



**CIVIL AVIATION AUTHORITY OF SRI LANKA
AVIATION SAFETY NOTICE**

ASN No 083	Ref No: PEL/2011/01	File Ref: PL/18/50/5
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- Recipients : 1. All related Training Schools for AML.
2. Approved Maintenance Organisations.
3. All Aircraft Maintenance Licence Holders.
4. Sri Lanka Air Force.
5. Applicants for Aircraft Maintenance Licence and Ratings
01. Subject : **Requirements and Standards Relating to Issue and Renewal of Aircraft Maintenance Licenses and Aircraft Type Ratings.**
02. Nature : Compulsory
03. Issue no : 03
04. Status : Replacement of ASN 083 issued on 20 September 2010
05. Effective date : 01st January 2012
06. Validity : Until further Notice
07. Contact person : Deputy Director (Personnel Licensing), Civil Aviation Authority, No.04, Hunupitiya Road, Colombo 02, Sri Lanka. Telephone: +94 11 2358925, Fax: +94 11 2304691, E-mail: ddpel@caa.lk.
08. Availability : A copy of this document is available on web site- www.caa.lk and the technical library of Civil Aviation Authority. Copies can be collected at reproduction cost from the library.
09. Applicability : 1. All related Training Schools for AML.
2. Approved Maintenance Organisations.
3. All Aircraft Maintenance Licence Holders.
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10. Comments : Comments (if any) on the contents of this Aviation Safety Notice (ASN) may be forwarded to the contact person. However the Aviation Safety Notice will come into effect on the date shown therein notwithstanding any objection or comment made by any person or party unless and until an amendment to the Aviation Safety Notice is issued afresh by the Director General of Civil Aviation.
11. Notice : All applicants for Aircraft Maintenance Licence issued by the DGCA shall conform to the requirements specified in the attachment hereto. The requirements contained in this ASN will be operational in parallel with the existing arrangement for the issue/renewal of AME licence which is specified in the ASN 008, until such time the CAA will combine the two system, in terms of a new ASN to be issued.
12. History of Revision : To repeal provision for converting foreign AML to Sri Lankan AML for harmonizing regulations with EASA Part 66 & SARI Part 66.
13. Related ASNs : ASN 054, ASN 008, ASN 085 & ASN 097
14. Action Required : For compliance by
: 1. All related Training Schools for AML.
2. Approved Maintenance Organisations.
3. All Aircraft Maintenance Licence Holders.
4. Sri Lanka Air Force.
5. Applicants for Aircraft Maintenance Licence and Ratings
15. Check list : List of current ASN nos. are as follows

ASN No	Issue No	Date of Applicability	Remarks
ASN002	01	10.03.2000	nil
ASN003	01	18.08.2000	nil
ASN004	01	13.02.2001	nil
ASN005	01	26.03.2001	nil
ASN007	01	15.09.2001	nil
ASN008	02	16.11.2006	Replaced ASN no 008 issue no 01
ASN009	01	18.02.2002	nil
ASN010	01	18.02.2002	nil
ASN011	01	18.02.2002	nil
ASN012	01	18.02.2002	nil
ASN013	01	08.02.2002	nil
ASN014	01	01.03.2002	nil
ASN015	01	01.03.2002	nil
ASN016	01	01.03.2002	nil
ASN017	02	10.03.2005	Replaced ASN no 017 issue no 01
ASN018	01	20.03.2002	nil
ASN019	01	01.04.2002	nil
ASN021	01	01.04.2002	nil
ASN022	01	08.04.2002	nil

ASN023	01	01.06.2002	Replaced ASN no 003
ASN024	01	02.09.2002	nil
ASN025	02	15.10.2002	Replaced ASN no 001
ASN026	01	15.10.2002	nil
ASN027	01	20.12.2002	nil
ASN028	01	12.03.2003	nil
ASN029	01	21.03.2002	nil
ASN030	01	10.07.2002	nil
ASN031	01	15.07.2003	Replaced ASN no 006
ASN032	01	25.07.2003	nil
ASN033	02	25.08.2005	Replaced ASN no 033 issue no 01
ASN034	01	11.09.2003	nil
ASN035	01	12.09.2003	nil
ASN036	01	12.09.2003	nil
ASN037	01	13.10.2003	nil
ASN038	02	30.06.2010	Replaced ASN no 038 issue no 01
ASN039	04	19.08.2008	Replaced ASN no 039 issue no 03
ASN040	01	07.06.2004	nil
ASN041	01	16.06.2004	nil
ASN042	06	10.06.2010	Replaced ASN no 042 issue no 05
ASN043	02	12.08.2004	Amendment to ASN no 013
ASN044	03	24.05.2010	Replaced ASN no 044 issue no 02
ASN045	02	05.01.2007	Replaced ASN no 045 issue no 01
ASN046	03	10.06.2010	Replaced ASN no 046 issue no 02
ASN047	04	24.05.2010	Replaced ASN no 047 issue no 03
ASN048	02	05.01.2007	Replaced ASN no 048 issue no 01
ASN049	01	20.09.2004	nil
ASN051	02	10.06.2010	Replaced ASN no 051 issue no 01
ASN052	01	20.09.2004	nil
ASN053	05	10.06.2010	Replaced ASN no 053 issue no 04
ASN054	04	15.12.2009	Replaced ASN no 054 issue no 03
ASN055	04	17.07.2009	Replaced ASN no 055 issue no 03
ASN056	02	20.07.2009	Replaced ASN no 056 issue no 01
ASN057	02	01.10.2009	Replaced ASN no 057 issue no 01
ASN058	03	21.07.2009	Replaced ASN no 058 issue no 02
ASN059	02	16.12.2009	Replaced ASN no 059 issue no 01
ASN060	02	05.08.2005	Replaced Page no 01 of the attachment to the ASN no 060 issue no 01
ASN061	02	05.08.2005	Replaced Page no 01 of the attachment to the ASN no 061 issue no 01
ASN062	01	01.03.2005	nil
ASN063	01	20.12.2004	nil
ASN065	01	06.04.2005	nil
ASN066	01	16.05.2005	nil
ASN067	01	16.05.2005	nil
ASN068	01	18.05.2005	nil
ASN069	01	18.05.2005	nil
ASN070	01	18.05.2005	nil
ASN071	01	18.05.2005	nil
ASN072	01	19.05.2005	nil
ASN073	01	19.05.2005	nil
ASN074	01	19.05.2005	nil
ASN075	01	19.05.2005	nil
ASN076	01	16.06.2005	nil
ASN077	01	08.08.2005	nil
ASN078	01	21.12.2005	nil
ASN079	01	16.09.2005	nil
ASN080	01	07.11.2005	nil
ASN081	05	10.06.2010	Replaced ASN no 081 issue No. 04
ASN082	01	23.11.2005	nil
ASN083	01	01.12.2005	nil
ASN084	01	16.12.2005	nil
ASN085	01	05.01.2006	nil

ASN086	02	02.05.2008	Replaced ASN no 086,087,088
ASN087	01	06.04.2006	nil
ASN088	01	06.04.2006	nil
ASN089	01	10.05.2006	nil
ASN090	03	02.12.2009	Replaced ASN no 090 issue No. 02
ASN091	02	24.03.2008	Replaced ASN no 091 issue No. 01
ASN092	01	09.11.2007	nil
ASN093	01	26.05.2008	nil
ASN094	01	02.06.2006	nil
ASN095	01	25.09.2006	nil
ASN096	01	11.09.2007	nil
ASN097	02	20.01.2010	Replaced ASN no 097 issue No. 01
ASN098	01	04.04.2007	nil
ASN099	02	25.05.2010	Replaced ASN no 099 issue No. 01
ASN100	03	08.06.2010	Replaced ASN no 100 issue No. 02
ASN101	01	28.01.2008	nil
ASN 102	01	04.03.2008	nil
ASN 103	01	01.08.2008	nil
ASN 104	01	28.08.2008	nil
ASN 105	01	07.08.2008	nil
ASN 106	01	03.12.2008	nil
ASN 107	01	12.01.2009	nil
ASN 108	01	20.05.2009	nil
ASN 109	01	07.09.2009	nil
ASN 110	01	08.09.2009	nil
ASN 111	01	25.09.2009	nil
ASN 112	01	22.02.2010	nil
ASN 113	01	03.03.2010	nil
ASN 114	01	04.03.2010	nil
ASN 115	01	06.04.2010	nil
ASN 116	01	06.04.2010	nil
ASN 117	01	21.05.2010	nil
ASN 118	01	24.05.2010	nil
ASN 119	01	22.06.2010	nil

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AIRCRAFT MAINTENANCE LICENCE (TECHNICIANS/ENGINEER/MECHANIC)

1.1 General rules concerning licences and ratings for Aircraft Maintenance Licence

- 1.1.1 An applicant shall, before being issued with Aircraft Maintenance Licence or Rating, meet such requirements in respect of age, knowledge, experience and skill, as are specified for that licence or rating.
- 1.1.2 An applicant for Aircraft Maintenance Licence or Rating, shall demonstrate, in the manner determined by the SLCAP 3070, such requirements in respect of knowledge and skill as are specified for that licence or rating.
- 1.1.3 This ASN sets out the requirements, standards and procedures for obtaining an Aircraft Maintenance Licence pursuant to section 22(1) of the Sri Lanka Air Navigation regulations of 1955 and paragraph 4.2 chapter 4 of Annex 1 to the convention on International Civil Aviation – “Personnel licensing”. The requirement contained in Part-66 of European Aviation Safety Agency requirements, which is hereinafter referred to as EASA Part – 66, supplements this part. The Aircraft Maintenance Licence provides the necessary foundation for the applicant to qualify for the type approval to inspection, servicing and maintenance of aircraft in an Approved Maintenance Organization or equivalent acceptable to the DGCA.

1.2 Scope

- 1.2.1 This section establishes the requirements for the issue of an aircraft maintenance licence and conditions of its validity and use, for aeroplanes and helicopters of the following categories:
- Category A
 - Category B1
 - Category B2
 - Category C
- 1.2.2 Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston engines. The subcategories are:
- A1 and B1.1 Aeroplanes Turbine
 - A2 and B1.2 Aeroplanes Piston
 - A3 and B1.3 Helicopters Turbine
 - A4 and B1.4 Helicopters Piston

2. Application

An application for an aircraft maintenance licence or amendment to such licence shall be made to the DGCA in the manner specified. An application for the amendment to an aircraft maintenance licence shall also be made to the DGCA. The application be reviewed as per the procedure given in paragraph 11 of this ASN.

3. Requirement for the issue of the Licence

3.1 Eligibility

3.1.1 Citizenship

For the proof of the citizenship the applicant shall submit any of the following.

1. Birth certificate issued in Sri Lanka.
2. Valid passport issued by any State.
3. Citizenship certificate of any State.

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4. A valid aviation personnel licence showing the citizenship of the holder and issued by the State of which he/she is a citizen.

3.1.2 Age.

The applicant for an aircraft maintenance licence shall not be less than 18 years of age (However he/she shall be not less than 21 years in age before issue any authorisation privilege to release aircraft or its components). Proof of age shall be shown by means of

1. A birth certificate.
2. A passport from any State.

3.1.3 Educational Qualifications

An applicant for the Aircraft Maintenance Licence shall have obtained the following basic educational qualifications or equivalent at the time of application.

1. Credit Pass in English at GCE (O/L) or pass in higher level English examination.
2. Pass in six subjects at GCE (O/L) with Science and Mathematics. Either Mathematics or Science should have a Credit pass.

4. Privileges

DGCA Sri Lanka shall prescribe the scope of the privileges of the licence holder in terms of the complexity of tasks to which the certification relates and scope of privileges will be decided on the completion of type training activities listed in Appendix III to this ASN.

4.1 Subject to compliance with paragraph 4.2, the following privileges shall apply:

1. A category A aircraft maintenance licence authorize the holder to issue certificates of release to service following minor scheduled line maintenance and simple defect rectification within the limits of tasks specifically endorsed on the authorization. The certification privileges shall be restricted to work that the licence holder has personally performed in an AMO approved by the DGCA or equivalent acceptable to the DGCA.
2. A category B1 aircraft maintenance licence shall authorize the holder to issue certificates of release to service following maintenance, including aircraft structure, power plant and mechanical and electrical systems. Replacement of avionic line replaceable units, requiring simple tests to prove their serviceability, shall also be included in the privileges. Category B1 shall automatically include the appropriate subcategory.
3. A category B2 aircraft maintenance licence shall authorize the holder to issue certificates of release to service following maintenance on avionic and electrical systems.
4. A category C aircraft maintenance licence shall authorize the holder to issue certificates of release to service following base maintenance on aircraft. The privileges apply to the aircraft in its entirety in an AMO approved by the DGCA or equivalent acceptable to the DGCA.

4.2 The holder of an aircraft maintenance licence shall not exercise certification privileges unless:

1. In compliance with the applicable requirements of approved maintenance organization.
2. Holders of Aircraft Maintenance Licence shall not exercise the privileges of their licences and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.

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3. Holders of Aircraft Maintenance Licence provided for in this ASN shall not exercise the privileges of their licences and related ratings while under the influence of any psychoactive substance which might render them unable to safely and properly exercise these privileges.

Note: psychoactive substance- Alcohol, opioids, cannabinoids, sedatives and hypnotics, cocaine, other psychostimulants, hallucinogens, and volatile solvents, whereas coffee and tobacco are excluded.

4. Holders of licences provided for in this ASN shall not engage in any problematic use of substances.

Note: Problematic use of substances- The use of one or more psychoactive substances by aviation personnel in a way that:

- a) *Constitutes a direct hazard to the user or endangers the lives, health or welfare of others; and/or*
 - b) *Causes or worsens an occupational, social, mental or physical problem or disorder.*
5. Any licence holder who engages in any kind of problematic use of substances shall be removed from his/her safety-critical functions. Return to the safety-critical functions may be considered after successful treatment or, in cases where no treatment is necessary, after cessation of the problematic use of substances and upon determination that the person's continued performance of the function is unlikely to jeopardize safety.
 6. In the preceding two-year period he/she has, either had six months of maintenance experience in accordance with the privileges granted by the aircraft maintenance licence or, met the provision for the issue of the appropriate privileges.
 7. He/She is able to read, write and communicate to an understandable level in the language (English) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written.
 8. DGCA has authorized holder regarding details of the certification privileges by an endorsement on his licence and with an attachment to the licence or authorization issued by AMO as per CAA approved procedure manual.
 9. DGCA shall not authorize any person attached to any AMO to issue the certificates of release to service unless he/she holds a valid and current Aircraft Maintenance Licence, except in conditions explained in section 5.7(b) of ASN 085.

5. Basic knowledge requirements

- 5.1 An applicant for an aircraft maintenance licence or addition of a category or subcategory to such an aircraft maintenance licence shall demonstrate, at an examination to be conducted by the DGCA, a level of knowledge in the appropriate subject modules in accordance with Appendix 1 to this Part.
- 5.2 Full or partial credit against the basic knowledge requirements and associated examination shall be given for any other technical qualification considered by the DGCA to be equivalent to the knowledge standard of this Part.

5.3 The DGCA may only grant examination credit on the basis of an examination credit report prepared in accordance with paragraph 16 of this part.

6. Experience requirements

6.1 An applicant for an aircraft maintenance licence shall have acquired:

6.11 For category A and subcategories B1.2 and B1.4:

- (i) Three years of practical maintenance experience on operating aircraft, if the applicant has no previous relevant technical training; or
- (ii) Two years of practical maintenance experience on operating aircraft and completion of training considered relevant by the competent authority as a skilled worker, in a technical trade; or
- (iii) One year of practical maintenance experience on operating aircraft and completion of an approved basic training course.

6.12 For category B2 and subcategories B1.1 and B1.3:

- (i) Five years of practical maintenance experience on operating aircraft if the applicant has no previous relevant technical training; or
- (ii) Three years of practical maintenance experience on operating aircraft and completion of training considered relevant by the competent authority as a skilled worker, in a technical trade; or
- (iii) Two years of practical maintenance experience on operating aircraft and completion of an approved basic training course.

6.13 For category C with respect to large aircraft:

- (i) Three years of experience exercising category B1.1, B1.3 or B2 privileges on large aircraft or as B1.1, B1.3 or B2 support staff, or a combination of both in an AMO ; or
- (ii) Five years of experience exercising category B1.2 or B1.4 privileges on large aircraft or as B1.2 or B1.4 support staff, or a combination of both in an AMO ; or

6.14. For category C with respect to non large aircraft:

Three years of experience exercising category B1 or B.2 privileges on non large aircraft or as B1 or B.2 support staff, or a combination of both in an AMO; or

6.15. For category C obtained through the academic route:

An applicant holding an academic degree in a technical discipline, from a university or other higher educational institution recognized by the competent authority, three years of experience working in a civil aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance including six months of observation of base maintenance tasks.

Note: practical maintenance experience : Applicant shall have worked in an AMO in the inspection, servicing and maintenance of aircraft or its components.

6.2 An applicant for an extension to an aircraft maintenance licence shall have a minimum civil aircraft maintenance experience requirement appropriate to the additional category or subcategory of licence applied for as defined in Appendix IV to this Part.

6.3 For category A,B1 and B2 the experience must be practical which means being involved with a representative cross section of maintenance tasks on aircraft.

6.4 For all applicants, at least one year of the required experience must be recent maintenance experience on aircraft of the category/subcategory for which the initial aircraft maintenance licence is sought. For subsequent category/subcategory additions to an existing aircraft maintenance licence, the additional recent maintenance experience required may be less than one year, but must be at least three months. The required experience must be dependent upon the difference between the licence category/subcategory held and applied for. Such additional experience must be typical of the new licence category/subcategory sought.

6.5 Notwithstanding paragraph 6.1, aircraft maintenance experience gained outside a civil aircraft maintenance environment shall be accepted when such maintenance is equivalent to that required by this ASN as established by the DGCA. Additional experience of civil aircraft maintenance shall, however, be required to ensure understanding of the civil aircraft maintenance environment.

Serving members of the Sri Lanka Air Force with a minimum of ten years service who meet all the other requirements and recommended by the Commander of the Air Force or the Director of Aeronautical Engineering are eligible to sit for the AML examinations. However, six months civil aircraft maintenance experience is required to issue the Aircraft Maintenance Licence.

7. Continued validity of the aircraft maintenance licence

7.1 The aircraft maintenance licence becomes invalid one year after its issue or last amendment, unless the holder submits his/her aircraft maintenance licence to the DGCA in order to verify that the information contained in the licence is the same as that is contained in the CAA records, pursuant to paragraph 14 of this ASN.

7.2 The holder of an Aircraft Maintenance Licence shall complete the relevant parts of CAA form No. CAA/PL/R/06 and submit it with the holder's copy of the licence to the DGCA that issued the original aircraft maintenance licence unless the holder works in a maintenance organization approved in accordance with the procedure in ASN 094 that has a procedure in its exposition whereby such organization may submit the necessary documentation on behalf of the aircraft maintenance licence holder.

7.3 Any certification privileges based upon an aircraft maintenance licence becomes invalid as soon as the aircraft maintenance licence is invalid, or not accompanied with a valid renewal certificate.

7.4 The aircraft maintenance licence is only valid when issued and/or amended by the DGCA and when the holder has signed the document.

8. Type/task training and ratings

8.1 The holder of a category A aircraft maintenance licence may only exercise certification privileges on a specific aircraft type following the satisfactory completion of the relevant category A aircraft task training carried out by an appropriately Approved Maintenance Organization or Approved Maintenance Training Organization or equivalent acceptable to the DGCA. The training shall include practical hands on training and theoretical training as appropriate for each task authorized. Satisfactory completion of training shall be demonstrated by an examination and/or by workplace assessment carried out by an appropriately Approved

Maintenance Organization or Maintenance Training organization through Designated Examiners or equivalent acceptable to the DGCA.

8.2 Except as otherwise specified in paragraph 8.7, the holder of a category B1,B2 or C aircraft maintenance licence shall only exercise certification privileges on a specific aircraft type when the aircraft maintenance licence is endorsed with the appropriate aircraft type rating.

8.3 Except as otherwise specified in paragraph 8.8, ratings shall be granted following satisfactory completion of the relevant category B1,B2 or C aircraft type training approved by the DGCA or conducted by an appropriately approved maintenance training organisation.

8.4 Category B1 and B2 approved type training shall include theoretical and practical elements and consist of the appropriate course in relation to the paragraph 4.1 privileges of this Part. Theoretical and practical training shall comply with Appendix III to this Part.

8.5 Category C approved type training shall comply with Appendix III to this Part. In the case of a category C person qualified by holding an academic degree as specified in paragraph 6.15, the first relevant aircraft type theoretical training shall be at the category B1 or B2 level. Practical training is not required.

8.6 Completion of approved aircraft type training, as required by paragraphs 8.2 to 8.5, shall be demonstrated by an examination. The examination shall comply with Appendix III to this Part. The examinations in respect of category B1 or B2 or C aircraft type ratings shall be conducted by training organizations appropriately approved by the DGCA, or the training organisation conducting the approved type training course.

8.7 Notwithstanding paragraph 8.2, for aircraft other than large aircraft, the holder of a category B1 or B2 aircraft maintenance licence may also exercise certification privileges, when the aircraft maintenance licence is endorsed with the appropriate group ratings, or manufacturer group ratings, unless the Approved Training organization has determined that the complexity of the aircraft in question requires a type rating.

8.71 Manufacturer group ratings may be granted after complying with the type rating requirements of two aircraft types representative of the group from the same manufacturer.

8.72 Full group ratings may be granted after complying with the type rating requirements of three aircraft types' representative of the group from different manufacturers. However, no full group rating may be granted to B1 multiple turbine engine aeroplanes, where only manufacturer group rating applies.

8.73 The groups shall consist of the following:

(1) For category B1 or C:

- helicopter piston engine
- helicopter turbine engine
- aeroplane single piston engine —metal structure
- aeroplane multiple piston engines —metal structure
- aeroplane single piston engine —wooden structure
- aeroplane multiple piston engines —wooden structure
- aeroplane single piston engine —composite structure
- aeroplane multiple piston engines —composite structure

- aeroplane turbine —single engine
- aeroplane turbine —multiple engine

(11) For category B2 or C:

- aeroplane
- helicopter

8.8 Notwithstanding paragraph 8.3, ratings on aircraft other than large aircraft may also be granted, subject to satisfactory completion of the relevant category B1, B2 or C aircraft type examination and demonstration of practical experience on the aircraft type, unless the Approve Training Organization has determined that the aircraft is complex, where paragraph 3 approved type training is required. Procedure approved by DGCA is published in Aircraft Maintenance Assessment Procedure Manual (SLCAP 3070).

In the case of a category C rating on aircraft other than large aircraft, for a person qualified by holding an academic degree as specified in paragraph 6.15, the first relevant aircraft type examination shall be at the category B1 or B2 level.

8.81 Category B1, B2 and C approved type examinations must consist of a mechanical examination for category B1 and an avionics examination for category B2 and both mechanical and avionics examination for category C.

8.82 The examination shall comply with Appendix III to this ASN. The examination shall be conducted by training organizations appropriately approved by the DGCA.

8.83 Aircraft type practical experience shall include a representative cross section of maintenance activities relevant to the category.

9. Conversion provisions

9.1 The DGCA shall convert Aircraft Maintenance Engineer Licence to Aircraft Maintenance Licence in accordance with conversion procedures pursuant to paragraph 10 of this ASN ,as applicable.

10. Conversion Procedure

The procedure specified in ASN 097 shall be applicable to convert Aircraft Maintenance Engineer Licence to Aircraft Maintenance Licence and the procedure shall describe the scope of each type of qualification and show to which aircraft maintenance licence it will be converted, which limitation will be added and the module/subjects on which examination is needed to ensure conversion to the aircraft maintenance licence without limitation, or to include an additional (sub-) category

11. Procedure for the issue of an aircraft maintenance license.

11.1 On receipt of CAA Form No.CAA/PL/I/08 and any supporting documentation, the DGCA shall verify application Form for completeness and ensure that the experience claimed meets the requirements of this Part.

11.2 The DGCA may verify an applicant's examination status and/or confirm the validity of any credits to ensure that all required modules of Appendix 1 have been met as required by this Part.

11.3 When satisfied that the applicant meets the standards of knowledge and experience required by this Part, the DGCA shall issue the relevant aircraft maintenance licence to the applicant. The same information shall be kept on the file maintained for individual applicants.

12. Procedure for the amendment of an aircraft maintenance licence to include an additional basic category or subcategory

12.1 In addition to the documents required under paragraph 11, the applicant for additional basic categories or subcategories to an aircraft maintenance licence shall submit his/her current original aircraft maintenance licence to the DGCA together with duly completed CAA Form CAA/PL/I/08.

12.2 At the completion of the procedure as specified in paragraph 11, the DGCA shall endorse the additional basic category or subcategory on the aircraft maintenance licence by stamp and signature or reissue the licence. The CAA file shall be amended accordingly.

13. Procedure for the amendment of an aircraft maintenance licence to include an aircraft type rating or group rating

On receipt of a duly completed CAA Form CAA/PL/I/08 and any supporting documentation demonstrating compliance with the applicable type rating and/or group rating requirements and the accompanying aircraft maintenance licence, the DGCA shall either endorse the applicant's aircraft maintenance licence with the aircraft type or group or reissue the said licence to include the aircraft type rating or group rating.

14. Procedure for the renewal of an aircraft maintenance licence validity

14.1 The holder of an aircraft maintenance licence shall complete the relevant parts of CAA Form CAA/PL/R/06 and submit it with the holder's copy of the licence to the DGCA. The application Form to be made during the 60 days immediately preceding the expiry date but not less than 30 days prior to the date of renewal/expiry printed on the licence. The licence can also be renewed at the time of endorsement for additional categories, ratings, and change of address or on the special requirements of applicant by submitting a request to the DGCA for acceptance. The minimum experience requirements for renewal should not be less restrictive to item 2 of paragraph 4.2 of this Part.

14.2 The DGCA shall compare the holder's aircraft maintenance licence with the CAA file and verify any pending revocation, suspension or variation action pursuant to paragraph 18 of this part. If the documents are identical and no action is pending pursuant to paragraph 18, the holder's copy shall be renewed for one year and the file endorsed accordingly.

14.3 If the CAA file is different from the aircraft maintenance licence held by the licence holder:

1. The DGCA shall investigate the reasons for such differences and may decide not to renew the aircraft maintenance licence.
2. The DGCA shall inform the licence holder affected of such fact and shall, if necessary, take action under paragraph 18 of this Part to revoke, suspend or amend the licence in question.
3. If the date of renewal is lapsed, the DGCA review the individual requests on the basis of;
 - (1) Submission of a valid explanation up to three months.

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- (11) Appearing for Module 9 and 10, “Human Factors” and “Aviation Legislation” respectively for more than 3 months up to 2 years.
 - (111) Appearing for Module 8, 9,10 and others as appropriately to the respective category for more than 2 years up to 5 years.
 - (IV) Beyond which, shall be issued with new licence upon meeting all requirements for initial issue described in this Part.

15. Examination.

- 15.1 Basic examinations shall follow the standard specified in Appendix I and II to this Part.
- 15.2 In case of Type examinations, the examinations must follow the standard specified in Appendix III to this Part.
- 15.3 All examination papers shall be handed out at the start of the examination to the candidate and handed back to the examiner at the end of the allotted examination time period. No examination paper may be removed from the examination room during the allotted examination time period.
- 15.4 Apart from specific documentation needed for type examinations, only the examination paper may be available to the candidate during the examination.
- 15.5 Examination candidates shall be separated from each other so that they cannot read each other's examination papers. They may not speak to any person other than the examiner. Reported nature of any such behavior will disqualify the candidate to continue the examination.
- 15.6 Candidates who are proven to be cheating shall be banned from taking any further examination within 12 months of the date of the examination in which they were found cheating.

16. Examination credit report

- 16.1 For each technical qualification concerned the report shall identify the subject matter and knowledge levels contained in Appendix I to this Part relevant to the particular category being compared.
- 16.2 The report shall include a statement of compliance against each subject stating where, in the technical qualification, the equivalent standard can be found. If there is no equivalent standard for the particular subject, the report shall state such facts.
- 16.3 Based upon paragraph 16.2 comparison, the report shall indicate for each technical qualification concerned the Appendix 1 subject matters subject to examination credits.
- 16.4 Where the national qualification standard is changed, the report shall be amended as necessary.

17. Validation of Foreign Licenses

DGCA shall issue a Foreign Licence Validation Certificate on the strength of a Foreign Aircraft Maintenance Licence if necessary.

Note: Foreign Aircraft Maintenance Licence will not be converted to a Srilankan Aircraft Maintenance Licence

17.1 Issue of a Foreign Validation Certificate (FLVC)

- (a) A foreign license validation certificate shall be issued to an applicant who provides the following and when the DGCA is satisfied that the conditions have been fulfilled:
- (i) A foreign license valid under the laws of a Contracting State and valid for the privileges requested.
 - (ii) A request letter from the airline which employs the licence holder specifying the purpose for which the foreign license is to be validated.
 - (iii) An application from the licence holder on CAASL Form No CAA/PL/I/27.

The Foreign License Validation Certificate shall be issued for a period of six months from the date of issue but not beyond the period of validity of the foreign licence. It shall clearly indicate that its validity will be dependent on the validity of the Foreign License. A shorter period may be granted.

17.2 Conditions for the issue of a Foreign License Validation Certificate

- (i) The DGCA is satisfied that the foreign license meets or exceeds the standards for the issue of a similar license of the Civil Aviation Authority of Sri Lanka
- (ii) The foreign license should be appropriately endorsed and currently valid.
- (iii) The applicant should satisfactorily complete an examination on Air Navigation Regulations conducted by the DGCA.
- (iv) Foreign License Validation Certificate will be issued only when the assignment is of a temporary nature.
- (v) The Foreign License Validation Certificate will be issued on receipt of confirmation from the issuing Authority about the validity of the license.

Note : The onus of providing any information required by the DGCA for such validation lies with the applicant.

18. Revocation, suspension or limitation of the aircraft maintenance licence

The DGCA shall suspend, limit or revoke the aircraft maintenance licence where it has been identified a safety issue or if it has clear evidence that the person has carried out or been involved in one or more of the following activities:

1. Obtaining the aircraft maintenance licence and/or the certification privileges by falsification of submitted documentary evidence.
2. Failing to carry out requested maintenance combined with failure to report such fact to the organization or person who requested the maintenance.
3. Failing to carry out required maintenance resulting from own inspection combined with failure to report such fact to the organization or person for whom the maintenance was intended to be carried out.

4. Negligent maintenance.
5. Falsification of the maintenance record.
6. Issuing a certificate of release to service knowing that the maintenance specified on the certificate of release to service has not been carried out or without verifying that such maintenance has been carried out.
7. Carrying out maintenance or issuing a certificate of release to service when adversely affected by alcohol or drugs.
8. Issuing certificate of release to service while not in compliance with this Part

19. Fees chargeable for the aircraft maintenance licence examinations.

The fees chargeable in respect of issue/renewal of Aircraft Maintenance Licence shall be in terms of the Gazette Extraordinary of the Government of Sri Lanka, Number 1025/6 dated 28.04.1998, as amended from time to time and fees introduced for additional activities in future. A current Fee Table is available for reference at the Personnel Licensing Section.

Appendix I

Basic knowledge requirements

1. KNOWLEDGE LEVELS —CATEGORY A, B1, B2 AND C AIRCRAFT MAINTENANCE LICENCE

Basic knowledge for categories A,B1 and B2 are indicated by the allocation of knowledge levels indicators (1,2 or 3) against each applicable subject. Category C applicants must meet either the category B1 or the category B2 basic knowledge levels.

The knowledge level indicators are defined as follows:

LEVEL 1

A familiarization with the principal elements of the subject.

Objectives:

The applicant should be familiar with the basic elements of the subject.

The applicant should be able to give a simple description of the whole subject, using common words and examples.

The applicant should be able to use typical terms.

LEVEL 2

A general knowledge of the theoretical and practical aspects of the subject.

An ability to apply that knowledge.

Objectives:

The applicant should be able to understand the theoretical fundamentals of the subject.

The applicant should be able to give a general description of the subject using, as appropriate, typical examples.

The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.

The applicant should be able to read and understand sketches, drawings and schematics describing the subject.

The applicant should be able to apply his knowledge in a practical manner using detailed procedures.

LEVEL 3

A detailed knowledge of the theoretical and practical aspects of the subject.

A capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.

Objectives:

The applicant should know the theory of the subject and interrelationships with other subjects.

The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.

The applicant should understand and be able to use mathematical formulae related to the subject.

The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject.

The applicant should be able to apply his knowledge in a practical manner using manufacturer's instructions.

The applicant should be able to interpret results from various sources and measurements and apply corrective action where appropriate.

2. MODULARISATION

Qualification on basic subjects' for aircraft maintenance licence category or subcategory should be in accordance with the following matrix. Applicable subjects are indicated by an 'X'

Subject modules	A or B1 aeroplane with:		A or B1 helicopter with:		B2
	Turbine engine(s)	Piston engine(s)	Turbine engine(s)	Piston engine(s)	Avionics
1	X	X	X	X	X
2	X	X	X	X	X
3	X	X	X	X	X
4	X	X	X	X	X
5	X	X	X	X	X
6	X	X	X	X	X
7	X	X	X	X	X
8	X	X	X	X	X
9	X	X	X	X	X
10	X	X	X	X	X
11	X	X			
12			X	X	
13					X
14					X
15	X		X		
16		X		X	
17	X	X			

<u>MODULE 1 - METHAMATICS</u>	LEVEL A	LEVEL B1	LEVELB2
<p>1.1 Arithmetic Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.</p>	1	2	2
<p>1.2 Algebra</p> <p>(a) Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions;</p> <p>(b) Linear equations and their solutions; Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second degree equations with one unknown; logarithms;</p>	1	2	2
<p>1.3 Geometry</p> <p>(a) Simple geometrical constructions;</p> <p>(b) Graphical representation; nature and uses of graphs, graphs of equations/functions;</p> <p>(c) Simple trigonometry; trigonometric relationships, use of tables and rectangular and polar coordinates.</p>	-	1	1
	2	2	2
	-	2	2

<u>MODULE 2- PHYSICS</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
2.1 Matter	1	1	1
Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.			
2.2 Mechanics			
2.2.1 Statics	1	2	1
Forces, moments and couples, representation as vectors; Centre of gravity. Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion; Nature and properties of solid, fluid and gas; Pressure and buoyancy in liquids (barometers).			
2.2.2 Kinetics	1	2	1
Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); Rotational movement: uniform circular motion (centrifugal/centripetal forces); Periodic motion: pendular movement; Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency.			
2.2.3 Dynamics			
(a) Mass Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;	1	2	1
(b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).	1	2	2
2.2.4 Fluid dynamics	2	2	2
(a) Specific gravity and density;			

<p>(b) Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.</p> <p>2.3 Thermodynamics</p>	1	2	1
<p>(a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition.</p>	2	2	2
<p>(b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics</p> <p>Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas;</p> <p>Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps;</p> <p>Latent heats of fusion and evaporation, thermal energy, heat of combustion.</p>	-		2

<p>2.4 Optics (Light)</p> <p>Nature of light; speed of light;</p> <p>Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses;</p> <p>Fiber optics.</p>	-	2	2
<p>2.5 Wave Motion and Sound</p> <p>Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves;</p> <p>Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.</p>	-	2	2

<u>MODULE 3 – ELECTRICAL FUNDAMENTALS</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
<p>3.1 Electron Theory</p> <p>Structure and distribution of electrical charges within: atoms, molecules, ions, compounds;</p> <p>Molecular structure of conductors, semiconductors and insulators.</p>	1	1	1
<p>3.2 Static Electricity and Conduction</p> <p>Static electricity and distribution of electrostatic charges;</p> <p>Electrostatic laws of attraction and repulsion;</p> <p>Units of charge, Coulomb's Law;</p> <p>Conduction of electricity in solids, liquids, gases and a vacuum</p>	1	2	2
<p>3.3 Electrical Terminology</p> <p>The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.</p>	1	2	2

3.4 Generation of Electricity			
Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	1	1	1
3.5 DC Sources of Electricity			
Construction and basic chemical action of: primary cells, secondary cells, lead acid cells, nickel cadmium cells, other alkaline cells; Cells connected in series and parallel; Internal resistance and its effect on a battery; Construction, materials and operation of thermocouples; Operation of photo-cells.	1	2	2
3.6 DC Circuits			
Ohms Law, Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply.	-	2	2
3.7 Resistance/Resistor			
(a) Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.	-	2	2
(b) Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge;	-	1	1
3.8 Power	-	2	2

<p>Power, work and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work and energy.</p>			
<p>3.9 Capacitance/Capacitor</p> <p>Operation and function of a capacitor;</p> <p>Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.</p>	-	2	2
<p>3.10 Magnetism</p> <p>(a) Theory of magnetism; Properties of a magnet;</p> <p>Action of a magnet suspended in the Earth's magnetic field; Magnetization and demagnetization; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor.</p>	-	2	2
<p>(b) Magneto motive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets</p>	-	2	2
<p>3.11 Inductance/Inductor</p> <p>Faraday's Law;</p> <p>Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of</p>	-	2	2

<p>change of flux, number of conductor turns;</p> <p>Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage;</p> <p>Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other;</p> <p>Lenz's Law and polarity determining rules;</p> <p>Back emf, self induction; Saturation point; Principle uses of inductors;</p> <p>3.12 DC Motor/Generator Theory</p> <p>Basic motor and generator theory; Construction and purpose of components in DC generator;</p> <p>Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors;</p> <p>Starter Generator construction.</p> <p>3.13 AC Theory</p> <p>Sinusoidal waveform: phase, period, frequency, cycle;</p> <p>Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power</p> <p>Triangular/Square waves;</p> <p>Single/3 phase principles</p> <p>3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits</p> <p>Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; Power dissipation in L, C and R circuits;</p> <p>Impedance, phase angle, power factor and current</p>	-	2	2
<p>1</p>	1	2	2
<p>-</p>	-	2	2

calculations; True power, apparent power and reactive power calculations			
3.15 Transformers	-	2	2
Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Calculation of power in a three phase system; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto transformers.			
3.16 Filters	-	1	1
Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.			
3.17 AC Generators	-	2	2
Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses; Permanent Magnet Generators.			
3.18 AC Motors	-	2	2
Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole			
<u>MODULE 4 – ELECTRONIC FUNDAMENTALS</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
4.1 Semiconductors			
4.1.1 Diodes			

<p>(a) Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes.</p>	-	2	2
<p>(b) Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters; PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions; Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation; Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.</p>	-	-	2
4.1.2 Transistors			
<p>(a) Transistor symbols; Component description and orientation; Transistor characteristics and properties.</p>	-	1	2
<p>(b) Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors. Basic appreciation of other transistor types and their uses. Application of transistors: classes of amplifier (A, B, C); Simple circuits including: bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits.</p>	-	-	2
4.1.3 Integrated Circuits			

(a) Description and operation of logic circuits and linear circuits/operational amplifiers.	-	1	-
(b) Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.	-	-	2
4.2 Printed Circuit Boards Description and use of printed circuit boards.	-	1	2
4.3 Servomechanisms (a) Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.	-	1	-
(b) Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, deadband; Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; Servomechanism defects, reversal of synchro leads, hunting.	-	-	2

<u>MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS</u>	LEVEL A	LEVEL B1.2 B1.3	LEVEL B1.2 B1.4	LEVEL B2
5.1 Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument systems.	1	2	2	3
5.2 Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	-	1	-	2
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	-	1	-	2
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.	-	2	-	2
5.5 Logic Circuits (a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.	-	2	-	2
(b) Interpretation of logic diagrams.	-	-	-	2
5.6 Basic Computer Structure (a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM);	1	2	-	-

Computer technology (as applied in aircraft systems).				
(b) Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multi address instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	-	-	-	2
5.7 Microprocessors	-	-	-	2
Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.				
5.8 Integrated Circuits	-	-	-	2
Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.				
5.9 Multiplexing	-	-	-	2
Operation, application and identification in logic diagrams of multiplexers and demultiplexers.				
5.10 Fibre Optics	-	1	1	2
Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.				
5.11 Electronic Displays	-	2	-	2

Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.				
5.12 Electrostatic Sensitive Devices	1	2	2	2
Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.				
5.13 Software Management Control	-	2	1	2
Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes				
5.14 Electromagnetic Environment	-	2	2	2
Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection				
5.15 Typical Electronic/Digital Aircraft Systems	-	2	2	2
General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) testing such as: ACARS-ARINC Communication and Addressing and Reporting System ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System GPS-Global Positioning System IRS-Inertial Reference System TCAS-Traffic Alert Collision Avoidance System				

<u>MODULE 6 – MATERIALS AND HARDWARE</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
6.1 Aircraft Materials — Ferrous			
(a) Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels;	1	2	1
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1
6.2 Aircraft Materials — Non-Ferrous			
(a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non- ferrous materials;	1	2	1
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1
6.3 Aircraft Materials — Composite and Non-Metallic			
6.3.1 Composite and non-metallic other than wood and fabric			
(a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.	1	2	2
(b) The detection of defects/deterioration in composite and non-metallic material. Repair of composite and non-metallic material.	1	2	-
6.3.2 Wooden structures Construction methods of wooden airframe	1	2	-

structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.	1	2	
6.3.3 Fabric covering			
Characteristics, properties and types of fabrics used in aeroplanes; Inspections methods for fabric; Types of defects in fabric; Repair of fabric covering.			-
6.4 Corrosion			
(a) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress;	1	1	1
(b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	2	3	2
6.5 Fasteners			
6.5.1 Screw threads Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads;	2	2	2
6.5.2 Bolts, studs and screws			
Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels.	2	2	2
6.5.3 Locking devices			
Tab and spring washers, locking plates, split			

pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.			
6.5.4 Aircraft rivets	1	2	1
Types of solid and blind rivets: specifications and identification, heat treatment.			
6.6 Pipes and Unions			
(a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;	2	2	2
(b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2	2	1
6.7 Springs Types of springs, materials, characteristics and applications.	-	2	1
6.8 Bearings Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2
6.9 Transmissions Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	1	2	2
6.10 Control Cables	1	2	1
Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.			
6.11 Electrical Cables and Connectors Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes	1	2	2

<u>MODULE 7 – MAINTENANCE PRACTICES</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
<p>7.1 Safety Precautions-Aircraft and Workshop</p> <p>Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals.</p> <p>Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.</p>	3	3	3
<p>7.2 Workshop Practices</p> <p>Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.</p>	3	3	3
<p>7.3 Tools</p> <p>Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment;</p>	3	3	3
<p>7.4 Avionic General Test Equipment</p> <p>Operation, function and use of avionic general test equipment.</p>	-	2	3
<p>7.5 Engineering Drawings, Diagrams and Standards</p> <p>Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerized presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL;</p>	1	2	2

Wiring diagrams and schematic diagrams			
7.6 Fits and Clearances	1	2	1
Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.			
7.7 Electrical Wiring Interconnection System (EWIS)	1	3	3
Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Identification of wire types, their inspection criteria and damage tolerance. Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding. EWIS installations, inspection, repair, maintenance and cleanliness standards.			
7.8 Riveting	1	2	-
Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.			
7.9 Pipes and Hoses	1	2	-
Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.			
7.10 Springs	1	2	-
Inspection and testing of springs.			
7.11 Bearings	1	2	-
Testing, cleaning and inspection of bearings;			

Lubrication requirements of bearings; Defects in bearings and their causes			
7.12 Transmissions	1	2	-
Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.			
7.13 Control Cables	1	2	-
Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.			
7.14 Material handling			
7.14.1 Sheet Metal	-	2	-
Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.			
7.14.2 Composite and non-metallic	-	2	-
Bonding practices; Environmental conditions Inspection methods			
7.15 Welding, Brazing, Soldering and Bonding			
(a) Soldering methods; inspection of soldered joints.	-	2	2
(b) Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	-	2	-
7.16 Aircraft Weight and Balance			
(a) Centre of Gravity/Balance limits calculation: use of relevant	-	2	2

documents;			
(b) Preparation of aircraft for weighing; Aircraft weighing	-	2	-
7.17 Aircraft Handling and Storage	2	2	2
Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.			
7.18 Disassembly, Inspection, Repair and Assembly Techniques			
(a) Types of defects and visual inspection techniques. Corrosion removal, assessment and re-protection.	2	3	2
(b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes;	-	2	-
(c) Non destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods.	-	2	1
(d) Disassembly and re-assembly techniques.	2	2	2
(e) Trouble shooting techniques	-	2	2
7.19 Abnormal Events			
(a) Inspections following lightning strikes and HIRF penetration.	2	2	2

(b) Inspections following abnormal events such as heavy landings and flight through turbulence	2	2	-
7.20 Maintenance Procedures	1	2	2
Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection /Quality Control/Quality Assurance; Additional maintenance procedures. Control of life limited components			
<u>MODULE 8 – BASIC AERODYNAMICS</u>	<u>LEVAL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
8.1 Physics of the Atmosphere	1	2	2
International Standard Atmosphere (ISA), application to aerodynamics.			
8.2 Aerodynamics	1	2	2
Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost			
8.3 Theory of Flight	1	2	2
Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights,			

performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation.			
8.4 Flight Stability and Dynamics	1	2	2
Longitudinal, lateral and directional stability (active and passive).			
<u>MODULE 9 – HUMAN FACTORS</u>	<u>LEVAL A</u>	<u>LEVAL B1</u>	<u>LEVAL B2</u>
9.1 General	1	2	2
The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.			
9.2 Human Performance and Limitations	1	2	2
Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.			
9.3 Social Psychology	1	1	1
Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership			
9.4 Factors Affecting Performance	2	2	2
Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.			
9.5 Physical Environment	1	1	1
Noise and fumes;			

<p>Illumination; Climate and temperature; Motion and vibration; Working environment.</p>			
<p>9.6 Tasks</p> <p>Physical work; Repetitive tasks; Visual inspection; Complex systems.</p>	1	1	1
<p>9.7 Communication</p> <p>Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.</p>	2	2	2
<p>9.8 Human Error</p> <p>Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e accidents) Avoiding and managing errors.</p>	1	2	2
<p>9.9 Hazards in the Workplace</p> <p>Recognizing and avoiding hazards; Dealing with emergencies</p>	1	2	2
<p><u>MODULE 10 – AVIATION LEGISLATION</u></p>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
<p>10.1 Regulatory Framework</p> <p>Role of International Civil Aviation Organisation; Role of the Member States and National Aviation Authorities; Role of EASA; Role of the European Commission: Relationship between Part -21, Part-145, Part-66, Part-147 and Part-M and EU-OPS;</p>	1	1	1
<p>10.2 Part-66 — Certifying Staff — Maintenance</p> <p>Detailed understanding of Part-66.</p>	2	2	2

10.3 Part-145 — Approved Maintenance Organizations	2	2	2
Detailed understanding of Part-145.			
10.4 EU-OPS — Commercial Air Transport/Commercial Operations	1	1	1
Air Operators Certificates; Operators Responsibilities, in particular regarding continuing airworthiness and maintenance; Documents to be carried on board; Aircraft Placarding (Markings);			
10.5 Aircraft Certification			
(a) General	-	1	1
Certification rules: such as EACS 23/25/27/29;			
Type Certification; Supplemental Type Certification; Part-21 Design/Production Organisation Approvals.			
(b) Documents	-	2	2
Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station Licence and Approval.			
10.6 Part-M	2	2	2
Detailed understanding of Part-M			
10.7 Applicable knowledge of Air Navigation Regulations in Sri Lanka.	2	2	2
Knowledge of Aviation Safety Notices (ASNs); Procedure of issuing ASNs, Subjective matters covering ASNs, Authority of issuing ASNs, Certificate of Registration; Issue, renewal, validation procedure and period of validation, classification of aircraft operations, Nationality of registration markings.			

<p>Certificate of Airworthiness; Issue, renewal validity period, weight schedule, fuel sheet, log sheet, documents to carry in the aircraft, Noise Certificate, ATA specifications, Certificate of Release to Service, stores procedures and purchasing of spares and parts</p> <p>Aircraft maintenance licenses, issue, validity period, renewal and suspension. AMO approvals, Maintenance Control Manual, approval of MCM, validity period of AMO, Workshop approvals, calibration of tools and equipments.</p>			
<p>(a)</p> <p>Maintenance Programmes, approval of maintenance programme. Maintenance checks and inspections;</p> <p>Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.;</p>	1	2	2
<p>(b)</p> <p>Continuing airworthiness;</p> <p>Test flights;</p> <p>ETOPS, maintenance and dispatch requirements;</p> <p>All Weather Operations, Category II/III operations and minimum equipment requirements. RVSM and RNAV operations, requirement of EGPWS, ACAS I/II, DFDR and FDR requirements.</p>	-	1	1
<p><u>MODULE 11A – TURBINE</u> <u>AEROPLANE</u> <u>AERODYNAMICS,</u> <u>STRUCTURES AND</u> <u>SYSTEMS</u></p>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
<p>11.1 Theory of Flight</p> <p>11.1.1 Aeroplane Aerodynamics and Flight Controls</p> <p>Operation and effect of:</p>	1	2	-

<ul style="list-style-type: none"> — roll control: ailerons and spoilers; — pitch control: elevators, stabilizers, variable incidence stabilizers and canards; — yaw control, rudder limiters; <p>Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;</p>			
<p>11.1.2 High Speed Flight</p> <p>Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors affecting airflow in engine intakes of high speed aircraft; Effects of sweepback on critical Mach number.</p>	1	2	-
<p>11.2 Airframe Structures — General Concepts</p> <p>(a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision. Aircraft bonding</p>	2	2	-
<p>(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties,</p>	1	2	-

beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning. Airframe symmetry: methods of alignment and symmetry checks.			
11.3 Airframe Structures — Aeroplanes			
11.3.1 Fuselage (ATA 52/53/56)	1	2	-
Construction and pressurisation sealing; Wing, stabiliser, pylon and undercarriage attachments; Seat installation and cargo loading system; Doors and emergency exits: construction, mechanisms, operation and safety devices; Windows and windscreen construction and mechanisms.			
11.3.2 Wings (ATA 57)	1	2	-
Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.			
11.3.3 Stabilisers (ATA 55)	1	2	-
Construction; Control surface attachment.			
11.3.4 Flight Control Surfaces (ATA 55/57)	1	2	-
Construction and attachment; Balancing — mass and aerodynamic.			
11.3.5 Nacelles/Pylons (ATA 54)	1	2	-
Construction; Firewalls; Engine mounts.			
11.4 Air Conditioning and Cabin Pressurization (ATA 21)			
11.4.1 Air supply	1	3	-
Sources of air supply including engine bleed, APU and ground cart;			
11.4.2 Air Conditioning	1	3	-

Air conditioning systems; Air cycle and vapor cycle machines; Distribution systems; Flow, temperature and humidity control system.			
11.4.3 Pressurization	1	3	-
Pressurization systems; Control and indication including control and safety valves; Cabin pressure controllers.			
11.4.4 Safety and warning devices	1	2	-
Protection and warning devices.			
11.5 Instruments/Avionic Systems			
11.5.1 Instrument Systems (ATA 31)	1	2	-
Pitot static: altimeter, air speed indicator, vertical speed indicator;			
Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator;			
Compasses: direct reading, remote reading; Angle of attack indication, stall warning systems;			
Other aircraft system indication.			
11.5.2 Avionic Systems	1	1	-
Fundamentals of system lay-outs and operation of;			
Auto Flight (ATA 22);			
Communications (ATA 23);			
Navigation Systems (ATA 34).			
11.6 Electrical Power (ATA 24)	1	3	-
Batteries Installation and Operation;			
DC power generation;			
AC power generation;			
Emergency power generation;			
Voltage regulation;			
Power distribution;			
Inverters, transformers, rectifiers;			
Circuit protection.			
External/Ground power;			

11.7 Equipment and Furnishings (ATA 25)			
(a) Emergency equipment requirements; Seats, harnesses and belts.	2	2	-
(b) Cabin lay-out; Equipment lay-out; Cabin Furnishing Installation; Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Air stairs.	1	1	-
11.8 Fire Protection (ATA 26)			
(a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1	3	-
(b) Portable fire extinguisher	1	1	-
11.9 Flight Controls (ATA 27)	1	3	-
Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks systems; Balancing and rigging; Stall protection/warning system.			
11.10 Fuel Systems (ATA 28)			
System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling; Longitudinal balance fuel systems.	1	3	-
11.11 Hydraulic Power (ATA 29)			
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation;	1	3	-

Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.			
11.12 Ice and Rain Protection (ATA 30)	1	3	-
Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic and chemical; Rain repellent; Probe and drain heating. Wiper systems			
11.13 Landing Gear (ATA 32)	2	3	-
Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and auto-braking; Tyres; Steering.			
11.14 Lights (ATA 33)	2	3	-
External: navigation, anti-collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.			
11.15 Oxygen (ATA 35)	1	3	-
System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;			
11.16 Pneumatic/Vacuum (ATA 36)	1	3	-
System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.			
11.17 Water/Waste (ATA 38)	2	3	-
Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.			
11.18 On Board Maintenance Systems (ATA 45)	1	2	-
Central maintenance computers;			

Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring)			
<u>MODULE 11B – PISTONE</u> <u>AEROPLANE</u> <u>AERODYNAMICS,</u> <u>STRUCTURES AND</u> <u>SYSTEMS</u>	<u>LEVEL A2</u>	<u>LEVEL B1.2</u>	<u>LEVEL B2</u>
Note: The scope of this module should reflect the technology of aeroplanes pertinent to the A2 and B1.2 subcategory			
11.1 Theory of Flight			
11.1.1 Aeroplane Aerodynamics and Flight Controls	1	2	-
Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters;			
Control using elevons, ruddervators; High lift devices, slots, slats, flaps, flaperons; Drag inducing devices, spoilers, lift dumpers, speed brakes; Effects of wing fences, saw tooth leading edges; Boundary layer control using, vortex generators, stall wedges or leading edge devices; Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels;			
11.1.2 High Speed Flight — N/A			
11.2 Airframe Structures — General Concepts	--	--	--
(a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems;	2	2	-

<p>Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions;</p> <p>System installation provisions; Lightning strike protection provision. Aircraft bonding</p> <p>(b)</p> <p>Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning, anti-corrosive protection, wing, empennage and engine attachments; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods of alignment and symmetry checks.</p> <p>11.3 Airframe Structures — Aeroplanes</p>	1	2	-
<p>11.3.1 Fuselage (ATA 52/53/56)</p> <p>Construction and pressurization sealing; Wing, tail-plane pylon and undercarriage attachments; Seat installation; Doors and emergency exits: construction and operation; Window and windscreen attachment.</p>	1	2	-
<p>11.3.2 Wings (ATA 57)</p> <p>Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.</p>	1	2	-
<p>11.3.3 Stabilizers (ATA 55)</p> <p>Construction; Control surface attachment.</p>	1	2	-
<p>11.3.4 Flight Control Surfaces (ATA 55/57)</p> <p>Construction and attachment; Balancing — mass and aerodynamic.</p>	1	2	-

11.3.5 Nacelles/Pylons (ATA 54)			
(a) Nacelles/Pylons: — Construction; — Firewalls; — Engine mounts	1	2	-
11.4 Air Conditioning and Cabin Pressurisation (ATA 21)	1	3	-
Pressurisation and air conditioning systems; Cabin pressure controllers, protection and warning devices.			
11.5 Instruments/Avionic Systems			
11.5.1 Instrument Systems (ATA 31)	1	2	-
Pitot static: altimeter, air speed indicator, vertical speed indicator; Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Angle of attack indication, stall-warning systems. Other aircraft system indication.			
11.5.2 Avionic Systems Fundamentals of system lay-outs and operation of: — Auto Flight (ATA 22); — Communications (ATA 23); — Navigation Systems (ATA 34).	1	1	-
11.6 Electrical Power (ATA 24)	1	3	-
Batteries Installation and Operation; DC power generation; Voltage regulation; Power distribution; Circuit protection; Inverters, transformers.			
11.7 Equipment and Furnishings (ATA 25)			
(a) Emergency equipment requirements; Seats, harnesses and belts.	2	2	-
(b) Cabin lay-out; Equipment lay-out; Cabin Furnishing Installation (level 2);	1	1	-

Cabin entertainment equipment; Galley installation; Cargo handling and retention equipment; Airstairs.			
11.8 Fire Protection (ATA 26)			
(a) Fire extinguishing systems; Fire and smoke detection and warning systems; System tests.	1	3	-
(b) Portable fire extinguisher.	1	3	-
11.9 Flight Controls (ATA 27)	1	3	-
Primary controls: aileron, elevator, rudder; Trim tabs; High lift devices; System operation: manual; Gust locks; Balancing and rigging; Stall warning system.			
11.10 Fuel Systems (ATA 28)	1	3	-
System lay-out; Fuel tanks; Supply systems; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.			
11.11 Hydraulic Power (ATA 29)	1	3	-
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical; Pressure Control; Power distribution; Indication and warning systems			
11.12 Ice and Rain Protection (ATA 30)	1	3	-
Ice formation, classification and detection; De-icing systems: electrical, hot air, pneumatic and chemical; Probe and drain heating; Wiper systems.			
11.13 Landing Gear (ATA 32)	2	3	-
Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, brakes, antiskid and autobraking; Tyres; Steering.			
11.14 Lights (ATA 33)	2	2	-

External: navigation, anti collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.			
11.15 Oxygen (ATA 35)	1	3	-
System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;			
11.16 Pneumatic/Vacuum (ATA 36)	1	3	-
System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems			
11.17 Water/Waste (ATA 38)	2	3	-
Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.			
<u>MODULE 12 – HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS</u>	<u>LEVEL A3 A4</u>	<u>LEVEL B1.3 B1.4</u>	<u>LEVEL B2</u>
12.1 Theory of Flight — Rotary Wing Aerodynamics	1	2	-
Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, Blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power settling, overpitching; Auto-rotation; Ground effect.			
12.2 Flight Control Systems	2	3	-
Cyclic control; Collective control; Swashplate; Yaw control: Anti-Torque Control, Tail rotor, bleed air; Main Rotor Head: Design and Operation features; Blade Dampers: Function and construction; Rotor Blades:			

<p>Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical and fly-by-wire; Artificial feel; Balancing and Rigging</p>			
<p>12.3 Blade Tracking and Vibration Analysis</p> <p>Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.</p>	1	3	-
<p>12.4 Transmissions</p> <p>Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake. Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers</p>	1	3	-
<p>12.5 Airframe Structures</p> <p>(a) Airworthiness requirements for structural strength; Structural classification, primary, secondary and tertiary; Fail safe, safe life, damage tolerance concepts; Zonal and station identification systems; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision.</p> <p>(b) Construction methods of: stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, methods of skinning and anti-corrosive protection. Pylon, stabiliser and undercarriage attachments; Seat installation; Doors: construction, mechanisms, operation and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; Structure assembly techniques: riveting, bolting, bonding; Methods of surface protection, such as chromating, anodising, painting; Surface cleaning. Airframe</p>	2	2	-
	1	2	-

symmetry: methods of alignment and symmetry checks.			
12.6 Air Conditioning (ATA 21)			
12.6.1 Air supply Sources of air supply including engine bleed and ground cart;	1	2	-
12.6.2 Air Conditioning Air conditioning systems; Distribution systems; Flow and temperature control systems; Protection and warning devices.	1	3	-
12.7 Instruments/Avionic Systems			
12.7.1 Instrument Systems (ATA 31) Pitot static:altimeter, air speed indicator, vertical speed indicator; Gyroscopic:artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; Compasses: direct reading, remote reading; Vibration indicating systems — HUMS; Other aircraft system indication.	1	2	-
12.7.2 Avionic Systems Fundamentals of system layouts and operation of: Auto Flight (ATA 22); Communications (ATA 23); Navigation Systems (ATA 34).	1	1	-
12.8 Electrical Power (ATA 24) Batteries Installation and Operation; DC power generation, AC power generation; Emergency power generation; Voltage regulation, Circuit protection. Power distribution; Inverters, transformers, rectifiers; External/Ground power.	1	3	-
12.9 Equipment and Furnishings (ATA 25)			
(a) Emergency equipment requirements; Seats, harnesses and belts; Lifting systems.	2	2	-
(b) Emergency flotation systems; Cabin lay-out, cargo retention; Equipment lay-out; Cabin Furnishing	1	1	-

Installation.			
12.10 Fire Protection (ATA 26)	1	3	-
Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.			
12.11 Fuel Systems (ATA 28)	1	3	-
System lay-out; Fuel tanks; Supply systems; Dumping, venting and draining; Cross-feed and transfer; Indications and warnings; Refuelling and defuelling.			
12.12 Hydraulic Power (ATA 29)	1	3	-
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems			
12.13 Ice and Rain Protection (ATA 30)	1	3	-
Ice formation, classification and detection; Anti-icing and de-icing systems: electrical, hot air and chemical; Rain repellent and removal; Probe and drain heating. Wiper system			
12.14 Landing Gear (ATA 32)	2	3	-
Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, tyres, brakes; Steering; Skids, floats.			
12.15 Lights (ATA 33)	2	3	-
External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.			

12.16 Pneumatic/Vacuum (ATA 36)	1	3	-
System lay-out; Sources: engine, compressors, reservoirs, ground supply.; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.			
<u>MODULE 13- AIRCRAFT</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
<u>AERODYNAMICS, STRUCTURES AND SYSTEMS</u>			
13.1 Theory of Flight			
(a) Aeroplane Aerodynamics and Flight Controls Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters Control using elevons, ruddervators; High lift devices: slots, slats, flaps; Drag inducing devices: spoilers, lift dumpers, speed brakes; Operation and effect of trim tabs, servo tabs, control surface bias.	-	-	1
(b) High Speed Flight Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number.	-	-	1
(c) Rotary Wing Aerodynamics Terminology; Operation and effect of cyclic, collective and anti-torque controls.	-	-	1
13.2 Structures — General Concepts			
(a) Fundamentals of structural systems.	-	-	1
(b)	-	-	2

<p>Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.</p> <p>13.3 Autoflight (ATA 22)</p> <p>Fundamentals of automatic flight control including working principles and current terminology; Command signal processing; Modes of operation: roll, pitch and yaw channels; Yaw dampers; Stability Augmentation System in helicopters; Automatic trim control; Autopilot navigation aids interface; Autothrottle systems. Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions.</p>	-	-	3
<p>13.4 Communication/Navigation (ATA 23/34)</p> <p>Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter;</p> <p>Working principles of following systems: — Very High Frequency (VHF) communication; — High Frequency (HF) communication; — Audio; — Emergency Locator Transmitters; — Cockpit Voice Recorder; — Very High Frequency omnidirectional range (VOR); — Automatic Direction Finding (ADF); — Instrument Landing System (ILS);</p> <p>— Microwave Landing System (MLS); — Flight Director systems; Distance Measuring Equipment (DME); — Very Low Frequency and hyperbolic navigation (VLF/Omega); — Doppler navigation; — Area navigation, RNAV systems; — Flight Management Systems; — Global Positioning System (GPS), Global Navigation Satellite Systems</p>	-	-	3

(GNSS); — Inertial Navigation System; — Air Traffic Control transponder, secondary surveillance radar; — Traffic Alert and Collision Avoidance System (TCAS); — Weather avoidance radar; — Radio altimeter; — ARINC communication and reporting;			
13.5 Electrical Power (ATA 24)	-	-	3
Batteries Installation and Operation; DC power generation; AC power generation; Emergency power generation; Voltage regulation; Power distribution; Inverters, transformers, rectifiers; Circuit protection; External/Ground power.			
13.6 Equipment and Furnishings (ATA 25) Electronic emergency equipment requirements; Cabin entertainment equipment. Flight Controls (ATA 27)	-	-	3
(a) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems.	-	-	1
(b) System operation: electrical, fly by wire.	-	-	2
13.8 Instrument Systems (ATA 31)	-	-	2
Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators;			

<p>Machmeters; Altitude reporting/alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems; Fuel quantity indicating systems Gyroscopic principles; Artificial horizons; Slip indicators; Directional gyros; Ground Proximity Warning Systems; Compass systems; Flight Data Recording systems; Electronic Flight Instrument Systems; Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration measurement and indication.</p> <p>13.9 Lights (ATA 33)</p> <p>External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.</p> <p>13.10 On board Maintenance Systems (ATA 45)</p> <p>Central maintenance computers; Data loading system; Electronic library system;</p> <p>Printing; Structure monitoring (damage tolerance monitoring).</p>	-	-	3
<p><u>MODULE 14 – PROPULSION</u></p> <p>14.1 Turbine Engines</p> <p>(a) Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines;</p> <p>(b) Electronic Engine control and fuel metering systems (FADEC).</p> <p>14.2 Engine Indicating Systems</p> <p>Exhaust gas temperature/Interstage turbine temperature systems;</p>	<u>LEVEL A</u>	<u>LEVELB1</u>	<u>LEVEL B2</u>
	-	-	1
	-	-	2
	-	-	2

Engine speed; Engine Thrust Indication; Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.			
<u>MODULE 15 – GAS TURBINE ENGINES</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
15.1 Fundamentals	1	2	-
Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; The relationship between force, work, power, energy, velocity, acceleration; Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop.			
15.2 Engine Performance	-	2	-
Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; Engine efficiencies; By-pass ratio and engine pressure ratio; Pressure, temperature and velocity of the gas flow; Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations			
15.3 Inlet	2	2	-
Compressor inlet ducts Effects of various inlet configurations; Ice protection.			
15.4 Compressors	1	2	-
Axial and centrifugal types; Constructional features and operating principles and applications; Fan balancing; Operation: Causes and effects of compressor stall and surge; Methods of air flow control:			

bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; Compressor ratio.			
15.5 Combustion Section	1	2	-
Constructional features and principles of operation.			
15.6 Turbine Section	2	2	-
Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.			
15.7 Exhaust	1	2	-
Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.			
15.8 Bearings and Seals	-	2	-
Constructional features and principles of operation.			
15.9 Lubricants and Fuels	1	2	-
Properties and specifications; Fuel additives; Safety precautions.			
15.10 Lubrication Systems	1	2	-
System operation/lay-out and components.			
15.11 Fuel Systems	1	2	-
Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.			
15.12 Air Systems	1	2	-
Operation of engine air distribution and anti-ice control systems, including internal			

cooling, sealing and external air services.			
15.13 Starting and Ignition Systems	1	2	-
Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.			
15.14 Engine Indication Systems	1	2	-
Exhaust Gas Temperature/Interstage Turbine Temperature; Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature;			
Fuel pressure and flow; Engine speed; Vibration measurement and indication; Torque; Power.			
15.15 Power Augmentation Systems	-	1	-
Operation and applications; Water injection, water methanol; Afterburner systems.			
15.16 Turbo-prop Engines	1	2	-
Gas coupled/free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.			
15.17 Turbo-shaft engines	1	2	-
Arrangements, drive systems, reduction gearing, couplings, control systems.			
15.18 Auxiliary Power Units (APUs)	1	2	-
Purpose, operation, protective systems.			
15.19 Powerplant Installation	1	2	-
Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.			
15.20 Fire Protection Systems	1	2	-

Operation of detection and extinguishing systems.			
15.21 Engine Monitoring and Ground Operation	1	3	-
Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Trend (including oil analysis, vibration and boroscope) monitoring; Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; Compressor washing/cleaning; Foreign Object Damage.			
15.22 Engine Storage and Preservation	-	2	-
Preservation and depreservation for the engine and accessories/systems.			
<u>MODULE 16 – PISTON ENGINE</u>	<u>LEVEL A</u>	<u>LEVEL B1</u>	<u>LEVEL B2</u>
16.1 Fundamentals	1	2	-
Mechanical, thermal and volumetric efficiencies; Operating principles — 2 stroke, 4 stroke, Otto and Diesel; Piston displacement and compression ratio; Engine configuration and firing order.			
16.2 Engine Performance	1	2	-
Power calculation and measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition			
16.3 Engine Construction	1	2	-
Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder and piston assemblies; Connecting rods, inlet and exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.			
16.4 Engine Fuel Systems			

16.4.1 Carburetors Types, construction and principles of operation; Icing and heating.	1	2	-
16.4.2 Fuel injection systems Types, construction and principles of operation.	1	2	-
16.4.3 Electronic engine control Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1	2	-
16.5 Starting and Ignition Systems Starting systems, pre-heat systems; Magneto types, construction and principles of operation; Ignition harnesses, spark plugs; Low and high tension systems.	1	2	-
16.6 Induction, Exhaust and Cooling Systems Construction and operation of: induction systems including alternate air systems; Exhaust systems, engine cooling systems air and liquid.	1	2	-
16.7 Supercharging/Turbocharging Principles and purpose of supercharging and its effects on engine parameters; Construction and operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.	1	2	-
16.8 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2	-
16.9 Lubrication Systems System operation/lay-out and components.	1	2	-
16.10 Engine Indication Systems	1	2	-

<p>Engine speed; Cylinder head temperature; Coolant temperature;</p> <p>Oil pressure and temperature; Exhaust Gas Temperature; Fuel pressure and flow; Manifold pressure.</p> <p>16.11 Powerplant Installation</p> <p>Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.</p> <p>16.12 Engine Monitoring and Ground Operation</p> <p>Procedures for starting and ground run-up; Interpretation of engine power output and parameters; Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer.</p> <p>16.13 Engine Storage and Preservation</p> <p>Preservation and depreservation for the engine and accessories/systems.</p>	<p>1</p> <p>1</p> <p>-</p>	<p>2</p> <p>3</p> <p>2</p>	<p>-</p> <p>-</p> <p>-</p>
<p><u>MODULE 17 - PROPELLER</u></p> <p>17.1 Fundamentals</p> <p>Blade element theory;</p> <p>High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip;</p> <p>Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.</p> <p>17.2 Propeller Construction</p> <p>Construction methods and materials used in wooden, composite and metal propellers;</p>	<p><u>LEVEL A</u></p> <p>1</p> <p>1</p>	<p><u>LEVEL B1</u></p> <p>2</p> <p>2</p>	<p><u>LEVEL B2</u></p> <p>-</p> <p>-</p>

Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speed propeller; Propeller/spinner installation.			
17.3 Propeller Pitch Control	1	2	-
Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.			
17.4 Propeller Synchronising	-	2	-
Synchronising and synchrophasing equipment.			
17.5 Propeller Ice Protection	1	2	-
Fluid and electrical de-icing equipment.			
17.6 Propeller Maintenance	1	3	-
Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.			
17.7 Propeller Storage and Preservation	1	2	-
Propeller preservation and depreservation			

Appendix II

Basic Examination Standard

1. Standardization Basis for Examinations

- 1.1. All basic examinations must be carried out using the multi-choice question format and essay questions as specified below.
- 1.2. Each multi-choice question must have three alternative answers of which only one must be the correct answer and the candidate must be allowed a time per module which is based upon a nominal average of 75 seconds per question.
- 1.3. Each essay question requires the preparation of a written answer and the candidate must be allowed 20 minutes to answer each such question. Essay questions are to cover Module 7, 9, 10 in the knowledge syllabus in the Appendix 1 of this Part.
- 1.4. The pass mark for each module and sub-module multi-choice part of the examination is 75 %.
- 1.5. The pass mark for each essay question is 75 % in that the candidates answer must contain 75 % of the required key points addressed by the question and no significant error related to any required key point.
- 1.6. If either the multi-choice part only or the essay part only is failed, then it is only necessary to reappear for the multi-choice or essay part, as appropriate.
- 1.7. No any penalty marking system in correction of multiple-choice question papers.
- 1.8. All modules in this Part describe the procedure to obtain complete Aircraft Maintenance Licence categories or subcategories. The categories or subcategories described in this Part has to complete within a 5 year time period of passing the first module except in the case specified in paragraph 1.9 below.
- 1.9. The 5 year time period specified in paragraph 1.8 the above does not apply to those modules which are common to more than one of aircraft maintenance licence categories or subcategories and which were previously passed as part of another such category or subcategory examination.

2. Question Numbers for the Aircraft Maintenance Licence Examination - Appendix I Modules

2.1. Subject Module 1 Mathematics:

Category A -	16 Multi-choice.	Time allowed 20 minutes.
Category B1-	30 Multi-choice.	Time allowed 40 minutes.
Category B2-	30 Multi-choice.	Time allowed 40 minutes.

2.2. Subject Module 2 Physics:

Category A-	30 Multi-choice.	Time allowed 40 minutes.
Category B1-	50 Multi-choice.	Time allowed 65 minutes.
Category B2-	50 Multi-choice.	Time allowed 65 minutes.

2.3. Subject Module 3 Electrical Fundamentals:

Category A-	20 Multi-choice.	Time allowed 25 minutes.
Category B1-	50 Multi-choice.	Time allowed 65 minutes.
Category B2-	50 Multi-choice.	Time allowed 65 minutes.

2.4. Subject Module 4 Electronic Fundamentals:

Category A-	None.	
Category B1-	20 Multi-choice.	Time allowed 25 minutes.
Category B2-	40 Multi-choice.	Time allowed 50 minutes.

2.5. Subject Module 5 Digital Techniques/Electronic Instrument Systems:

Category A-	16 Multi-choice.	Time allowed 20 minutes.
Category B1.1 & B1.3-	40 Multi-choice.	Time allowed 50 minutes.
Category B1.2 & B1.4-	20 Multi-choice.	Time allowed 25 minutes.
Category B2-	70 Multi-choice.	Time allowed 90 minutes.

2.6. Subject Module 6 Materials and Hardware:

Category A-	50 Multi-choice.	Time allowed 65 minutes.
Category B1-	70 Multi-choice.	Time allowed 90 minutes.
Category B2-	60 Multi-choice.	Time allowed 75 minutes.

2.7. Subject Module 7 Maintenance Practices:

Category A-	70 multi-choice and 2 essay questions. Time allowed 90 minutes plus 40 minutes.	
Category B1-	80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes.	
Category B2	-60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.	

2.8. Subject Module 8 Basic Aerodynamics:

Category A-	20 Multi-choice	Time allowed 25 minutes.
Category B1-	20 Multi-choice	Time allowed 25 minutes.
Category B2-	20 Multi-choice .	Time allowed 25 minutes.

2.9. Subject Module 9 Human factors:

Category A-	20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.	
Category B1-	20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.	
Category B2-	20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.	

2.10. Subject Module 10 Aviation Legislation:

Category A-	30 multi-choice and 1 essay question. Time allowed 40 minutes plus 20 minutes.	
Category B1-	40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.	
Category B2-	40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.	

2.11. Subject Module 11a Turbine Aeroplane Aerodynamics, Structures and Systems:

Category A-	100 Multi-choice.	Time allowed 125 minutes.
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- Category B1- 130 Multi-choice. Time allowed 165 minutes.
Category B2- None.
- 2.12. Subject Module 11b Piston Aeroplane Aerodynamics, Structures and Systems:
Category A- 70 Multi-choice. Time allowed 90 minutes.
Category B1- 100 Multi-choice. Time allowed 125 minutes.
Category B2- None.
- 2.13. Subject Module 12 Helicopter Aerodynamics, Structures and Systems:
Category A- 90 Multi-choice. Time allowed 115 minutes.
Category B1- 115 Multi-choice. Time allowed 145 minutes.
Category B2- None.
- 2.14. Subject Module 13 Aircraft Aerodynamics, Structures and Systems:
Category A- None.
Category B1- None.
Category B2- 130 Multi-choice. Time allowed 165 minutes.
- 2.15. Subject Module 14 Propulsion:
Category A- None.
Category B1- None.
Category B2- 25 Multi-choice Time allowed 30 minutes.
- 2.16. Subject Module 15 Gas Turbine Engine:
Category A- 60 Multi-choice. Time allowed 75 minutes.
Category B1- 90 Multi-choice Time allowed 115 minutes.
Category B2- None.
- 2.17. Subject Module 16 Piston Engine:
Category A- 50 Multi-choice. Time allowed 65 minutes.
Category B1- 70 Multi-choice. Time allowed 90 minutes.
Category B2- None.
- 2.18. Subject Module 17 Propeller:
Category A- 20 Multi-choice. Time allowed 25 minutes.
Category B1- 30 Multi-choice. Time allowed 40 minutes.
Category B2- None.

Appendix III

Type training and Examination Standard

1. Type training levels

The three levels listed below define the objectives that a particular level of training is intended to achieve.

Level 1 General Familiarization

A brief overview of the airframe, systems and powerplants as outlined in the Systems Description Section of the Aircraft Maintenance Manual.

1. Course objectives: Upon completion of the course, the student will be able to identify safety precautions related to the airframe, its systems and powerplant
2. Identify maintenance practices important to the airframe, its systems and powerplant
3. Define the general layout of the aircraft's major systems
4. Define the general layout and characteristics of the powerplant
5. Identify special tooling and test equipment used with the aircraft

Level 2 Ramp and Transit

Basic system overview of controls, indicators, principal components including their location and purpose, servicing and minor troubleshooting.

Course objectives: In addition to the information contained in the Level 1 General Familiarisation course, at the completion of this Level 2 Ramp and Transit training, the student will be able to:

1. Recall the safety precautions to be observed when working on or near the aircraft, powerplant and systems.
2. Demonstrate knowledge of the main ramp and transit (through-flight) activities of the following:
 - (a) Doors, windows and hatches.
 - (b) Electrical power supplies.
 - (c) Fuel.
 - (d) Auxiliary power unit.
 - (e) Powerplant.
 - (f) Fire protection.
 - (g) Environmental Control Systems.
 - (h) Hydraulic power.
 - (i) Landing gear.
 - (j) Flight controls.
 - (k) Water/waste.
 - (l) Oxygen.
 - (m) Flight and service interphone.
 - (n) Avionics.

(o) Cabin equipment/furnishings.

3. Describe systems and aircraft handling particularly access, power availability and sources.
4. Identify the locations of the principal components.
5. Explain the normal functioning of each major system, including terminology and nomenclature.
6. Perform the procedures for ramp and transit servicing associated with the aircraft for the following systems: Fuel, Power Plants, Hydraulics, Landing Gear, Water/Waste, Oxygen.
7. Demonstrate proficiency in use of crew reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the MEL/CDL.
8. Identify and use appropriate documentation.
9. Locate those procedures for replacement of components for ramp and transit activities identified in objective 2.

Level 3 Line and base maintenance training

Detailed description, operation, component location, removal/installation and bite and troubleshooting procedures to maintenance manual level.

Course objectives: In addition to the information contained in Level 1 and Level 2 training, at the completion of Level III Line and Base Maintenance training, the student will be able to:

- (a) Perform system, engine, component and functional checks as specified in the maintenance manual.
- (b) Correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level.
- (c) Describe procedures for replacement of components unique to aircraft type.

2. Type training standard

Type training must include a theoretical and practical element.

2.1. Theoretical Element

As a minimum the elements in the Syllabus below that are specific to the aircraft type must be covered. Additional elements introduced due to technological changes shall also be included.

Training levels are those levels defined in paragraph 1 above.

After the first type course for category C certifying staff all subsequent courses need only be to level 1.

Introduction Module Title
General Aircraft (dimensions/weights MTOW etc) Time limits/maintenance checks Levelling and weighing Towing and taxiing Parking/mooring Servicing Standard practices-only type particular B2 module-safety items/mechanical interface B1 module-safety items/avionics interface

	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
	B1	C	B1	C	B1	C	B1	C	B2
Blade tracking and vibration analysis	-	-	-	-	3	1	3	1	-
Transmissions	-	-	-	-	3	1	3	1	-
Airframe structure	-	-	-	-	3	1	3	1	1
Main rotor	-	-	-	-	3	1	3	1	-
Tail rotor/rotor drive	-	-	-	-	3	1	3	1	-
Rotor flight control	-	-	-	-	3	1	3	1	-
Airframe Structure	3	1	3	1	-	-	-	-	1
Fuselage Doors	3	1	3	1	-	-	-	-	-
Fuselage	3	1	3	1	-	-	-	-	-
Fuselage Windows	3	1	3	1	-	-	-	-	-
Wings	3	1	3	1	-	-	-	-	-
Stabilizers	3	1	3	1	-	-	-	-	-

Flight Control Surfaces	3	1	3	1	-	-	-	-	-
Nacelles/Pylons	3	1	3	1	-	-	-	-	-
Zonal & Station Identification Systems	1	1	1	1	1	1	1	1	1
Air Supply	3	1	3	1	3	1	3	1	1
Air Conditioning	3	1	3	1	3	1	3	1	1
Pressurization	3	1	-	-	-	-	-	-	1
Safety & Warning Devices	3	1	-	-	-	-	-	-	1
Instrument Systems	3	1	3	1	3	1	3	1	3
Avionics Systems	2	1	2	1	2	1	2	1	3
Electrical Power	3	1	3	1	3	1	3	1	3
Equipment & Furnishings	3	1	3	1	3	1	3	1	-
Electronic Emergency Equip. Requir. & Cabin Entertainment Equipment	-	1	-	-	-	-	-	-	3
Fire Protection	3	1	3	1	3	1	3	1	1
Flight Controls	3	1	3	1	3	1	3	1	2
Sys.Operation: Electrical/Fly-by-Wire	3	1	-	-	-	-	-	-	3
Fuel Systems	3	1	3	1	3	1	3	1	1
Hydraulic Power	3	1	3	1	3	1	3	1	1
Ice & Rain Protection	3	1	3	1	3	1	3	1	1
Landing Gear	3	1	3	1	3	1	3	1	1
Lights	3	1	3	1	3	1	3	1	3
Oxygen	3	1	3	1	-	-	-	-	1
Pneumatic/Vacuum	3	1	3	1	3	1	3	1	1
Water/Waste	3	1	3	1	-	-	-	-	1
On-board Maintenance Systems	3	1	3	1	-	-	-	-	3

TURBINE ENGINES

	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics B2
	B1	C	B1	C	B1	C	B1	C	
Constructional arrangement and operation	-	-	-	-	-	-	-	-	1
Engine Performance	3	1	-	-	3	1	-	-	1
Inlet	3	1	-	-	3	1	-	-	-
Compressors	3	1	-	-	3	1	-	-	-
Combustion Section	3	1	-	-	3	1	-	-	-
Turbine Section	3	1	-	-	3	1	-	-	-
Exhaust	3	1	-	-	3	1	-	-	-
Bearings and Seals	3	1	-	-	3	1	-	-	-
Lubricants and Fuels	3	1	-	-	3	1	-	-	-
Lubrication Systems	3	1	-	-	3	1	-	-	-
Fuel Systems	3	1	-	-	3	1	-	-	1
Engine controls	3	1	-	-	3	1	-	-	1
FADEC	2	1	-	-	2	1	-	-	3
Air Systems	3	1	-	-	3	1	-	-	-
Starting & Ignition Systems	3	1	-	-	3	1	-	-	-
Engine Indicating Systems	3	1	-	-	3	1	-	-	3
Power Augmentation Systems	3	1	-	-	-	-	-	-	-
Turbo-prop Engines	3	1	-	-	-	-	-	-	-
Turbo-shaft Engines	-	-	-	-	3	1	-	-	-
Auxiliary Power Units (APUs)	3	1	-	-	-	-	-	-	1
Powerplant Installation	3	1	-	-	3	1	-	-	-
Fire Protection Systems	3	1	-	-	3	1	-	-	1
Engine Monitoring and Ground Operation	3	1	-	-	3	1	-	-	-
Engine Storage and Preservation	3	1	-	-	3	1	-	-	-

PISTON ENGINES

	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics B2
	B1	C	B1	C	B1	C	B1	C	
Engine Performance	-	-	3	1	-	-	3	1	1
Engine Construction	-	-	3	1	-	-	3	1	1
Engine Fuel Systems	-	-	3	1	-	-	3	1	1
Carburettors	-	-	3	1	-	-	3	1	-
Fuel injection systems	-	-	3	1	-	-	3	1	-
Engine controls	3	1	-	-	3	1	-	-	1

FADEC	-	-	2	1	-	-	2	1	3
Starting and Ignition Systems	-	-	3	1	-	-	3	1	-
Induction, Exhaust and Cooling Systems	-	-	3	1	-	-	3	1	-
Supercharging/Turbocharging	-	-	3	1	-	-	3	1	-
Lubricants and Fuels	-	-	3	1	-	-	3	1	-
Lubrication Systems	-	-	3	1	-	-	3	1	-
Engine Indication Systems	-	-	3	1	-	-	3	1	3
Powerplant Installation	-	-	3	1	-	-	3	1	-
Engine Monitoring and Ground Operation	-	-	3	1	-	-	3	1	-
Engine Storage and Preservation	-	-	3	1	-	-	3	1	-

PROPELLERS

	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
	B1	C	B1	C	B1	C	B1	C	B2
Propeller — General	3	1	3	1	-	-	-	-	1
Propeller Construction	3	1	3	1	-	-	-	-	-
Propeller Pitch Control	3	1	3	1	-	-	-	-	-
Propeller Synchronising	3	1	3	1	-	-	-	-	-
Propeller Electronic control	2	1	2	1	-	-	-	-	3
Propeller Ice Protection	3	1	3	1	-	-	-	-	-
Propeller Maintenance	3	1	3	1	-	-	-	-	-

2.2. Practical Element

The practical training element must consist of the performance of representative maintenance tasks and their assessment, in order to meet the following objectives:

- (a) Ensure safe performance of maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example troubleshooting, repairs, adjustments, replacements, rigging and functional checks such as engine run, etc, if required.
- (b) Correctly use all technical literature and documentation for the aircraft.
- (c) Correctly use specialist/special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

3. Type training examination standard

Where aircraft type training is required, the examination must be written and comply with the following:

1. Format of the examination is of the multiple-choice type. Each multiple-choice question must have three alternative answers of which only one must be the correct answer. The

time for answering is based upon a nominal average of 120 seconds per level 3 question and 75 seconds per level 1 or 2 questions.

2. The examination must be of the closed book type. No reference material is permitted. An exception will be made for the case of examining a B1 or B2 candidate's ability to interpret technical documents.
3. The number of questions must be at least one question per hour of instruction subject to a minimum of two questions per Syllabus subject. The competent authority of the Member State will assess number and level of questions on a sampling basis when approving the course.
4. The examination pass mark is 75 %.
5. Penalty marking is not to be used to determine whether a candidate has passed.
6. End of module phase examinations cannot be used as part of the final examination unless they contain the correct number and level of questions required.

4. Type examination standard

Where type training is not required, the examination must be oral, written or practical assessment based, or a combination thereof.

Oral examination questions must be open.

Written examination questions must be essay type or multiple-choice questions.

Practical assessment must determine a person's competence to perform a task.

Examination subjects must be on a sample of subjects drawn from paragraph 2 type training/examination syllabus, at the indicated level.

The examination must ensure that the following objectives are met:

- (a) Properly discuss with confidence the aircraft and its systems.
- (b) Ensure safe performance of maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example troubleshooting, repairs, adjustments, replacements, rigging and functional checks such as engine run, etc, if required.
- (c) Correctly use all technical literature and documentation for the aircraft.
- (d) Correctly use specialist/special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

A written report must be made by the examiner to explain why the candidate has passed or failed.

Appendix IV

Experience requirements for extending an Aircraft Maintenance Licence

The table below shows the experience requirements for adding a new category or subcategory to an existing Aircraft Maintenance Licence.

The experience must be practical maintenance experience on operating aircraft in the subcategory relevant to the application.

The experience requirement will be reduced by 50 % if the applicant has completed an approved maintenance course relevant to the subcategory.

To From	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2
A1	-	6 months	6 months	6 months	2 years	6 months	2 years	1 year	2 years
A2	6 months	-	6 months	6 months	2 years	6 months	2 years	1 year	2 years
A3	6 months	6 months	-	6 months	2 years	1 years	2 years	6 months	2 years
A4	6 months	6 months	6 months	-	2 years	1 years	2 years	6 months	2 years
B1.1	None	6 months	6 months	6 months	-	6 months	6 months	6 months	1 year
B1.2	6 months	None	6 months	6 months	2 years	-	2 years	6 months	2 years
B1.3	6 months	6 months	None	6 months	6 months	6 months	-	6 months	1 year
B1.4	6 months	6 months	6 months	None	2 years	6 months	2 years	-	2 years
B2	6 months	6 months	6 months	6 months	1 years	1 years	1 years	1 years	-