simultaneously explains a rolling takeoff from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a rolling takeoff.

## **D. TASK: NORMAL AND CROSSWIND APPROACH**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a normal and crosswind approach by describing—
  - a. factors affecting performance.
  - b. how to maintain proper RPM.
  - c. establishment and maintenance of the recommended approach angle and rate of closure.
  - d. coordination of flight controls.
  - e. crosswind correction and ground track.
  - f. loss of effective translational lift.
  - g. how to terminate the approach.
2. Exhibits instructional knowledge of common errors related to a normal and crosswind approach by describing—
  - a. improper RPM control.
  - b. improper approach angle.
  - c. improper use of cyclic to control rate of closure and collective pitch to control approach angle.
  - d. failure to coordinate pedal corrections with power changes.
  - e. failure to arrive at the termination point at zero groundspeed.
3. Demonstrates and simultaneously explains a normal or a crosswind approach from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a normal or a crosswind approach.

## **E. TASK: STEEP APPROACH**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a steep approach by describing—
  - a. purpose of the manoeuvre.
  - b. importance of considering performance data, to include height/velocity diagram.
  - c. selection of proper approach angle for obstacle clearance.
  - d. how to maintain proper RPM.
  - e. establishment and maintenance of the appropriate approach angle and rate of closure.
  - f. coordination of flight controls.
  - g. crosswind correction and ground track.
  - h. location where effective translational lift is lost.
  - i. how to terminate the approach.
2. Exhibits instructional knowledge of common errors related to a steep approach by describing—
  - a. improper approach angle.
  - b. improper RPM control.
  - c. improper use of cyclic to control rate of closure and collective pitch to control approach angle.
  - d. failure to coordinate pedal corrections with power changes.
  - e. failure to arrive at the termination point at zero groundspeed.
  - f. inability to determine location where effective translational lift is lost.
3. Demonstrates and simultaneously explains a steep approach from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a steep approach.

**F. TASK:           SHALLOW APPROACH AND RUNNING/ROLL-ON  
LANDING**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; Rotorcraft Flight Manual.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a shallow approach and running/roll-on landing by describing—
  - a. purpose of the manoeuvre.
  - b. effect of landing surface texture.
  - c. factors affecting performance.
  - d. how to maintain proper RPM.
  - e. obstacles and other hazards, which should be considered.
  - f. establishment and maintenance of the recommended approach angle and rate of closure.
  - g. coordination of flight controls.
  - h. crosswind correction and ground track.
  - i. loss of effective translational lift.
  - j. transition from descent to surface contact.
  - k. flight control technique after surface contact.
2. Exhibits instructional knowledge of common errors related to a shallow approach and running/roll-on landing by describing—
  - a. improper RPM control.
  - b. improper approach angle.
  - c. improper use of cyclic to control rate of closure and collective pitch to control approach angle.
  - d. failure to coordinate pedal corrections with power changes.
  - e. failure to maintain a speed that will take advantage of effective translational lift during the final phase of approach.
  - f. touching down at an excessive groundspeed.
  - g. failure to touch down in appropriate attitude.
  - h. failure to maintain directional control after touchdown.
3. Demonstrates and simultaneously explains a shallow approach and running/roll-on landing from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a shallow approach and running/roll-on landing.

## **G. TASK: GO-AROUND**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a go-around by describing—
  - a. situations where a go-around is necessary.
  - b. importance of making a timely decision, considering obstacles, loss of translational lift, and engine response time.
  - c. proper use of power throughout manoeuvre.
  - d. timely and coordinated application of flight controls during transition to climb attitude.
  - e. proper track and obstacle clearance during climb.
2. Exhibits instructional knowledge of common errors related to a go-around by describing—
  - a. failure to recognize a situation where a go-around is necessary.
  - b. hazards of delaying the decision to go around.
  - c. improper application of flight controls during transition to climb attitude.
  - d. failure to control drift and clear obstacles safely.
3. Demonstrates and simultaneously explains a go-around from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a go-around.

## **H. TASK: APPROACH AND LANDING WITH SIMULATED POWERPLANT FAILURE - MULTIENGINE HELICOPTER**

**NOTE:** In a multiengine helicopter manoeuvring to a landing, the applicant should follow a procedure that simulates the loss of one powerplant.

REFERENCE(S): FAA-H-8083-21; RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements an approach and landing with simulated powerplant failure.
2. Exhibits adequate knowledge of manoeuvring to a landing with a powerplant inoperative, including the controllability factors associated with manoeuvring, and the applicable emergency procedures.
3. Selects a suitable touchdown point.

4. Maintains, prior to beginning the final approach segment, the desired altitude  $\pm 100$  feet, the desired airspeed  $\pm 10$  knots, the desired heading  $\pm 5^\circ$ , and maintains desired track.
5. Establishes the approach and landing configuration appropriate for the runway or landing area, and adjusts the powerplant controls as required.
6. Maintains a normal approach angle and recommended airspeed to the point of transition to touchdown.
7. Terminates the approach in a smooth transition to touchdown.
8. Completes the after-landing checklist items in a timely manner, after clearing the landing area, and as recommended by the manufacturer.
9. Exhibits instructional knowledge of common errors related to approach and landing with simulated powerplant failure by describing—
  - a. hazards resulting from not following manufacturer's recommended procedures in the event of a powerplant failure.
  - b. failure of the pilot to follow the appropriate checklist.
10. Demonstrates and simultaneously explains approaching and landing procedures with a simulated powerplant failure.
11. Analyzes and corrects simulated common errors related to an approach and landing with simulated powerplant failure.

**IX. AREA OF OPERATION: FUNDAMENTALS OF FLIGHT**

**NOTE:** The examiner shall select at least one TASK.

**A. TASK: STRAIGHT-AND-LEVEL FLIGHT**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of straight-and-level flight by describing—
  - a. effect and use of flight controls.
  - b. the Integrated Flight Instruction method.
  - c. trim technique.
  - d. methods that can be used to overcome tenseness and over controlling.
2. Exhibits instructional knowledge of common errors related to straight-and-level flight by describing—
  - a. improper coordination of flight controls.
  - b. failure to cross-check and correctly interpret outside and instrument references.
  - c. faulty trim technique.
3. Demonstrates and simultaneously explains straight-and-level flight from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to straight-and-level flight.

## **B. TASK: LEVEL TURNS**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of level turns by describing—
  - a. effect and use of flight controls.
  - b. the Integrated Flight Instruction method.
  - c. trim technique.
  - d. methods that can be used to overcome tenseness and over controlling.
2. Exhibits instructional knowledge of common errors related to level turns by describing—
  - a. improper coordination of flight controls.
  - b. failure to cross-check and correctly interpret outside and instrument references.
  - c. faulty trim technique.
3. Demonstrates and simultaneously explains level turns from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to level turns.

### **C. TASK: STRAIGHT CLIMBS AND CLIMBING TURNS**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of straight climbs and climbing turns by describing—
  - a. effect and use of flight controls.
  - b. the Integrated Flight Instruction method.
  - c. trim technique.
  - d. methods that can be used to overcome tenseness and over controlling.
2. Exhibits instructional knowledge of common errors related to straight climbs and climbing turns by describing—
  - a. improper coordination of flight controls.
  - b. failure to cross-check and correctly interpret outside and instrument references.
  - c. faulty trim technique.
3. Demonstrates and simultaneously explains straight climbs and climbing turns from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to straight climbs and climbing turns.

**D. TASK: STRAIGHT DESCENTS AND DESCENDING TURNS**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of straight descents and descending turns by describing—
  - a. effect and use of flight controls.
  - b. the Integrated Flight Instruction method.
  - c. trim technique.
  - d. methods that can be used to overcome tenseness and over controlling.
2. Exhibits instructional knowledge of common errors related to straight descents and descending turns by describing—
  - a. improper coordination of flight controls.
  - b. failure to cross-check and correctly interpret outside and instrument references.
  - c. faulty trim technique.
3. Demonstrates and simultaneously explains straight descents and descending turns from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to straight descents and descending turns.

## **X. AREA OF OPERATION: PERFORMANCE MANEUVERS**

**NOTE:** The examiner shall select at least TASK B or C. In addition, applicant shall provide a helicopter appropriate for demonstrating touchdown autorotations.

### **A. TASK: RAPID DECELERATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a rapid deceleration by describing—
  - a. purpose of the manoeuvre.
  - b. how to maintain proper RPM throughout manoeuvre.
  - c. evaluation of wind direction and speed, terrain, and obstructions.
  - d. proper use of anti-torque pedals.
  - e. selection of an altitude that will permit safe clearance between tail boom and terrain.
  - f. coordinated use of cyclic and collective controls throughout manoeuvre.
2. Exhibits instructional knowledge of common errors related to a rapid deceleration by describing—
  - a. improper RPM control.
  - b. improper use of anti-torque pedals.
  - c. improper coordination of cyclic and collective controls.
  - d. failure to properly control the rate of deceleration.
  - e. stopping of forward motion in a tail-low attitude.
  - f. failure to maintain safe clearance over terrain.
3. Demonstrates and simultaneously explains a rapid deceleration from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a rapid deceleration.

## **B. TASK: STRAIGHT-IN AUTOROTATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a straight-in autorotation by describing—
  - a. purpose of manoeuvre.
  - b. selection of a suitable touchdown area.
  - c. how to maintain proper engine and rotor RPM.
  - d. evaluation of wind direction and speed.
  - e. effect of density altitude, gross weight, rotor RPM, airspeed, and wind to determine a touchdown point.
  - f. how and at what point manoeuvre is initiated.
  - g. flight control coordination, aircraft attitude, and autorotational speed.
  - h. deceleration, collective pitch application, and touchdown technique, or
  - i. technique for performing a power recovery to a hover.
2. Exhibits instructional knowledge of common errors related to a straight-in autorotation by describing—
  - a. improper engine and rotor RPM control.
  - b. uncoordinated use of flight controls, particularly anti-torque pedals.
  - c. improper attitude and airspeed during descent.
  - d. improper judgment and technique during termination.
3. Demonstrates and simultaneously explains a straight-in autorotation to touchdown from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a straight-in autorotation.

### **C. TASK: 180° AUTOROTATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a 180° autorotation by describing—
  - a. purpose of manoeuvre.
  - b. selection of a suitable touchdown area.
  - c. how to maintain proper engine and rotor RPM.
  - d. evaluation of wind direction and speed.
  - e. effect of density altitude, gross weight, rotor RPM, airspeed, and wind to determine a touchdown point.
  - f. how and at what point the manoeuvre is initiated.
  - g. flight control coordination, aircraft attitude, and autorotation airspeed.
  - h. proper planning and performance of the autorotative turn.
  - i. deceleration, collective pitch application, and touchdown technique, or
  - j. technique for performing a power recovery to a hover.
2. Exhibits instructional knowledge of common errors related to a 180° autorotation by describing—
  - a. improper engine and rotor RPM control.
  - b. uncoordinated use of flight controls, particularly anti-torque pedals.
  - c. improper attitude and airspeed during descent.
  - d. improper judgment and technique during the termination.
3. Demonstrates and simultaneously explains a 180° autorotation to touchdown from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a 180° autorotation.

## **XI. AREA OF OPERATION: EMERGENCY OPERATIONS**

**NOTE:** The examiner shall select at least one TASK from A, B, C, or D to be accomplished in flight and at least one TASK from E, F, G, H, I, or J to be accomplished orally on the ground.

### **A. TASK: POWER FAILURE AT A HOVER**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements related to power failure at a hover by describing—
  - a. recognition of power failure.
  - b. how to maintain a constant heading.
  - c. correction for drift.
  - d. effect of density altitude, height above the surface, gross weight, wind, and rotor RPM on performance.
  - e. autorotation and touchdown technique from a stationary or forward hover.
2. Exhibits instructional knowledge of common errors related to power failure at a hover by describing—
  - a. failure to apply correct and adequate pedal when power is reduced.
  - b. failure to correct drift prior to touchdown.
  - c. improper application of collective pitch.
  - d. failure to touch down in a level attitude.
3. Demonstrates and simultaneously explains a simulated power failure at a hover from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a simulated power failure at a hover.

## **B. TASK: POWER FAILURE AT ALTITUDE**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21,RFM.

**NOTE:** Examiner shall direct the applicant to terminate this TASK with a power recovery at an altitude high enough to ensure a safe touchdown could be accomplished in the event of an actual power failure.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements related to power failure at altitude by describing—
  - a. importance of being continuously aware of suitable landing areas.
  - b. technique for establishing and maintaining proper rotor RPM, airspeed, and pedal trim during autorotation.
  - c. method used to evaluate wind direction and speed.
  - d. effect of density altitude, gross weight, rotor RPM, airspeed, and wind to determine landing area.
  - e. selection of a suitable landing area.
  - f. planning and performance of approach to the selected landing area.
  - g. importance of dividing attention between flying the approach and accomplishing the emergency procedure, as time permits.
  - h. techniques that can be used to compensate for undershooting or overshooting selected landing area.
  - i. when and how to terminate approach.
2. Exhibits instructional knowledge of common errors related to power failure at altitude by describing—
  - a. failure to promptly recognize the emergency, establish and maintain proper rotor RPM, and confirm engine condition.
  - b. improper judgment in selection of a landing area.
  - c. failure to estimate approximate wind direction and speed.
  - d. uncoordinated use of flight controls during autorotation entry and descent.
  - e. improper attitude and airspeed during autorotation entry and descent.
  - f. failure to fly the most suitable pattern for existing situation.
  - g. failure to accomplish the emergency procedure, as time permits.
  - h. undershooting or overshooting selected landing area.
  - i. uncoordinated use of flight controls during power recovery.
3. Demonstrates and simultaneously explains a simulated power failure at altitude from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to power failure at altitude.

### **C. TASK: SETTLING-WITH-POWER**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements related to settling-with-power by describing—
  - a. conditions that are likely to result in settling-with-power.
  - b. timely recognition of settling-with-power.
  - c. techniques for recovery.
2. Exhibits instructional knowledge of common errors related to settling-with-power by describing—
  - a. failure to recognize conditions that are conducive to development of settling-with-power.
  - b. failure to detect first indications of settling-with-power.
  - c. improper use of controls during recovery.
3. Demonstrates and simultaneously explains settling-with-power from an instructional standpoint.

#### **D. TASK: LOW ROTOR RPM RECOVERY**

**NOTE:** The examiner may accomplish this TASK orally if the helicopter used for the practical test has a governor that cannot be disabled.

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements related to low rotor RPM recovery by describing—
  - a. conditions that are likely to result in low rotor RPM.
  - b. potential problems from low rotor RPM if not corrected timely.
  - c. techniques for recovery.
2. Exhibits instructional knowledge of common errors related to low rotor RPM recovery by describing—
  - a. failure to recognize conditions that are conducive to the development of low rotor RPM.
  - b. failure to detect the development of low rotor RPM and to initiate prompt corrective action.
  - c. improper use of controls.
3. Demonstrates and simultaneously explains low rotor RPM recovery from an instructional standpoint.

#### **E. TASK: ANTI-TORQUE SYSTEM FAILURE**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to anti-torque system failure by describing:

1. Helicopter aerodynamics related to failure.
2. Indications of failure.
3. Recommended pilot technique to maintain controlled flight.
4. How to select a landing area.
5. Recommended technique to accomplish a safe landing, when failure occurs.

## **F. TASK: DYNAMIC ROLLOVER**

REFERENCES: FAA-H-8083-21; FAA-S-8081-15, FAA-S-8081-16; RFM; FAA AC 90-87.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to dynamic rollover by describing:

1. Helicopter aerodynamics involved.
2. How interaction between anti-torque thrust, crosswind, slope, cyclic and collective pitch control contribute to dynamic rollover.
3. Preventive actions used for takeoffs and landings on different surfaces.

## **G. TASK: GROUND RESONANCE**

REFERENCES: FAA-H-8083-21; RFM

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to ground resonance by describing:

1. Aerodynamics involved and association with a fully articulated rotor system.
2. Conditions that are conducive to the development of ground resonance.
3. Preventive actions used for takeoffs and landings on different surfaces.

## **H. TASK: LOW "G" CONDITIONS**

REFERENCE: Rotorcraft Flight Manual.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements of low "G" conditions by describing:

1. Situations that will cause a low "G" condition.
2. Recognition of low "G" conditions.
3. Proper recovery procedures to prevent mast bumping.
4. Effects of this condition on different types of rotor systems.

## **I. TASK: SYSTEMS AND EQUIPMENT MALFUNCTIONS**

REFERENCES: FAA-H-8083-21; RFM

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to systems and equipment malfunctions by describing recommended pilot action, appropriate to the helicopter used for the practical test, in the following areas:

1. Smoke or fire during ground or flight operations.
2. Engine/oil and fuel system.
3. Carburetor or induction icing.
4. Hydraulic system.
5. Electrical system.
6. Flight controls.
7. Rotor/drive system.
8. Pitot/static system.
9. Any other system or equipment.

## **J. TASK: EMERGENCY EQUIPMENT AND SURVIVAL GEAR**

REFERENCES: FAA-H-8083-21; RFM.

**Objective.** To determine that the applicant exhibits instructional knowledge of the elements related to emergency equipment and survival gear appropriate to the helicopter used for the practical test by describing:

1. Location in the helicopter.
2. Method of operation or use.
3. Servicing.
4. Storage.
5. Equipment and gear appropriate for operation in various climates, over various types of terrain, and over water.

## **XII. AREA OF OPERATION: SPECIAL OPERATIONS**

**NOTE:** The examiner shall select at least one TASK.

### **A. TASK: CONFINED AREA OPERATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21; RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a confined area operation by describing—
  - a. conduct of high and low reconnaissance.
  - b. method used to evaluate wind direction and speed, turbulence, terrain, obstacles, and emergency landing areas.
  - c. selection of a suitable approach path, termination point, and departure path.
  - d. how to maintain proper RPM.
  - e. how to track the selected approach path to the termination point, establishing an acceptable approach angle and rate of closure.
  - f. factors that should be considered in determining whether to terminate at a hover or on the surface.
  - g. conduct of ground reconnaissance and selection of a suitable takeoff point, considering wind and obstructions.
  - h. factors affecting takeoff and climb performance.
  - i. factors to consider in performing a takeoff and climb under various conditions.
2. Exhibits instructional knowledge of common errors related to a confined area operation by describing—
  - a. failure to perform, or improper performance of high and low reconnaissance.
  - b. failure to track the selected approach path or to fly an acceptable approach angle and rate of closure.
  - c. improper RPM control.
  - d. inadequate planning to ensure obstacle clearance during the approach or the departure.
  - e. failure to consider emergency landing areas.
  - f. failure to select a definite termination point during the high reconnaissance.
  - g. failure to change the termination point, if conditions so dictate.
  - h. failure to consider effect of wind direction or speed, turbulence, or loss of effective translational lift during the approach.
  - i. improper takeoff and climb technique for existing conditions.

3. Demonstrates and simultaneously explains a confined area operation from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to a confined area operation.

## **B. TASK: PINNACLE/PLATFORM OPERATION**

REFERENCES: FAA-H-8083-9, FAA-H-8083-21;RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of a pinnacle/platform operation by describing—
  - a. conduct of high and low reconnaissance.
  - b. methods used to evaluate wind direction and speed, turbulence, terrain, obstacles, and emergency landing areas.
  - c. selection of a suitable approach path, termination point, and departure path.
  - d. how to maintain proper RPM.
  - e. how to track the selected approach path to the termination point, and establish an acceptable approach angle and rate of closure.
  - f. factors that should be considered in determining whether to terminate in a hover or on the surface.
  - g. selection of a suitable takeoff point, considering wind and obstructions.
  - h. factors affecting takeoff and climb performance.
  - i. factors to consider in performing a takeoff and climb under various conditions.
2. Exhibits instructional knowledge of common errors related to a pinnacle/platform operation by describing—
  - a. failure to perform, or improper performance of, high and low reconnaissance.
  - b. failure to track selected approach path or to fly an acceptable approach angle and rate of closure.
  - c. improper RPM control.
  - d. inadequate planning to assure obstacle clearance during approach or departure.
  - e. failure to consider emergency landing areas.
  - f. failure to select a definite termination point during the high reconnaissance.
  - g. failure to change the termination point, if conditions so dictate.
  - h. failure to consider effect of wind direction or speed, turbulence, or loss of effective translational lift during the approach.

- i. improper takeoff and climb technique for existing conditions.
3. Demonstrates and simultaneously explains a pinnacle/platform operation from an instructional standpoint.
  4. Analyzes and corrects simulated common errors related to a pinnacle/platform operation.

### **XIII. AREA OF OPERATION: POSTFLIGHT PROCEDURES**

#### **A. TASK: AFTER-LANDING AND SECURING**

REFERENCES: FAA-H-8083-9;RFM

**Objective.** To determine that the applicant:

1. Exhibits instructional knowledge of the elements of after-landing and securing by describing—
  - a. methods to minimize hazardous effects of rotor downwash during hovering to parking area.
  - b. engine temperature stabilization and shutdown.
  - c. method to secure rotor blades and cockpit.
  - d. safety concerns for passenger(s) when exiting.
  - e. postflight inspection to include use of checklist.
  - f. refueling procedures, including safety concerns.
2. Exhibits instructional knowledge of common errors related to after-landing and securing by describing—
  - a. hazards resulting from failure to follow recommended procedures.
  - b. failure to conduct a postflight inspection and use a checklist.
3. Demonstrates and simultaneously explains after-landing and securing from an instructional standpoint.
4. Analyzes and corrects simulated common errors related to after-landing and securing.

**Appendix 1 – STS TASKS PERMITTED IN A FLIGHT SIMULATION TRAINING  
DEVICE**

RESERVED