Australian Government

Civil Aviation Safety Authority

DAY (VFR) SYLLABUS - AEROPLANES

Issue 4.2 – 01 January 2010

Day VFR Syllabus (Aeroplanes)

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Civil Aviation Safety Authority

DAY VFR SYLLABUS – AEROPLANES

STUDENT, PRIVATE AND COMMERCIAL PILOT LICENCES

DAY VFR OPERATIONS BELOW 10,000 FEET AMSL

Issue 4.2 : 01 January 2010

This issue contains changes related to Changes to the Knowledge Deficiency Report (KDR) assessment requirements that allow flight-training organisations to conduct this assessment.

In Section 2-Flying Training, three new units of competency have been added to meet International Civil Aviation Authority (ICAO) recommendations regarding English language, single pilot human factors and threat and error management (TEM) requirements. Also in this section are flight standards that have been reformatted and Achievement Record amendments to reflect the changed standards.

Revision History

Issue	Date	Section(s)	Details of Change
Issue 4.2	January 2010	Section 3 (9.1.2)	Spelling correction “troposphere”.
Issue 4.1	October 2008	Sections 1, 2 and 3	Minor updates and corrections.
Issue 4	March 2008	Section 1	Change to KDR requirements.
		Section 2	Addition of three units of competency and competency standards reformatted. Achievement Records amended to reflect changes to competency standards.
		Section 3	Explanatory text about competency standards and Airmanship/Human Factors added. Addition of TEM aeronautical knowledge requirement.
Issue 3.2	May 2007	Section 2.2 Ground Training Block 2	Changed to indicate requirement of flight crew medical certificate issued by CASA. Sections 3.6.2 and 3.6.4, CTAF(R) inserted.
Issue 3.1	April 2004	Section 3	Sub-paragraphs 11.3.2 (Alcohol) and 11.3.3 (Drugs) changed by adding new text and deleting the previous sub-sub-section 11.3.2 (b).
Issue 3	February 2004	All	Complete manual reformatted with minor changes throughout.
Issue 2.2.2	April 2002	Section 1 Subsection 2	Includes changes related to CyberExams CPLA examinations.
		Section 3	References to CASA documents deleted.
		Various	Minor changes to include VEC changed to ERC, MTAF to MBZ etc
Issue 2.2 1	February 2001		Added performance criteria to previous content, amendments and corrections to standards
Issue 2	July 1999	All	Issue 1 changed to competency standards. Assessment guides, flight test forms included
Issue 1	January 1993	All	Document developed from information in CAOs.

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SUBSECTION 1 – INTRODUCTION

1.1. The Day VFR Syllabus

The Day VFR Syllabus specifies the progressive flying and aeronautical knowledge training requirements relevant to the Student Pilot Licence (SPL), the Private Pilot (Aeroplane) Licence (PPLA), and the Commercial Pilot (Aeroplane) Licence (CPLA) for aeroplanes. The regulations that specify the requirements for the issue of these pilot licences are contained in Part 5 of the Civil Aviation Regulations (CARs). This Syllabus of training is authorised by CAR 5.59. Items in this syllabus are limited to those required for operating single piston engine aeroplanes under the Visual Flight rules (VFR), by Day up to 10,000 feet altitude.

The Day VFR Syllabus is divided into three sections:

1 Overview (this section).

2 Flying Training.

3 Aeronautical Knowledge.

1.2. The Flying Training Syllabus

The Flying Training Syllabus (Section 2) specifies the flying sequences required to complete each phase of flying training. It also specifies the standards that pilots must achieve in each sequence in competency-based terms. Competency standards are designed to make clear to students, instructors and testing officers, exactly how the standard for each flying sequence is to be assessed.

1.3. Flying Training

Training for any of the qualifications in this syllabus must be undertaken at a CASA authorised flying training school. However experience gained in ultralight aeroplanes or other types of aircraft may be credited towards the aeronautical experience requirements for the issue of a licence. The experience that may be credited is detailed in CAR Part 5.

1.4. Integration of Flying and Ground Training

Flying training organisations and student pilots must comply with the requirements in Section 1 Subsection 2 of this section of the syllabus, to ensure that flying and ground training are integrated in such a way that pilots have the aeronautical knowledge necessary for the particular phase of flying training being undertaken.

1.5. Flight Tests

Flight tests are required for the General Flying Progress Test (GFPT), PPLA and CPLA qualifications. Flight test forms that detail the items to be tested are contained in Section 2 Subsection 4. Before attempting the flight test candidates must meet requirements specified in CARs. These include:

- Complete the appropriate requirements of the flying training syllabus
- Possess at least the minimum aeronautical experience
- Pass the written examination(s)
- Hold a flight crew medical certificate
- Qualify for the Flight Radio Telephone Operator Licence (FROL) (except GFPT)
- Be recommended by the Chief Flying Instructor of a flying training school.

Flight tests are conducted by Authorised Testing officers (ATOs) or by CASA Flying Operations Inspectors (FOIs).

1.6. Aeronautical Experience

The aeronautical experience (flight time) required for the GFPT, PPLA and CPLA is specified in CAR Part 5 and summarised in this Section Subsection 2. This aeronautical experience should be viewed only as the minimum requirement for the qualification. Experience has shown that factors such as ability and continuity of training lead to marked differences in the flight time needed for individuals to reach the standard required. In particular, at the General Flying Progress Test and PPLA Flight Test levels, accumulation of only the minimum experience will not necessarily guarantee achievement of the required standard. In the majority of cases candidates will require hours in excess of the minimums.

1.7. The Aeronautical Knowledge Syllabus

The Aeronautical knowledge Syllabus (Section 3) specifies the knowledge required for each of the flying qualifications. It is recommended that students undertake a course of ground training with a reputable ground training organisation to ensure that they have adequate knowledge to safely conduct flying operations. CASA sets the written examinations for PPLA and CPLA, based on the syllabus, to check that a candidate has the required knowledge. Knowledge deficiencies identified in written examinations are retested orally as part of the flight test. The knowledge deficiency report (KDR) assessment may be completed by a flight-training organisation, and certified by the Chief Flying Instructor (CFI) prior to the flight test. Alternatively, an Approved Testing Officer (ATO) may assess the KDR during the flight test. The examinations required at each stage of training are summarised in this section Subsection 2.

SUBSECTION 2 – TRAINING ADMINISTRATION

2.1. Documentation

2.1.1. Flying training records

Flying training schools are required to maintain a flying training record for each student, which records the following items:

- each training flight, including aeroplane type and registration, the instructor, the training
- sequences covered and the duration of the flight
- a progressive total of aeronautical experience
- a summary of the students progress for each flight
- a record of examination results.

The flying training records shall be retained by the flying training school but shall be forwarded to another training school on request from the student.

2.1.2. Record of achievement

It is the responsibility of each student pilot and the flying school to maintain a Record of Achievement using the forms at Section 2 Subsection 2. Each phase of training has a separate achievement record that lists the sequences that must be completed for that phase. The completed record should be checked by the Chief Flying Instructor prior to issuing a recommendation for any flight test to ensure that the student has achieved the required standard in all items of the syllabus. A recommendation for a flight test must not be issued unless the instructor concerned has certified each item as satisfactory. A copy of this completed record should be attached to the flight test form following successful completion of the flight test.

2.1.3. Log book

The student must also maintain a logbook that records the following items for each flight:

- date of the flight
- aircraft type and registration
- and pilot in command
- flight time
- The route or training sequences covered in the flight
- The progressive total of aeronautical experience.

Full requirements for logging of flight time are found in CAO 40.1.0. Flying schools should ensure that the flight times recorded in the log book are in accordance with those recorded in the flying training records maintained by the school and should certify the student's log book to this effect at monthly intervals.

2.1.4. Theory examination pass results

When a candidate achieves a pass in a theory examination the result is to be entered in the candidate's logbook either by the conducting officer who supervised the examination or by the Chief Flying Instructor of the organisation where the candidate is undertaking flying training. Where a Chief Flying Instructor who is not also a conducting officer makes the entry, he/she must only do so after sighting documentary evidence of the pass result.

2.1.5. Flight test forms

The flight test forms for GFPT, PPLA and CPLA are found at Section 2 Subsection 4 of this syllabus. Flight tests must be conducted according to the requirements of the forms. Students should familiarise themselves with the flight test forms before undertaking any flight test.

A form must be completed for every flight test regardless of whether the candidate passes or fails the test. All items to be tested in a given flight test are listed on the form so that both the candidate and the testing officer are aware of the sequences to be covered. The testing officer must forward the completed form (including any failed flight test forms) to the local CASA district office within 14 days of the flight test, for licence issue.

2.2. Student Pilot Licence

Student pilots may undertake dual flying training without holding a student pilot licence. However, a student pilot licence and a flight crew medical certificate, issued by CASA, is required before a student pilot may undertake a solo flight or act as pilot in command

Student pilots may only pilot aircraft as authorised by, and under direct supervision of, a flying training school. Student pilots should be familiar with CAR Part 5 which specifies the recent experience required by a student pilot and limits the number of consecutive hours that a student pilot may fly as pilot in command. It also details other limitations on flights by student pilots.

2.3. First Solo

Prior to undertaking the first solo flight a student pilot must meet the following training requirements:

- hold a student pilot licence and flight crew medical certificate
- pass an oral or written examination set by the flying school
- been assessed as having achieved the required standard in all sequences listed in Section 2 Subsection 2 for the First solo phase of training
- been assessed by a Grade 1 or Grade 2 instructor as being competent for the first solo flight.

When the first solo flight is completed, the instructor should certify the pilot competent to fly that type by making an entry in the body of the student pilot's log book.

2.4. First Area Solo

Prior to undertaking the first area solo flight a student must meet the following training requirements:

- have completed first solo and 2 hours PIC in the circuit
- pass a written examination set by the flying school
- been assessed as having achieved the required standard in all sequences listed in Section 2 Subsection 2 for the First area solo phase of training
- been assessed by a Grade 1 or Grade 2 instructor as being competent for the first area solo flight.

2.5. General Flying Progress Test

Prior to undertaking the GFPT a student must meet the following training requirements and possess the following minimum aeronautical experience (see CAR Part 5 for details of flight time which may be credited):

- 20 hours total flight time which includes
- 5 hours PIC
- 2 hours IF
- pass the Basic Aeronautical Knowledge (BAK) written examination set by the flying school (this examination is not an examination set by CASA)
- been assessed as having achieved the required standard in all sequences listed in Section 2 for the GFPT phase
- recommended by the Chief Flying Instructor for the GFPT flight test.

A pass in the GFPT flight test must be entered in the pilot's logbook.

2.6. Private Pilot (Aeroplane) Licence

Prior to undertaking the PPLA flight test a student must meet the following training requirements and possess the following minimum aeronautical experience (see CAR Part 5 for details of flight time which may be credited):

- 40 hours total flight time which includes
- 5 hours general flight time as PIC
- 5 hours cross country flight time as PIC
- 2 hours IF
- pass the PPLA written examination set by CASA
- hold or be qualified to hold a Flight Radio Telephone Operator Certificate (FROL)
- been assessed as having achieved the required standard in all sequences listed in Section 2 Subsection 2 for the PPLA phase
- be recommended by the Chief Flying Instructor for the PPLA flight test.

2.7. Basic Aeronautical Knowledge Examination

A candidate must hold a pass in the Basic Aeronautical Knowledge (BAK) examination before he/she will be permitted to undertake either the CASA PPLA Theory Examination or the CASA CPLA Theory Examination.

2.8. The Approved CPLA Training Course (150 hours)

2.8.1. The Approved CPLA Training Course is intended to be an integrated course of both theory and practical aviation training. To ensure a suitable level of integration, and in addition to the examination requirements for pre-solo and pre-area solo, the following conditions apply.

2.8.2. (a) A student pilot must have accumulated at least 5 hours dual flying training before he/she may be credited with a pass in the BAK examination.

(b) A student pilot must have commenced cross-country training and passed the BAK examination before he/she may be credited with a pass in CASA PPLA theory examination (where applicable).

(c) A student pilot must have accumulated at least 5 hours PIC cross country flight time before he/she may be credited with a pass in the CASA CPLA written examination. Additionally he/she must have passed the BAK examination before attempting the CPLA written examination.

(d) Alternatively, the CPLA subject examination may be attempted after the following phases of training have been achieved:

(i) after passing the General Flying Progress Test (GFPT), or achieving the competencies for the GFPT (as specified in the GFPT Achievement Record):

- Aerodynamics
- Human Factors
- Aircraft General Knowledge (AGK)
- Meteorology

(ii) after accumulating 5 hours pilot in command cross country time, or achieving the competencies of the PPL (as specified in the PPL Achievement Record)

- Navigation
- Aircraft Operation, Performance and Flight Planning
- Flight Rules and Air Law.

(e) To be credited with a pass in any of the examinations as specified in (c) and (d), the examination sitting must take place after the pre-requisites have been fulfilled. If a student attempts and passes an examination before meeting the pre-requisites, then that pass cannot be credited towards the approved course and the student will have to apply to CASA to resit and pass the exam again.

2.8.3. The Chief Flying Instructor is responsible for ensuring that, as a part of the student monitoring process incorporated within the school's Approved CPLA Training Course, a student complies with the conditions relating to the sitting of examinations as outlined in the previous paragraph.

2.8.4. Students undertaking an Approved CPLA course are not required to be issued with a PPLA and may undertake all training required for the issue of the CPLA while holding an SPL.

2.8.5. While the basic syllabus of training is aimed at Day VFR qualification, candidates may undertake training toward additional qualifications within the 150-hour course of training. For example, training toward the following qualifications may be undertaken:

(a) multi-engine endorsement

(b) design feature endorsement

(i) retractable under-carriage

(ii) tail wheel

(iii) pressurisation

(iv) floatplane

(v) ski landing

(c) spinning approval

(d) aerobatic approval

(e) formation approval

(f) command instrument rating

(g) night VFR rating

(h) glider towing approval

(i) low level approval

(j) stock mustering approval

(k) agricultural rating

(l) night agricultural rating.

2.8.6. Training toward any of these additional qualifications may only be undertaken with an organisation having an appropriate approval. Further, all theory and practical experience requirements for the given qualification as outlined in CARs/CAOs must be met. Note that, regardless of additional training and flight tests completed, some qualifications—eg, command instrument rating—cannot be issued until the candidate holds either a PPLA or a CPLA.

2.8.7. Where a candidate interrupts training or changes training organisations, the following conditions will apply:

(a) The candidate is to obtain from the Chief Flying Instructor a letter of certification confirming enrolment on an Approved CPLA Training Course. The letter must also contain a breakdown of aeronautical experience while on the course.

(b) When re-enrolling for approved training the candidate must supply the letter of certification to the Chief Flying Instructor where training will recommence. Only the aeronautical experience, as contained in the letter, may be credited towards continuation of an approved course of training.

(c) A copy of the student's flying training record is to be supplied to a student where he/she interrupts training or changes organisations. The copy is to be provided to the next Chief Flying Instructor when training re-commences.

2.8.8. Only hours accumulated while undergoing supervised training with a school whose curriculum includes an Approved CPLA Training Course may be credited towards the 150-hour aeronautical experience requirement for licence issue.

2.8.9. An organisation wishing to offer an Approved CPLA Training Course may only do so if the organisation holds a commercial school classification and satisfies the following conditions:

(a) the syllabus of training used must, as a minimum, address all items listed in sections 2 and 3 of the Day VFR syllabus

(b) the organisation shall use a student progress and record system which ensures that all aeronautical knowledge and experience requirements of the syllabus are satisfied

(c) the Chief Flying Instructor shall take appropriate steps to incorporate in the company operations manual:

(i) reference to the syllabus as the standard to be used for training

(ii) the requirement for staff to use the student progress recording system.

Note: A syllabus that includes items additional to those in the Day VFR syllabus is an acceptable syllabus for the purpose of paragraph (a).

2.8.10. Prior to undertaking the CPLA flight test under the approved training syllabus a pilot must meet the following training requirements and possess the following minimum aeronautical experience (see CAR Part 5 for details of flight time which may be credited):

- 150 hours total flight time flown during the approved training course which includes
- 70 hours flight time as PIC
- 20 hours cross country flight time as PIC
- 10 hours IF
- Pass the CPLA written examination set by CASA
- hold or be qualified to hold a Flight Radio Telephone Operator Certificate (FROL)
- been assessed as having achieved the required standard in all sequences listed in Section 2 for the CPLA phase
- be recommended by the Chief Flying Instructor for the CPLA flight test.

2.9. The 200-hour CPLA Qualification.

2.9.1. Where a candidate has gained aeronautical experience by means other than as a student on an Approved CPLA Training Course, the minimum hours requirement for licence qualification is 200.

2.9.2. Prior to undertaking a CPLA flight test, a 200-hour candidate must undertake an assessment flight with a Grade One flight instructor. As a result, the instructor is to recommend as appropriate, that the candidate either is ready to undertake the CPLA flight test, or should undertake, in accordance with the relevant parts of the Day VFR Syllabus, a tailored course of training designed to prepare the candidate for the flight test.

2.9.3. Where a tailored course is recommended, the Chief Flying Instructor is to provide in writing a detailed training programme consistent with the sequences listed in the Day VFR Syllabus, as recommended by the assessment flight instructor. Depending on student progress, the programme may be subsequently increased or decreased in length at the discretion of the Chief Flying Instructor, who should annotate the original recommendation accordingly.

2.9.4. Prior to undertaking the CPLA flight test other than under the approved training syllabus, a pilot must meet the following aeronautical experience and training requirements and possess the following minimum aeronautical experience (see CAR Part 5 for details of flight time which may be credited):

- 200 hours total flight time (holders of a helicopter licence see CAR Part 5)
- 100 hours flight time as PIC
- 100 hours flight time in a registered or recognised aeroplane
- 20 hours cross country flight time as PIC in a registered or recognised aeroplane
- 10 hours IF in a registered or recognised aeroplane
- pass the CPLA written examination set by CASA
- hold or be qualified to hold a Flight Radio Telephone Operator Certificate (FROL)
- been assessed as having achieved the required standard in all sequences listed in Section 2 for the CPLA phase
- be recommended by the Chief Flying Instructor for the CPLA flight test.

2.10. Flight Tests

2.10.1. Prior to administering a pilot licence flight test, a flight test officer must ensure that the candidate has satisfied all of the prerequisites as outlined in CARs/CAOs.

The following documentation should be supplied to the testing officer prior to the flight test to enable the flight test officer to verify that all requirements have been complied with:

- Completed flight test /licence application
- Completed student achievement record
- Written examination knowledge deficiency report
- Student's flying training records
- Student's logbook.

2.10.2. Where the candidate has completed an Approved CPLA Training Course, the testing officer must ensure that, in addition to statutory requirements being met, the 150 hours of experience credited toward the licence has been accumulated by the candidate as supervised training at a school whose curriculum includes an Approved CPLA Training Course. This requirement is to be confirmed by reference to the candidate's training records.

SUBSECTION 3 – FLYING TRAINING

3.11. The flying syllabus is at Section 2 of this document. It has been structured so as to:

(a) divide training into five phases in order to align training requirements with privileges appropriate to a particular level of experience

(b) list mandatory flight sequences for each phase

(c) specify the skill standard to be attained for each flight sequence.

3.12. The syllabus assumes that, in general, SPL and PPLA training will be conducted in basic training aeroplanes (i.e. single engine, fixed pitched propeller and tricycle undercarriage). During the CPLA phase, training in aeroplanes fitted with a constant speed propeller should be introduced.

SUBSECTION 4 – AERONAUTICAL KNOWLEDGE

4.13. The aeronautical knowledge syllabus is at Section 3 of this document. It has been structured so as to:

(a) integrate theoretical knowledge and flight training by identifying the knowledge areas appropriate to each phase of training; and

(b) specify the knowledge standard required for each syllabus objective.

4.14. It is recommended that a student pilot undertake a structured course of study provided by a reputable training provider, which includes all the items specified in the Aeronautical Knowledge Syllabus. Acceptable means of training include:

(a) a structured home-study package

(b) a correspondence study package

(c) ground training at an institution which offers the appropriate course; or

(d) ground training at a flying training school which offers both flight and theory training to the level required.

4.15. As a guide, the following would be the number of hours of ground instruction that could be expected to be required to properly address all the items of the syllabus for each of the CASA examinations. These times are based on face-to-face classroom instruction and do not include the considerable amount of private study which a candidate would be expected to have to undertake away from class.

- PPLA 40 hours
- CPLA 200 hours.

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SECTION 2 – FLYING TRAINING

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SUBSECTION 1 – INTRODUCTION

1.1. Syllabus Structure

The Day VFR Flying Training Syllabus is divided into four sub sections**:**

- **Introduction** (This subsection)

  Provides an overview of the concept of competency and its application to flying training. Outlines the general structure and requirements of the flying training syllabus.

- Achievement Record

  Details the Units and elements of competency required at each phase of training and the achievement standard for each element. It includes the student's record of achievement.

- Flight Test Forms

  Specify the elements that must be tested and are used to record the results of the flight test. See pages 2-47 and 2-48.

1.2. Flying Training Phases

The Flying Training Syllabus is divided into five phases. They are:

- Pre-solo
- Pre-area solo
- GFPT (General Flying Progress Test)
- PPLA (Private Pilot Licence Aeroplanes)
- CPLA (Commercial Pilot Licence Aeroplanes)

Flight tests are conducted for:

- GFPT
- PPLA
- CPLA.

The units and element of competency that are required to be completed in each phase are specified in Subsection 2. This subsection constitutes the record of achievement for each phase of training.

1.3. Competency

Competency itself is defined as the combination of knowledge, skills and behaviour required to perform a task to the standard required by industry. The competency standards specify all those skills that must be demonstrated by pilots in order to obtain a PPLA or a CPLA.

1.4. Units and Elements of Competency

The Unit of competency is a discrete job or function that is written as a measurable outcome eg Navigate Aircraft.

An Element of Competency describes what must actually be done eg Prepare chart and flight plan.

The Performance Criteria is an evaluative statement that specifies what is to be assessed and the required level of performance eg Selects and prepares appropriate visual navigation charts suitable for the intended flight.

Units specify all the competencies required for private and commercial pilots to fly a helicopter under the VFR by day.

1.5. Changes to the Units of Competency

Two major changes have been made to the units of competency in the Day VFR Syllabus (Aeroplanes). The first change is the addition of three units of competency recommended by the International Civil Aviation Organisation (ICAO). Those standards are:

- Unit C1 English Communication in the Aviation Environment
- Unit C6 Manage Flight
- Unit C7 Threat and Error Management.

The second change is to the style of CASA competency standards. The standards have been reformatted and are comprised of:

- Units
- Elements
- Performance Criteria
- Range of Variables (ROV)
- Underpinning Knowledge.

Units and elements are the same as described in paragraph 1.4. However, the performance criteria are the markers that are used to assess a person's performance. In previous Day VFR Syllabus (Aeroplanes) the performance criteria were contained in the Assessment Guides. The standards in this version, although briefer than the Assessment Guides, do reflect much the same information, but any techniques have been removed. The performance criteria are the primary means of assessment and specify the level of performance that must be achieved. The Range of Variables (ROV) add definition to the performance criteria by elaborating critical or significant aspects of the unit of competency and detail conditions and contexts that should be applied during assessment. The Underpinning Knowledge is knowledge specific to a unit that may not be covered by a CASA licence or rating examination.

A Generic Range of Variables table appears before the common and category units of competency. This Generic ROVs should be applied to every unit of competency and was designed to avoid repetition in each of the units.

1.6. Flight Tests

Flight Tests are required for the GFPT, PPLA and CPLA. Flight tests must be conducted by either an ATO or an FOI. Applicants for a flight test must have met the requirements set down in CARs that are summarised in Section 1 Subsection 2 of this Syllabus.

A flight test must be conducted in accordance with the items listed on the flight test pro-forma. A flight test pro-forma for each type of flight test is found in this Section at Subsection 4. The standards required to obtain a pass in the sequences conducted in the flight test are those specified in the assessment guide in this syllabus.

The flight test must be conducted in a suitable aeroplane as specified in CARs.

> **Note:** The flight test for a CPLA must be conducted in an aeroplane fitted with a constant speed propeller (or no propeller) and which has a cruise speed of at least 120 knots at the manufacturer's recommended cruise power setting.

1.7. Aeronautical Experience

Persons using this syllabus should note that the aeronautical experience and other requirements applying to the issue of a SPL, PPLA and CPLA are contained in CARs and are summarised in Section 1 Subsection 2 of this syllabus. The aeronautical experience is the minimum required for the issue of the particular licence whereas the standards specified in this syllabus are the minimum that must be met to achieve a pass in the flight test. Applicants for a licence must meet both requirements.

1.8. Determination of Pilot Standards

The competency standards contained in the national standard and in this syllabus are organised into units of competency which represent the areas of skill and knowledge required to perform the task of piloting an aeroplane, for example **Unit 5** of the PPLA Syllabus is **Control aeroplane in normal flight**.

The units of competency are further subdivided into the elements of skill that go to make up the unit. For example the elements listed for **Unit 5** are:

- Climb aeroplane
- Maintain straight and level flight
- Descend aeroplane
- Turn aeroplane
- Control aeroplane at slow speeds
- Performs circuits and approaches
- Comply with airspace requirements.

The units and elements that must be achieved at each stage of training are specified in the Achievement Records in this Section at Subsection 2.

Achievement records are included for each of the following phases of training:

- First Solo
- First Area Solo
- GFPT
- PPLA
- CPLA.

Definition of Achievement Standards

For first solo flights and the GFPT, the standards that must be met may not necessarily be as high as those required for the issue of the licence. Therefore the achievement record for first solo, first area solo and GFPT lists the standard at which each element must be achieved as a number from 1 to 4. The numbers used to denote standard in the achievement record have the following significance:

1 Achieved standard required for Commercial Pilot as detailed in the Day VFR Syllabus (Aeroplanes).

2 Achieved standard required for Private Pilot as detailed in the Day VFR Syllabus (Aeroplanes).

3 Able to achieve the private pilot standard on the majority of occasions; safe to operate under direct supervision.

4 Has received training in the element but not able to consistently achieve the PPL standard.

> **Note:** The word "safe" used in standard 3 means that the pilot may achieve the required standard on the majority, but not necessarily on all occasions. However the student should be able to recognise a situation where the desired outcome of a manoeuvre may be in doubt and take appropriate corrective action to recover.

1.9. Achievement Record

Each phase of training incorporates an Achievement Record listing the units and elements of competency relating to that phase. Before being recommended for first solo, first area solo or any flight test, a student must have been assessed as competent in each element listed in the appropriate Achievement Record at the standard specified for that phase. The instructor making the assessment at the time that the student achieves competency in the element should certify the Achievement Record to this effect.

To avoid a requirement for duplicate certifications in successive phases, any elements that have been listed at the same standard in a previous phase are not repeated in subsequent phases.

The standard specified in each achievement record is the minimum required for the particular phase but, if a student can consistently achieve a higher standard, then the element may also be certified in the achievement records for any or all higher levels up to the PPLA. However it should be noted that certification for elements at the CPLA level must not be made until all PPLA elements in the PPLA phase have been completed and certified.

The Achievement Record is to be retained by the student and must be checked by the person authorising a first solo flight or conducting a flight test as having been completed for all items. A copy of the relevant record must be appended to a flight test form. The Achievement Record is additional to, and does not replace, the flying training records that are required to be maintained by the flying school.

1.10. Technique and Judgement

Assessment should be based on the technique used by the candidate and not just the ability to perform the task within specified numerical tolerances. Technique involves smooth and accurate control application in adjusting power, attitude, trim and balance in a timely and coordinated fashion whilst following correct procedures. Additionally, sound judgement and decision-making should be displayed. It may be that on some occasions flight conditions (eg, turbulence) are such that even though the pilot's technique is sound the aeroplane may deviate outside specified tolerances for short periods. In such cases the assessment of technique should be the determining factor.

1.11. Airmanship

Simply defined, airmanship is the ability to fly safely. However, the standards in this version of the syllabus do not include a section titled 'Airmanship'. Instead, the application of human factors elements detailed in Unit C6, Manage Flight, should be used to assess airmanship. This method has been adopted so that clear evidence is available to demonstrate competence, rather than the ill defined and subjective use of airmanship. The concept is further explained in paragraph 1.14.

1.12. English Language Assessment

With effect from 5 March 2008, all pilot licences may only be issued if the applicant has demonstrated at least a Level four (Operational) English language proficiency in accordance with the standard of the ICAO Standards and Recommended Practices (SARP) The licence will include the language endorsement detailing the level of proficiency of the holder's English language. Only a minimum Level four (Operational) would be accepted by CASA for the issue of a flight crew licence.

Approved Testing Officers may only conduct the assessment if a candidate is recommended by the CFI as capable of achieving a Level six (Expert) proficiency. Such a candidate is usually (but not automatically) an English native or expert speaker without any speech impediment or strong regional accent that makes comprehension difficult for others. The ATO may only assess the candidate as either proficient at Level six or not proficient at Level six, and must not recommend any other level of proficiency.

For a candidate whom the CFI assesses as unlikely to attain a Level six (Expert) proficiency, the candidate shall be directed to a language specialist centre approved by CASA. The ATO may only conduct the flight test when the candidate produces evidence of being assessed with at least a Level four (Operational) proficiency.

However, flight instructors will be required to make a judgment on a student pilot's English language proficiency to decide if additional language training is required and when the student pilot may fly on solo navigation. The English standard should be used as a tool to make this judgment. A special training package for CASA language proficiency implementation may also be used as a guide.

1.13. Threat and Error Management (TEM) and Single Pilot Human Factors (Manage Flight)

ICAO has recommended that TEM should be introduced into flight training at all licence levels. For TEM to be effective, human factors skills must be practiced. The human factors skills that are required to achieve this are listed at paragraph 1.14.

TEM is an operational concept applied to the conduct of a flight that includes the traditional roles of human factors and airmanship, but provides for a structured and pro-active approach for pilots to use in identifying and managing threats and errors (hazards) that may affect the safety of the flight. The key to successful TEM is the effective use of the human factors elements detailed in paragraph 1.14. Therefore, flight instructors and assessors must teach and measure these items of competency. A Civil Aviation Advisory Publication (CAAP) will be produced to explain methods of teaching and assessing TEM and human factors. Assessment of single pilot human factors and threat and error management will commence on 1 July 2009.

1.14. Airmanship and Human Factors

As explained in paragraph 1.11, airmanship is the ability to fly safely. The same outcome applies to the results of good human factors practices—safe flight. The flight standards in the Day VFR Syllabus have linked airmanship and human factors. The unit of competency titled 'Manage Flight' is comprised of five elements that, when properly applied, can be a measure of the effects of airmanship. These elements are:

- Maintain effective lookout
- Maintain situation awareness
- Assess situations and make decisions
- Set priorities and manage tasks

- Maintain effective communications and interpersonal relationships.

As a practical example, appropriately positioning an aircraft in the circuit area to avoid conflict with preceding traffic is considered good airmanship. Alternatively, the result could be seen as a function of good human factors practice. 'Effective lookout' locates the other aircraft in the circuit, good 'situation awareness' could be used to predict the possibility of future conflict, and timely 'decision making' could also be used by the pilot to adjust the position or performance of his or her aircraft to ensure a trouble free final approach. Therefore, although the term 'airmanship' does not appear in the competency standards, the effect of good airmanship can be measured by applying competent human factors practices.

1.15. Terminology Used During Assessment

The following terms are used in the standards to assess competency. The terms used are specifically related to flight activities.

The checks and actions detailed in these definitions are advisory. Approved checklists, placards, Flight Manual/POHs, or Operations Manuals have precedence and must be complied with.

Some definitions and terms that appear in competency standards are underlined; to alert assessors that clarification is available from this table.

Definition or Term	**Meaning**
Aiming point	The 'aiming point' related to a visual approach and landing of an aircraft, is that point at which a pilot looks, to achieve a predetermined touchdown/termination point.
Aircraft is balanced	The skid ball in the balance indicator is less than a quarter of the ball diameter from the centre.
Aircraft is trimmed/trims aircraft	The aircraft is trimmed within 10 seconds of achieving stabilised and balanced flight, after an attitude, power or configuration change, so that no control input is required in the relevant axis from the pilot to maintain this state.
Airspace cleared	Collision avoidance must always be practiced and a procedure followed to ensure a collision does not occur. This procedure is performed before all turns and manoeuvres. A commonly used technique for this procedure is: • When turning left, "Clear right, clear ahead, clear left-turning left" or • When turning right, "Clear left, clear ahead, clear right-turning right". If an object is closing and remains on a line of constant bearing (stays at the same point on the windscreen), a collision will occur if avoiding action is not taken.
Approach to hover	The process of maintaining a specified track and glide slope at reducing ground speed to a nominated termination point at the hover.
Approved checklist	A checklist derived from information set out in the Flight Manual/POH, placards or other documents provided with the aircraft, necessary to ensure the safe operation of the aircraft
Avoid area	The area delineated on the height-velocity envelope chart in a helicopter or gyroplane flight manual/ POH which shows the parameters within which operations should be avoided.
Closure rate	The apparent speed at which a helicopter or gyroplane moves towards a specified point or object.
Competency standards	The defined competencies required for effective performance in the workplace expressed in outcome terms
Configures aircraft for bad visibility	The aircraft speed and configuration are adjusted to achieve best manoeuvring speed, forward visibility and safety margin above stall speed.
Controlled corrective action	Timely and coordinated use of controls, without abrupt manoeuvring is made to achieve specified performance.
Controlled rate of descent	'Controlled rate of descent' associated with a landing means that the touchdown is without harshness and the successful outcome of the landing is not in doubt.
Controlling ballooning during roundout and bouncing after touchdown	This is achieved if control of the aircraft is maintained by adjusting the attitude of an aircraft without the application of power.

Effect of turbulence	The effect of turbulence must be considered when measuring standards of flying competency. Assessors must evaluate each situation and then apply considered judgement to compensate for variations to the published standards.
Errors	Action or inaction that result in deviation from appropriate intentions.
Evaluation	The process of measuring competency to meet specified outcomes and to provide feedback that ensures achievement of the required competency.
Final approach checklist	The checklist in accordance with the flight manual or company operations manual that is completed on final approach before landing.
Flight environment	The environments internal and external to the aircraft that may affect the outcome of the flight. The aircraft's internal environment may include but is not limited to aircraft attitude and performance, instruments, observations, flight controls, equipment, warning and alerting devices, crewmembers, aircraft position, procedures, publications, checklists and automation. The external environment may include but is not limited to airspace, meteorology, stakeholders and operating culture.
Flight manoeuvre envelope	The area contained within the V-n diagram (speed-load factor) applicable to the aircraft type.
Full panel	Flight instrument array of at least an artificial horizon (AH), stabilised heading indicator, air speed indicator (ASI), vertical speed indicator (VSI), altimeter, turn and balance indicator/turn coordinator and an engine power indicator.
Hand-over/take- over procedure	The process of a pilot in command positively giving control of the aircraft to another pilot or positively assuming control from another pilot and the acknowledgement of this action by the pilot or co-pilot.
Hover helicopter	Means to maintain the helicopter over the hover point at nominated height and heading.
Hover point	Means that point on the surface of the earth over which a nominated part of the helicopter is maintained.
Human factors	Optimising the relationships within systems between people, activities and equipment
Immediate actions	These actions are performed immediately after an engine failure, while maintaining control of the aeroplane, as detailed in the Flight Manual/POH, operations manual or approved checklist. The purpose of these actions is to re-establish engine power.
In ground effect (IGE)	Hovering the helicopter less than 2/3 rotor diameter above a surface that restricts the induced flow.
Judgement	An opinion formed after analysis of relevant information
Leadership*	The ability of the pilot in command to induce the crewmember(s) to use their skills and knowledge to pursue a defined objective.
Lift off	Is the process of lifting the helicopter vertically from the surface to a stabilised hover.
Light on the skids or wheels	Means that with collective pitch (power) applied, and the helicopter still in contact with the ground, any application of cyclic pitch or anti torque pedal will produce a discernible movement by the helicopter
Limited panel	Flight instrument array of at least a magnetic compass, air speed indicator (ASI), vertical speed indicator (VSI), altimeter, turn and balance indicator/turn coordinator and an engine power indicator.
Line up checks	Line up checks are performed before take-off when lined up in the runway or take-off direction. The checks should include: Compass checked and aligned with take-off direction; Engine instruments indicate engine within operating limits.
Manage-(ment)*	To plan, direct and control an operation or situation.
Minimum power speed	Means the speed at which level flight can be maintained with minimum power required.
Mishandled landing	Means to recognise an abnormal landing and recover the aircraft to controlled flight. Often associated with a 'go around'.

Operational requirements	The effect that weather forecasts, availability and serviceability of radio navigation aids and aerodrome lighting status have on the determination of fuel, holding and alternate aerodrome requirements.
Orientation	To be aware of the position of the aircraft relative to navigation aid or feature, based on the direction and estimated distance of the aircraft from the navigation aid or feature.
Pedal/spot turn	Turning a hovering helicopter about a vertical axis, which passes through a nominated part (normally the mast) of the aircraft.
Pre-descent or navigation turning point checks	These checks are completed as detailed in the Flight Manual/POH, operations manual or approved checklist before descending for approach and landing or operations at low level.
Pre-manoeuvre checks	These checks are completed before performing manoeuvres which involve rapid changes of altitude, attitude or heading. The mnemonic "HASELL" may be used as a reminder for this check: H Height is sufficient to safely complete all manoeuvres. A Airframe configuration is appropriate for manoeuvres. S Security of harnesses and loose objects is ensured. E Engine instruments are checked, RPM, mixture, boost pumps and carburettor heat are set as required. Fuel remaining is adequate. L Location is correct, clear of built up areas, controlled airspace and restricted areas. L Maintain lookout before and during manoeuvres.
Pre-stall buffet	The aerodynamic vibration felt in an aircraft when manoeuvring at $C_{LMAX.}$
Recall items	An item specified in an approved checklist that must be stated and actioned from memory.
Safe-(ly)	Means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the flight standards specified by the regulator.
Safest outcome	Means that the manoeuvre or flight is completed with minimum damage or injury under the prevailing circumstances.
Shut down checks	These checks are completed as detailed in the Flight Manual/POH, operations manual or approved checklist when committed to a forced landing after an engine failure. The purpose is to isolate fuel and electrical sources that could lead to a fire.
Situation awareness	Monitor and evaluate the flight environment to identify all threats relevant to the safe progress of a flight.
Stake holder	Any person involved with, or affected by the flying operation to be performed.
Standard operating procedures	Any procedure included in the operations manual of an AOC or OC holder.
Stress-(ors)	A disturbing physiological or psychological influence on human performance that may impact adversely on the safe conduct of a flight or situation.
Student pilot area limit	In relation to a flight undertaken by a student pilot, means: a traffic pattern; or the area within 10 miles from the aerodrome reference point of the aerodrome from which the flight commenced; or a flight training area associated with the aerodrome from which the flight commenced; the most direct route between the aerodrome from which the flight commenced and a flight training area associated with the aerodrome.
Termination point	The 'termination point' associated with a landing, is the point at which the helicopter terminates the approach to the hover.
Terminate with power (and recover to the hover)	When associated with autorotative flight this term means that the application of collective pitch with engine and rotor RPM coordinated (needles joined) brings the helicopter to a stabilised hover (auto to powered flight).
Threats	Events or hazards whose occurrence is outside the control of the pilot(s) and which may threaten the safety of the flight.
Touchdown point	The 'touchdown point ' associated with a landing, is the point at which the aircraft landing gear first contacts the runway or landing area.

Trouble checks	The checks detailed in the Flight Manual/POH, operations manual or approved checklist that are performed to prepare the engine for a restart after an engine failure.
True horizon/earth's horizon	The reference that is used to measure the pitch and bank attitude of an aircraft.
Undesired aircraft state	Undesired aircraft states are flight crew-induced aircraft position or speed deviations, misapplication of flight controls, or incorrect systems configuration, associated with a reduction in margins of safety.
Upset Aircraft State	Upset aircraft state occurs when an aircraft unintentionally exceeds: • A pitch angle of 25 degrees nose up • A pitch angle of 10 degrees nose down • A bank angle of more than 45 degrees; or • Flight within these parameters at airspeeds inappropriate for the conditions.
Violations	Intentional deviations from rules or standards.
Visual cues – Helicopter and Gyroplane	Any visual features or references that are used to determine the position or movement relative to the aiming point, touchdown point, obstacles and, for helicopters, the hover point.
Visual references	'Visual references' associated with hovering means the features within the visual range of the pilot that are used as visual cues to maintain the helicopter over a hover point.
Wings level	Means that a line joining the wing tips is kept parallel to the earth's horizon.
Workplace environment	Any physical environment in which aviation related work is conducted by an aircrew member.

***Note 1 Leadership**

One of the most important qualities that the pilot in command of a multi crew aircraft must possess is leadership.

In this document leadership is defined as 'the ability of the pilot in command to induce the crewmember(s) to use their skills and knowledge to pursue a defined objective'. To ensure standardisation and objectivity, assessors must keep this definition in mind when determining the leadership qualities of a pilot in command or a crewmember.

The Macquarie Dictionary defines the word 'induce' as:

'to lead or move by persuasion or influence, as to some action, state of mind and

to bring about, produce or cause etc.'

The term 'pursue a defined objective' is used because the role of a pilot in command is to pursue a defined objective but not necessarily achieve that objective, as changing circumstances may dictate alternative actions and revised objectives to ensure the safe progress of a flight.

A 'defined objective' could be a flight, manoeuvre, procedure or action that is clearly identified and required to be achieved to ensure a safe outcome.

Therefore, in the aviation context, a pilot in command would be deemed competent as a leader when able to consistently cause the crewmember(s) to use their skills, knowledge and behaviour to successfully try to achieve a flight, manoeuvre, procedure or action in an ever-changing environment.

Of course, leadership is not limited to interaction with crewmembers only, but may involve any stakeholder.

***Note 2 Management**

Throughout the Day VFR Syllabus the term 'manage' or 'management' is used. The definition in the syllabus for manage is 'plan, direct and control an operation or situation'. When assessing competency standards that involve management, evidence should be sought to ensure that a plan is developed, implemented (direction) and re evaluated (control), throughout the activity.

The application of this skill when managing an abnormal situation may involve a plan of maintaining control of the aircraft, identifying the problem and determining the action to be taken to reduce or eliminate any threat. Direction may, in the case of a single place aircraft, require self-direction to ensure actions are conducted in accordance with checklist procedures, Approved Flight Manual/POH, SOPs or other acceptable means, or in a multi crew environment, directing other crewmembers as well as participating in those actions. Control would involve monitoring the progress of events to ensure a safe outcome. The last step may require modification of plans and actions.

SUBSECTION 2 – ACHIEVEMENT RECORD

NAME:……**ARN:**……..

DAY VFR SYLLABUS – FIRST SOLO ACHIEVEMENT RECORD

Units and elements of competency that must be achieved prior to the first solo flight. Each element must be certified as having been achieved at the specified standard by the instructor responsible for the assessment.

Unit		Element	Standard	Instructor/ ARN/ Date
C1	English communication in the aviation environment	• Communicate effectively face to face using clear and precise English • Communicate effectively in voice-only R/T communications using standard aviation phraseology.	3 3	
C2	Manage Pre and Post Flight Actions	• Complete pre and post flight actions Excluding: o Weight and balance o TO and landing performance o Access Met and NOTAM data • Perform pre-flight inspection • Completes and certifies daily inspection.	3 3 4	
C3	Operate Radio	• Use R/T equipment (As applicable to circuit airspace) • Maintain R/T equipment • Operate transponder.	3 4 3	
C4	Manage Fuel	• Plan fuel requirements (Applicable to circuit area) • Manage fuel system (Excluding range and endurance and refuelling requirements) • Refuel aeroplane.	3 3 4	
C6*	Manage Flight	• Maintain effective lookout • Maintain situation awareness • Assess situations and make decisions • Set priorities and manage tasks • Maintain effective communications and interpersonal relationships.	2 3 3 3 3	
C7*	Threat and Error Management	• Recognise and manage threats • Recognise and manage errors • Recognise and manage undesired aircraft state.	3 3 3	

NAME:……**ARN:**……

DAY VFR SYLLABUS – FIRST SOLO ACHIEVEMENT RECORD (CONT)

Unit		Element	Standard	Instructor/ ARN/ Date
A1	Control Aeroplane on the Ground	• Start and stop engine • Taxi aeroplane.	3 3	
A2	Take-off Aeroplane	• Carry out pre-take-off procedures • Take-off aeroplane • Excluding crosswind • Carry out after take-off procedures.	2 3 2	
A3	Control Aeroplane in Normal flight	• Climb Aeroplane (excluding maximum rate and angle) • Maintain straight and level flight • Descend aeroplane • Turn aeroplane • Control aeroplane at slow speed • Perform circuits and approaches (excluding flapless) • Comply with airspace requirements (As applicable to airspace).	3 3 3 3 3 3 3	
A4	Land Aeroplane	• Land aeroplane (excluding crosswind) • Perform mishandled landing procedures.	3 3	
A5	Execute Advanced Manoeuvres and Procedures	• Enter and recover from stall • Recover from incipient spin.	3 4	
A6	Manage Abnormal Situations	• Manage engine failure after take-off • Manage engine failure elsewhere in circuit.	3 3	

* These elements will not be assessed on flight tests until 1 July 2009.

I have completed the training specified in the elements, which have been certified on this Achievement Record.

…… (Signature)

Achievement Standard

3 Able to achieve the private pilot standard on the majority of occasions; safe to operate under direct supervision.

4 Has received training in the element but not able to consistently achieve the PPL standard.

NAME:……**ARN:**……..

DAY VFR SYLLABUS – FIRST AREA SOLO ACHIEVEMENT RECORD

Units and elements of competency that must be achieved prior to the first area solo flight. Each element must be certified as having been achieved at the specified standard by the instructor responsible for the assessment.

All first solo competencies must have been completed. Elements already completed to the required standard are not repeated in this record.

Unit		Element	Standard	Instructor/ ARN/ Date
C3	Operate Radio	• Use R/T equipment (As applicable to area airspace) • Maintain R/T equipment.	3 3	
A2	Take-off Aeroplane	• Take-off aeroplane (including crosswind)	3	
A3	Control Aeroplane in Normal Flight	• Comply with airspace requirements (Applicable to area).	3	
C4	Manage Fuel	• Plan fuel requirements (For flight to area).	3	
C8	Navigate Aircraft	• Comply with airspace procedures (For route and area) • Conduct departure procedures • Navigate aircraft enroute • Execute arrival procedures.	3 3 3 3	
A4	Land Aeroplane	• Land aeroplane (Including crosswind).	3	
A5	Execute Advanced Manoeuvres and Procedures	• Recover from incipient spin • Turn aeroplane steeply • Sideslip aeroplane.	3 4 4	
A6	Manage Abnormal Situations	• Perform forced landing.	3	

I have completed the training specified in the elements, which have been certified on this Achievement Record.

…… (Signature)

Achievement Standard

3 Able to achieve the private pilot standard on the majority of occasions; safe to operate under direct supervision.

4 Has received training in the element but not able to consistently achieve the PPL standard.

NAME:……**ARN**:……

DAY VFR SYLLABUS – GFPT ACHIEVEMENT RECORD

Units and elements of competency that must be achieved prior to the GFPT. Each element must be certified as having been achieved at the specified standard by the instructor responsible for the assessment.

All first solo and first area solo competencies must have been completed. Elements already completed to the required standard are not repeated in this record.

Unit	Element	Standard	Instructor/ ARN/ Date
C1 English Communication in the Aviation Environment	• Communicate effectively face to face using clear and precise English • Communicate effectively in voice-only R/T communications using standard aviation phraseology.	2 2	
C2 Manage Pre and Post Flight Actions	• Complete pre and post flight actions • Perform pre-flight inspection	2 2 3	
C3 Operate Radio	• Use R/T equipment • Maintain R/T equipment • Operate transponder.	2 2 2	
C4 Manage Fuel	• Plan fuel requirements • Manage fuel system • Refuel aeroplane.	2 2 3	
C5 Manage Passengers and Cargo	• Brief passengers • Aid and assist passengers • Manage cargo.	2 2 2	
C6* Manage Flight	• Maintain effective lookout • Maintain situation awareness • Assess situations and make decisions • Set priorities and manage tasks • Maintain effective communications and interpersonal relationships.	2 2 2 2 2	
C7* Threat and Error Management	• Recognise and manage threats • Recognise and manage errors • Recognise and manage undesired aircraft state.	2 2 2	

NAME:……**ARN**:……

DAY VFR SYLLABUS – GFPT ACHIEVEMENT RECORD (CONT)

Unit		Element	Standard	Instructor/ ARN/ Date
A1	Control Aeroplane on the Ground	• Start and stop engine • Taxi aeroplane.	2 2	
A2	Take-off Aeroplane	• Carry out pre-take-off procedures • Take-off aeroplane • Take-off aeroplane in a crosswind • Carry out after take-off procedures.	2 2 2 2	
A3	Control Aeroplane in Normal flight	• Climb aeroplane • Maintain straight and level flight • Descend aeroplane • Turn aeroplane • Control aeroplane at slow speeds • Perform circuits and approaches • Comply with airspace requirements.	2 2 2 2 2 2 2	
A4	Land Aeroplane	• Land aeroplane • Land aeroplane in a crosswind • Perform mishandled landing procedures.	2 2 2	
A5	Execute Advanced Manoeuvres and Procedures	• Enter and recover from stall • Recover from incipient spin • Turn aeroplane steeply • Sideslip aeroplane • Execute short take-off and landing.	2 2 2 2 2	
A6	Manage Abnormal Situations	• Manage engine failure after take-off • Manage engine failure elsewhere in circuit • Perform forced landing • Conduct precautionary search and landing • Manage other abnormal situations.	2 2 2 2 2	
A7	Perform Full Instrument Panel Manoeuvres	• Determine and monitor serviceability of flight instruments and instrument power sources • Perform manoeuvres using full instrument panel to re-establish VFR.	3 3	
Recover from Spin (Optional)		• Recover from spin.		

* These elements will not be assessed on flight tests until 1 July 2009.

I have completed the training specified in the elements, which have been certified on this Achievement Record.

…… (Signature)

Achievement Standard

3 Able to achieve the private pilot standard on the majority of occasions; safe to operate under direct supervision.

NAME:……**ARN:**……

DAY VFR SYLLABUS – PRIVATE PILOT LICENCE (AEROPLANES) ACHIEVEMENT RECORD

Units and elements of competency that must be achieved prior to the Private Pilot Licence (Aeroplane) flight test. All items must be demonstrated to standard 2 (PPLA standard). Each element must be certified as having been achieved at the specified standard by the instructor responsible for the assessment.

Unit	Element	Instructor/ ARN/ Date
C1 English Communication in the Aviation Environment	• Communicate effectively face to face using clear and precise English • Communicate effectively in voice-only R/T communications using standard aviation phraseology.	
C2 Manage Pre and Post Flight Actions	• Complete pre and post flight actions • Perform pre-flight inspection	
C3 Operate Radio	• Use R/T equipment • Maintain R/T equipment • Operate transponder.	
C4 Manage Fuel	• Plan fuel requirements • Manage fuel system • Refuel aeroplane.	
C5 Manage Passengers and Cargo	• Brief passengers • Aid and assist passengers • Manage cargo.	
C6* Manage Flight	• Maintain effective lookout • Maintain situation awareness • Assess situations and make decisions • Set priorities and manage tasks • Maintain effective communications and interpersonal relationships.	
C7* Threat and Error Management	• Recognise and manage threats • Recognise and manage errors • Recognise and manage undesired aircraft state.	
C8 Navigate Aircraft	• Prepare chart and flight plan • Comply with airspace procedures • Conduct departure procedures • Navigate aircraft enroute • Navigate at low level and in reduced visibility • Perform lost procedure • Perform diversion procedure • Use radio navigation aids • Execute arrival procedures.	

NAME:……**ARN:**……

DAY VFR SYLLABUS – PRIVATE PILOT LICENCE (AEROPLANES) ACHIEVEMENT RECORD (CONT)

Unit		Element	Instructor/ ARN/ Date
A1	Control Aeroplane on the Ground	• Start and stop engine • Taxi aeroplane.	
A2	Take-off Aeroplane	• Carry out pre-take-off procedures • Take-off aeroplane • Take-off aeroplane in a crosswind • Carry out after take-off procedures.	
A3	Control Aeroplane in Normal flight	• Climb aeroplane • Maintain straight and level flight • Descend aeroplane • Turn aeroplane • Control aeroplane at slow speeds • Perform circuits and approaches • Comply with airspace requirements.	
A4	Land Aeroplane	• Land aeroplane • Land aeroplane in a crosswind • Perform mishandled landing procedures.	
A5	Execute Advanced Manoeuvres and Procedures	• Enter and recover from stall • Recover from incipient spin • Turn aeroplane steeply • Sideslip aeroplane • Execute short take-off and landing.	
A6.	Manage Abnormal Situations	• Manage engine failure after take-off • Manage engine failure elsewhere in circuit • Perform forced landing • Conduct precautionary search and landing • Manage other abnormal situations.	
A7	Perform Full Instrument Panel Manoeuvres	• Determine and monitor serviceability of flight instruments and instrument power sources • Perform manoeuvres using full instrument panel to re-establish VFR.	
A13	Recover from Spin (optional)	• Recover from spin.	

* These elements will not be assessed on flight tests until 1 July 2009.

I have completed the training specified in the elements, which have been certified on this Achievement Record.

……(Signature)

NAME:……**ARN**:……

DAY VFR SYLLABUS – COMMERCIAL PILOT LICENCE (AEROPLANES) ACHIEVEMENT RECORD

Units and elements of competency that must be achieved prior to the Commercial Pilot Licence (Aeroplanes) flight test. All items must be demonstrated to standard 1 (CPLA standard). Each element must be certified as having been achieved at the specified standard by the instructor responsible for the assessment. The assessment for CPLA elements may not be made until all the elements in the PPLA phase have been completed.

Unit	Element	Instructor/ ARN/ Date
C1 English communication in the aviation environment	• Communicate effectively face to face using clear and precise English • Communicate effectively in voice-only R/T communications using standard aviation phraseology.	
C2 Manage Pre and Post Flight Actions	• Complete pre and post flight actions • Perform pre-flight inspection.	
C3 Operate Radio	• Use R/T equipment • Maintain R/T equipment • Operate transponder.	
C4 Manage Fuel	• Plan fuel requirements • Manage fuel system • Refuel aeroplane.	
C5 Manage Passengers and Cargo	• Brief passengers • Aid and assist passengers • Manage cargo.	
C6* Manage Flight	• Maintain effective lookout • Maintain situation awareness • Assess situations and make decisions • Set priorities and manage tasks • Maintain effective communications and interpersonal relationships.	
C7* Threat and Error Management	• Recognise and manage threats • Recognise and manage errors • Recognise and manage undesired aircraft state.	
C8 Navigate Aircraft	• Prepare chart and flight plan • Comply with airspace procedures • Conduct departure procedures • Navigate aircraft enroute • Navigate at low level and in reduced visibility • Perform lost procedure • Perform diversion procedure • Use radio navigation aids • Execute arrival procedures.	

NAME:……**ARN**:……..

DAY VFR SYLLABUS – COMMERCIAL PILOT LICENCE (AEROPLANES) ACHIEVEMENT RECORD (CONT)

Unit		Element	Instructor/ ARN/ Date
A1	Control Aeroplane on the Ground	• Start and stop engine • Taxi aeroplane.	
A 2	Take-off Aeroplane	• Carry out pre-take-off procedures • Take-off aeroplane • Take-off aeroplane in a crosswind • Carry out after take-off procedures.	
A3	Control Aeroplane in Normal flight	• Climb aeroplane • Maintain straight and level flight • Descend aeroplane • Turn aeroplane • Control aeroplane at slow speeds • Perform circuits and approaches • Comply with airspace requirements.	
A4	Land Aeroplane	• Land aeroplane • Land aeroplane in a crosswind • Perform mishandled landing procedures.	
A5	Execute Advanced Manoeuvres and Procedures	• Enter and recover from stall • Recover from incipient spin • Turn aeroplane steeply • Sideslip aeroplane • Execute short take-off and landing.	
A6.	Manage Abnormal Situations	• Manage engine failure after take-off • Manage engine failure elsewhere in circuit • Perform forced landing • Conduct precautionary search and landing • Manage other abnormal situations.	
A7	Perform Full Instrument Panel Manoeuvres	• Determine and monitor serviceability of flight instruments and instrument power sources • Perform manoeuvres using full instrument panel to re-establish VFR.	
A8	Perform Limited Instrument Panel Manoeuvres (CPL only)	• Recognise failure of attitude indicator and/or stabilised heading indicator • Perform manoeuvres using limited instrument panel • Recover from unusual attitudes using limited flight instrument panel • Re-establish visual flight following inadvertent entry into IMC.	
A13	Recover from Spin (optional)	• Recover from spin.	

* These elements will not be assessed on flight tests until 1 July 2009.

I have completed the training specified in the elements, which have been certified on this Achievement Record.

……..(Signature)

SUBSECTION 3
FLIGHT STANDARDS FOR
PRIVATE AND COMMERCIAL PILOT LICENCE AEROPLANES

INDEX TO UNITS OF COMPETENCY FOR PRIVATE PILOT QUALIFICATION **Page**

1.1. Table 1: Generic Range of Variables

Range of Variables

• Performance standards are to be demonstrated in flight in an aircraft of the appropriate category equipped with dual flight controls and electronic intercommunication between the trainee and the instructor or examiner.
• Consistency of performance is achieved when competency is demonstrated on more than one flight.
• Flight accuracy tolerances specified in the standards apply under flight conditions from smooth air up to, and including light turbulence.
• Where flight conditions exceed light turbulence appropriate allowances as determined by the assessor may be applied to the tolerances specified.
• When minimum descent altitudes (MDA) and not below or above heights are specified, the tolerance for straight and level height must be adjusted to (+100 –0 ft) or (+0 –100 ft) as applicable.
• Infrequent temporary divergence from specified tolerances is acceptable if the pilot applies controlled corrective action[1].
• Units and elements may be assessed separately or in combination with other units and elements that form part of the job function.
• Assessment of an aircraft operating standard also includes assessment of the threat and error management and human factors standards applicable to the unit or element.
• Standards are to be demonstrated while complying with approved checklists, placards, aircraft flight manuals, operations manuals, standard operating procedures and applicable aviation regulations.
• Performance of emergency procedures is demonstrated in flight following simulation of the emergency by the instructor or examiner, except where simulation of the emergency cannot be conducted safely or is impractical.
• Assessment should not involve simulation of more than one emergency at a time.
• **Private pilots** should demonstrate that control of the aircraft or procedure is maintained at all times but if the successful outcome is in doubt, corrective action is taken promptly to recover to safe[2] flight.
• **Commercial and air transport pilots** should demonstrate that control of the aircraft or procedure is maintained at all times so that the successful outcome is assured.
• The following evidence is used to make the assessment:
  o The trainee's licence and medical certificate as evidence of identity and authorisation to pilot the aircraft.
  o For all standards, the essential evidence for assessment of a standard is direct observation by an instructor or examiner of the trainee's performance in the specified units and elements, including aircraft operation and threat and error management.
  o Oral and written questioning of underpinning knowledge standards.
  o Completed flight plan, aircraft airworthiness documentation, appropriate maps and charts and aeronautical information.
  o Aircraft operator's completed flight records to support records of direct observation.
  o Completed achievement records for evidence of consistent achievement of all specified units and elements of competency.
  o The trainee's flight training records, including details of training flights and instructors comments, to support assessment of consistent achievement.
  o The trainee's log book for evidence of flight training completed.
• For licence and rating issue:
  o Completed application form, including, licence or rating sought, aeronautical experience, CFI recommendation and the result of the flight test.
  o Completed flight test report indicating units and elements completed.
  o Examination results and completed knowledge deficiency reports.

[1] Timely and coordinated use of controls, without abrupt manoeuvring is made to achieve specified performance.

[2] Means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the requirements of the Manual of Standards Part 61

1.2. Unit C1: English Communication in the Aviation Environment – Flight Standard

Unit Description: Skills and knowledge required to communicate effectively with all stakeholders within a flight operations environment and to ensure messages are clearly understood and responded to appropriately.

Element	Performance Criteria
C1.1 Communicate effectively face to face using clear and precise English	• Pronounces words clearly, using an accent that does not cause difficulties in understanding. • Conveys information in clearly structured sentences without confusion or ambiguity. • Uses an extensive vocabulary to accurately communicate on general and technical topics, without excessive use of jargon, slang or colloquial language. • Speaks fluently without long pauses, repetition or excessive false starts. • Responds to communications with actions that demonstrate that the information has been received and understood. • Exchanges information clearly in a variety of situations with both expert and non-expert English speakers while giving and receiving timely and appropriate responses. • Recognises and manages communication errors and/or misunderstandings effectively. • Maintains effective communication with crew members and other personnel in flight and on the ground on operational matters. • Communicates effectively in unfamiliar, stressful or non-standard situations.
C1.2 Communicate effectively in voice-only R/T communications using standard aviation phraseology	• Makes appropriate transmissions using standard aviation phraseology. • Uses plain English effectively when standard phraseology is inadequate. • Receives appropriate responses to transmissions. • Responds to transmissions and takes appropriate action. • Identifies and manages communication errors and/or misunderstandings promptly and effectively. • Seeks clarification in the time available if message is unclear or uncertainty exists. • Reacts appropriately to a variety of regional accents. • Communicates effectively in unexpected, stressful or non standard situations using standard phraseology or plain English.

Range of Variables

- Includes oral and written communication in English.
- Communication standards are demonstrated in flight and related activities on the ground while acting as a pilot in any capacity during communications with crewmembers, ATS and other aircraft.
- Situations include disruptions to communication normally encountered in the flight environment including background noise levels, equipment malfunctions and distractions.
- In flight communication is conducted in a timely manner consistent with operational safety.
- Assessment at an expert level (ICAO Level 6) requires all the criteria of elements C1.1 and C1.2 to be demonstrated consistently in the operational environment and in a range of non-operational situations with only rare occurrences of errors or misunderstandings.
- Assessment at an operationally competent level (ICAO Level 4) requires all criteria of element C1.2 to be demonstrated in the operational environment, but occasional loss of fluency, errors and/or misunderstandings are permissible in demonstrating the criteria of element C1.1 providing effective communication is maintained.

Underpinning Knowledge

- Demonstrate oral and written English vocabulary sufficient to converse on a wide range of common and technical topics.
- Apply English grammatical construction.
- Apply aviation terminology.
- Use standard aviation R/T phraseology.

1.3. Unit C2 Manage Pre and Post Flight Actions– Flight Standard (PPL and CPL)

Unit Description: Knowledge and skills to obtain required information and authority, ensure maintenance requirements are met and perform required functions before and after flight and to ensure that the aeroplane meets maintenance and safety requirements prior to flight.

Element	Performance Criteria
C2.1 Complete pre and post flight administration	***Pre flight*** • Obtains, interprets and applies meteorological and NOTAM information • Completes pre-flight planning and documentation in accordance with regulations and/or operations manual • Calculates aeroplane take-off and landing performance in accordance with performance and weight and balance charts • Selects optimum cruise altitude determined by operational, safety[3] or efficiency requirements • Interprets maintenance release (Flight Technical Log) and Minimum Equipment List (MEL) and determines aircraft serviceability for proposed flight. ***Post flight*** • Completes flight maintenance release (Flight Technical Log) and flight administration and enters identified unserviceabilities in accordance with regulations and/or operations manual.
C2.2 Perform pre-flight inspection	• Identifies and secures equipment and documentation as required by regulation in the aircraft • Completes internal and external checks in accordance with approved checklist • Ensures removal of all aircraft locking devices • Identifies defects or damage to the aircraft that could compromise safety • Certifies Flight Technical Log entering any defects or endorsements to Permissible Unserviceabilities (PUS) • Completes and certifies daily inspection.
Range of Variables	
• Single or multi engine aircraft • Day Visual Flight Rules	
Underpinning Knowledge	
N/A	

[3] Means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the requirements of the Manual of Standards Part 61.

1.4. Unit C3 Operate Radio – Flight Standard (PPL and CPL)

Unit Description: Knowledge and skills to operate and manage radiotelephone and intercom equipment under normal and emergency flight conditions.

Element	Performance Criteria
C3.1 Use R/T equipment	• Ensures serviceability of radiotelephone equipment. • Conducts transmission and receipt of R/T messages in accordance with procedures and phraseology detailed in the FROL syllabus and Aeronautical Information Publications (AIP). • Maintains a listening watch and responds appropriately to applicable transmissions. • Performs loss of radio transmitter or receiver procedures in accordance with AIP, ERS(A), VFR Flight Guide. • Conducts emergency and urgency transmissions and procedures in accordance with Enroute Supplement Australia (ERS(A) current edition) and AIP and all messages are reacted to appropriately.
C3.2 Maintain R/T equipment	• Performs R/T equipment failure procedures in accordance with Flight Manual/POH • Employs fault finding procedures and corrective actions not involving special tools or instruments
C3.3 Operate transponder	• Operates and monitors transponder in accordance with AIP during normal, abnormal and emergency operations.
Range of variables	
• Single or multi engine aircraft • VFR,IFR or simulated IMC • Propeller/rotor wash and jet blast noise • Up to and including light turbulence	
Underpinning knowledge	
• English language • To recognise, interpret and react appropriately to light signals	

1.5. Unit C4 Manage Fuel – Flight Standard (PPL and CPL)

Unit Description: Knowledge and skills to determine aircraft fuel requirements and perform the necessary calculations, to refuel the aeroplane and to ensure the fuel system is configured and operated for maximum safety and efficiency in the prevailing flight conditions, and to calculate requirements, configure and make adjustments to achieve best range and best endurance.

Element	Performance Criteria
C4.1 Plan fuel requirements	• Determines fuel reserve requirement in accordance with CASRs • Ensures fuel allowance is sufficient for operational requirements and applicable abnormal or emergency situations • Calculates total fuel requirement in accordance with CASRs.
C4.2 Manage fuel system	• Verifies fuel quantity by visual inspection when possible or other methods appropriate to the aircraft type • Ensures fuel is the correct grade and is free from contamination • Ensures fuel drain cocks closed • Operates fuel system in accordance with Flight Manual/POH • Operates fuel cross feed in accordance with Flight Manual/POH to ensure aircraft balance • Operates fuel pumps and engine controls in accordance with Flight Manual/POH • Configures aircraft to achieve best range and calculates revised range • Configures aircraft to achieve best endurance and calculates revised endurance.
C4.3 Refuel aircraft	• Refuels aircraft in accordance with CASRs, Flight Manual/POH, workplace health and safety and local procedures • Ensures all fuel caps are closed and secured • Ensures aircraft is earthed before refuelling.
Range of Variables	
• Day Visual Flight Rules in variable weather conditions • Fuel sources • Fire extinguishers • Locations.	
Underpinning knowledge	
• Health & safety requirements during refuelling • Local procedures for refuelling.	

1.6. Unit C5 Manage Passengers and Cargo - Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to ensure that passengers are informed, controlled, and that provision has been made for their comfort and well being, and that cargo is managed in accordance with regulations.

Elements	Performance Criteria
C5.1 Brief passengers	• Briefs passengers before flight and in emergencies in accordance with CASRs, and company operations man • Explains and confirms conduct and procedures to avoid contact of personnel or articles with propellers, rotor blades or jet blast • Explains procedures to avoid interference with flight controls when applicable • Explains and demonstrates the use of seat belts/safety harness • Explains and demonstrates use of escape hatches, exits and emergency equipment.
C5.2 Aid and assist passengers	• Establishes and maintains clear communications with passengers • Provides passenger comfort and well-being within the limits of aircraft safety controls passengers on the ground and in the air in accordance with CASRs, occupational health and safety requirements and operations manual.
C5.3 Manage cargo	• Manages loading, unloading and security of cargo throughout flight operations • Identifies dangerous goods and applies procedures to ensure safety and security.
Range of Variables	
• Single or multi engine aircraft • Propeller/rotor wash and jet blast • Simulated abnormal or emergency situations • Real or simulated passengers and cargo.	
Underpinning Knowledge	
• Explain your actions in relation to managing passengers during an abnormal or emergency situation • Health & safety regulations • Local procedures for movement of passengers • Security requirements.	

1.7. Unit C6 Manage Flight – Flight Standard

Unit Description: Skills, knowledge and behaviour to plan, direct and control all aspects of a flight.

Element	**Performance Criteria**
C6.1 Maintain effective lookout	• Maintains lookout and traffic separation using a systematic scan technique at a rate determined by traffic density, visibility and terrain • Maintains radio listening watch and interprets transmissions to determine traffic location and intentions of traffic • Performs airspace-cleared procedure before commencing any manoeuvres.
C6.2 Maintain situation awareness	• Monitors all aircraft systems using a systematic scan technique • Collects information to facilitate ongoing system management • Monitors flight environment for deviations from planned operations • Collects flight environment information to update planned operations.
C6.3 Assess situations and make decisions	• Identifies problems • Analyses problems • Identifies solutions • Assesses solutions and risks • Decides on a course of action • Communicates plans of action - if appropriate • Allocates tasks for action – if appropriate • Takes actions to achieve optimum outcomes for the operation • Monitors progress against plan • Re evaluates plan to achieve optimum outcomes.
C6.4 Set priorities and manage tasks	• Organises workload and priorities to ensure completion of all tasks relevant to the safety of the flight • Puts the safe and effective operation of the aircraft ahead of competing priorities and demands • Plans events and tasks to occur sequentially • Anticipates critical events and tasks to ensure completion • Uses technology to reduce workload and improve cognitive and manipulative activities • Avoids fixation on single actions, tasks or functions.
C 6.5 Maintain effective communications and interpersonal relationships	• Establishes and maintains effective and efficient communications and interpersonal relationships with all stakeholders to ensure the safe outcome of the flight • Defines and explains objectives to applicable/involved stakeholders • Demonstrates a level of assertiveness that ensures the safe completion of the flight • Encourages passengers to participate in and contribute to the safe outcome of the flight.
Range of Variables	
• All flight and ground operations • Interactivity with stakeholders • Single or multi engine aircraft.	
Underpinning Knowledge	
N/A	

1.8. Unit C7 Threat and Error Management – Flight Standard

Unit Description: Skills, knowledge and behaviour to recognise and plan, direct and control threats and errors.

Element	Performance Criteria
C7.1 Recognise and manage threats	• Identifies relevant environmental or operational threats that are likely to affect the safety of the flight • Develops and implements countermeasures to manage threats • Monitors and assesses flight progress to ensure a safe outcome; or modifies actions when a safe outcome is not assured.
C7.2 Recognise and manage errors	• Applies checklists and standard operating procedures to prevent aircraft handling, procedural or communication errors and identifies committed errors before safety is affected or aircraft enters an undesired aircraft state • Monitor aircraft systems, flight environment and crewmembers, collects and analyses information to identify potential or actual errors • Implements countermeasures to prevent errors or takes action in the time available to correct errors before the aircraft enters an undesired aircraft state.
C7.3 Recognise and manage undesired aircraft state	• Recognises undesired aircraft state • Prioritises tasks to ensure management of undesired aircraft state • Manipulates aircraft controls or systems, or modifies actions or procedures to maintain control of the aircraft and return to normal flight operations, in the time available.
Range of Variables	
• All flight and ground operations.	
Underpinning Knowledge	
• Explain the principles of threat and error management detailing a process to follow to identify and mitigate or control threats and errors during multi crew operations • Give an example of how an undesired aircraft state can develop from an unmanaged threat or error • What aspects of multi crew operations can prevent an undesired aircraft state • Explain how the use of checklists and standard procedures prevents errors • Give an example of a committed error and how action could be taken to ensure safety of flight • Explain how prioritising and managing workload can reduce the commission of errors • Explain how establishing and maintaining interpersonal relationships can ensure safe flight • Explain how checklists and standard operating procedures can help to recognise, prevent and/or correct errors.	

1.9. Unit C8: Navigate Aircraft – Flight Standard

Unit Description: To develop the knowledge and skills to plan and conduct a flight to a destination aerodrome, or alternate aerodrome, navigating the aircraft under the VFR. This will include pre-flight planning, compliance with airspace procedures and departure and arrival procedures, and navigation under normal and abnormal conditions.

Element	Performance Criteria
C8.1 Prepare chart and flight plan	• Selects and prepares appropriate visual navigation charts suitable for the intended flight • Determines and allows for beginning and end of daylight • Obtains and interprets meteorological forecasts and NOTAMs • Selects a suitable route and altitude considering weather, terrain, airspace, NOTAMs and alternate landing areas • Obtains and analyses operational information that is valid for the intended flight • Determines whether the intended flight can be conducted under the VFR • Completes flight plan to destination and any planned alternates • Provides flight notification for SAR purposes • Calculates fuel requirements in accordance with CASRs.
C8.2 Comply with airspace procedures	• Obtains and complies with air traffic clearances • Complies with procedures applicable to airspace classification.
C8.3 Conduct departure procedures	• Performs pre-flight planning and cockpit organisation to ensure charts, documentation and navigational calculator are accessible from the control seat • Intercepts track within five nautical miles of airfield • Calculates ETA for first waypoint • Complies with all departure clearances and instructions • Observes local and published noise abatement requirements and curfews.
C8.4 Navigate aircraft en route	• Maintains a navigation cycle that ensures accurate tracking and applies track correctional technique to re-establish track prior to waypoint or destination • Maintains heading (±10◦ directional indicator aligned with compass) • Maintains and revises ETAs ±2 minutes for waypoint or destination • Maintains track ±1 nm in controlled airspace • Maintains navigation log to monitor tracking, ETAs and fuel status • Monitors fuel consumption and revises fuel reserves • Recognises deteriorating situations and initiates early corrective action • Positively identifies ground fixes by two or more features • Obtains a positive fix at intervals not greater than 30 minutes • Performs pre-descent and turning point checks • Maintains awareness of route and destination weather conditions and reacts appropriately to adverse weather changes • Maintains radio communications and listening watch with ATS/ATC • Maintains lookout using a systematic scan technique at a rate determined by traffic density, visibility and terrain • Monitors aircraft systems and engine handling to ensure that the aircraft is operated in accordance with the Flight Manual/POH.
C8.5 Navigate at low level and in reduced visibility	• Maintains aircraft in visual meteorological conditions • Maintains separation from terrain and obstacles, allowing for wind and turbulence (minimum height 500 ft AGL) • Configures aircraft for bad visibility • Advises ATS and establishes a SARTIME, if applicable

Element	Performance Criteria
	• Fixes position at least once every 30 minutes • Avoids noise-sensitive areas, if applicable.
C8.6 Perform lost procedure	• Configures aircraft to achieve best endurance speed at present or most efficient altitude • Fixes position • Revises plan to either destination or alternate considering weather, terrain and fuel available whilst maintaining reserve (ETA ±2 minutes) • Maintains minimum height of 500 ft AGL • Uses radio and transponder to request assistance, if applicable • Plans a timely precautionary search and landing if still lost/minimum fuel/darkness.
C8.7 Perform diversion procedure	• Diverts around weather or to an acceptable aerodrome • Revises plan to either destination or alternate considering weather, terrain and fuel available whilst maintaining reserves (ETA ±2 minutes) • Identifies and plans for CTA, CTR and Prohibited, Restricted and Danger Areas • Selects most suitable cruising altitude/level (±150 ft) • Amends SARWATCH if required • Advises of intention to divert for traffic separation.
C8.8 Use radio navigation aids	• Tunes, identifies and tests all navigation aids before use. • Determines aircraft is within rated coverage of applicable radio navigation aids • Fixes aircraft position and solves aircraft orientation problems using radio navigation aids • Tracks/homes to the ground station • Verifies integrity of GPS signal • Enters and checks waypoint entry into GPS system • Confirms waypoints and fixes from all radio navigation aids with flight plan and identified ground fixes during en route navigation at least once every 60 minutes.
C8.9 Execute arrival procedures	• Obtains aerodrome information from ERS(A), ATIS/ATS and NOTAMs for applicable aerodrome • Obtains and complies with airways clearance requirements or makes broadcasts applicable to the airspace by nominated distance or position in accordance with AIPs • Identifies and avoids all air traffic • Establishes landing direction and airfield serviceability • Enters a circuit at circuit height via published approach points and flies a minimum of three legs of the circuit, except in circumstances when a straight-in approach is acceptable in accordance with AIPs. • Performs a circuit and landing • Cancels SARWATCH • Observes local and published noise abatement requirements and curfews.
Range of Variables	
• Day VFR • Terrain • Airspace • Simulated weather conditions • Simulated abnormal and emergency situations.	
Underpinning Knowledge	
N/A.	

1.10. Unit A1 Control Aeroplane on the Ground– Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to start and stop an aeroplane engine, perform all safety requirements, perform pre-taxi functions and manoeuvre an aeroplane on the ground without incident.

Element	Performance Criteria
A1.1 Start and stop engine	• Clears aircraft from obstructions, buildings and other aircraft • Clears propeller before start • Starts engine in accordance with Flight Manual/POH including hot and cold starts • Performs after-start checks from memory in accordance with approved checklist[4] • Manages start and after-start emergencies from memory in accordance with Flight Manual/POH • Shuts down engine in accordance with Flight Manual/POH • Performs after-shutdown checks in accordance with approved checklist[5] • Exercises propeller care and manages adverse effects of propeller wash • Complies with manufacturer's limitations and reports deviations when appropriate.
A1.2 Taxi aeroplane	• Requests applicable ATC clearances or MBZ/CTAF broadcasts in accordance with AIPs • Confirms serviceability of brakes after park brake release and before taxiing • Interprets and complies with taxiway and other aerodrome markings. **Note:** In the absence of markings, the aircraft is maintained in the centre of the taxiway and at a safe[6] distance from obstacles • Maintains lookout and right-of-way rules and complies with ATC or marshalling instructions when applicable • Adjusts taxi speed to suit aeroplane type, surface conditions, level of congestion, and maintenance of control and to avoid collision with obstacles or other aircraft • Applies flying controls, power and brakes to maintain the aircraft on the taxiway centreline (±1.5 metres of centreline) while compensating for wind and surface conditions • Performs instrument checks in a suitable area clear of traffic and other hazards • Ensures final approach path is clear of conflicting traffic on specified or appropriate runway.
Range of Variables	
• Single- or multi-engine aircraft • Day VFR • Sealed, gravel or grass runways and taxiways • Aircraft fitted with electrical or mechanical starters • Hand-start aircraft not fitted with electrical or mechanical starters • Propeller/rotor wash and jet blast • Windsocks • Simulated abnormal or emergency situations • Limitations, such as those imposed by local noise abatement procedures and curfews.	

[4] A checklist derived from information set out in the Flight Manual/POH, placards or other documents provided with the aircraft, necessary to ensure the safe operation of the aircraft

[5] A checklist derived from information set out in the Flight Manual/POH, placards or other documents provided with the aircraft, necessary to ensure the safe operation of the aircraft

[6] Means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the requirements of the Manual of Standards Part 61.

Underpinning Knowledge
• Describe starter motor limitations • Explain the cause and effect of fuel vaporisation on start • React appropriately to light and marshalling signals • Explain how to exercise propeller care • Interpret and react appropriately to aerodrome markings, signals and local procedures • Explain actions in the event of brake or tyre failure.

1.11. Unit A2 Take-Off Aeroplane – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to complete pre-take-off checks, take-off aeroplane into wind and crosswind, and perform after-take-off checks.

Element	Performance Criteria
A2.1 Carry out pre-take-off procedures	• Performs approved pre-take-off checklist • Performs take-off safety brief prior to runway entry • Requests and complies with ATC clearance or broadcast intentions as applicable • Ensures final approach path is clear of conflicting traffic on specified or appropriate runway • Configures aircraft for take-off and lines up on the centreline at appropriate intersection or full length of runway • Aligns aircraft on the centreline of the specified or appropriate runway • Performs approved line-up checks.
A2.2 Take-off aeroplane	• Sets take-off power and confirms engine is operating within limits • Accelerates aircraft along the centreline to the take-off safety speed, allowing for wind • Rotates aircraft to the target climb attitude at approximately 3° per second • Balances aircraft[7] • Maintains extended centreline of runway or obstacle clearance flight path (±10°) • Maintains nominated climb speed (+5, -0 kts) until clear of obstacles • Retracts undercarriage at a safe[8] altitude if applicable • Retracts flap at a safe altitude if applicable • Sets climb power and speed (±5 kts) in accordance with manufacturer's time limits or at a safe height • Rejects take-off for abnormalities prior to reaching take-off safety speed.
A2.3 Take-off aeroplane in a crosswind	• Sets take-off power and confirms engine is operating within limits • Accelerates aircraft along the centreline to the take-off safety speed, allowing for wind • Maintains wings level • Rotates aircraft to the target climb attitude at approximately 3° per second • Balances aircraft • Maintains extended centreline of runway or obstacle clearance flight path (±10°) • Maintains nominated climb speed (+5, -0 kts) until clear of obstacles • Retracts undercarriage at a safe altitude if applicable • Retracts flap at a safe altitude if applicable • Sets climb power and speed (±5 kts) in accordance with manufacturer's time limits or at a safe height • Rejects take-off for abnormalities prior reaching to take-off safety speed.
A2.4 Carry out after-take-off procedures	• Performs after-take-off checks in accordance with approved checklist at a safe height • Complies with ATC instructions if applicable • Maintains separation from other aircraft.

[7] The skid ball in the balance indicator is less than a quarter of the ball diameter from the centre.

[8] Means that a manoeuvre or flight is completed without injury to persons, damage to aircraft or breach of aviation safety regulations, while meeting the requirements of the Manual of Standards Part 61.

Range of Variables
• Single- or multi-engine aircraft • Day VFR • Sealed, gravel or grass runways and taxiways • Propeller/rotor wash and jet blast • Windsocks • Aircraft operated to crosswind limits, minimum assessment to 70% of maximum crosswind component. • Simulated abnormal or emergency situations • Simulated hazardous weather • Limitations, such as those imposed by local noise abatement procedures and curfews.
Underpinning Knowledge
• Calculate crosswind components • Explain factors affecting take-off and initial climb performance • Interpret windsock indications, stating wind direction and speed.

1.12. Unit A3 Control Aeroplane in Normal Flight – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to control an aeroplane while climbing, descending and turning, in straight and level flight at slow speeds, and to perform circuits and approaches, while complying with airspace requirements.

Element	Performance Criteria
A3.1 Climb aeroplane	• Sets and maintains climb power and attitude to achieve specified climb performance for the following profiles: o Maintains IAS for best angle of climb (V_X) (+5, -0 kts) o Maintains IAS for best rate of climb (V_Y) (+5, -0 kts) o Maintains IAS for cruise climb (±5 kts) • Sets altimeter subscale in accordance with procedures specified in AIPs • Identifies and avoids terrain and traffic threats • Anticipates and levels aircraft at nominated altitude (±150 ft for PPL, ±100 ft for CPL) • Maintains heading (±10°) • Trims aircraft • Balances aircraft • Monitors and reacts appropriately to engine indications and performance • Configures aircraft if applicable.
A3.2 Maintain straight and level flight	• Sets and maintains power and attitude to achieve specified straight and level performance for the following profiles: o Straight and level flight at normal cruise o Straight and level flight at high-speed cruise o Straight and level flight with flap selected • Maintains heading (±10°) • Maintains altitude (±150 ft for PPL, ±100 ft for CPL) • Maintains IAS (±10 kts) • Sets altimeter subscale in accordance with procedures specified in AIPs • Identifies and avoids terrain and traffic threats • Balances aircraft • Trims aircraft.
A3.3 Descend aeroplane	• Sets and maintains power and attitude to achieve specified descent performance during straight flight for the following profiles: o Idle power at glide IAS (±10 kts) o Powered descent at nominated IAS (±10 kts) and rate of descent (±150 ft/minute) o Approach configuration descent at nominated IAS (±10 kts) with flap selected and undercarriage down • Sets altimeter subscale in accordance with procedures specified in AIPs • Identifies and avoids terrain and traffic threats • Anticipates specified altitude and levels aircraft at that altitude (±150 ft for PPL, ±100 ft for CPL) • Maintains heading (±10°) • Balances aircraft • Trims aircraft • Monitors and controls engine temperature • Applies carburettor heat in accordance with Flight Manual/POH when applicable • Maintains traffic clearance ahead and below.

Element	Performance Criteria
A3.4 Turn aeroplane	• Performs airspace cleared procedure • Sets and maintains power, attitude and angle of bank to achieve specified turn performance to the left and right for the following profiles: o Level turns (±150 ft for PPL, ±100 ft for CPL) o Climbing turn (±5 kts, rate one or 20° bank ±5°) o Powered descent turn (±10 kts, 30° bank ±5°) o Gliding turn through 180° observing height loss (±10 kts, 30° bank ±5°) • Turns aircraft at varying rates to achieve specified tracks • Manoeuvres aircraft over specified tracks or geographical feature (±10° on exit) • Turns aircraft onto nominated headings using magnetic compass only (±10° on exit) • Balances aircraft • Trims aircraft for climbing and descending turns • Applies controlled corrective action • Monitors and controls engine temperature.
A3.5 Control aeroplane at slow speeds	• Completes pre-manoeuvre checks from memory • Manoeuvres aircraft at minimum clean approach speed (+10, -0 kts). • Manoeuvres aircraft at flapped approach configuration speed (+10, –0 kts) • Observes audible and visual stall warnings and recovers aircraft to controlled flight • Manages the reduced effectiveness of controls • Recovers from slow speed configuration using take-off power to achieve nominated speed in excess of 1.5Vs without loss of height (±10 kts, ±150 ft for PPL, ±100 ft for CPL) • Balances aircraft • Trims aircraft.
A3.6 Perform circuits and approaches	• Maintains lookout and traffic separation using a systematic scan technique at a rate determined by traffic density • Monitors and reacts appropriately to engine performance and indications • Tracks upwind along extended runway centreline to 500 ft • Establishes aircraft on crosswind tracking 90° to the runway • Establishes aircraft on downwind at circuit height (±100 ft) tracking parallel to the runway at a specified distance from the runway • Performs pre-landing checklist • Establishes aircraft on base leg a specified distance from threshold of runway • Commences and controls rate of descent to maintain approach path • Ensures aircraft is aligned with specified or appropriate runway • Establishes aircraft on final approach in approach configuration not below 500 ft AGL • Identifies and selects aiming point • Maintains aircraft on extended centreline and coordinates power and attitude to maintain approach slope and speed not less than 1.3Vs to a height of 50 ft • Applies speed allowances for wind gusts when applicable • Maintains speed not below threshold speed +10 kts until commencing flare • Configures aircraft for landing • Performs final approach checklist

Element	Performance Criteria
	• Anticipates and allows for wind on all legs of the circuit • Balances aircraft • Trims aircraft.
A3.7 Comply with airspace requirements	• Explains, using a chart, geographical limits of the designated area • Identifies prominent geographical features using a chart • Identifies the limits of the designated area on the ground • Determines the position of controlled airspace using a chart and geographical features • Identifies and avoids restricted areas and controlled airspace using a chart and geographical features • Completes departure from the circuit area and transits to the designated area without incident • Completes departure from the designated area and transits to the circuit area without incident • Maintains orientation[9] by geographical features.
Range of Variables	
• Single- or multi-engine aircraft • Day VFR • Sealed, gravel or grass runways and taxiways • Windsocks • Aircraft operated to crosswind limits, minimum assessment to 70% of maximum crosswind component. • Simulated abnormal or emergency situations • Simulated hazardous weather • Limitations, such as those imposed by local noise abatement procedures and curfews.	
Underpinning Knowledge	
• Explain the function of and primary and secondary effects of controls • Explain the stall warning devices fitted to aircraft • Explain the theory and application of best rate and angle of climb • Explain the effects of excessive cooling on engine performance during descent and methods to counter these effects • Explain the use of carburettor heat • Explain the hazards during maximum rate descents • Explain the effects of turn on magnetic compass performance • Explain the effects of angle of bank on load factor and stall speed • Explain how induced drag can adversely affect an aircraft at slow speed • Explain the dangers of turbulence and wake turbulence when flying at slow speed.	

[9] To be aware of the position of the aircraft relative to navigation aid or feature, based on the direction and estimated distance of the aircraft from the navigation aid or feature.

1.13. Unit A4 Land Aeroplane – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to land an aeroplane into wind and crosswind and to perform a mishandled landing when required.

Element	Performance Criteria
A4.1 Land aeroplane	• Identifies and selects aiming point[10] • Selects power to idle prior to touchdown • Flares aircraft at an appropriate height • Controls ballooning during flare and bouncing after touchdown by adjustment of attitude without the application of power • Touches down at a controlled rate of descent[11], aligned with runway centreline • Touches down within 400 ft/120 metres for PPL or 200ft/60 metres for CPL beyond a nominated touchdown point • Touches down ±2 metres of centreline • Touches down on the main wheels, and the nose is lowered onto the runway without harshness • Maintains directional control along the centreline • Applies braking to stop the aircraft within landing distance available. • Performs after-landing checklist • Maintains separation from other traffic.
A4.2 Land aeroplane in a crosswind	• Configures aircraft for crosswind landing • Tracks aircraft above runway centreline • Selects power to idle prior to touchdown • Flares aircraft at an appropriate height • Controls ballooning during flare and bouncing after touchdown by adjustment of attitude without the application of power • Touches down at a controlled rate of descent[12], aligned with runway centreline. • Touches down within 400 ft/120 metres for PPL or 200ft/60 metres for CPL beyond a nominated touchdown point • Touches down ±2 metres of centreline • Prevents wing rise after touchdown • Maintains directional control along the centreline • Applies braking to stop the aircraft within landing distance available without wheel lockup • Performs after-landing checklist.
A4.3 Perform mishandled landing procedures	• Recognises when the landing standard cannot be achieved and implements a decision to perform mishandled landing[13] • Controls aeroplane • Applies take-off power • Controls aircraft direction while airborne and on the ground • Lifts off at take-off safety speed or establishes climb attitude if airborne • Retracts undercarriage and flap when applicable • Performs after-take-off checks.

[10] The 'aiming point' related to a visual approach and landing of an aircraft, is that point at which a pilot looks, to achieve a predetermined touchdown point.
[11] 'Controlled rate of descent' associated with a landing means that the touchdown is without harshness and the successful outcome of the landing is not in doubt.
[12] 'Controlled rate of descent' associated with a landing means that the touchdown is without harshness and the successful outcome of the landing is not in doubt.
[13] 'means to recognise an abnormal landing and recover the aircraft to controlled flight. Often associated with a 'go around"

Range of Variables
• Single- or multi-engine aircraft • Day VFR • Aircraft with nose wheel or tail wheel • Aircraft with or without flaps • Aircraft with fixed or retractable undercarriage • Sealed, gravel or grass runways and taxiways • Propeller/rotor wash and jet blast • Windsocks • Aircraft operated to crosswind limits, minimum assessment to 70% of maximum crosswind component • Limitations, such as those imposed by local noise abatement procedures and curfews.
Underpinning Knowledge
• Recognise and respond to conditions leading to a mishandled landing • Calculate landing performance • Recall the crosswind limits for the aircraft type flown • Calculate crosswind components • Interpret windsock indications • Explain causes of loss of control of an aircraft on landing.

1.14. Unit A5 Execute Advanced Manoeuvres and Procedures – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to control an aeroplane by applying advanced manoeuvres and procedures.

Element	Performance Criteria
A5.1 Enter and recover from stall	***Recognise approach to stall*** • Performs pre-manoeuvre checks • Recognises airframe buffet and control ineffectiveness symptoms and visual and aural stall warning devices while approaching the stall. ***Stall aircraft*** • Stalls aircraft while maintaining balanced flight • Observes IAS and control wheel/stick position at point of departure from intended flight path (stall) • Recovers from stall with minimum loss of height • Adjusts aeroplane attitude and power setting to resume normal balanced flight on advent of stall • Recovers from stall using full power • Recovers from stall without power • Recovers from stall during straight and level, climbing, descending and approach configuration flight • Recovers from stall during a turn • Achieves height loss consistent with aircraft type.
A5.2 Recover from incipient spin	• Performs pre-manoeuvre checks • Terminates yaw • Adjusts aeroplane attitude and power setting following incipient spin entry (stall with wing drop) and resumes normal balanced flight • Recovers at incipient spin stage during a turn and resumes controlled flight • Achieves height loss consistent with aircraft type.
A5.3 Turn aeroplane steeply	• Completes airspace cleared procedure • Performs level steep turn of nominated bank angle (45°–60°) without altitude change (±150 ft for PPL, ±100 ft for CPL) • Performs descending steep turn of nominated bank angle (45°–60°) to a nominated heading or geographical feature through a minimum of 500 ft height loss • Exits on specified heading or geographical feature (±10°) • Balances aircraft • Trims aircraft for descending steep turn.
A5.4 Sideslip aeroplane	***Straight sideslip*** • Induces slip to achieve increased rate of descent while maintaining track and airspeed • Adjusts rate of descent by coordinating angle of bank and applied rudder. ***Sideslipping turn*** • Adjusts bank angle to turn through minimum heading change of 90° at constant airspeed using sideslip • Exits on specified heading or geographical feature (±10°) • Recovers from sideslip and returns aeroplane to balanced flight.

A5.5 Execute short take-off and landing	***Short take-off*** • Calculates take-off and landing performance in accordance with performance chart • Performs pre-take-off checks in accordance with approved checklist • Lines up aeroplane to enable maximum use of runway length • Performs line-up checks in accordance with approved checklist • Applies take-off power before brakes (where fitted) are released • Rotates aeroplane at recommended speed • Sets nominated climb speed appropriate to obstacle clearance requirements • Performs after-take-off checks from memory in accordance with approved checklist. ***Short landing*** • Lands aeroplane at nominated touchdown point (+200 ft/60 metres for PPL, +100 ft/30 metres for CPL) at minimum speed • Controls ballooning during flare and bouncing after touchdown by adjustment of attitude without the application of power • Maintains direction after touchdown • Applies maximum braking without locking up wheels • Stops aircraft within landing distance available • Performs after-landing checks in accordance with approved checklist.

Range of Variables

- Single- or multi-engine aircraft
- Day VFR
- Aircraft with nose wheel or tail wheel
- Aircraft with or without flaps
- Aircraft with fixed or retractable undercarriage
- Sealed, gravel or grass runways and taxiways
- Propeller/rotor wash and jet blast
- Windsocks
- Aircraft operated to crosswind limits, minimum assessment to 70% of maximum crosswind component
- Limitations, such as those imposed by local noise abatement procedures and curfews.

Underpinning Knowledge

- Explain symptoms of the approach to the stall and the stall in the aircraft type flown
- Explain the relationship between angle of attack and the stall
- Explain the effects of weight, ‘g-force’ and angle of bank on the stall speed
- Explain the potential dangers of unbalanced flight at slow speed
- Explain the principles associated with the position of the stick/control column and the point of stall
- State the symmetrical and rolling ‘g-force’ limitations of the aircraft being operated
- Explain the effects of a sideslip on aeroplane performance
- Explain the effects of sideslipping an aeroplane on fuel, pitot and flap systems
- Explain take-off and landing performance chart calculations
- Provide an example of when a maximum rate turn should be performed
- Provide an example of when a minimum radius turn should be performed.

1.15. Unit A6 Manage Abnormal Situations – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to accurately assess an abnormal situation and perform immediate actions, configure an aeroplane, select a landing area and land with no injury to personnel or damage to the aeroplane or property, perform a precautionary search and manage other abnormal situations.

Element	Performance Criteria
A6.1 Manage engine failure after take-off	• Controls aircraft • Lowers nose to achieve best gliding speed • Selects a landing area within gliding distance • Performs immediate actions in accordance with Flight Manual/POH • Performs emergency procedures in accordance with Flight Manual/POH • Advises ATS or another agency capable of providing assistance of situation and intentions • Briefs passengers about flight situation, brace position and harness security • Lands aeroplane ensuring safest outcome.
A6.2 Manage engine failure elsewhere in the circuit	• Controls aircraft • Performs immediate actions in accordance with Flight Manual/POH • Selects a landing area within gliding distance, on the aerodrome or elsewhere • Performs emergency procedures in accordance with Flight Manual/POH and lands the aeroplane if the engine cannot be restarted • Advises ATS or other agencies capable of providing assistance of situation and intentions • Briefs passengers about flight situation, brace position and harness security • Lands aircraft ensuring safest outcome if an engine restart is not achieved.
A6.3 Perform forced landing	• Controls aircraft • Performs immediate actions in accordance with Flight Manual/POH • Selects landing area within gliding distance • Formulates a plan • Performs all emergency checks in accordance with Flight Manual/POH • Briefs passengers about flight situation, brace position and harness security • Advises ATS or other agencies capable of providing assistance of situation and intentions • Manoeuvres aircraft to selected landing area • Lands aircraft ensuring safest outcome if an engine restart is not achieved • Trims aircraft • Balances aircraft.

A6.4 Conduct precautionary search and landing	• Assesses flight circumstances and decides to perform precautionary landing in the time available • Communicates intentions when appropriate • Configures aircraft for reduced visibility manoeuvring if applicable. • Selects landing area and inspects its suitability for landing, ensuring: o unobstructed approach and overshoot paths o landing area length adequate for landing o landing area surface suitable for aircraft type and clear of hazards • Maintains orientation and contact with the landing area. • Lands aircraft.
A6.5 Manage other abnormal situations	• Controls aircraft • Identifies abnormal or emergency situation • Manages or rectifies abnormal or emergency situation in accordance with Flight Manual/POH, standard operating procedures or Company Operations Manual • Performs abnormal and emergency actions in accordance with AIP procedures when applicable • Advises ATS or other agencies capable of providing assistance of situation and intentions.

Range of Variables

- Single- engine aircraft
- Day VFR
- Limitations, such as those imposed by local noise abatement procedures and curfews
- Simulated manoeuvres that would be terminated by forced landing or ditching may be discontinued when the assessor is satisfied that the landing standard could be achieved
- At least one precautionary search to be conducted at an unfamiliar landing area
- Decision to land is taken immediately after the need becomes apparent.

Underpinning Knowledge

- Explain methods of determining the suitability of emergency landing areas
- Explain the advantages of pre briefing actions in the event of an engine failure after take-off when departing from an airfield
- Describe a practical action plans for use in the event of an engine failure after take-off from the aerodrome of operation
- Explain engine failure emergency procedures
- Detail a plan of action to be used in the event of an engine failure in the circuit, other than after take-off
- Recall the height loss during a 180◦ gliding turn in the aircraft being operated
- Explain the link between autorotation and manoeuvring an aircraft at low airspeeds
- Explain actions to be conducted following a forced landing.

Partial engine failure

- Explain the effects of a partial engine failure on aircraft performance with respect to:
  - straight and level flight
  - turning while maintaining level flight
- Describe the hazards associated with turning an aircraft at slow speed, using large angles of bank while maintaining level flight following a partial engine failure after take-off
- Explain what factors should be considered when deciding whether to land immediately or proceed to a more suitable landing area after a partial engine failure
- Precautionary search
- Explain scenarios that may require a precautionary landing
- Detail the bad visibility configuration
- Explain the hazards associated with flying at low level.

1.16. Unit A7 Full Instrument Panel Manoeuvres – Flight Standard (PPL and CPL)

Unit Description: Skills and knowledge to perform all normal flight manoeuvres using the full instrument panel to re-establish VFR conditions.

Elements	Performance Criteria
A7.1 Determine and monitor serviceability of flight instruments and instrument power sources	• Determines serviceability of flight instrument, pitot/static system and instrument power sources in accordance with Flight Manual/POH, before flight • Performs functional checks of turn, heading and attitude indicators while taxiing • Monitors flight instrument and instrument power sources and reacts appropriately to any warnings, unserviceabilities or erroneous indications.
A7.2 Perform manoeuvres using full instrument panel to re-establish VFR	• Interprets and reacts appropriately to flight instrument indications to achieve and maintain specified flight profiles using full instrument panel • Sets and maintains power and attitude by reference to full instrument panel to achieve straight and level performance during normal cruise (±200 ft ±10° ±10 kts) • Sets and maintains power and attitude by reference to full instrument panel to achieve nominated climb performance (±10° ±5 kts) • Sets and maintains power and attitude by reference to full instrument panel to achieve descent performance (±10° ±10 kts ±200 ft/min) • Sets and maintains power, attitude and bank during climb, descent and level flight by reference to full instrument panel to achieve rate one turns onto a nominated heading (±10° on exit) • Balances aeroplane • Trims aeroplane *Recover from unusual attitudes* • Identifies uncontrolled flight involving high and low nose attitudes, varying angles of bank and power settings and unbalanced flight and resumes controlled flight *Re-establish flight by visual reference* • Performs or simulates involuntary transition from visual flight conditions to instrument meteorological conditions (IMC), identifies loss of visual reference and manoeuvres aeroplane to re-establish VMC (Visual Meteorological Conditions) • Develops a plan that ensures re-establishment of VMC.

Range of Variables

- Day Visual Flight Rules in variable weather conditions
- IMC or VMC with simulated IMC
- Fitted flight instruments suitable for full panel instrument flight
- Checks and actions in approved checklists, placards, Flight Manual/POHs, or Operations Manuals have precedence and must be complied with.

Underpinning Knowledge

- Explain a scan technique appropriate to fitted flight instruments and phase of flight
- State the attitude and power requirements to achieve specified flight profiles
- State the Instrument failure and warning systems fitted to the aeroplane.

1.17. Unit A8 Limited Instrument Panel Manoeuvres (CPL Only) – Flight Standard

Unit Description: Skills and knowledge to perform all normal flight manoeuvres, recover from unusual attitudes and re-establish visual flight using the limited instrument panel.

Elements	Performance Criteria
A 8.1. Recognise failure of attitude indicator and/or stabilised heading indicator	• Monitors flight instruments and instrument power sources, recognises warning indicators or erroneous instrument indications and transitions to instrument flight by reference to limited panel flight instruments.
A 8.2. Perform manoeuvres using limited instrument panel	• Interprets and reacts appropriately in the time available to flight instrument indications to achieve and maintain specified flight profiles using limited instrument panel • Sets and maintains power and attitude by reference to limited instrument panel to achieve straight and level performance during: o normal cruise (±200 ft ±15° ±10 kts or ±M.02) o in an aeroplane-approach configuration with flap (when fitted) and undercarriage down (±200 ft ±15° ±10 kts nominated speed but not below minimum approach speed) o in a helicopter-at minimum power for level flight speed (±10 kts) • Sets and maintains power and attitude by reference to limited instrument panel to achieve nominated climb performance (±5° ± 5 kts M.01) • Sets and maintains power and attitude by reference to limited instrument panel to achieve nominated descent performance (± 15° ±10 kts or ±M.02 ±200 ft per minute) • Sets and maintains power, attitude and bank during climb, descent and straight and level flight by reference to limited instrument panel to achieve rate one turns onto a nominated heading (±20° on exit then ±15°) • Balances aircraft • Trims aircraft during straight and level, descending and climbing flight • Level aircraft at a nominated altitude (±200 ft), from a climb or descent during straight or turning flight.
A 8.3. Recover from unusual attitudes using limited flight instrument panel	• Iidentifies uncontrolled flight involving high and low nose attitudes, varying angles of bank and power settings and unbalanced flight and resumes controlled flight by reference to flight instruments using a limited instrument panel • Achieves straight and level attitude without excessive oscillations at the horizon (± 300 ft of height at which aircraft nose first passed through horizon then ±200 ft of nominated altitude).
A 8.4. Re-establish Visual flight following inadvertent entry into IMC	• Performs or simulates involuntary transition from visual flight conditions to instrument meteorological conditions (IMC), identifies loss of visual reference and manoeuvre aircraft to re-establish VMC by reference to flight instruments using a limited instrument panel • Develops a plan that ensures re-establishment of VMC.

Range of Variables
• Single engine or multi engine aircraft or approved flight simulators • Manually flown in single pilot or multi crew operations • IMC or VMC with simulated IMC conditions • Fitted flight instruments suitable for limited panel instrument flight • Up to and including light turbulence • During unusual attitude recovery, straight and level flight is achieved when there are no excessive oscillations at the horizon.
Underpinning Knowledge
• Explain a scan technique appropriate to fitted flight instruments and phase of flight (without attitude or stabilised heading indicators) • Recall the performance instrument indications and power requirements to achieve specified flight profiles • State the anti icing and de icing controls/switches fitted to the aircraft type, and when these systems should be operated • Recall the instrument failure and warning systems fitted to the aircraft.

1.18. Unit A13 – Recover from Spin– Flight Standard (Optional for PPL or CPL)

Unit Description: Skills and knowledge to recover from an upright spin.

Element	Performance Criteria
Recover from spin	• Performs pre-manoeuvre checks • Enters and establishes an upright spin • Identifies upright spin and direction of yaw • Closes throttle • Stops yaw • Unstalls wing (aircraft) • Recovers to controlled flight • Recovers within the number of turns normally required for upright spin recovery in the aircraft type, within the aircraft and height limitations.

Range of Variables

- Day VFR flight in VMC
- Within the lateral and vertical limitations of the planned manoeuvring airspace using an approved aerobatic aeroplane.

Underpinning Knowledge

- Detail actions required to recover from an incipient spin (wing drop at point of stall)
- Explain what actions, by a pilot, with an aeroplane in any attitude, at the point of stall, that is likely to cause a spin
- Explain the blanketing effects the elevator can have on the rudder during spin recovery
- Discuss the significance of stick/control wheel position with respect to spin recovery
- Explain the aerodynamic causes of a spin
- Explain what aerodynamic factor determines the direction of a spin
- Explain how to recognise a stable spin
- Explain the difference between a stable spin and an unstable spin
- Explain the difference between a spin and spiral dive
- State factors which may lead to a flat spin
- Explain the difference between an upright and an inverted spin
- Explain what visual indications are used to determine the direction of a spin
- Explain which instrument indications confirm the direction of a spin
- State standard spin entry and recovery techniques for the aircraft being flown
- State the number of turns normally required for spin recovery in the aeroplane type
- State the height normally required to enter and recover from a stable spin
- Explain the ‘Mueller-Beggs spin recovery action and limitations on its application
- State the ‘g’ and any other limitations applicable to spinning for the aeroplane type.

SUBSECTION 4 – FLIGHT TEST FORMS

1.1. Flight Tests

There are three flight tests relating to this syllabus. They are:

1 General Flying Progress Test (GFPT).

2 PPLA flight test.

3 CPLA flight test.

Flight test forms are available via the CASA website (see para 1.3 below). The appropriate forms must be completed for every test conducted, whatever the result.

1.2. Application

Each forms consists of an application form and a record of the flight test on the reverse.

A candidate for a flight test must ensure that the application form section is completed, including the Chief Flying Instructor's recommendation, prior to commencement of the test. The completed form should be provided to the testing officer.

1.3. Flight Test Forms

The flight test forms is divided into four sections:

1 General requirements.

2 Ground.

3 Flying.

4 Airmanship.

The forms are numbered for identification as detailed below. (To access the forms, click the link.)

- GFPT Test (Aeroplane) Application – Form 640
- Private Pilot (Aeroplane) Licence Application – Form 077
- Commercial Pilot (Aeroplane) Licence Application – Form 090.

1.4. General requirements

This section outlines the general requirements applicable to the conduct of the test including those relating to planning of the flight.

1.5. Ground

The ground section consists of items that must be tested orally before flight and includes satisfactory knowledge of all the items listed on the candidate's Knowledge Deficiency Report. The Ground section of the test must be passed before the flying section may be attempted.

1.6. Flying

This section lists the units and elements of the Day VFR Flying Training Syllabus that must be examined in the flight test. In the CPLA test form flying is subdivided into general and operational flying. The flight test form uses the same units, elements and numbering as the Day VFR Syllabus to enable candidates and testing officers to easily refer back to the syllabus. The standard required to achieve a pass in an element in the flight test is the standard specified in the assessment guide in the syllabus.

Candidates should understand that perfection of performance is not the essential requirement to achieve a pass in the flight test. The aim of the test is to demonstrate the candidate's ability to operate the aeroplane safely and to make all the operational decisions necessary for the conduct of the flight. To achieve a Pass in the flight test a candidate should demonstrate the following standard

- Correct techniques and procedures, as specified in the assessment guide, were used
- Errors in height, airspeed, heading and balance were not sustained
- The aeroplane was operated within published limitations
- All operations complied with regulatory and airspace requirements
- Sound airmanship was displayed throughout the flight.

Some latitude is allowed to GFPT and PPLA candidates in the performance of a manoeuvre. Where an error is made in a particular element, provided that it is recognised and appropriate corrective action taken, a second attempt at the unsuccessful manoeuvre may be permitted. At the CPLA level the successful outcome of any manoeuvre should not be in doubt.

Failure in any item listed on the flight test forms will result in an overall fail assessment for the flight test, however at the discretion of the testing officer a candidate may be credited with passes in those items successfully completed and those items will not have to be repeated in a subsequent test.

Go To Section 1 **Go To Section 3**

SECTION 3 – AERONAUTICAL KNOWLEDGE TRAINING

Go To Section 1 | Go To Section 2

SUBSECTION 1 – INTRODUCTION

1.1. To integrate theory training with flight training, the Aeronautical Knowledge syllabus has been divided into two ground training blocks as indicated below

Block 1:

Contains the knowledge requirements to be taught prior to the General Flying Progress Test and nominates specific objectives to be met prior to undertaking the following flights:

- 1st Solo
- 1st Area Solo
- General Flying Progress Test (GFPT).

Block 2:

specifies the knowledge requirements prior to the completion of the:

- PPL training phase
- CPL training phase.

1.2. The Performance Standards used to define the relative importance of each syllabus objective are:

STANDARD	LEVEL	DESCRIPTION
A	Essential	Must be known completely relates directly to the safety of the aeroplane and occupants.
B	Important	Must be known in considerable depth relates to the efficient and practical operation of an aeroplane.
C	Additional	Pre-PPL background knowledge only PPL basic principles should be known CPL should be known in considerable depth.

Note: *Where a sequence is left blank the preceding standard is to apply*

1.3. Interpreting the syllabus

1.3.1. This syllabus is designed to integrate flight and ground training, and provide guidance on the relative importance of particular topics.

1.3.2. The following example illustrates how to obtain maximum value from the ground training syllabus:

Topic No.	Objective	1st Solo	1st Area Solo
6.7.3	State the effect (increase/decrease) of bank angle on:		
	(a) stall IAS	A	
	(b) the aircraft's structure (load factor)		A

Explanation:

Topic 6.7.3 (a) is an ESSENTIAL item of knowledge which must be learnt prior to the first solo flight and is required knowledge for ALL SUBSEQUENT PHASES of training.

Topic 6.7.3 (b) is also deemed to be ESSENTIAL knowledge which:

- May be taught prior to first solo, but
- Must be taught prior to the first area solo, and is required knowledge for all SUBSEQUENT PHASES of training.

1.4. Industry Examinations

1.4.1. To maintain a measure of ground/flight integration, a student must pass the following examinations, set and marked by the industry, prior to progressing to the next training phase:

- Prior to first solo:
  An oral or written examination.
- Prior to first area solo:
  A written examination
- Prior to the general flying progress test (GFPT):
  A written Basic Aeronautical Knowledge (BAK) examination.

1.4.2. Results of the above examinations are to be recorded in a student's flying training record.

1.4.3. Industry examination – guidance

1.4.3.1. It is suggested that examinations should sample approximately 60% to 70% of "A" topics. The pass mark may be nominated by the training organisation but should not be less than 70%.

1.4.3.2. Though these examinations should, in the main, sample topics appropriate to the phase of training, it is advisable to include some ESSENTIAL knowledge topics from earlier phases, particularly if there has been a prolonged break in training.

1.4.3.3. The three examinations mentioned in paragraph 1.4.1 may be compiled by training organisations other than the flying training organisation using them.

1.5. CASA Examinations

1.5.1. Prior to the PPL or CPL flight test, a person must pass the following CASA examinations:

(a) For PPL, a single multiple-choice examination which will sample any topic of the syllabus from "1st solo" up to and including topics listed under the "PPL flight test" column

(b) For CPL, a single multiple-choice examination consisting of a number of subject-part examination, each of which is to be sat separately. The subject-part examination will in general sample any of the respective subject topics of the syllabus.

1.5.2. The pass standards for these examinations are:

(a) PPL – **70%**

(b) CPL – **80%** for Flight Rules and Air Law subject-part examination and **70%** for each of the other subject-parts, unless amended by changes to regulations.

GROUND TRAINING BLOCK 1

RELATES TO FLIGHT PHASES 1 TO 3 (1ST SOLO, 1ST AREA SOLO, GFPT)

INDEX TO GROUND TRAINING BLOCK 1 (UP TO GFPT) **PAGE**

		Standard prior to:		
		1st Solo	1st Area Solo	GFPT
2 – AIRCRAFT GENERAL KNOWLEDGE				
2.1	**Terminology**			
	With respect to the items listed below recall the standards abbreviations used and meet the objectives stated:			
2.1.1	**Direction:**			
	(a) recall the following methods of expressing direction:	B		
	(i) as a three figure group			
	(ii) as a two figure group for runways			
	(iii) in the clock code			
	(b) define heading (HDG)	B		
	(c) define True (T), Magnetic (M), and Compass (C) North		B	
	Distance, Speed and Velocity		B	
	(d) state the units used for distance:		B	
	(i) navigation - nautical miles (NM)			
	(ii) visibility - metres (m), kilometres (km)			
	(e) define a knot (kt)		B	
	(f) define wind velocity (W/V)		B	
2.1.2	**Time:**			
	(g) express time as a 4, 6, and 8 figure group	B		
	(h) mentally convert local time (EST, CST, WST) to UTC and vice versa		B	
2.1.3	**Vertical measurement**		B	
	(i) state the unit used (ft) for vertical measurement and differentiate between:			
	(i) height			
	(ii) altitude			
	(iii) elevation			
2.1.4	**Other units**		B	
	(j) state the units used for:			
	(i) runaway dimensions			
	(ii) temperature - degrees Celsius (C)			
	(iii) pressure - hectopascals (hPa), psi, Hg			
	(iv) weight - kilograms (kg), pounds (lb)			
	(v) volume - litres (l), US and Imp. Gallons (gal)			
	(k) given W/V and runway directions determine the appropriate runway for take-off/landing:			
	(i) the direction (left/right) of any cross wind component			
	(ii) the value of crosswind component.			

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
2.2	**Power plants and systems – basics**			
	Notes: *Because "type" knowledge of power plants, systems and engine handling is more appropriate during initial training, the majority of the generic items below need only be taught after the "area-solo" phase.*			
	"Type" knowledge requirements are specified in subsection 5.			
2.2.1	Demonstrate a basic understanding of the principle of operation of a four stroke cycle internal combustion engine and state the purpose of the following components: • cylinders pistons piston rings inlet/exhaust valves crank shaft cam shaft spark plugs.			B
2.2.2	State the purpose of the following components/features: (a) carburettor (b) throttle (c) magneto, dual ignition (d) alternator (e) battery, battery compartment vent (f) propeller (g) circuit breaker, fuse, bus bar (h) impulse start (i) oil cooler (j) fuel tank vents.			B
2.2.3	State the purpose of the following gauges: (a) RPM (Tachometer), MAP (b) CHT, EGT (c) voltmeter, ammeter, loadmeter (d) fuel pressure (e) oil temperature and pressure. ***Note:*** *"Purpose" means the importance in relation to monitoring the powerplant and systems.*	B		
2.2.4	State how the following affect the power output of an engine: (a) throttle lever position (b) RPM (c) air density.			B
2.2.5	State the purpose of engine lubrication. ***Note:*** *"Purpose" means the reduction of friction and engine cooling.*			B
2.2.6	State the purpose of mixture control and describe the effect of excessively rich and lean mixture strengths on engine operation. ***Note:*** *Also see 5. 'Aircraft Type Knowledge'*		B	
2.2.7	Compare the advantages and disadvantages of a simple carburettor and a direct injection system.		B	

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
2.2.8	**Fuels and oils**			
	(a) list sources of fuel contamination		A	
	(b) state the advantage of filling tanks prior to overnight parking		B	
	(c) explain the terms:			
	(i) viscosity, oil sump, multi-grade oils			
	(ii) octane rating			
	(iii) Avgas, Avtur			
	and indicate how to identify Avtur and Avgas			
	(d) list the potential dangers/problems of:			B
	(i) mixing hydraulic fluids			
	(ii) using automobile fuel or fuel of a grade other than specified			
	(e) list factors conducive to fuel vapourisation and identify statements to minimise this phenomenon.			
2.2.9	List typical services provided by a light aeroplane's:			B
	(a) hydraulic system			
	(b) electrical system			
	(c) ignition system			
	(d) vacuum system.			
2.3	**Engine handling**			
2.3.1	List the causes and effect of detonation.		A	
	Note: *Limited to improper use of mixture control, MP/RPM, & use of incorrect fuel octane.*			
2.3.2	On aircraft fitted with a fixed pitch propeller, describe the method of using a manual mixture control if the aircraft:			B
	(a) does not have an EGT gauge			
	(b) has an EGT gauge.			
	Note: *For initial training this topic is covered in 5.4.2, Aircraft Type Knowledge.*			
2.3.3	State the effect on engine operation of:			B
	(a) prolonged idling			
	(b) using a mixture that is too rich or too lean.			
2.3.4	Give reasons for the following limitations/actions:			B
	(a) minimum oil pressure			
	(b) minimum/maximum oil temperature			
	(c) minimum/maximum CHT			
	(d) maximum RPM			
	(e) ignition checks: pre-takeoff and shutdown			
	(f) prolonged use of starter motor, and use of pilot heat on the ground			
	(g) engine warm up on prolonged descents.			
2.3.5	Explain the significance of blue or black exhaust smoke.		B	

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
2.4	**Malfunctions**			
2.4.1	With respect to a malfunction or a failure of the components listed in (a) to (h) below: • identify cockpit indications which may suggest a malfunction • state pilot actions (if any) to rectify the problem • describe the consequences if the malfunction cannot be rectified. Components: (a) alternator (b) magneto (c) battery (d) ignition switch (e) fuel vent (blockage), fuel/booster pump (f) oil cooler, cowl flaps (g) vacuum pump (h) hydraulic brakes.			B
2.4.2	With respect to the following engine gauges: • identify reasons for an abnormality • state pilot actions (if any) to rectify a problem • state the consequences if the problem cannot be rectified by the pilot (a) oil temperature and pressure (b) CHT (c) fuel pressure (d) tachometer (e) ammeter/loadmeter (f) voltmeter.			B
2.5	**Engine icing** ***Note:*** *Students should be advised that the following material is general in nature and that the operational application of engine ice prevention/control varies between individual aircraft and engines. Pilots should therefore follow procedures recommended in the pilots' operating handbook.*			
2.5.1	Describe the method for checking the operation of carburettor heat prior to take-off.	A		

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
2.5.2	State the atmospheric conditions and engine control settings conducive to the formation of: (a) throttle ice (b) fuel evaporation ice (c) impact ice in a carburettor. *The student should be aware of the probability and severity of icing under different OAT, relative humidity and power conditions.*		A	
2.5.3	For aircraft fitted with a fixed pitch propeller, identify cockpit indications which would signify the presence of engine ice. ***Note:*** *For initial training, this topic is covered in '5.4.2, Aircraft Type Knowledge'.*			A
2.5.4	State the danger of progressive throttle increments if engine icing is not diagnosed.		A	
2.5.5	Discuss the use of carburettor heat for: (a) anti-icing (b) de-icing (c) ground operation.			B
2.5.6	Differentiate between the use of "alternate air" and "carburettor heat" controls.			B
2.5.7	State the effect of the application of carburettor heat on engine performance and engine instrument indications.			B
2.6	**Flight instruments**			
2.6.1	Interpret colour codes on an ASI.	B		
2.6.2	From a list, identify pressure and gyroscopic (suction and electrical) instruments used in a typical light trainer. ***Note:*** *Pressure instruments are the:* • *ASI, altimeter, VSI.* *Gyroscopic instruments are the:* • *DI, rate of turn, turn coordinator, flight attitude indicator (artificial horizon)*		B	
2.6.3	State the effect of a blockage of the pitot or static source on the indications displayed by each pressure instrument listed in 2.6.6 above.		B	
2.6.4	(a) state the effect of an incorrect sub-scale setting on the reading of an altimeter	A		
	(b) calculate height error resulting from incorrect sub-scale settings.			A
2.6.5	State the effect of using an alternate static source located inside the cockpit, on the reliability of pressure instrument indications. ***Note:*** *In 2.6.3 to 2.6.5 above, "effect" means "over-reading" "under-reading" or "nil effect".*		B	
2.6.6	State the effect of low suction & loss of electrical power on the reliability of the gyroscopic flight instruments.			B
2.6.7	List conditions/situations which may result in toppling of gyroscopic instruments and identify conditions under which they would re-erect.			B
2.6.8	State how, when and why a DI should be synchronised with the magnetic compass.		B	
2.6.9	Describe checks which would ensure the serviceability of a magnetic compass and the flight instruments mentioned in 2.6.2 above.			A

		Standard prior to:		
		1st Solo	1st Area Solo	GFPT
3 – FLIGHT RULES AND AIR LAW				
3.1	**Documentation**			
3.1.1	Introduce student to the method of maintaining a pilots' log book and the purpose of flight progress records.	B		
3.1.2	Know the reasons for and general contents of: • CARs, CAOs, AIP, CAAP • ERS(A), NOTAMS, AIC.			B
3.2	**Pilot licences, privileges and limitations**			
3.2.1	State the flight area limitations which apply to the holder of a Student Pilot Licence.		A	
3.2.2	State the recency requirements which apply to solo flight by a student pilot.		A	
3.2.3	State the privileges granted and the limitations imposed on the holder of a Student Pilot licence with passenger carrying privileges.			A
3.3	**Flight rules and conditions of flight**			
3.3.1	Recall/apply the following rules/requirements:			
	(a) rules of the air	A		
	(b) the requirements relating to the operation of aircraft on & in the vicinity of an aerodrome & the conditions relating to turns after take-off	A		
	(c) separation minima between a/c for take-off & landing at a non-controlled aerodrome	A		
	(d) rules relating to restrictions on smoking in aircraft during take-off, landing and refuelling	A		
	(e) visual flight rules and visual meteorology conditions (aeroplanes) for operations below 10,000ft		A	
	(f) altimetry procedures for flight below 10,000ft.		A	
3.3.2	State the rules relating to:			
	(a) the use of drugs & alcohol, and recall the minimum period between alcohol consumption and flight departure	A		
	(b) temporary medical unfitness.		A	
3.3.3	Recall the meaning of the following light signals directed at an aircraft:		A	
	(a) steady "Green" and steady "Red"			
	(b) "Green" "Red"' and "White" flashes.			
3.3.4	Recall regulations relating to the minimum heights for flights over:		A	
	(a) populated areas			
	(b) other areas.			
3.3.5	State the limitations imposed on:		A	
	(a) acrobatic flight			
	(b) flights over public gatherings.			
3.3.6	Recall the requirements for landing prior to the end of daylight.		A	

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
3.4	**Air service operations**			
3.4.1	Extract the restrictions pertaining to the carriage of passengers on certain flights.			A
3.4.2	Extract/apply the following regulations/rules/orders relating to the responsibilities of a pilot in command:			A
	(a) before flight:			
	(i) requirements regarding:			
	• fuels and oils			
	• fuelling of aircraft			
	• starting and ground operation of engines			
	(ii) appropriate passenger briefing			
	(b) during flight:			
	(i) regulations regarding the operation ad safety of the aircraft and the authority of the pilot in command.			
	(ii) dropping of articles from an aircraft in flight.			
3.4.3	Recall the following requirements:			
	(a) before flight:		A	
	(i) the orders regarding the:			
	• removal of locking devices			
	• security of doors, hatches, tank caps			
	• testing of flight controls			
	• removal of frost and ice			
	• instrument checks			
	• security of safety harness prior to solo flight in a dual control aircraft			
	(ii) fuel system inspection:		A	
	• when and how			
	(iii) carriage of passengers in a control seat			A
	(iv) carriage of infants and children:			A
	(b) during flight:			
	(i) the orders regarding:			A
	• occupation of seats			
	• wearing of seat belts			
	• adjustment of seats			
	(ii) regulations regarding manipulation of aircraft controls:			A
	• by pilots			
	• not permitted by unauthorised persons			

		Standard prior to:		
		1st Solo	1st Area Solo	GFPT
3.5	**Aerodromes**			
3.5.1	With reference to a diagram of the aerodrome(s) used for training: (a) identify movement areas (b) explain the significance of taxiway, runway, and/or helipad markings.	A		
3.5.2	Identify the following positions in a circuit: (a) downwind leg (b) base leg (c) crosswind leg (d) upwind leg (e) dead side of the circuit.	A		
3.5.3	Explain the significance of a white cross on the movement area.	A		
3.5.4	Identify and explain the purpose of the following aerodrome markings: (a) runway markings (b) runway threshold markings (c) runway end markings (d) cone and gable markers (e) taxiway markings (f) holding points/bays (g) a double white cross adjacent to a primary wind indicator (h) a horizontal white dumbbell.		A	

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
3.6	**Airspace (Local)**			
3.6.1	See Flying Training Syllabus.		A	
3.7	**Emergencies and SAR**			
3.7.1	Recall the intermittent use of navigation and landing lights by an aircraft to indicate.	A		
3.7.2	Differentiate between an accident and an incident.			B
3.7.3	Extract the requirements applicable to the notification of accidents and incidents.			B
3.7.4	Explain the terms: (a) SARTIME (b) INCERFA ALERFA DETRESFA.			 C C
3.7.5	Extract emergency procedures from ERS(A).		A	
	4 – RADIO TELEPHONY			
4.1	**Radio Telephony**			
4.1.1	Recall the phonetic alphabet and the method of transmitting numerals.	A		
4.1.2	Recall pertinent (local) procedures and radio phraseology for: (a) circuit flying (b) flights to/from the training area.	A		
4.1.3	State the purpose of the following radio controls: (a) on/off switches (b) frequency selector and squelch control (c) transmit button and mute switch.	A		
4.1.4	Differentiate between a distress & urgency message (a) give examples when each should be used (b) recall each prefix and extract the elements of each message from ERS(A).	A		
4.1.5	Extract radio failure procedures from ERS(A).	A		

		Standard prior to:		
		1st Solo	1st Area Solo	GFPT
	5 – AEROPLANE TYPE KNOWLEDGE			
	Note: *The following topics relate primarily to a basic nose-wheel training aeroplane.* *A person who wishes to gain a licence on a different class/type eg, multi-engine, must meet the appropriate endorsement requirements specified.*			
5.1	**Identification of aircraft components**	B		
	The student should be introduced to the training aeroplane to be used and identify the following components (as applicable to type):			
5.1.1	Fuselage:			
	(a) entry and emergency exits			
	(c) aerials, static vents, rotating beacon			
	(d) inspection hatches.			
5.1.2	Wings:			
	(a) leading and trailing edges, nav lights			
	(b) ailerons, flaps, trim tabs, and associated hinges/attachments			
	(c) pitot head, tie down points, stall warning			
	(d) fuel caps, tanks, drains, vents, hatches.			
5.1.3	Tail:			
	(a) elevator/stabiliser			
	(b) fin, rudder, trim tabs and associated hinges.			
5.1.4	Undercarriage:			
	struts, wheels, brakes steering and ground handling points.			
5.1.5	Engine:			
	location			
	type, number of cylinders			
	induction system.			
5.1.6	General cockpit layout:			
	engine and flight controls			
	engine and flight instruments			
	heating and ventilation controls			
	main switches.			
5.2	**Emergency actions**			
	Recall the:			
5.2.1	Emergency actions listed in the pilot's operating handbook.	A		
5.2.2	Power plant and airspeed limitations given in the flight manual.	A		
5.2.3	The following operating speeds:			
	lift off	A		
	climb: normal best rate	A		
	short take-off and landing.		B	
5.2.4	Stall recognition and recovery relevant to type	A		
5.2.5	Pilot actions in the event of:	A		
	an aircraft fire in the air and on the ground			
	engine failure:			
	after take-off			
	in the training area			
	propeller overspeed.			
5.2.6	Engine oil specifications and quantity.		A	
5.2.7	following fuel requirements/data:		A	
	grade used and method of identification			
	total usable fuel.			

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
5.3	**Systems**			
5.3.1	With reference to a pilot's operating handbook, demonstrate a basic understanding of the following systems: (a) fuel, engine lubrication, hydraulic (b) electrical, ignition (c) undercarriage, brakes.		B	
5.3.2	List the services provided by the: (a) battery alternator magneto (b) hydraulic system (c) lubrication system (d) vacuum system.		B	
5.3.3	With reference to the systems (or components) listed in 5.3.1 and 5.3.2: (a) identify malfunctions (b) list pilot actions (if any) (c) state consequences if the malfunction cannot be rectified.		B	
5.4	**Engine ice and handling:**			
5.4.1	State the cockpit indications that signify the presence of engine ice and state the recommended procedure to clear engine ice.		A	
5.4.2	State the methods used to: (a) control engine temperature (b) lean fuel/air mixture (c) control power and (d) recall the allied cockpit gauges which provide information on the above parameters.	B		
5.5	**Take-off and landing performance** ***Note:*** *Background knowledge in subsections 8.2 and 8.3 of this phase should be taught prior to commencing this section. As operations during this phase are "local" it may be assumed that take-off weight equals landing weight.*			
5.5.1	Given appropriate data use the flight manual to:			
	(a) extract take-off and landing distances required			B
	(b) determine maximum take-off/landing weight			A
	(c) adjust take-off weight to ensure that structural weight limits are not exceeded.			A
5.6	**Loading**			
5.6.1	use the aeroplane's loading system to distribute load and ensure that the aeroplane will not exceed CG limits.			A

		Standard prior to:		
		1st Solo	1st Area Solo	GFPT
6 – AERODYNAMICS				
6.1	**Basic theory**			
6.1.1	Identify the following: (a) aerofoil, angle of attack, relative airflow (b) centre of pressure, centre of gravity (c) lift, weight, thrust, drag.	B		
6.1.2	Differentiate between: (a) IAS and GS (b) IAS, CAS, TAS and GS.	B		B
6.2	**Lift and drag**			
6.2.1	State whether lift and drag of an aerofoil will increase or decrease with changes in: (a) airspeed (b) angle of attack (c) flap setting.	B		
6.2.2	List the types of drag, which affect a subsonic aircraft in flight. ***Note:*** *Types are:* *(a) Parasite (zero lift):* *form, interference, skin friction* *(b) Induced (lift dependent).*			B
6.2.3	State how Total Drag varies with airspeed.			B
6.2.4	Recall typical angles of attack at which a basic low speed aerofoil: (a) generates maximum lift (16 degrees) (b) is most efficient (best L/D : 4 degrees) and relate these angles to: (i) stall speed (ii) best glide speed. ***Note:*** *Students should be aware that these values are representative only.*		B	
6.3	**Flight controls**			
6.3.1	Describe the primary and further effects of the elevator, rudder and aileron on an aeroplane's movement about the longitudinal, lateral and normal (vertical) axes.	B		
6.3.2	Describe the effect of changes in power and airspeed on pitch trim and on the effectiveness of the elevator, rudder and ailerons.	B		
6.3.3	Describe the purpose of trim control.	B		
6.3.4	State the effect of lowering or raising flap on lift, drag and attitude.	B		
6.4	**Straight and level flight**			
6.4.1	State the relationship between attitude, angle of attack and airspeed in level flight. ***Note:*** *Students should appreciate that this relationship is only true in level flight.*	B		

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
6.5	**Climbing**			
6.5.1	Differentiate between rate and angle of climb.	B		
6.5.2	State the effect (increase/decrease) on climb rate and angle resulting from changes in: (a) weight (b) power (c) airspeed (changed from recommended) (d) flap deflection (e) head/tailwind component, windshear (f) bank angle (g) altitude and density altitude.		B	
6.6	**Descents:**			
6.6.1	State the effect on rate, angle of descent and attitude resulting from changes in: (a) power - constant IAS (b) flap - constant IAS.	B		
6.6.2	State the effect of head/tail wind on the glide path and glide distance (relevant to the earth's surface).	B		
6.6.3	Explain why a pilot should maintain the recommended glide speed, if undershooting an approach to land.	B		
6.7	**Turning**			
6.7.1	Describe what is meant by a balanced turn.	B		
6.7.2	Describe the terms "g" wing loading load factor.			B
6.7.3	During a level turn, state the effect (increase/decrease) of bank angle on: (a) stall IAS (b) the aircraft's structure (load factor). ***Note:*** *An appreciation of the rate of increase of stall speed with bank, and possible airframe damage if limits are exceeded is also required.*	A	A	
6.7.4	List reasons for avoiding steep turns: (a) shortly after take-off (b) during a glide - particularly on approach.	A		
6.7.5	Explain why an aeroplane executing balanced level turns at low level may appear to slip or skid when turning downwind or into wind.		A	
6.7.6	Given level flight stall speed, determine the stall speed and load factor during turns at 45 and 60 degrees bank.		B	
6.8	Stalling, spinning & spiral dives.			
6.8.1	Define stalling angle and describe: (a) the symptoms when approaching the stall (b) the characteristics of a stall.	A		
6.8.2	Explain: (a) the effect of using ailerons when approaching and during the stall (b) why an aeroplane may stall at different speeds.	A A		

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
6.8.3	List the effect (increase/decrease/nil) of the following variables on the level flight stall IAS:			
	(a) power	A		
	(b) flap	A		
	(c) wind shear vertical gusts	A		
	(d) manoeuvres	A		
	(e) weight		A	
	(f) frost and ice		A	
	(g) altitude.		A	
6.8.4	Cite manoeuvres during which an aeroplane may stall at an angle which appears to be different to the true stalling angle.		B	
6.8.5	Differentiate between a spin and a spiral dive in a light aeroplane and describe the standard recovery technique for each manoeuvre (Refer CAA Flight Instructors Manual).		A	
	Note: *Student should be advised to follow the techniques recommended in the pilot's operating handbook.*			
6.9	**Taxi, take-off, landing**			
6.9.1	Cite situations which may cause an aeroplane to "wheel barrow" and state the recommended pilot action in the event of such an occurrence.	B		
6.9.2	Describe the effect of a cross-wind on high and low wing aeroplanes during taxi, take-off and landing.	B		
	Note: *"Effect of a cross-wind" means the effect on "yaw" & "roll" and includes the tendency to nose over during taxi.*			
6.9.3	List the advantages of taking-off and landing into wind.		B	
6.9.4	Compare a flapless approach to an approach with flap in terms of:		B	
	(a) attitude during descent			
	(b) approach path angle			
	(c) threshold and touch-down speeds			
	(d) landing roll.			
6.9.5	Describe the effect of wind shear (wind gradient) and ground effect on aerodynamic and flight characteristics and identify.			B

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
6.10	**Wake turbulence**			
	Note: *If a student is operating from an aerodrome where helicopters or heavy aircraft also operate, all 'A' items must be taught prior to pre-solo.*			
6.10.1	List factors affecting the strength of vortex flow viz: • aircraft weight, speed, wing shape			B
6.10.2	State the primary control hazard that may result from a vortex encounter.		A	
6.10.3	Identify from diagrams the: (a) approximate flow direction around each vortex (b) approximate location of vortices (in still air) generated by a preceding aeroplane during: (i) cruise flight (ii) take-off and landing (c) approximate take-off/touch-down points and flight profiles which Caution: Students should be advised that heavy/med. aeroplanes are capable of steep climb gradients after take-off when operating at low take-off weights.			B
6.10.4	State/identify the effect of wind and atmospheric turbulence on the: (a) strength of vortices (b) longevity of vortices (c) location of vortices.			B
6.10.5	Recall that rotor downwash can be a hazard to a radius of approximately thrice the rotor diameter, and that this area should be avoided by light aircraft. ***Note:*** *Students should be aware of wake turbulence sep. standards in order to make value judgements to waive these standards at a controlled aerodrome or provide their own separation at non-controlled aerodromes.*		A	
6.11	**Thrust stream turbulence (jet blast)**			
6.11.1	Recall that this form of turbulence varies with engine power and distance from the source. ***Note:*** *The following information may be of value to illustrate the need for caution:* (a) approximate speeds of the jet at 30 metres are: • idling power: 25 kt • full power: 125 kt (b) at high power settings stream turbulence can extend to approximately: • 500/600 mtrs behind a DC 10 and 180 mtrs behind a 727			B
6.12	**Structural damage**			
6.12.1	Describe the effect of structural damage, including bird strikes, with emphasis on: (a) stall characteristics and (b) controllability.			

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
	7 – NAVIGATION			
	Note: *Reference to AIP "visual" charts means the present ERC, VTC, and AUS PCA and embraces any subsequent changes to charts required for flight under VFR.*			
7.1	**Basics – Extract Information from documents**			
7.1.1	On a WAC and AIP "visual" charts (if applicable) which cover the local area of operation: (a) identify, without reference to the chart legend: (i) major features to assist in map reading eg, roads, rivers, lakes (ii) obstacles and spot heights, including elevation or height above terrain (iii) CTA, PRDs, and aerodrome data on VTC/ERC (if applicable) (b) decode other symbols with reference to the chart legend (c) assess the general height of the terrain from hypsometric tints and contours (d) estimate track and distance (e) demonstrate and explain the reason for chart orientation in flight.		B	
7.1.2	On visual AIP charts identify airspace boundaries and symbols with reference to the chart legend.			B
7.1.3	Use ERS(A) to extract: (a) runway data (b) data pertaining to Prohibited, Restricted and Danger Areas.			B
7.2	**Computation techniques**			
7.2.1	Use mental rules of thumb to estimate: (a) time interval using estimated GS and distance eg, 120 kt = 2 NM/min (b) endurance given fuel flow and fuel available (excluding reserve fuel). ***Note:*** *Students should be given examples to indicate that over short distances and periods of time, such approximations are reasonably accurate.*		B	
7.2.2	Apply magnetic variation to obtain magnetic direction.		B	
7.2.3	Carry out conversions between: (a) feet/metres (b) nm/km (c) lbs/kg (d) US gal/litres/kg of avgas.			B
7.2.4	Determine head/tail, and x-wind components given W/V and HDG. ***Note:*** *Students should also practice using the conversion and wind component tables in ERS(A).*			B

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
8 – OPERATION, PERFORMANCE & FLIGHT PLANNING				
8.1	**Airworthiness & aircraft equipment**			
8.1.1	With reference to a maintenance release decide whether an aircraft is serviceable for a specific flight.			A
8.1.2	Recall the limitations imposed on a student pilot permit holder with regard to: (a) conducting daily inspections (b) signing a maintenance release (c) reporting of defects.			B
8.2	**Take-off and landing performance**			
	Note: *Use of take-off and landing charts is included in "Type" training.*			
8.2.1	State the effect (increase/decrease) of the following factors on take-off, landing, & take-off climb performance: (a) strength of head/tail wind component (b) air temperature (c) QNH (d) density height (non-standard conditions) (e) airfield elevation (f) runway slope & surface including wet & slushy runways (g) ground effect and windshear (h) frost on an aircraft.		B	
8.2.2	Differentiate between pressure height & density height.		B	
8.2.3	Describe how to use an altimeter to obtain: (a) local QNH at an aerodrome (b) pressure height of an aerodrome (c) elevation of an aerodrome.		B	
8.2.4	Explain the terms: (a) maximum structural take-off and landing weight (b) climb weight limit.			B
8.2.5	State the likely results of exceeding aircraft weight limits.			B
8.3	**Loading**			
	Note: *Practical use of a loading system is included in "Type" training.*			
8.3.1	At this phase of training, a student should have a basic understanding of the terms listed below, to enable him/her to apply this knowledge when using the applicable loading system in type training: (a) arm, moment, datum, station, index unit (b) centre of gravity (CG) and CG limits (c) empty weight, zero fuel weight (ZFW), ramp weight (d) maximum take-off and maximum landing weights (e) floor loading limits.			B

		Standard prior to:		
		1st Solo	**1st Area Solo**	**GFPT**
8.4	**Speed limitations**			
8.4.1	Explain the following terms/abbreviations: (a) normal operating speed (V_{no}) (b) never exceed speed (V_{NE}) (c) maximum manoeuvre speed (V_A) (d) turbulence penetration speed (V_B) (e) limit and design load factors (f) flap operating speed (V_{FO}) and flap extended speed (V_{FE}).		A	
8.4.2	Cite situations which may result in an aircraft exceeding speed limits and load factor limits.		A	
	9 – METEOROLOGY			
9.1	**Knowledge of local weather**			
9.1.1	Demonstrate a basic knowledge of local weather, in particular the likely occurrence of : (a) thunderstorms (b) low cloud (c) poor visibility (d) turbulence and describe how these phenomena may affect the safe operation of an aircraft.			B
9.2	**Knowledge of forecasts and reports**			
9.2.1	Demonstrate an understanding of weather forecasts, reports and broadcasts that are pertinent to the area of operation.			B
9.3	**Understand significance of observations**			
9.3.1	Recognise signs which may indicate the presence of : (a) turbulence, thermals, dust devils (b) wind gradient, wind shear, and describe the effect of these phenomena on flight characteristics. ***Note:*** *"Signs" means forecast conditions and pilot observations.*			B

GROUND TRAINING BLOCK 2

INDEX TO GROUND TRAINING BLOCK 1 (Post GFPT) **PAGE**

FLIGHT PHASES 4/5

Notes:

- *Where topics are common but completion standards differ for PPL and CPL students, separate standards are specified for each licence level.*
- *Objectives which apply to PPL also apply to CPL students*.

		Standard prior to: PPL Flt Test	CPL Flt Test
	2 – AIRCRAFT GENERAL KNOWLEDGE		
2.1	**Engines**		
2.1.1	Carburetion		
	(a) describe the principle of operation of a simple carburettor in terms of :		C
	(i) fuel vaporisation and distribution		
	(ii) control of the fuel/air charged:		
	• throttle butterfly		
	(iii) idling, main and acceleration jets:		
	• purpose of these jets		
	(iv) mixture control.		
2.1.2	Supercharging		
	(a) state the purpose of supercharging		C
	(b) list the types of superchargers:		C
	(i) geared (mechanically driven)		
	(ii) turbo (exhaust driven).		
	(c) state the purpose/function of the following components:		B
	(i) geared superchargers		
	• impeller, diffuser		
	(ii) turbo chargers:		
	• compressor, waste gate (fixed, manual, automatic)		
	(d) state the precautions to be observed to avoid detonation when operating a supercharged engine.		A
2.2	**Propellers**		
	Notes: Depending on design, a variable pitch propeller will, when the propeller oil pressure is lost, adopt either full fine or full coarse pitch. *With this in mind, the following generalities will be used when examining topics relating to variable pitch propellers. The use of springs is omitted as their function varies depending on propeller design.* • *centrifugal twisting moment (CTM) tends to reduce (fine) pitch* • *counter weights, when used, increase (coarsen) pitch* • *oil pressure is used to decrease pitch if counterweights are fitted* • *oil pressure is used to increase pitch if counterweights are not fitted* *Students should be advised to check pilots' operating handbook to ascertain the constant speed mechanism used when operating different types.*		

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
2.2.1	Describe the following terms: • blade angle, helix angle/pitch • propeller thrust and torque • thrust horsepower (THP) • brake horsepower (BHP) • asymmetric blade effect .		C
2.2.2	Describe how a propeller converts engine power into thrust and explain what is meant by fine and course pitch stops.		C
2.2.3	Describe the effect of using carburettor heat on aeroplanes fitted with a CSU.		B
2.2.4	Describe how power output is controlled when operating aeroplanes fitted with a variable pitch propeller and know how to monitor power using engine instruments.		B
2.2.5	List the precautions necessary if operating a variable pitch propeller when: (a) conducting ground checks (b) changing power i.e. use of throttle/RPM levers.		B
2.2.6	List reasons for propeller overspeed in aeroplanes fitted with: (a) fixed pitched propellers (b) variable pitch propellers and state the associated remedial pilot action.	A	A
2.2.7	Describe: (a) the effect of CSU malfunction on engine operation (b) the effect of using engine controls in the event of malfunction.		B
2.2.8	In aeroplanes fitted with a CSU, identify cockpit indications which could signify: (a) the presence of engine ice (b) that engine ice has been cleared after application of "carb heat".		A
2.3	**Power plants**		
2.3.1	Explain the term "full throttle height".	B	
2.3.2	Describe the effect of the following factors on engine performance: (a) fuel/air mixture strength (b) density height (c) altitude, on: (i) normally aspirated engines (ii) turbocharged/supercharged engines.	 B B B	 B
2.3.3.	Compare the performance characteristics of : (a) aeroplanes with fixed pitch propellers and those fitted with a CSU (b) engine operation (within limits) at high MP/low RPM and low MP/high RPM (c) normally aspirated and turbocharged/supercharged engines.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
2.4	**Aeroplane systems**		
2.4.1	Describe or state the function of the following typical components mentioned in pilot operating handbooks:		
	(a) **Fuel system components**:		B
	(i) auxiliary/booster pump		
	(ii) fuel drain		
	(iii) fuel pressure gauge		
	(iv) fuel flow gauge		
	(v) check valves.		
	(b) **Lubrication system**:		B
	(i) by-pass valves		
	(ii) oil cooler		
	(iii) wet sump system		
	(iv) dip stick.		
	(c) **Stall warning devices**	A	
	(d) **Electrical & Ignition systems**:		B
	(i) alternator generator		
	(ii) voltage regulator over voltage relay		
	(iii) ammeter voltmeter		
	(iv) circuit breaker fuse		
	(v) battery ampere hours		
	(vi) bus bar battery master switch		
	(vii) starter motor starter relay		
	(viii) dual ignition distributor ignition switch		
	(ix) external power receptacle, ground/flight switch.		
	(e) Undercarriage system:		B
	(i) oleos/shock struts		
	(ii) shimmy dampers		
	(iii) nose wheel steering/castering		
	(iv) retractable undercarriage		
	• uplocks/downlocks		
	• anti-retraction devices		
	• aural/visual warning devices		
	• emergency systems		
	• free fall		
	• electric, hydraulic, pneumatic		
	(f) Hydraulic system:		B
	(i) accumulator		
	(ii) actuators		
	(iii) brake master cylinder		
	(iv) check valve restrictors.		
	(g) Auto-pilot:		B
	(i) roll attitude heading pitch controls		
	(ii) trim indicator		
	(iii) cut-out mechanisms.		
	Note: *Includes the possibility of "overpowering" the system and associated precautions.*		

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
	(h) Fire protection:		
	(i) typical detectors:		B
	• overheat - thermal switches		
	• rate of temperature rise - thermocouple		
	• flame		
	(ii) typical warning devices:	A	
	• lights		
	• audio		
	(iii) types of fire extinguisher and usage	A	
	(iv) engine cooling:		B
	• fins		
	• baffles		
	• cowl flaps.		
2.5	**Flight instruments**		
2.5.1	General:		
	(a) explain the following terms:	B	
	(i) pitot-static system		
	(ii) pitot pressure static pressure		
	(iii) alternate static source		
	(iv) pressure error		
	(b) explain the relationship between:	B	
	(i) IAS CAS EAS TAS.		
	Note: *The item listed in 2.5.2 below include some aspects learnt in Training Block 1.*		
	(c) have a basic knowledge of the principle of operation and construction of the:		C
	(i) ASI, VSI, altimeter		
	(ii) artificial horizon, direction indicator, rate of turn indicator, turn co-ordinator.		
2.5.2	State the effect of the following factors on the accuracy of pressure instrument indications:	B	
	(a) ASI:		
	(i) blockage/leaks (pitot or static)		
	(ii) manoeuvre induced errors (eg sharp pull out from a dive).		
	(b) VSI:		
	(i) blockage of the static source		
	(ii) lag.		
	Note: *Student should be aware that an IVSI compensates for lag errors.*		
	(c) Altimeter:		
	(i) blockage of the static source		
	(ii) lag		
	(iii) incorrect sub-scale settings		
	(iv) errors due to changes in atmospheric temperature and pressure.		
2.5.3	Gyroscopic principles:		C
	(a) describe the gyroscopic properties of rigidity and precession		
	(b) compare the advantages and disadvantages of air driven and electrically driven gyroscopes		
	(c) state the effect on a Directional Indicator of:		
	• apparent wander/drift		
	• maximum at the poles, zero at the equator		
	• transport wander.		

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
2.5.4	Direct reading magnetic compass Background knowledge Principle of construction: • magnetic needles point to magnetic north • fluid decreases oscillations and friction - should not contain bubbles • pendulosity of magnet systems causes errors.		C
2.5.5.	State the effect of the following errors on compass indications in the southern hemisphere: (a) turning errors (b) acceleration errors.	B	
2.5.6	State the purpose of and use a compass correction card to determine magnetic heading.	B	
	3 – FLIGHT RULES & AIR LAW		
3.1	**Documentation**		
3.1.1	Describe the method of obtaining publications and know why it is important to update these documents.	B	
3.1.2	Given an item of operational significance: (a) select from the list below the appropriate reference document: CAR CAO AIP (Book) CAAP (b) extract relevant and current information from these documents.	B	
3.1.3	Extract/decode information contained in ERS(A), NOTAMS and AIP supplements.	B	
3.1.4	Understand the terms and abbreviations in AIP GEN which are relevant to flight in accordance with VFR.	A	
3.2	**Pilot licences, privileges and limitations**		
3.2.1	Know: (a) privileges and limitations of the licence (b) recent experience requirements (c) classification of operations.	A	
3.2.2	Extract/apply the rules pertaining to flight and duty time limitations for: (a) PPL holders (b) CPL holders.	A	A
3.3	**Flight rules and conditions of flight**		
3.3.1	Select documents that must be carried on board an aircraft during flight in Australian airspace.	B	
3.3.2	Extract/apply the rules relating to: (a) carriage and discharge of firearms (b) aerodromes where operations are note restricted to runways (c) the conditions relating to flight in PRD areas.	A A B	
3.3.3	Give examples of situations which would require a "security" prefix prior to a radio call.	B	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
3.4	**Air service operations**		
3.4.1	Extract/apply the rules relating to:		
	(a) a pilot's responsibilities before flight	A	
	(b) aerodrome meteorological minima	A	
	(c) flights over water and in designated remote areas	A	
	(d) carriage of:	B	
	(i) cargo		
	(ii) sick and handicapped persons		
	(iii) parachutists		
	(iv) flotation and survival equipment		
	(v) animals		
	(vi) dangerous goods		
	(e) requirement for passenger lists.		B
3.4.2	State the requirements to test radio equipment prior to taxi and maintain a listening watch.	A	
3.5	**Aerodromes**		
3.5.1	State a pilot's responsibilities with regard to the use of aerodromes.	C	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
3.6	**Airspace**		
3.6.1	Differentiate between the various classifications of airspace.	B	
3.6.2	With respect to the terms listed in (a) to (g):	B	
	• explain each term and, if applicable. - identify airspace boundaries on appropriate charts - extract vertical limits of designated airspace from charts or ERS(A)		
	(a) flight information service FIR FIA OCTA		
	(b) air traffic control service CTA CTR controlled airspace		
	(c) radio "reports" and "broadcasts"		
	(d) VFR route and lanes of entry		
	(e) PRD areas		
	(f) CTAF(R) areas		
	(g) controlled aerodromes GAAP aerodromes.		
3.6.3	Extract/apply permitted tracking tolerances for VFR aircraft to avoid controlled airspace.	B	
3.6.4	Know the requirements and procedures to be adopted when operating:		B
	(a) in any class of airspace		
	(b) from or into:		
	(i) any licensed aerodrome		
	(ii) a CTAF(R).		
	Notes: 1. "Requirements" means the need for clearances, reports and broadcasts. 2. "Procedures" means when to request a clearance, make a report/broadcast and pilot action on receipt of an instruction from ATC. 3. THIS TOPIC DOES NOT INCLUDE RADIO PHRASEOLOGY.		
3.6.5	Altimetry:		
	(a) recall the datum from which an altimeter indicates height when the following are set on the sub-scale: • Area QNH • Local QNH • QFE • Standard Pressure Setting	A	
	(b) recall the meaning of the following: • transition altitude • transition level • transition layer		C
	(c) recall the procedures that are carried out with the altimeter at the Transition Altitude and the Transition Level on climb & descent		B
	(d) derive the Transition Level for any given area QNH.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
3.7	**Emergencies, accidents, incidents**		
3.7.1	State the conditions under which a pilot may declare a mercy flight and select occasions when a mercy flight must not be undertaken.	B	
3.7.2	Extract from AIP the responsibilities of a pilot regarding the notification of accidents and incidents.	B	
3.7.3	(*AIRFLASH PRIORITY* deleted)	A	
3.7.4	Cite examples of "hazards to navigation" that must be reported by pilots.	B	
3.8	**Security**		
3.8.1	Explain the term ADIZ and extract: (a) the general requirements for operations in this zone (b) the action by the pilot of the intercepted aircraft.	A	
3.8.2	State the powers vested in a pilot in command.	A	
	4 – RADIO TELEPHONY		
4.1	**Radio**		
4.1.1	Know the basic principles of radio wave propagation and recall the appropriate frequency bands for VHF, MF and HF.		C
4.1.2	Know the limitations of VHF and HF in terms of quality of reception and range.	B	
4.1.3	List factors which may affect VHF and HF reception.	B	
4.1.4	Use appropriate charts/documents to: (a) extract VHF and HF frequencies (b) determine communication coverage.	A	
4.2	**Transponder**		
4.2.1	State the precautions to be observed when selecting codes and extract transponder codes for: (a) radio failure (b) an emergency.	A	
4.2.2	Given an area of operation decide whether it is necessary to use a transponder.	A	
4.2.3	State the meaning of the terms SQUAWK, IDENT and CODE.	B	
4.2.4	Describe the information (if any) that is transmitted when a pilot selects: (a) STBY, ON (b) ALT, IDENT.	B	
4.2.5	Identify indications of normal and abnormal transponder operation and list factors that affect transponder reception.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
5 – AEROPLANE TYPE KNOWLEDGE			
5.1	**Aeroplane knowledge**		
5.1.1	Prior to cross-country flight training, a student should: (a) list aircraft equipment necessary for the flight (b) demonstrate a knowledge of : (i) tie down procedures (ii) stowage of equipment/cargo (iii) knowledge of location and use of an ELB (iv) an awareness of survival procedures given in ERS(A).	B	

		Standard prior to: PPL Flt Test	Standard prior to: CPL Flt Test
	6 – AERODYNAMICS		
6.1	**Terminology**		
6.1.1	Identify descriptions/drawings of the following terms: • aerofoil span chord camber thickness/chord ratio • relative airflow angle of attack • total reaction lift drag • laminar and turbulent boundary layers.	B	
6.2	**Design features**		
6.2.1	State the purpose of the following design features/controls: • anhedral dihedral aspect ratio sweepback wash-out • wing spoilers flaps vortex generators • trim tabs.		C
6.3	**Bernoulli's theorem**		
6.3.1	Apply Bernoulli's theorem of constant energy flow to describe how an aerofoil produces lift. ***Note:*** *Limited to the variation of kinetic energy (dynamic pressure) and potential energy (static pressure) as air flows through a venturi or over a wing.* *Student should also be aware that the upper surface of a wing generates the majority of lift.*		C
6.4	**Changes in angle of attack**		
6.4.1	State/identify the effect of changes in angle of attack up to the stalling angle on: (a) pressure changes above and below the wing (b) changes in airflow characteristics streamlined to turbulent (c) lift and drag (d) the boundary layer.		C
6.5	**Lift and drag**		
6.5.1	State the meaning of the following terms used in the lift and drag formulae viz: (a) C_L and C_D - depend on shape & angle of attack of an aerofoil (b) ½ P V^2 - defines dynamic pressure (IAS) (c) S - defines surface area.		C
6.5.2	With reference to C_L, C_D, C_L/C_D graphs identify angles of attack associated with: (a) minimum drag - max level flight speed (b) max lift - stalling angle (c) best C_L/C_D - best glide range and still air range.		B
6.5.3	Revise types of drag and state the effect on total drag resulting from changes in IAS, aircraft weight and height.		B
6.6	**Manoeuvres**		
6.6.1	Draw/identify the forces of lift, weight, thrust and drag acting on an aeroplane in: (a) "steady" level flight (b) a "steady" climb (c) a "steady" descent (d) a balanced level turn.		C
6.6.2	State the relationship between speed, bank angle, radius and rate of turn during a balanced level turn.	B	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
6.6.3	For a given IAS use the rule of thumb to determine the approximate bank angle for a rate one turn.	B	
6.6.4	State why:		B
	(a) power must be applied to maintain speed in a level turn		
	(b) an aeroplane tends to overbank in level and climbing turns and not in descending turns.		
6.6.5	State:		
	(a) the effect of aileron drag on turn performance at low airspeed	B	
	(b) how the following design features offset this drag:		C
	(i) frise ailerons		
	(ii) differential ailerons.		
6.6.6	Stalling and spinning:	A	
	Review stall topics learnt in Block 1 (item 6.8).		
6.7	**Performance considerations**		
6.7.1	Give reasons for flying for maximum still air range and endurance.	B	
6.7.2	List/identify aerodynamic and engine considerations which are required to achieve maximum still air range and endurance when operating an aeroplane with a:		
	(a) normally aspirated engine	B	
	(b) turbocharged/supercharged engine.		B
6.7.3	From (theoretical) power required and power available graphs identify:		C
	(a) stall speed (power on)		
	(b) best still air range speed		
	(c) best endurance speed		
	(d) maximum level flight speed		
	(e) the region of reverse command.		
	Note: *The region of reverse command is (sometimes) colloquially described as the "back of the power curve".*		
6.7.4	Revise the terms "load factor", "g" and "wing loading" and cite situations that may result in an aeroplane exceeding load factor and wing loading limits.	A	
6.7.5	Given that certain flight conditions remain constant, state the effect of:	B	
	(a) changes in weight and altitude (height) on:		
	(i) angle of attack and IAS in level flight		
	(ii) level flight range and endurance		
	(iii) turn rate and radius		
	(iv) glide range and endurance		
	(b) changes in head/tail wind component on:		
	(i) level flight range and endurance		
	(ii) glide range and endurance		
	(c) changes in power on turn rate and radius.		

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
6.8	**Stability and control**		
6.8.1	State the effect of the factors listed below on the stability and control of an aeroplane in each of the three planes of movement:		
	(a) longitudinal stability:	B	
	(i) position of CG		
	(ii) movement of centre of pressure		
	(iii) changes in thrust		
	(iv) tailplane moment.		
	(b) lateral stability:		B
	(i) high versus low set wings		
	(ii) dihedral versus anhedral		
	(iii) sweepback.		
	(c) directional stability:		B
	(i) large fore/aft displacement of the CG		
	(ii) large versus small fin and rudder moment.		
6.8.2	Understand the relationship between directional and lateral stability (spiral instability) and state the effect of spiral instability on the control of an aeroplane.	B	
6.8.3	Recognise statements/diagrams which describe static and dynamic stability.		C
6.8.4	Describe the controllability problems associated with flight in the region of reverse command.	B	
6.8.5	Explain the purpose of:	B	
	(a) trim tabs (fixed and cockpit controlled)		
	(b) balance tabs		
	(c) anti-balance tabs		
	(d) aerodynamic balance		
	(e) mass balance.		
6.8.6	Explain the function of the items mentioned in 6.8.5 in relation to the movement of a main control surface.		C
6.9	**Taxi, take-off and landing**		
6.9.1	Describe the stability and control characteristics of nose wheel aeroplanes during ground operation.		B
6.9.2	Describe the result of the following factors on the controllability of an aeroplane:	B	
	(a) propeller torque and slipstream effect		
	(b) gyroscopic effect		
	(c) asymmetric blade effect.		
6.9.3	Describe the term "ground effect" and its effect on aeroplane performance.	B	

		Standard prior to: PPL Flt Test	Standard prior to: CPL Flt Test
	7 – NAVIGATION		
7.1	**Form of the earth**		
7.1.1.	In order to apply this knowledge a student should have an understanding of the items listed in (a) to (h) and, if applicable, their effect on: • position on the earth • time differences • distance and direction (a) the shape and rotation of the earth (b) latitude, longitude (c) meridians of longitude, parallels of latitude (d) equator, Greenwich meridian (e) great circles, small circles, rhumb lines (f) difference between true and magnetic north (g) terrestrial magnetism, magnetic variation and the change in variation with time (h) distance on the earth i.e. relationship between a minute of latitude and a nautical mile.	B	
7.2	**Time**		
7.2.1	Explain the terms UTC, Local Mean Time, Local (Standard) Time, Local summer time.	B	
7.2.2	Extract (within +/- 5 min) the beginning and end of civil twilight from AIP daylight and darkness graphs.	B	
7.2.3	Carry out conversions between: • LMT, UTC, Local (Standard) times including local summer time	B	
7.2.4	List factors which may cause daylight to end earlier than the time extracted from AIP darkness graphs.	B	
7.2.5	Describe the effect of the earth's rotation and revolution around the sun on the: (a) beginning and end of daylight (b) period of daylight.		C
7.2.6	Describe the effect of changes in longitude on local mean time.		C
7.3	**Charts and publications** ***Note:*** *AIP "Visual Charts" refers to the present ERC, VTC and AUS PCA and embraces any subsequent changes to charts required for flight under VFR.*		
7.3.1	From AIP "Visual Charts" and ERS(A), select the chart(s) document(s) which contain information about a given item of operational significance.	B	
7.3.2	Extract/decode symbols and apply information displayed on AIP "visual charts".	B	
7.3.3	Interpret topographic detail and decode symbols displayed on a WAC and VTC.	B	
7.3.4	On a WAC and AIP "visual charts": (a) measure rhumb line track (b) measure distance: (i) using chart and latitude scale (c) plot a position given: (i) latitude and longitude (ii) bearing and distance. ***Note:*** *Students should also practice techniques to estimate track and distance.*	B	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
7.3.5	A CPL student is expected to have a basic knowledge of the theory of map projections and: (a) identify the following properties of a Lamberts Conformal: (i) appearance of rhumb lines, great circles, meridians and the graticule (ii) distortion of shapes & areas (iii) scale variation. (b) describe the methods of representing scale.		C
7.4	**Computations:**		
7.4.1	Review computations and conversions and: (a) solve GS, distance, fuel used, fuel required, fuel remaining and fuel consumption problems, given appropriate combinations of these factors (b) solve CAS/TAS problems given air temp & pressure height (c) determine HDG, GS and drift given TAS, W/V, TR (d) determine TR given HDG, TAS, W/V (e) solve problems relating to rates/gradients of climb and descent (f) determine TOPC and TOPD position using average airspeed, W/V, and rates of climb/descent.	B	
7.5	**Pilot Navigation**		
7.5.1	Principles of map reading: (a) describe the method of chart orientation (b) list situations when a pilot should read: (i) from map to ground (ii) from ground to map. (c) select appropriate position lines to establish: (i) ground speed (ii) track error (iii) a fix. (d) select appropriate ground features to establish position when flying: (i) at low level (500 ft AGL)	B	
	(ii) between (approximately) 2000 and 10,000 ft (iii) over mountainous terrain, coastal areas, densely populated and sparsely populated areas.		
7.5.2	Chart preparation and selection (practice): (a) draw tracks, track error lines, time/distance markings (b) given a route: • select WAC(s) and appropriate AIP "visual charts".	B	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
7.5.3	With reference to a planned or given track and given appropriate data: (a) determine track made good (TMG) (b) calculate drift (c) determine alteration of heading or HDG(M) to: (i) parallel track (ii) intercept track at a nominated point (iii) maintain track once track is intercepted. (d) revise/confirm estimates or ETA using latest ground speed or time/distance proportion (e) establish a DR position using latest TR & GS. *Notes:* *PPL - Whilst the use of a map plotter is acceptable, students should be taught to employ mental dead reckoning and proportional techniques to solve in-flight navigational problems.* *CPL - A CPL student is also required to:* • *mentally apply the one in sixty rule* • *mentally revise estimates/ETA's* • *estimate TR & ETI to a selected diversion point.*	B	
7.5.4	Monitor flight progress by maintaining an in-flight navigation log.	B	
7.5.5	Monitor fuel consumption and revise fuel reserves.	A	
7.5.6	Plan in-flight diversions: (a) around adverse weather (b) to a suitable aerodrome. ***Note:*** *Diversions must address all appropriate items listed in AIP with respect to flight plan amendments.*	A	
7.6	**Radio Navigation Aids**		
7.6.1	Describe how to identify an aid and state the frequency of a nominated NDB or VOR.	B	
7.6.2	Extract NDB and VOR information from ERS(A) or ERC and state the rated coverage of a VOR up to 10,000 ft.	B	
7.6.3	State the effect (in Australia) of the following errors on the reliability of ADF cockpit indications: (a) co-channel interference (b) mountain effect (c) effect of thunderstorms (d) coastal refraction.	B	
7.6.4	Explain why information pertaining to broadcasting stations is included in ERS(A).		C
7.6.5	Recall the "aggregate" error of a VOR and explain what is meant by "scalloping".		C
7.6.6	Establish a position line given: (a) HDG & ADF data (b) VOR indications.	B	
7.6.7	Describe how to use the VOR to determine TR to or from a station.	B	
7.6.8	Describe how to use an ADF or VOR to home to a station, and recognise instrument indications that signify station passage. ***Note:*** *CPL students are expected to apply drift when tracking inbound to an NDB.*	B	
7.6.9	Establish fixes using a DME distance and: (a) HDG & ADF data or (b) VOR indications and use these fixes to make off track corrections.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
8 – AIRCRAFT OPERATION, PERFORMANCE AND PLANNING			
8.1	**ERS(A)**		
8.1.1	Extract/apply all items of information contained in ERS(A) which are relevant to VFR (day) operations.	B	
8.2	**Aerodromes and Aeroplane Landing Areas (ALAs)**		
	Note: *ALAs are included as a topic in this syllabus pursuant to a pilot's responsibilities in accordance with CAR 92.*		
8.2.1	Explain/apply the following terms used in CASA publications & documents: (a) take-off safety speed (b) take-off distance available (TODA) (c) take-off distance required (TODR) (d) landing distance available (LDA) (e) landing distance required (LDR).	B	
8.2.2	Determine whether a given is suitable for an aeroplane to take-off and land safety in accordance with guidelines contained in CAAP 92.1.	B	
8.3	**Density Height:**		
8.3.1	Determine density height: (a) given OAT & pressure height (b) using cockpit temp. & an altimeter setting of 1013.2 hPa (c) density altitude charts. **Notes:** The following methods should be taught for (a) and (b): a manual computer flight manual charts or mathematics.	B	

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
8.4	**Take Off & Landing Performance**		
	Note: *"Completion Standards" and associated "Knowledge Standards" for PPL and CPL students are specified at the end of this topic.*		
8.4.1	Use the flight manual to extract maximum structural take-off and landing weights.	A	
8.4.2	Given a typical flight scenario, use performance charts to extract:		
	(a) maximum take-off weight	A	
	(b) maximum landing weight	A	
	(c) take-off distance required (TODR)	B	
	(d) landing distance required (LDR)	B	
	(e) climb weight limit	A	
	(f) take-off parameters:	B	
	• power, flap setting, take-off safety speed		
	(g) landing parameters:	B	
	• flap, threshold speed		
	and state the conditions on which the parameters listed in (f) & (g) are based.	B	
	Note: *The objective in 8.4.2 will require the ability to perform one or more of the following tasks:*		
	(a) apply information extracted from ERS(A)		
	(b) determine TODA and LDA at a ground ALA		
	(c) apply the CASA regulatory requirements/orders as applicable to single engine aeroplanes		
	(d) extract/derive entry parameters for take-off & landing charts viz:		
	(i) temperature and pressure		
	(ii) take-off and landing weights		
	(e) extract structural weight limits from a flight manual.		
	Completion standards for Topic 8.4		
	PPL	A	
	The primary requirement is to ensure that safety limits are not exceeded.		
	CPL		A
	In addition to the requirement to conform to safety criteria, a student is also required to:		
	(a) demonstrate speed and accuracy		B
	(b) give reasons for imposing climb weight and structural weight limits		B
	(c) calculate:		B
	(i) climb gradient		
	(ii) rate of climb.		

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
8.5	**Climb, Cruise and Descent Performance**		
8.5.1	From typical charts or tables extract/determine the following data for climb, cruise and descent: (a) time, speed, distance, fuel flow/quantity (b) appropriate engine settings (c) rates of climb/descent (d) the conditions under which an aeroplane will achieve maximum range and endurance.	B	
8.5.2	Determine the: (a) best air and ground NM/unit of fuel. (eg: 2.5 NM/kg) (b) least fuel/air or ground NM (eg: 0.4 kg/NM). ***Note:*** *Fuel units are US gal, kg, litres.*		B
8.5.3	Estimate: (a) mid zone weight (b) landing weight (c) take off weight at an intermediate landing point.		B
8.6	**Loading**		
8.6.1	Explain the following terms: (a) arm, moment, datum, station, index unit (b) centre of gravity (CG) and CG limits (c) mean aerodynamic chord (MAC) (d) empty weight, zero fuel weight (ZFW), ramp weight (e) maximum takeoff and maximum landing weights (f) floor loading limits. ***Note:*** *The only requirement for PPL is the application of the information in 8.6.1.*		B
8.6.2	Demonstrate the ability to: (a) express CG as a % of MAC (b) determine CG position relative to the datum (c) determine movement of CG with changes in load distribution and mass.		B
8.6.3	Given appropriate data use a typical loading system or a load sheet to distribute load to maintain CG within limits throughout a flight ***Note:*** *This objective requires the ability to perform one or more of the following tasks:* *(a) extract the following weight limits from a flight manual:* • *empty weight ZFW* • *maximum structural take-off and landing weight* *(b) determine:* • *maximum payload* • *maximum load per station* • *maximum floor loading capacities* • *fore and aft CG limits for a given/derived weight* • *weight of fuel/ballast to be carried.*		A

		Standard prior to: PPL Flt Test	Standard prior to: CPL Flt Test
	Completion standards for 8.6.1 to 8.6.3		
	PPL		
	The primary requirement is to ensure that:	A	
	(a) the CG is within limits throughout the flight		
	(b) structural and performance limits are not exceeded		
	(c) compartment and floor load limits are not exceeded.		
	CPL		
	In addition to the safety standards specified for a PPL, a CPL student is required to:		A
	(a) demonstrate speed and accuracy as defined in knowledge tests/examinations		
	(b) determine:		
	(i) the maximum payload/fuel that may be carried		B
	(ii) ballast requirements if any		B
	(iii) the position of the CG under different load configurations.		B
8.7	**Flight Plan Preparation**		
8.7.1	Extract/apply the responsibilities of a pilot in command with regard to weather and operational briefing prior to planning a VFR flight.	A	
8.7.2	Given a route applicable to: • the level of licence • type of operation viz: OCTA/CTA:		
	(a) select appropriate visual charts for the flight	A	
	(b) list the operations for which it is mandatory to obtain meteorological and operational briefing	A	
	(c) list the weather services available, and nominate the sources and methods of obtaining this information	B	
	(d) extract/apply CASA requirements/instructions for flight notification of VFR flights and state the preferred methods of submitting this notification.	B	
8.7.3	Given an aerodrome forecast determine whether holding or alternate requirements apply and if so: (a) nominate an appropriate alternate aerodrome (b) determine the quantity of additional fuel required for holding or flight to the alternate.	A	
8.8	**Flight Planning** ***Notes:*** *1: In the interests of standardisation the domestic flight plan form should be used.* *2. Fuel policy for exam purposes will be as discussed in CAAP 234-1(0). It forms part of the syllabus pursuant to a pilot's responsibility in accordance with CASA regulations.*		

		Standard prior to: PPL Flt Test	Standard prior to: CPL Flt Test
8.8.1	**Completion standard prior to 1st solo nav-ex.**		
	Given:		
	• a typical training navigation route (OCTA/CTA) as applicable)		
	• appropriate weather and operational briefing		
	• aircraft (type) planning data and fuel at start up:		
	(a) select correct (safe) cruise levels	A	
	(b) enter information correctly in the flight plan form	B	
	(c) submit appropriate flight notification details	B	
	(d) determine minimum (safe) fuel and endurance	A	
	(e) demonstrate accuracy in computations:	B	
	• HDG +/- 5^0, ETI +/- 2 mins Fuel/Endurance +5%		
	(f) meet the standards specified in Nav topics 7.5.2 to 7.5.6.		
8.8.2	**PPL - Completion Standard**	A	
	Given:		
	• a departure place and two landing points		
	• weather and operational briefing		
	• passenger and/or baggage requirements		
	• appropriate performance data		
	Complete a Flight Plan form after considering the following aspects:		
	(a) selection of safe route(s) and cruise levels to comply with VFR		
	(b) selection of cruise levels in accordance with the table of cruising levels		
	(c) fuel for the flight, holding fuel, fuel to an alternate aerodrome, and specified reserves		
	(d) weight limitation and aeroplane balance requirements		
	(e) latest departure time.		
	Notes:		
	1. A PPL with OCTA (only) privileges is required to operate OCTA.		
	2. A PPL with CTA privileges is required to plan at least one segment to/from a GAAP or primary airport.		
8.8.3	**CPL - Completion Standard**		
	Given a typical commercial task including:		
	• departure and landing points within and/or outside controlled airspace		
	• weather and operational briefing		
	• appropriate performance data:		
	(a) select safe routes to comply to VFR		A
	(b) select cruise levels:		
	(i) to comply with VFR and the table of cruising levels and		A
	(ii) which meet passenger and fuel economy requirements		B
	(c) determine:		
	(i) the minimum (safe) fuel required		A
	(ii) the maximum payload (passengers/cargo and fuel) that may be carried		A
	(iii) whether intermediate refuelling is necessary		B
	(iv) ETD/ETA after considering Day VFR requirements, flight/duty time limitations and commercial considerations		A
	(d) complete a Flight Plan form and a loading system.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
8.9	**Equi-time Point (ETP), Point of no return (PNR), Diversions**		
8.9.1	Cite/recognise situations that may require the calculations of an ETP or PNR.	B	
8.9.2	Assuming a constant cruise altitude and TAS, indicate the position of an ETP between two points in still air.	B	
8.9.3	Calculate time and distance to an ETP or PNR between two points, using planned or given data.		B
8.9.4	Given fuel on board, use planned/given ground speed to decide which of the following courses of action would require the least fuel (including reserves): (a) proceed to destination (b) return to the departure aerodrome (c) proceed to a suitable alternate. ***Note:*** Also refer to Topic 7.5.6 relating to diversions.	B	
8.10	**Airworthiness and Equipment**		
8.10.1	State the purpose of certificates of airworthiness and registration.	B	
8.10.2	Given a typical scenario, extract from CASA regulations/orders/instructions the communication and normal and emergency equipment required to be on board an aircraft.	A	
8.10.3	State the responsibilities of a pilot in command with regard to: (a) daily inspections (b) recording/reporting aircraft defects.	A	
8.10.4	As applicable, determine the types of maintenance that may be carried out by a PPL or CPL holder.	B	
8.10.5	Given a copy of a maintenance release: (a) determine its validity (b) list the class(es) of operation applicable to the aircraft (c) list outstanding defects/endorsements and decide whether these affect the airworthiness of the aircraft.	A	

		Standard prior to: PPL Flt Test	CPL Flt Test
	9 – METEOROLOGY		
	Note: *Reference documents:* • *AIP, Manuals of Meteorology, ERS(A)*		
9.1	**Composition of the atmosphere**		
9.1.1.	Student should know the following vertical divisions in the atmosphere: (i) troposphere, tropopause, stratosphere (ii) that most weather effects occur below the stratosphere.	B	
9.1.2	In the standard atmosphere, recall: (a) sea level temperature and pressure (b) temperature and pressure lapse rates in the troposphere.	B	
9.2	**Heat, temperature, pressure and humidity**		
9.2.1.	A student should: (a) describe the method of measuring surface air temperature, and know that actual temperatures may be much higher eg, above a runway	A	
	(b) know the meaning of the following terms: (i) isotherm, temperature inversion (ii) radiation, advection, convection, conduction (iii) isobar, horizontal pressure gradient (iv) saturated air, relative humidity, dew point (v) evaporation, condensation, freezing.	B	
9.2.2	List the effect of changes in temperature, pressure and humidity on air density.	A	
9.2.3	List factors that influence the diurnal variation of surface air temp & explain the temp gradient between land and sea surfaces.		C
9.3	**Atmospheric Stability**		
9.3.1	Differentiate between stable, unstable and conditionally atmospheric conditions. *Notes: PPL - a basic understanding may be necessary to meet the requirements of Item 9.8.1(j).* *CPL - A basic understanding of adiabatic process and the parcel method of assessing stability is required.*		C
9.4	**Clouds and Precipitation**		
9.4.1	Identify and "classify" cloud "types". Classifications required are: • high, medium, low • cumuliform, stratiform Examples of "type" are Cu, Ci etc.	B	
9.4.2	State the standard abbreviation for each cloud type, and the method used to report cloud amount.	B	
9.4.3	Describe the weather associated with each cloud type.	B	
9.4.4	Differentiate between drizzle, rain, showers and virga. ***Note:*** *A general description will suffice ie, actual droplet size is NOT required.*	B	
9.4.5	Select statements that describe the conditions necessary for the formation/dispersal of various types of cloud.		B

		Standard prior to:	
		PPL Flt Test	**CPL Flt Test**
9.5	**Visibility**		
9.5.1	Know the method used in meteorological forecasts and reports to determine visibility.	B	
9.5.2	Describe the term "runway visual range".	B	
9.5.3	Give reasons for differences between "in-flight" and "reported" visibility.	B	
9.5.4	List meteorological factors that will reduce in-flight visibility.	B	
9.6	**Winds – General**		
9.6.1	Describe the relationship between pressure and wind and apply Buys Ballot's law to assess the approximate location of high and low pressure systems.	B	
9.6.2	Differentiate between: (a) squalls and gusts (b) backing and veering.	B	
9.6.3	Compare surface and gradient winds in terms of direction and strength.	B	
9.6.4	List the "factors" that effect the diurnal variation of wind and describe typical "variations" in surface wind strength during a 24-hour period.	B	
9.7	**Air Masses and fronts**		
9.7.1	Describe typical "flying weather" associated with: (a) cold fronts (b) warm fronts (c) wave depressions (d) occluded fronts (e) tropical cyclones (f) the equatorial trough. ***Note:*** *In 9.7.1 above, "flying weather" embraces:* • *temperature (warmer/colder)* • *wind changes (back/veer, stronger/weaker)* • *stability and turbulence* • *cloud type and approximate amount, precipitation.*	B	
9.8	**Flight Considerations**		
9.8.1	With respect to the phenomena listed below: • state the conditions favourable to their development and where applicable, their dispersal • recognise signs which may indicate their presence • describe their effect on flight characteristics • where applicable, state the pilot actions required to minimise their effect on an aircraft in flight: (a) thermals, turbulence (b) dust devils and dust storms (c) wind gradient, wind shear and low level jetstreams (d) anabatic and katabatic winds (e) mountain waves and fohn winds (f) land and sea breezes (g) inversions and fog (h) thunderstorms and microbursts (i) downdrafts associated with terrain/cloud (j) atmospheric stability and instability (k) hoar frost, rime, and clear airframe ice (l) tropical cyclones, tornadoes.	B	

		Standard prior to: PPL Flt Test	Standard prior to: CPL Flt Test
9.9	**Synoptic Meteorology**		
9.9.1	Given a Mean Sea Level analysis chart, identify: (a) high and low pressure systems (b) a trough, a ridge, a col (c) warm, cold and occluded fronts (d) a tropical cyclone (e) approximate wind direction.	B	
9.9.2	Describe typical weather characteristics associated with the items listed in 9.9.1 (a) & (b) above. *Notes: Items (c) & (d) are covered in 9.7.1* *"Weather characteristics" means:* • *approx wind direction* • *moisture content (dry/humid)* • *cloud: stratiform and cumuliform* • *clear skies* • *turbulent or smooth air* • *good or poor visibility.*	B	
9.10	**Weather Services**		
9.10.1	For given locations, determine from CASA documents the availability of aviation forecasts, meteorological reports and weather briefing and state the method of obtaining this information. ***Note:*** *Also included in Flight Planning*	B	
9.10.2	State/select the conditions under which it is mandatory to obtain a forecast.	A	
9.10.3	With reference to CASA documents, extract, decode and apply information contained in an ARFOR, TAF, TTF, METAR, SPECI, AIRMET, SIGMET. ***Note:*** *Decode means the ability to:* • *decide whether a particular forecast is valid for a flight* • *interpret any coded information into plain language.*	A	
9.10.4	Given typical weather briefing, evaluate weather information applicable to a flight, and: (a) assess likely changes in weather during the flight (b) list phenomena which may adversely affect the flight. ***Note:*** *"weather" is defined in 9.9.2 and includes "fine weather".*	B	
9.10.5	List the conditions that require a pilot to submit a short AIREP.	B	
9.10.6	State the purpose of VOLMET and ATIS broadcasts indicate how this information is obtained and apply this information to practical scenarios.	B	
9.10.7	State what is meant by a Hazard Alert service. *(This is an updated description of the previous TAT or TAST).*	B	
9.11	**Climatology**		
9.11.1	Describe typical seasonal weather conditions in different regions of Australia with reference to: (a) visibility (good/poor) (b) prevailing winds (c) typical cloud patterns and precipitation (d) seasonal pressure and frontal systems including the ITCZ and equatorial trough (e) tropical cyclones.	B	

10 – RECOMMENDED PRE-STUDY

10.1 A knowledge of mathematics and physics is necessary to meet the aeronautical knowledge objectives in this syllabus. The subjects are not examined independently, but applicants below standard in mathematics and physics are advised to seek tuition until they are able to meet the laid down objectives. Failure to do so may make the aeronautical knowledge objectives difficult to achieve.

10.1.1 For MATHEMATICS the requirement is to solve problems requiring the use of:

(a) basic arithmetic:
- (i) vulgar fractions
- (ii) decimal fractions
- (iii) percentages
- (iv) averages
- (v) squares.

(b) ratio and proportion:
- (i) direct and inverse proportion
- (ii) representative fractions.

(c) circular slide rule:
- (i) multiplication and division
- (ii) conversion problems between the following units: nautical miles, statute miles and kilometres degrees Fahrenheit and degrees Celsius pounds and kilograms litres, imperial gallons and US gallons
- (iii) squares and square roots.

(d) basic trigonometry:
- (i) sine, cosine and tangent
- (ii) simple problems involving solution of right-angled triangles.

10.1.2 For PHYSICS the requirements are:

(a) solve problems relating to time, speed (velocity) and distance

(b) define velocity, acceleration, weight, mass, force, momentum, work, energy, power, static equilibrium, density, specific gravity and pressure

(c) solve graphically the wind triangle

(d) solve problems relating to the principle of moments and centre of gravity

(e) given the specific gravity and fuel quantity calculate fuel weight

(f) basic electrical principles as applicable to aircraft systems:
- (i) units of measurement for:
  current, voltage, resistance, capacity, power
- (ii) typical methods of electrical generation
- (iii) difference between AC and DC:
  typical aircraft components

(g) basic principles of hydraulics.

AMENDMENTS TO DAY VFR SYLLABUS

(HUMAN PERFORMANCE AND LIMITATIONS)

Effective from:

01 March 1996

Relevant Section of the Syllabus:

- (AEROPLANES), Section 3, Block 2*, Subsection 11
- (HELICOPTERS)**, Section 3, Subsection 11

Notes:

*The HPL subject, though grouped under Block 2 of the Aeroplane syllabus, must **NOT** be considered as peculiar only to this Block/stage of training. **Instructors and candidates shall refer to the performance standard required for each topic item at the respective phase of flight training.**

** The Helicopter syllabus has only four stages of flight training denoted, as opposed to five for that of the Aeroplane. The stages listed in this amendment follow the Aeroplane syllabus, and where "Ist Solo" and "Ist Area Solo" are denoted, these shall be considered as equivalent to the Helicopter's "Student Pilot Licence Solo Only (S)".

CASA Examinations:

HPL will be examined in CASA examinations at both the PPL and CPL level.

Performance Standard:

Definition of the level of knowledge required:

STANDARD	LEVEL	DESCRIPTION
A	Essential	Must be known completely relates directly to the safety of the aeroplane and occupants.
B	Important	Must be known in considerable depth relates to the efficient and practical operation of an aeroplane.
C	Additional	Pre-PPL background knowledge only PPL basic principles should be known CPL should be known in considerable depth.

Notes:

- *Where a sequence is left blank, the preceding standard (to the left) is to apply*
- *Where the standard is notated against the topic item heading, this standard applies to the whole paragraph, except where different standards are applied to a sub-item*

Study Reference:

PPL: "Air Craft - Human Performance & Limitations" by Tony Wilson***

CPL: "Air Craft - Human Performance & Limitations" by Tony Wilson***, and
"Human Factors for Pilots" by Roger C Green et al.

Note:

*** *The "contents page" of Tony Wilson's book give the INCORRECT impression that certain topics need not be studied and therefore will not be examined, for certain licence level. For example, one could draw the erroneous conclusion that the topic of "alcohol and other drugs" is only pertinent at the PPL level, and not at the more basic stages of flight training or that the topics of the "Ear and Eye" will only be learnt and examined at the CPL level.* ***Instructors and candidates must refer to the performance standards denoted.***

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
11.1	**Basic health**			B		A
11.1.1	Know the effect and importance on pilot performance of the following factors: (a) diet, exercise (b) coronary risk factors - smoking, cholesterol, obesity, hereditary factors (c) upper respiratory tract infection eg. colds, hay fever, congestion of air passages and sinuses (d) food poisoning and other digestive problems (e) headaches and migraines (f) pregnancy: • when to stop flying • impact on cockpit ergonomics (g) injuries (h) ageing (i) alcohol and smoking (j) blood donations (k) dehydration (l) emotional • anxiety, depression, fear.	B A			A	
11.1.2	Know that a pilot is not to fly when on any medication unless a medical clearance from a DME has been obtained.	A				
11.1.3	Know the responsibilities of pilots with regard to being medically fit for flight.			B	A	
11.2	**Reserved**					
11.3	**Health and fitness**					
11.3.1	Know the: (a) reasons for and frequency of physical examinations and that a CASA network of Designated Aviation Medical Examiners (DAMEs) exists (b) process of obtaining a medical examination (c) role of the CASA with regard to medical fitness and that only those conditions which present a flight safety hazard are disqualifying.			C	B	A
11.3.2	**Alcohol:** (a) Explain how alcohol is absorbed and excreted (b) state **and** explain what a 'hangover' is (c) explain the effect a 'hangover' may have on flying performance (d) explain the relationship between a 'hangover' and level of blood alcohol in a person (e) explain the relationship between the level of blood alcohol and the recovery period from a 'hangover' (f) state the factors that affect the elimination of alcohol from the body and describe the effects of illicit drugs and alcohol on proficiency eg: • judgement, comprehension, attention to detail • the senses, co-ordination and reaction times.	C		B		A
11.3.3.	**Drugs:** Explain that: Drug abuse is a behavioural problem and is independent of • dependence (addiction) • frequent use. Define illicit or non-illicit psychoactive substances.	C		B		A

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
	Explain the adverse effects of illicit or non-illicit psychoactive substances. Explain the effects and duration of such effects on human performance related to perception, speed of processing information, and reaction time of such drugs as: • cannabis-based substances eg, marijuana, ganja • amphetamine-based substances eg, Ecstasy • opium-based substances eg, codeine, heroin. Have a broad knowledge of the undesirable effects of over-the-counter and prescription drugs. In particular, the side effects of: • aspirin, antihistamines, nasal decongestants • amphetamines, tranquillisers, sedatives, antibiotics.					
11.3.4	**Blood donations:** (a) state the effect on flying after giving a blood donation (b) state the recommended period between giving blood and the next flight and know that this period can vary between individuals.	C		B		A
11.4	**Hyperventilation**	C	B			A
11.4.1	Know how to recognise and combat hyperventilation.					
11.4.2	Know what hyperventilation is and its causes.					
11.5	**Atmospheric pressure changes**	C	B			A
11.5.1	Trapped gases: (a) know the effect of changes in pressure on gases trapped in the body cavities (b) describe the effect on normal bodily function (c) state/list measures for prevention/treatment.					
11.5.2	Know the effects of flying after a period of underwater diving and state the precautions to be taken if intending to fly after underwater diving.					
11.6	**Basic knowledge of the anatomy of the ear**					
	(a) Know its function in receiving sound transmissions				B	
	(b) explain the purpose of the Eustachian tube and effects of atmospheric/cabin pressure changes	C		B		A
	(c) state the effects of noise exposure on: • hearing loss: long/short term • speech intelligibility • fatigue	C			B	
	(d) describe recommended methods of hearing protection.	C		B		
11.7	**Vision, spatial disorientation, illusions**					
11.7.1	Have a basic knowledge of the anatomy of the eye and its function during the day and at night.			C	B	
11.7.2	Know the factors that affect night vision and identify methods of "dark adaptation".			C	B	A
11.7.3	Describe the limitations of the eye in discerning objects at night and the "off-centre" method of identifying objects at night.			C	B	A
11.7.4	Know the limitations of the eye with respect to: (a) the ability to discern objects during flight eg. • other aircraft, transmission lines etc (b) empty field myopia (c) glare (d) colour vision in aviation	C	B			A

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
	(e) common visual problems, viz:					
	• myopia, hyperopia, astigmatism, presbyopia					
	(f) rotor flicker and its effects (helicopters only).					
11.7.5	Be aware of the importance of:			C	C	
	(a) seeking experienced professional advice for spectacles prescriptions					
	(b) selecting suitable sunglasses.					
11.7.6	Know of the factors which are conducive to mid-air collisions and describe/practice techniques for visual "scanning".	C	B		A	
11.7.7	Understand and define the term "disorientation".		C	B		A
11.7.8	Know the sensory systems involved in maintaining body equilibrium ie. that:					
	• equilibrium is normally maintained by use of the eyes, inner ear and proprioceptive system ("seat of pants").	C		B	A	
11.7.9	Understand that these mechanisms were developed for use by land based mammals and do not provide reliable information under all conditions of flight.	C			B	A
11.7.10	Describe illusion(s) that may be associated with the factors listed below:			C	B	A
	(a) "leans"					
	(b) linear and angular accelerations					
	(c) unperceived changes in the pitch roll yaw					
	(d) autokinetic illusions					
	(e) "graveyard spin" illusion.					
	(f) somatogravic illusion.					
11.7.11	Know:					
	(a) that sensory illusions usually occur when external visual clues are poor or ambiguous and that they are predictable			C	B	
	(b) the importance of an artificial visual reference system and a pilot's ability to use the system			C	B	A
	(c) the factors that may make a person more susceptible to disorientation		C		B	
	(d) how to overcome sensory illusions.		C	B	A	
11.7.12	Know what illusions may result from the following flight factors:	C		B		A
	(a) false horizontal clues eg:					
	• sloping cloud formations and sloping terrain					
	(b) depth perception eg:					
	• flying over water, snow, desert and other featureless terrain					
	• effect of fog haze dust					
	(c) optical characteristics of windscreens					
	(d) landing illusions:					
	• approach angles: steep shallow					
	• width and slope of runway					
	• slope of (approach)					
	• terrain approaches over water					
	(e) relative motion between objects.					
11.8	**Motion sickness**		C	B		
11.8.1	State the basic cause of motion sickness					
11.8.2	List factors which may aggravate motion sickness.					
11.8.3	List methods of combating motion sickness in flight.					

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
11.9	**Acceleration "g" effects** Know the effects of positive & negative accelerations on the human body include: (a) on the cardiovascular systems (b) vision and (c) consciousness.		C	B		
11.10	**Toxic hazards**	C	B		A	
11.10.1	Know the sources, symptoms, effects and treatment of carbon monoxide poisoning.					
11.10.2	Know the effect of breathing air contaminated by fuel and other noxious or toxic aviation products.					
11.11	**The atmosphere and associated problems**		C		B	A
11.11.1	State the chemical composition of the atmosphere and recall the variation of temperature and pressure with altitude.					
11.11.2	Have a basic concept of the circulatory and respiratory systems in terms of the distribution of oxygen and the excretion of carbon dioxide.					
11.11.3	Describe what is meant by the partial pressure of oxygen.					
11.12	**Hypoxia**		C	B		A
11.12.1	(a) List the causes of hypoxia and recognise the symptoms of hypoxia particularly: • its effect on night vision • the dangers of behavioural changes eg. lack of self criticism, over-confidence & a false sense of security (b) know that symptoms are difficult to detect in healthy individuals and can develop much faster at higher altitudes – eg. 14,000 ft. (c) list factors which may increase a person's susceptibility to hypoxia (d) state the approximate time of useful consciousness (Effective Performance Time: EPT) at 20,000, 25,000 and 30,000 feet and list factors which affect EPT (e) list methods of combating various forms of hypoxia.					
11.13	**Human factors considerations:**					
11.13.1	Know the basic concepts of information processing and decision making including: (a) how sensory information is used to form mental images (b) the influence of the following factors on the decision making process: • personality traits eg. introvert/extrovert • pride, peer pressure, employer pressure • the desire to get the task done • anxiety, over-confidence, boredom, complacency • types of memory - long/short term • memory limitations • aides memoire, rules of thumb • work load/overload • skill, experience, currency.		C			B
11.13.2	Discuss the general concepts behind decision-making and the methods of enhancing decision-making skills.		C			B
11.13.3	Concepts of Stress: (a) know the interaction between stress and arousal and the effects of short and long term stress on pilot performance and health			C	B	

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
	(b) know the symptoms, causes and effects of environmental stress • working in an excessively hot, cold, vibrating or noisy environment (c) know the symptoms and effects of domestic and work related stress (d) know the effects of stress on performance (e) know the principles of stress management eg. • cognitive/behavioural techniques • relaxation • time management					
11.13.4	Concepts of Fatigue (a) identify causes of fatigue and describe its effects on pilot performance (b) differentiate between acute and chronic fatigue (c) discuss coping strategies eg • sleep management • relaxation • fitness and diet			C	B	
11.13.5	Basic Ergonomics (a) discuss principles of control design and the design features of conventional and modern displays (b) discuss problems associated with: • poorly designed controls/positioning of controls • interpreting instrument presentations (c) know the following information regarding safety harnesses: • types, how to assess their maintenance • inertia reels, how to assess their maintenance				C	
11.13.6	Basic Principles of Crew Co-ordination (a) discuss factors which: • influence verbal and non-verbal communication between flight deck crew viz: o barriers to communication o listening skills o assertion skills • affect the decision making process viz: o communication - attitude o personality o judgement o leadership style (b) discuss ideal leadership qualities (c) review aircraft accidents which resulted from poor crew co-ordination.				C	
11.14	**Principles of first aid and survival** The student should be aware of the first aid and survival information contained in ERS(A) and preferably be exposed to practical instruction in the terms of first aid given in this document.			C	B	

	11 – HUMAN PERFORMANCE AND LIMITATIONS	1st Solo	1st Area Solo	GFPT BAK	PPL	CPL
11.15	**Threat and Error Management**					
	Basic principles of TEM					
	(a) Explain the principles of TEM and detail a process to identify and manage threats and errors during single pilot operations.		C	A		
	(b) Define 'threat' and give examples of threats.			A		
	(c) Give an example of a committed error and how action could be taken to ensure safe flight.		C	B	A	
	(d) Explain how the use of checklists and standard operating procedures can prevent errors.		B	A		
	(e) Give examples of how an undesired aircraft state can develop from an unmanaged threat or error.			B		
	(f) Explain what resources a pilot could identify and use to avoid or manage an undesired aircraft , state such as being lost or entering adverse weather.		C	A		
	(g) Explain the importance of ensuring that tasks are prioritised to manage an undesired aircraft state.		C	A		
	(h) Give examples of how establishing and maintaining interpersonal relationships can promote safe flight			B		

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