

ADVISORY CIRCULAR

No. : AC - 28 - 04-011

Date : 15 April 2019

A. SUBJECT:

Guidance of Applicants Taking Helicopter Instructor (FI/TRI/IRI) Skill Tests

B. PURPOSE:

This Advisory Circular (AC) details the Guidance of Applicants Taking Helicopter Instructor (FI/TRI/IRI) Skill Tests Rules and Procedures.

C. STATUS:

This is the first edition of AC - 28 -04- 011 dated on 15 April 2019. It will remain current until it is withdrawn or superseded.

D. CONTENTS:

Foreword

Part 1 General Information

Part 2 Flight Test Preparation and Provision of Helicopters

2.1 Flight Test Preparation

2.2 Provision of Helicopters

Part 3 Test Administration

3.1 Administration

Part 4 Examiners Briefing

4.1 Briefing

Part 5 Test Profile and Assessment Criteria

5.1 Theoretical Knowledge

5.2 Pre Flight Exercise Briefing

5.3 Flight

5.4 Post Flight Debriefing

Part 6 Post Test Administration

6.1 Examiners Debrief

6.2 Applicants Appeal Procedure

Appendices

Appendix 1 Flight Instructor Skill Test Theoretical Knowledge

Appendix 2 Instrument Rating Instructor Skill Test Theoretical Knowledge

Appendix 3 Type Rating Instructor Skill Test Theoretical Knowledge

Appendix 4 Skill Test Report Form

E. REFERENCES:

- JCAR FCL 2

Foreword

This Standards Document is intended to provide applicants for the grant of a Helicopter Instructor Rating (FI/TRI/IRI) with background information regarding the civil aviation regulatory commission policy for the FI, TRI and IRI Helicopter Skill Tests.

The information will help applicants prepare for this flight test, but it must be remembered that aspects mentioned here are of a general nature only and do not give precise details of each exercise or maneuver.

Nothing in the document is intended to conflict with the civil aviation regulatory commission legislation which remains the primary authority. Whilst every effort is made to ensure that all guidance in this document is correct, CARC reserves the right to amend this document as required to reflect changes in practice required for the effectiveness of the test. The notes incorporate the civil aviation regulatory commission licensing requirements for the Instructor rating and comply with JCAR-FCL 2.

This document is available for all those engaged in training and testing for the initial issue of the Instructor Ratings. This, and other Standards Documents, are also available on CARC website and shall be available to users without charge.

If, after reading this document you still have queries about the Instructor Skill Test, please ask your selected training provider or contact the **General Aviation And Training Section**.

Part 1**General Information**

1.1 Successful completion of an Instructor Skill Test will result in the appropriate Instructor Rating being added to the applicant's licence.

1.2 Any rating issued following an Instructor Skill Test will be valid for the period stated in JCAR-FCL 2.

1.3 Throughout these notes the following editorial practices and definitions shall apply:

- "Shall" and "Must" are used to indicate a mandatory requirement.
- "Expect" and "Should" are used to indicate strong obligation.
- "May" is used to indicate discretion.
- "Examiner" is used to indicate a person who is authorized by CARC to conduct the appropriate skill test.
- "Applicant" is used to indicate a person who is seeking the issue or renewal of a pilot's licence or rating.
- "He/She", the pronoun 'he' is used throughout for ease of reading.
- "Training Organization" is used to indicate any organization or facility approved by CARC to carry out training for the issue of an Instructor Rating, and so will include those Flying Training Organizations (FTO) or Type Rating Training Organization (TRTO) so approved.

1.4 Examiners shall not conduct Skill Tests for any applicant whom they have trained for the rating.

Part 2**Flight Test Preparation and Provision of Helicopters****2.1 Flight Test Preparation**

2.1.1 The Instructor Skill Test shall be taken within 6 months of the completion of training and all sections of the test must be completed within 6 months of the first attempt.

2.1.2 An applicant for a helicopter Instructor Skill Test shall have successfully completed all the CPL(H) or ATPL(H) Theoretical Knowledge Examinations or be credited with them.

2.1.3 The applicant for the Instructor Skill Test shall have successfully completed all the flight and ground training stated in JCAR FCL 2 Subpart H.

2.1.4 JCAR-FCL 2 Subpart H states the administrative arrangements for confirming the applicant's suitability to take the test. Disclosure of the applicant's training record to the Examiner prior to the test is required. The applicant's suitability to take the test will be confirmed by completion of the course completion .

2.1.5 Applicants who have previously attempted the Instructor Skill Test must produce to the Examiner any previous paperwork that shows the reasons for failure and any re-training requirement.

2.1.6 Applicants must be in possession of a CARC Class 1 medical certificate at the time of the test. The medical certificate shall be shown to the examiner. If the certificate is out of date the examiner may still conduct the test, but the applicant should be aware that, regardless of the outcome, he will not be permitted to use his licence or rating until the certificate is revalidated.

2.2 Provision of Helicopters

2.2.1 The applicant must provide a helicopter for an Instructor Skill Test. The helicopter, its equipment and documentation must be approved by CRAC for the purpose. The Examiner may carry out the process of approval for which there may be an additional fee.

2.2.2 The helicopter used for an Instructor Skill Test must be equipped and maintained to a recognized and accepted maintenance standard. It must have a certificate of airworthiness issued or accepted by CARC.

2.2.3 The helicopter must be fitted with duplicate primary flying controls for use by the applicant and Examiner. Swing-over flying controls are not acceptable.

2.2.4 Flight, engine and associated ancillary instruments must be available. All instruments must be readily visible to both the Examiner and the applicant.

2.2.5 Wheel brakes, undercarriage controls, engine controls, fuel controls and cabin fire extinguishers must be either duplicated or positioned so that they are accessible to both the Examiner and applicant.

2.2.6 The helicopter must be suitable for demonstrating all aspects of the relevant training syllabus.

2.2.7 Relevant radio navigation equipment should be installed.

2.2.8 Helicopters must be equipped with a VHF radio and a two-way inter-communication must be fitted for use by the Examiner and applicant. In-flight communication should be carried out using headsets.

2.2.9 A stopwatch or other suitable timing device should be provided for use by the applicant. This may be part of the helicopter equipment or provided separately.

2.2.10 If required, a means of screening from external reference must be provided to simulate flight by sole reference to instruments. Head worn visors or goggles may be used for this purpose.

2.2.11 Helicopters to be used for the IRI Skill Test shall be approved.

Part 3

Test Administration

3.1 Administration

3.1.1 This part will preview those items that are common to all Instructor Skill Tests.

3.1.2 An Instructor Skill Test will be conducted by a CARC Staff Flight Examiner (FE) or an FIE/TRI(E)/IRI(E) authorized by CARC. The test schedule and standards required are set by CARC. The examiner will conduct each test to meet the required schedule and achieve a meaningful, fair and valid assessment. He will give the applicant clear and unhurried instructions and will check that the applicant has understood what he has been asked to do.

3.1.3 Spare.

3.1.4 The Instructor Skill Test is divided into seven main sections as follows:

- Section 1 Theoretical Knowledge
- Section 2 Pre-Flight Briefing
- Section 3 Flight
- Section 4 Mandatory Exercises
- Section 5 Multi Engine (where applicable)
- Section 6 Instrument Exercises (where applicable)
- Section 7 Post Flight Debriefing

The Examiner will precede the Skill Test with a Test Admin and Examiners Brief and conclude with the Examiners Debrief and Admin

3.1.5 An Instructor Skill Test is intended to be conducted in its entirety on one day. However, in extenuating circumstances and if agreed between the applicant and the examiner it may be conducted over 2 days, but the test must be completed within 6 months of starting.

3.1.6 If the skill test is completed in two parts, both parts shall be conducted by the same Examiner. The overall result of the attempt shall not be assessed or recorded until all sections have been completed. Each part of the attempt shall be recorded on separate test report and clearly marked with the attempt/series number.

3.1.7 The typical sequence in which the Skill Test Sections will normally be conducted with their approximate durations are:

- Test Admin and Examiners Brief - 30 minutes
- Pre-Flight Exercise Briefing (Section 2) - 45 minutes
- Flight (Section 3/4/5/6 as req.) - 1 hour 30 minutes
- Post Flight Debrief (Section 7) - 30 minutes
- Lunch
- Theoretical Knowledge (Section 1) - 2 hours
- Examiners Debrief and Admin - 30 minutes

(Note: This sequence is subject to the normal rigors of weather, aircraft and classroom availability).



3.1.8 The applicant for the test shall have received instruction on the same type of helicopter as used for the test.

3.1.9 The flight test will be conducted in a single-engine or multi-engine helicopter certificated for single pilot operation, as appropriate to the skill test application.

3.1.10 An Instructor Skill Test is very demanding. It is appreciated that even the most competent pilots can make mistakes, but this does not necessarily mean that a failure should result.

3.1.11 The Examiner may stop the test at any stage if he considers that the applicant's demonstration of skill and/or knowledge requires a complete retest.

3.1.12 The applicant will be required to produce the following equipment and documentation for the test:

- Personal flying logbook (including evidence of any retraining if this is not the First attempt)
- CARC medical certificate
- CARC licence .
- A form of identity including a photograph; e.g. a valid passport or ID card
- A valid Certificate of Course Completion
- Evidence of successful completion of all theoretical knowledge examinations
- Appropriate helicopter technical and insurance documents
- Two headsets - most Examiners will carry their own headset but a spare unit should be available for the flight
- Two copies of the authorized helicopter check list
- Instrument flying screens, visors or goggles (as applicable)
- Current publications for the routing and airfields (as applicable)
- Planning material including a blank flight log, map and navigation equipment (as applicable)
- A stopwatch or timepiece in accordance with paragraph 2.2.9.
- Any relevant CARC correspondence such as a letter of assessment or retraining requirements

The applicant will be given the Examiner's weight for the Performance and Mass & Balance calculations.

Part 4

Examiners Test Briefing

4.1 Briefing

At the pre-arranged time the Flight Examiner will meet the applicant for the test briefing. The purpose of this briefing is to check that the applicant has completed the necessary training and experience requirements, to establish the aim of the flight test. The Examiner will then give a comprehensive briefing covering all aspects of the test. During the briefing the applicant should ask questions at any time if he is unclear about any aspect. The Examiner may not necessarily brief in the same sequence as below, but will cover all the following items in the briefing.

4.1.1 The Purpose of the Flight

The purpose of the flight is for the applicant to demonstrate his ability to give instruction on the ground and in the air to a student to the level of competence as required in JCAR FCL 2. Throughout the test the following will be assessed:

- (1) Ability as an Instructor to impart knowledge and skill.
- (2) Flying ability, accuracy, demonstrations, airmanship and making efficient use of time and airspace.
- (3) Knowledge of teaching exercises and their sequencing.
- (4) Student involvement.
- (5) Accuracy and synchronization of 'patter.'
- (6) Technical knowledge and standardization of exercises.
- (7) Analysis and correction of faults.

4.1.2 The Applicant's Responsibilities

The Examiner will explain that all the duties and decisions necessary for the safe and practical conduct of the flight, in accordance with current legislation, will be the responsibility of the applicant. The applicant should liaise with ATC but if ATC instructions conflict with the briefing these will take priority; the examiner will only intervene if he decides to do so for reasons of safety or clarification. The applicant is asked to assume that the Examiner is a student pilot and therefore the applicant is to expect only limited assistance from the Examiner.

4.1.3 Checklists

Throughout the flight the applicant will be expected to use the authorized helicopter checklist. The applicant is to assume that the test is the first flight of the day and will be expected to carry out a pre-flight inspection explaining to the 'student' what he is doing and why. Airborne checks may be completed from memory, or from alternative notes, but must be in accordance with the checklist and each check item spoken aloud.

4.1.4 Weather Minima

Applicants shall comply with the minimum weather conditions specified in their Training Organization's Flying Order Book or Operations Manual, or other more stringent limitations if applicable (e.g. State Minima). However, when extreme conditions of high wind speed, severe turbulence, icing or thunderstorms exist, the examiner may determine that this would make the flight difficult to assess and may override the applicant's willingness to proceed.

4.1.5 Planning Check

The Examiner will assess the applicant's planning prior to the flight during Section 3 of the test. He will expect to be briefed by the applicant as to the environmental/weather/aircraft suitability prior to the flight exercise and make his decision whether to proceed with the flight. In arriving at his decision, the applicant must take into account the requirements of all of the Sections of the Skill Test. The Examiner may question the applicant on any aspect of the planning, for example: choice of operating areas, altitudes, fuel planning, NOTAMS, Mass & Balance and Performance calculations etc.

4.1.6 The Profile

The Examiner will go through the test sequence item by item, explaining to the applicant what is required of him. He will explain that for the test he will play the part of a student pilot of average ability, who has completed all the elements of the course prior to the lesson being taught for the skill test, including any pre lesson study as prescribed by the applicant. During the briefing, the Examiner will regularly check if the applicant has any questions and finally he will ask the applicant if he is quite clear what is required of him during the test.

4.1.7 Definitions of Terms to be Used

The Examiner will explain and ascertain the candidates understanding of the following definitions to be used in the test:

- (i) If asked to 'demonstrate' a manoeuvre the applicant should fly the exercise as a demonstration of flying skill.
- (ii) If asked to 'patter' an exercise the applicant should talk through as he flies the manoeuvre or exercise, bringing out any relevant teaching points but without breaking the exercise down into a lesson or giving student practice.
- (iii) If asked to 'teach' an exercise or manoeuvre the applicant is to break down the exercise into its' relevant parts and devise a lesson, giving the student time to practice and noting or correcting any faults that he might have.

4.1.8 Helicopter Control

The helicopter must be operated in accordance with the Aircraft Flight Manual or Pilots Operating Handbook, as appropriate, and the operating procedures should follow those given in

4.1.9 Emergencies and Abnormal Conditions

The Examiner will discuss the actions necessary should any actual emergency or abnormal condition occur during the flight. In general, the handling pilot is to remain at

the controls and handle any emergency but the Examiner, as the aircraft Captain, may elect to take control at any stage.

4.1.10 Simulated Emergencies

The Examiner will brief on how he will initiate simulated emergencies.

4.1.11 Oral Questioning

The examiner may ask practical questions relating to the flight on subjects such as VFR procedures, helicopter performance and technical aspects, emergency handling and the helicopter documents. the Training Organization's Flying Order Book or Operations Manual.

Part 5**Test Profile and Assessment Criteria****5.1 Theoretical Knowledge (Section 1)**

5.1.1 In the Theoretical Knowledge section the Examiner will assess the candidate's ability to teach the student a selection of subjects from the following headings:

- (a) Air Law
- (b) Aircraft General Knowledge
- (c) Flight Performance and Planning
- (d) Human performance
- (e) Meteorology
- (f) Navigation
- (g) Operational Procedures
- (h) Principles of Flight
- (i) Training Administration

5.1.2 It must be stressed that whilst the applicant's level of knowledge will be assessed, the emphasis of the section will be on the ability of the candidate to impart that information to the student. To achieve this the following will be assessed by the Examiner:

- (a) Overall presentation, layout, use of color, use of visual aids, use of diagrams, board plan, neatness/clarity of writing.
- (b) Instructional technique, manner, stance, eye contact, student involvement, clarity of speech, explanations and questioning technique.
- (c) Technical content; sequence of exercise, breakdown of lesson/lesson plan, omissions.
- (d) The ability to identify the correct subject matter, assess the knowledge level of the student and pitch the instruction at the required level to achieve an appropriate level of understanding

5.1.3 It is expected that the applicant should have a thorough knowledge of those aviation subjects associated with instruction of the relevant syllabus and the ability to present those subjects in an appropriate manner. However it is accepted that this can be very broad based and therefore contains a list of core subjects associated with the PPL instruction. the Type Rating Syllabus and the IR Syllabus.

5.1.4 In order to teach the desired subject to the student, the applicant may use whatever teaching aids are to hand e.g. view foils, posters, photographs models etc, unless the Examiner states he wishes to see the candidate's 'board work'. In order to answer questions on Air Law and Training Administration the applicant should demonstrate the ability to locate the required information from the appropriate documentation.

5.1.5 Whilst the applicant may occasionally and judiciously refer to notes or 'board plans' this should not be to the detriment of the flow of the instruction. However if the candidate is at a loss to a particular subject he should state so and not try to 'bluff' and the Examiner may deem it appropriate to permit the applicant to consult reference material.

5.2 Pre-Flight Exercise Briefing (Section 2)

5.2.1 The Pre-Flight Exercise Brief will normally take the form of a board presentation of approximately 45 minutes on a pre-determined flight exercise from the relevant Flight Syllabus. It can be assumed that the Examiner will play the part of a student pilot of average ability, who has completed all the elements of the course prior to the exercise being taught, including any pre-lesson study as prescribed by the applicant.

As well as those items listed at 5.1.2 the following will be assessed by the examiner:

- (a) Visual Presentation and Content
- (b) Technical Accuracy
- (c) Clarity of Explanation
- (d) Clarity of Speech
- (e) Instructional Technique
- (f) Use of Models and Aids
- (g) Student Participation

Note: If the applicant wishes to use another media other than 'board work' for this presentation it is to be agreed with the examiner beforehand, so that required presentational skills can be assessed more thoroughly in the Theoretical Knowledge Section.

5.3 Flight (Section 3/4/5/6 as applicable)

5.3.1 Prior to the flight the applicant will be given time to collect the latest planning information. He will then be expected to give his 'student' a short pre-flight briefing (10-15 minutes) on the practical application of conducting the designated flight exercise, given the individual aircraft and environmental conditions of the day. This pre-flight briefing should contain at least the following items (the MATED brief is only included as a suggested aide memoir) which include : (MATED) Meteorology, Aircraft, ATC exercise and duties).

Met How the given met conditions are going to effect the flight profile i.e. cloud base, visibility/horizon, wind velocity, temp/dew point, precipitation etc.

Aircraft AUM (All Up Mass) performance, CG (t/o & landing calculation) fuel load (flight time), tech log details (limitations/hours available), ac documentation.

ATC Airfield details, NOTAMS, Royal Flights, RT services, Nav aids, Airspace.

Exercise How the exercise is to be sequenced to be most efficient. Given the experience level of the student who is going to be starting the aircraft, transit to exercise area, any revision of previous lessons.

Duties Division of responsibilities for radio/lookout/monitoring of T&P's etc.

5.3.2 The applicant will be expected to carry out a demonstration of safe and practical pre-flight inspection of the helicopter assuming it is the first flight of the day, and must make the student aware of the servicing operations that he is entitled to carry out on the helicopter. The applicant will be expected to proceed with the checks at a practical pace and with reference to the approved checklist. Where visual checks are made these should be described to the student. Pre-flight checks of the radio and navigation equipment should include all the equipment which the applicant proposes to use during the flight.

5.3.3 The first part of the flight will concentrate on the ability of the applicant to teach (see definition in Para 4.1.7) the student the flight exercise as briefed in the classroom. On completion of this the applicant will be asked to teach elements of an additional exercise (with the presumption a ground brief had been conducted). The applicant will then be asked to teach or demonstrate any Mandatory Exercises as requested by Section 4 of the test profile.

5.3.4 The following will be assessed throughout the flight by the examiner;

- (a) Arrangement of demonstration
- (b) Synchronizing of speech/demonstration
- (c) Correction of Faults
- (d) Helicopter handling and flying accuracy
- (e) Instructional technique
- (f) General airmanship/safety/positioning and use of airspace

5.3.5 It is anticipated that for the applicant to be able to produce convincing demonstrations, the handling skills and flying accuracy should be of an above average standard. Therefore, as a minimum, the CPL Skill Test tolerances for height, speed and heading as detailed in JCAR-FCL 2 shall apply.

5.3.6 Whilst it is expected that the applicant should have a sound understanding of the content of the flight exercise, occasional and judicious reference to notes is permissible. However, it should be noted that this should not be to the detriment of the smooth flow or safety of the exercise.

5.4 Post Flight Debriefing

5.4.1 On completion of the flight exercise, upon return to the classroom the applicant is expected to debrief the 'student' on his performance in the flight exercise.

5.4.2 The Examiner will assess the following in the applicant's debrief of the student:

- (a) Visual Presentation and Content
- (b) Technical accuracy
- (c) Clarity of Explanation
- (d) Clarity of Speech
- (e) Instructional Technique
- (f) Use of Model and Aids
- (g) Student Participation

Part 6

Examiners Debrief, Post Test Administrative Procedures & Applicants Appeal Procedure

6.1 Examiners Debrief

6.1.1 On the conclusion of all the sections of the test the Examiner will conduct a debriefing on applicant's performance for the entire test. The Examiner may ask questions in order to clarify certain items or actions and the applicant will be informed of the test result.

6.1.2 A PASS will be awarded when all Sections of the test are passed.

6.1.3 A PARTIAL PASS will result if any one Section of the test is failed. If Section 1 is failed then only Section 1 is required to retest. If Section 2 is failed then only Section 2 is required to retest. However, if any one of the Sections 3, 4, 5, or 6 is failed then the failed Section and Section 2 will be required to be retested.

6.1.4 A FAIL will be awarded if Section 1 and any of the other sections are failed at the first attempt in a Series. A failure of any section of the second attempt will require the applicant to retake the entire test.

6.1.5 Should the result be a Partial Pass or Fail, the Examiner will explain the reasons for the failure and also give advice on any aspect of the test, which the applicant may find useful during any subsequent attempt.

6.1.6 Each time an applicant undertakes an Instructor Skill Test it is known as an 'Attempt'. 'Attempts' are grouped into 'Series'. There are two Attempts in each Series.

6.1.7 The failure to pass all appropriate sections in two attempts in any Series will conclude that Series. Before undertaking a further attempt in the next (second or subsequent) series the applicant will be required to:

(a) Complete the retraining prescribed by the Flight Examiner at the completion of the previous Series and indicated on the Skill Test Report Form.

(b) Present his personal flying logbook to the Flight Examiner, containing entries certified by the CFI or HT of the training organization giving training, indicating that the prescribed re-training has been completed and that the applicant is fit to retake the Instructor Skill Test.

6.1.8 Should the applicant fail to pass the second or subsequent Series the Examiner will indicate the retraining required and will seek advice from the CARC Flight Examiner.

6.1.9 A FREE RETEST (i.e. without a test fee) may be awarded if the applicant discontinues the flight and the reasons for doing so are agreed by the Examiner. The free retest will require only those sections or items not previously flown to be completed; these items must be completed before the result of the flight can be determined. If the applicant terminates the flight test for reasons considered inadequate by the Examiner, he may forfeit the test fee and a further fee will be required before the next test.

6.1.10 Notification of the result will be given on the Instructor. The Skill Test Report Form will show the result of each item and section. Should the result be a Partial Pass or Fail, the Examiner will explain the reasons for the failure and also give advice on any aspect of the test, which the applicant may find useful during any subsequent attempt. Following a successful skill test, applicants must also obtain the signature of the Examiner in the relevant section of the Instructor.

6.2 Applicant's Appeal Procedure

6.2.1 Should an applicant have cause for concern about the conduct of the flight test, then an appeal should be made in writing to CARC. In order to succeed with an appeal the applicant will have to satisfy CARC that the examination or test was not properly

conducted. Mere dissatisfaction with the result is not enough. The appeal procedure is in CEO order.

Any person who has failed any test or examination which he is required to pass before he is granted or may exercise the privileges of a personnel licence may within 14 days of being notified of his failure request that the Authority determine whether the test or examination was properly conducted.



Capt. Haitham Misto
Chief Commissioners

Appendix 1 Flight Instructor Skill Test(FI)

1.1 These notes are intended to give applicants a detailed account of the subjects that, at the discretion of the Examiner, may be required to be instructed in Section 1 (Theoretical Knowledge) of the Skill Test. It must be emphasized that the list is not exhaustive nor will it limit the Examiners ability to question the applicants on any subject matter that is relevant to the appropriate syllabus.

1.2 The subjects listed are considered to be fundamental to the PPL syllabus and it is anticipated that the applicants having met the CPL Knowledge pre-requisite requirement for the FI course, should already be familiar with the subject matter. However, the applicant will also be tested on the ability to impart the knowledge of the subject to the student. Whilst assistance from notes, 'board plans', aids and other readily available reference materials is permissible to assist, this should not distract from the overall flow and continuity of the lesson.

1.3 Applicants will normally be expected to answer two questions from each section and it is anticipated that each answer may normally take 10-15 minutes. Therefore, to ensure there is minimum time wasted on unnecessary explanations the applicant should, through 'question and answering' techniques, determine the level of 'student' subject knowledge and from that decide the depth of level of explanation and appropriate media required before he starts to answer the question.

1.4 The headings used relate directly to those shown in JCAR-FCL 2 and the Examiners Record a copy of which is shown at Appendix 4.

Section 1 - Theoretical Knowledge

(a) Air Law

- Define ICAO with examples of Articles and Annexes of the Convention.
- Demonstrate the ability to locate and explain relevant regulations particularly the, licensing/rating privileges and Rules of the Air.
- Demonstrate the ability to locate and explain relevant JCAR Regulations including Subparts A, B, C, F and H of JCAR- FCL 2.
- Explain the implications of the (Aviation, Alcohol and Drugs).

(b) Aircraft General Knowledge

- Explain the principle of operation and construction of the aircraft systems listed in JCAR-FCL2 AMC 2.125 for the relevant aircraft type including - Airframe/Rotors, Power plant, Avionics, Systems, and Instrumentation.
- Explain the reasons for the normal and emergency drills in the Flight Manual (FM) relating to the aircraft systems.
- Explain the principles of operation of piston, fixed and free turbine engines including compressor surge and stall.
- Explain the operation of rotor head systems including teetering, articulated, semi rigid and rigid.

- Explain the operation of tail rotor systems including, teetering, articulated, NOTAR(Helicopter Without Tail Rotor) and state the symptoms, effects and avoidance of LTE(Long Term Evaluation).
- State the Safety Bulletins, Air Directives and Regulations pertaining to the aircraft type.
- Explain the basic principles involved in Carburetor Icing and Carburetor Heating systems.

(c) Flight Performance and Planning

- Explain and demonstrate how to calculate factors affecting Helicopter and Engine Performance including:
 - Calculating mass and balance for the aircraft
 - How to interpolate the relevant performance graphs from the FM
 - The use of the Height Velocity Diagram/Cat A profiles from the FM
 - The relation between Density and Pressure Altitude using the relevant charts and mathematical calculations
 - The requirement and demonstrate how to calculate for Max Continuous and Max Take Off Powers (if applicable)
- Explain and define the altimeter considerations including:
 - Transition Altitude/Transitional Level/Flight Level
 - QNH/ Regional Pressure Settings/QFE/Standard Altimeter setting
 - Selection of Minimum Safe En-Route Altitude/Safety Altitude

(d) Human Performance

- Explain the principles and processes of Teaching and Learning set out in JCAR-FCL 2 AMC 2.340 (taught in Phase 1 of the Instructor Course)
- Explain the Basic Physiology effects to Human Performance as prescribed in JCAR-FCL 2 AMC 2.125, including -Concepts, Effects of Partial Pressure, Vision, Hearing, Motion Sickness and Flying Health
- Explain the Basic Psychology effects to Human Performance as prescribed in JCAR-FCL 2 AMC 2.125, including - Information Process, Central decision Channel, Stress and Judgement/Decision making
- Define and explain the importance and application of non-technical skills e.g. Airmanship, Crew Resource Management (CRM) and Threat and Error Management (TEM).

(e) Meteorology

Define and explain the following:

- Composition/Structure of the Atmosphere:
 - Explain the effects of changes in temperature and pressure on altimeter settings.
 - Define QNH, QFE, and Standard Altimeter setting.

- Define dew point and state the significance to aircrew.
- Atmosphere in Motion - Horizontal Component:
 - State the forces causing horizontal motion of the atmosphere (wind).
 - Define terms veer and back.
 - Define geostrophic/gradient winds.
 - State the effect of surface friction on wind.
 - State the difference between the surface wind over land and sea given the same pressure gradient.
 - Describe the normal diurnal variation of wind.
 - Explain the development of land/sea breezes, katabatic/anabatic, winds and funnel effect.
- Atmosphere in Motion – Vertical Component:
 - Explain Lapse rates using typical examples for the environmental, dry adiabatic and saturated rates.
 - Describe how the relationship between lapse rates determines vertical motion.
 - Explain and state the significance of stability and instability.
 - Explain and state the significance of mechanical/turbulence, convection, orographic lift and mass lift/subsidence.
 - Explain Fohne effect.
 - Explain mountain/lee/standing waves.
- Visibility:
 - Define prevailing visibility (as given in METARs), oblique visibility, and RVR.
 - List the main causes and favorable conditions for the formation of haze.
 - Define fog and explain how radiation, advection, smoke hill and frontal fogs are formed, dispersed, and likely diversions for aircraft.
- Clouds and Precipitation:
 - Describe the basic cloud types.
 - State the cloud types formed by the four lifting processes.
 - Describe the growth of cloud particles into precipitation.
 - List the basic cloud types that give precipitation.
 - State the significant features of the cloud types related to aircraft operations.
 - State the effects of the types of precipitation on aircraft operations.
- Icing:
 - List the types of icing, stating temperature range, type of cloud, adhesiveness, transparency and weight, characteristics.
 - List the symptoms, hazards and actions to be taken in the event of engine/airframe icing.
- Thunderstorms:
 - State the requirements for formation, stages of development and hazards to aviators of thunderstorms.
- Air Masses, Fronts and Pressure Systems:
 - Define the term 'air mass' and state the source region, track and associated weather on arrival for the main air masses affecting Jordan.

- Define the term 'front' and draw a cross section of a warm and cold front indicating slope, 0 degree level, cloud structure, wind changes and precipitation.
- Describe and identify on a met chart the signification features of the following weather systems - Anticyclone, Ridge, Col, Trough and Polar Low.
- Interpretation of Meteorological Information:
 - Decode METAR and TAF and extract information from relevant meteorological charts.

(f) Navigation

- Explain the use of aeronautical maps and charts in practical navigation.
- Demonstrate how to use a mechanical Navigational Computer .
- Explain the Principles of Navigation including:
 - Define IAS/CAS/TAS.
 - Define True and magnetic tracks and headings.
 - Define effect of wind on TAS/GS, and explain the triangle of velocities including drift, wind correction and ETA's.
 - Explain the principles of Mental Dead Reckoning (MDR) including drift lines and the 1:60 rule.
- Explain the basic principles and practical use of Radio Navigation including:
 - Ground DF and Radar
 - ADF
 - VOR/DME
 - GPS
 - SSR

(g) Operational Procedures

- Locate, interpret and demonstrate the use of flight planning data relating to aircraft operations in JORDAN airspace including AIPs, AICs (Aeronautical Information Circulars).... etc.
- Demonstrate the ability to locate and explain the following ICAO Annexes:
 - Annex 6, Part III Operations of Helicopters
 - Annex 12 Search and Rescue
 - Annex 13 Aircraft Accident Investigation
 - Annex 16 Environmental Protection - Noise Limitations
- Demonstrate how to complete an ATS Flight Plan.

(h) Principles of Flight

- With the aid of a Board Plan, including a Vector Diagram where appropriate, explain the following:
 - Basic Rotor Aerodynamics and Definitions including: shaft axis, plane/axis of rotation, tip path plane, Lift Formula, blade pitch, equalization of lift, induced airflow, relative airflow, rotor thrust and drag, flapping, coning, over pitching and over torquing.
 - Basic Vector Diagram depicting forces on the Rotor Blade.
 - Ground Effect.
 - Tail Rotor Drift and Roll.

- Recirculation.
- Translational Lift.
- Flap back.
- Inflow Roll.
- Dynamic/Static Rollover.
- Ground Resonance.
- Power Curve.
- Limits to High Speed Flight.
- Vertical Autorotation.
- Autorotation in Forward Flight.
- Vortex Ring.

(I) Training Administration

- Demonstrate the ability to locate and explain information from the following sources:
 - JCAR-FCL 2 including Subparts A, B, C, F and H.
 - Guidance for PPL Skill Test Candidates.
 - Helicopter Training Coms.
 - LASORS(licensing, administration, standardization, operating requirements and safety).
 - AIC(Aeronautical Information Circulars).
 - Student Administration including PPL(H) Licence Application Form.

Appendix 2

Instrument Rating Instructor Skill Test Theoretical Knowledge (IRI)

1.1 These notes are intended to give applicants a detailed account of the subjects that, at the discretion of the Examiner, may be required to be instructed in Section 1 (Theoretical Knowledge) of the IRI Skill Test. It must be emphasized that the list is not exhaustive nor will it limit the Examiners prerogative to question the candidate on any subject matter that is relevant to the appropriate syllabus.

1.2 The subjects listed are contained in AMC-FCL 2.395 of JCAR-FCL 2 are considered to be fundamental to the IR syllabi. It is anticipated that the candidate having met the theoretical knowledge pre-requisite requirement for the IRI course, should already be familiar with the subject matter. However, the candidate will also be tested on the ability to impart the knowledge of the subject to the student. Whilst assistance from notes, 'board plans', aids and other readily available reference materials is permissible to assist, this should not distract from the overall flow and continuity of the lesson.

1.3 Applicants will normally be expected to answer two questions from each section and it is anticipated that each answer may normally take 10-15 minutes. Therefore, to ensure there is minimum time wasted on unnecessary explanations, the applicant should, through 'question and answering' techniques, determine the level of 'student' subject knowledge and from that decide the depth of level of explanation and appropriate media required before he starts to answer the question.

1.4 The headings used relate directly to those shown in JCAR-FCL 2 and the Examiners Record a copy of which is shown at Appendix 4.

Section 1 - Theoretical Knowledge

(a) Air Law

- Define ICAO with examples of Articles and Annexes of the Convention in relation to VFR/IFR.
- Explain the privileges of the Instrument Rating both inside and outside of controlled airspace.
- Demonstrate the ability to locate and explain the relevant procedures in PANS-OPS (procedure and navigation system operations).
- Demonstrate the ability to locate and explain relevant regulations including licensing/rating privileges, Rules of the Air and the aircraft equipment required for IFR.
- Demonstrate the ability to locate and explain relevant JCAR regulations including Subparts A, E, and H of JCAR- FCL 2.
- Explain the implications of the (Aviation, Alcohol and Drugs).

(b) Aircraft General Knowledge

- Explain the principle of operation and construction of the aircraft systems listed in JCAR- FCL 2 AMC 2.125 for the relevant aircraft type including - Airframe/Rotor, Avionics and Power plant Systems and Instrumentation.
- Explain the principle of operation, use, and serviceability checks of the aircraft navigation systems.
- Explain the principles of operations, the errors, pre flight, in flight serviceability checks and the system failures in relation to the following:



- Airspeed Indicator
- Altimeter
- Vertical Speed Indicator
- Altitude Indicator
- Heading Indicator
- Turn and Slip Indicator
- Magnetic Compass
- Explain the reasons for, and describe, the normal and emergency drills in the Flight Manual (FM) relating to the aircraft systems.
- State the Safety Bulletins, Air Directives and Regulations pertaining to the aircraft type.
- Explain the basic principles involved in Engine Icing and Engine Intake Heating systems (as applicable).

(c) Flight Performance and Planning

- Explain and demonstrate how to calculate factors affecting Helicopter and Engine Performance including:
 - Calculating mass and balance for the aircraft.
 - How to interoperate the relevant performance graphs from the FM.
 - The use of the Height Velocity Diagram/Cat A profiles from the FM.
 - The relation between Density and Pressure Altitude using the relevant charts and mathematical calculations.
 - The requirement and demonstrate how to calculate for Max Continuous and Max Take Off Powers (if applicable).
- Explain and define the altimeter considerations including:
 - Transition Altitude/Transitional Level/Flight Level
 - QNH/Regional Pressure Settings/QFE/Standard Altimeter setting
 - Selection of Minimum Safe En-Route Altitude/Safety Altitude
 - Altimeter setting procedures pre-flight/ take off/en-route/approach and landing/missed approach.

(d) Human Performance

- Explain the principles and processes of Teaching and Learning set out in JCAR FCL 2 AMC 2.395 (Phase 1 of the IRI Course)
- Explain the Basic Physiology/Psychology effects to Human Performance of the following:
 - The Senses
 - Spatial Disorientation
 - Sensory Illusions
 - Stress
- Define and explain the importance and application of non-technical skills e.g. Airmanship, Crew Resource Management (CRM) and Threat and Error Management (TEM).

(e) Meteorology

- Explain how to obtain meteorological information including:
 - Services Available
 - Met Briefings
 - Actual Weather Reports TAFs (Terminal Airport Forecast), METARs (Meteorological Actual Report), SIGMET (Significant Metrology Report), ATIS (automatic terminology information system).
 - Route Forecasts

- Explain the operational significance of meteorological conditions including:
 - Icing
 - Turbulence
 - Visibility
 - Wind
 - Cloud and Precipitation
 - Air Masses, Fronts and Pressure Systems.

(f) Navigation

- Explain the basic principles, the ground/helicopter equipment and use of radio navigational aids including:
 - VOR
 - NDB
 - VHF/ DF
 - DME
 - Primary/Secondary Radar
 - Marker Beacons
 - Transponders
 - GPS
 - En-Route Radar Services
- Explain the use, preparation, planning and amendment of charts including:
 - Aeronautical Maps
 - En Route Charts
 - Departure and Arrival Charts (SIDs and STARs)
 - Instrument Approach and Landing Charts
- Explain classification of airspace, airspace restrictions and hazards
- Demonstrate compilation of flight plans
- Explain how to prepare a PLOG (Pilot Log Card)
- Explain use of radio/radar in Air Traffic Services, including types of service and radio failure
- Demonstrate how to calculate and use:
 - Transition Altitude/Level, Flight Levels
 - Minimum Safe En Route Altitude
 - Minimum Sector Altitude
- Explain aerodrome holding and approach to land procedures including:
 - Minimum Sector Altitudes
 - Determination of minimum Safe Decent Height/Altitudes
 - Precision Approaches/Non Precision Approaches
 - Radar Approach Procedure
 - Missed Approach Procedure
 - Visual Manoeuvring/Circling after an Instrument Approach

(g) Operational Procedures

- Explain the basic radial scan technique and how to interpret the flight instruments information.
- Locate, interpret and demonstrate the use of flight planning data relating to IFR aircraft operations in JORDAN Airspace including AIP, NOTAMS, AIC.
- Explain the form of holding patterns, sector joins and methods changing from hold to approach procedure (PANS- OPS).
- Explain the technique for ADF/RMI, VOR/HSI, and OBS tracking including wind effect.

- Explain the basic principles and use of aerodrome arrival and departure procedures including precision and non-precision approaches including the missed approach procedures.
- Explain how to carry out an ILS/NDB/VOR approach.
- Explain the use of instrument arrival plates.
- Demonstrate how to complete an IFR flight plan.

(h) Principles of Flight

- Where appropriate explain basic Rotor Aerodynamics and Definitions including: shaft axis, plane/axis of rotation, tip path plane, Lift Formula, blade pitch, equalization of lift, induced airflow, relative airflow, rotor thrust and drag, flapping, coning, over pitching and over torquing.
- Where appropriate describe the operational significance of:
 - Power Curve
 - Limits to High Speed Flight
 - Autorotation in Forward Flight
 - Vortex Ring

(I) Training Administration

- Demonstrate the ability to locate and explain information from the following sources:
 - JCAR-FCL 2 including Subparts A, F, H and I
 - Helicopter Training Coms
 - LASORS(licensing, administration, standardization, operating requirements and safety)
 - AICs
 - PANS-OPS (ICAO DOC 8168 Vol. I and II).

Appendix 3

Type Rating Instructor Skill Test

- 1.1 These notes are intended to give applicants a detailed account of the subjects that, at the discretion of the Examiner.
- 1.2 (Theoretical Knowledge) of the Skill Test. It must be emphasized that the list is not exhaustive nor will it limit the Examiners prerogative to question the applicant on any subject matter that is relevant to the appropriate syllabus.
- 1.3 The subjects listed are considered to be fundamental to the Type Rating syllabus and it is anticipated that the applicant having met the CPL Knowledge pre-requisite requirement for the TRI course should be already familiar with the subject matter. However, the candidate will also be tested on the ability to impart the knowledge of the subject to the student. Whilst assistance from notes, 'board plans', aids and other readily available reference materials is permissible to assist, this should not distract from the overall flow and continuity of the lesson.
- 1.4 Applicants will normally be expected to answer two questions from each section and it is anticipated that each answer may normally take 10-15 minutes. Therefore, to ensure there is minimum time wasted on unnecessary explanations the applicant should, through 'question and answering' techniques, determine the level of 'student' subject knowledge and from that decide the depth of level of explanation and appropriate media required before he starts to answer the question.
- 1.5 The headings used relate directly to those shown in JCAR FCL-2 and the Examiners Record a copy of which is shown at Appendix 4.

Section 1 - Theoretical Knowledge

(a) Air Law

- Demonstrate the ability to locate and explain relevant regulations of including, licensing/rating privileges and Rules of the Air.
- Demonstrate the ability to locate and explain relevant CARC Regulations including Subparts A, F and H of JCAR-FCL 2.
- Explain the implications of the (Aviation, Alcohol and Drugs).

(b) Aircraft General Knowledge

- Explain the principle of operation and construction of the aircraft systems listed in JCAR-FCL 2 AMC 2.125 for the relevant aircraft types including - Airframe/Rotors, Power plant, Avionics Systems, and Instruments.
- Explain the reasons for the normal and emergency drills in the Flight M relating to the aircraft systems.
- State the Safety Bulletins, Air Directives and Regulations pertaining to the aircraft type.
- Explain the basic principles involved in Carburetor Icing/Carburetor Heating or Engine Icing/ Engine Intake Icing systems as applicable.

(c) Flight Performance and Planning

- Explain and demonstrate how to calculate Mass and Balance for the aircraft.
- Explain how to interoperate the relevant Performance Graphs from the FM.
- Explain and demonstrate the use of the Height Velocity Diagram/Cat A/B profiles from the FM.



- Explain and demonstrate the relation between Density and Pressure Altitude using the relevant charts and mathematical calculations.
- Explain the requirement and demonstrate how to calculate Max Continuous and Max Take Off Powers.

(d) Human Performance

- Explain the principles and processes of Teaching and Learning set out in JCAR-FCL 2 AMC 2.365 (Phase 1 of the TRI Course).
- Explain the Basic Physiology effects to Human Performance as prescribed in JCAR-FCL 2 AMC 2.125, including - Concepts, Effects of Partial Pressure, Vision, Hearing, Motion Sickness and Flying Health.
- Explain the Basic Psychology effects to Human Performance as prescribed in JCAR-FCL 2 AMC 2.125, including - Information Process, Central decision Channel, Stress and Judgement/Decision making.
- Define and explain the importance and application of non-technical skills e.g. Airmanship, Crew Resource Management (CRM) and Threat and Error Management (TEM).

(e) Meteorology

- Where appropriate and relevant to the operation of the type be prepared to explain the following:
 - Composition/Structure of the Atmosphere
 - Atmosphere in Motion – Horizontal/Vertical Component
 - Visibility
 - Clouds and Precipitation
 - Icing
 - Air Masses, Fronts and Pressure Systems
 - Interpretation of Meteorological Information

(f) Navigation

- Explain the principles of operation and use of the navigational equipment fitted to the aircraft.

(g) Operational Procedures

- Where appropriate to the operation of the type, demonstrate where to locate, interpret and how to use of flight planning data relating to aircraft operations in JORDAN airspace including AIPs, AICs etc

(h) Principles of Flight

- Where appropriate and relevant to the operation of the type be prepared to explain the following:
 - Basic Rotor Aerodynamics and Definitions including: shaft axis, plane/axis of rotation, tip path plane, Lift Formula, blade pitch, equalization of lift, induced airflow, relative airflow, rotor thrust and drag, flapping, coning, over pitching and over torquing
 - Basic Vector Diagram depicting forces on the rotor blade
 - Ground Effect
 - Tail Rotor Drift and Roll
 - Recirculation
 - Translational Lift
 - Flap back

- Inflow Roll
- Dynamic/Static rollover
- Ground Resonance
- Power Curve
- Limits to High Speed Flight
- Vertical Autorotation
- Autorotation in Forward Flight
- Vortex Ring

(i) Training Administration

- Demonstrate the ability to locate and explain information from the following sources;
 - JCAR FCL 2 including Subparts A, F and H
 - FCL Standards Documents
 - Helicopter Training Coms
 - LASORS(licensing, administration, standardization, operating requirements and safety)
 - AICs(Aeronautical Information Circulars).



APPENDIX 4 (CARC form 28 - 4H25)**Instructor (H) Assessment of Competence****FI(H) -TRI(H)- IRI(H) Skill test prof. check – revalidation / renewal****Guidance****a) Initial FI(R) Skill Test**

- Primary air exercise: lesson from PPL syllabus.
- Secondary air exercises: Mandatory items Section 4 (see Note i) and Basic IF.
- Ground: Pre-flight brief, prepared lecture, Theoretical Knowledge questions on SE operation and instruction.

b) FI(R) & FI Revalidation/Renewal (SE privileges only)

- Primary air exercise: lesson from PPL syllabus.
- Secondary air exercises: Mandatory items Section 4 (see Notes i & ii).
- If "no applied IF" restriction has been removed include items from Section 6b), c) and/or d).
- Ground: as schedule a) above.

c) Removal of "No IF" restriction

- Primary air exercise: lesson from IF syllabus.
- Ground: Theoretical Knowledge questions on basic and applied IF and instruction.

d) FIC Initial Authorisation (see Note ii) (Roles: Applicant as FIC instructor, FIE as student FI)

- Primary air exercise: lesson from PPL syllabus.
- Secondary air exercises: items from Section 4 (see Notes i & ii), Section 5 and Section 6 as appropriate, to include FI fault analysis by the applicant on an exercise given by the FIE.
- Ground: Pre-flight brief, prepared lecture, Theoretical Knowledge questions on SE operation and instruction.

e) FIC Re-authorisation

- As Schedule d) above.

f) TRI Initial Skill Test Revalidation/Renewal

- Primary air exercise: lesson from type rating syllabus.
- Secondary air exercises: Mandatory items from Section 4 and ME TRI items from Section 5 as applicable (see Note i).
- Ground: Prepared lecture, pre-flight brief and Theoretical Knowledge questions on SE/ME operation and instruction as appropriate.

g) Addition of instructor privileges

- Primary air exercise: lesson from ME/SE Type Rating syllabus as appropriate.
- Secondary air exercises: items of handling techniques.
- Ground Theoretical Knowledge questions on ME/SE operation and instruction.

h) IRI

- Primary air exercise: lesson from IR syllabus.
- Secondary air exercises: items from Section 6 and Section 5 to include limited panel IF and IF approaches if not covered by primary air exercise.
- Ground: Prepared lecture, pre-flight brief and Theoretical Knowledge questions on applied IF and instruction.

Note i. Mandatory exercises are nominated by Staff FE(H)

Note ii. An applicant may elect to have the "no applied IF" restriction removed during the course of any FI revalidation/renewal, provided that the training requirements have been met and certified by an appropriately qualified FIC. The Schedule shall be an appropriate combination of Schedules b) & d) or c) & d) above.

