

**MLE-66 – MILITAIRE LUCHTVAARTEISEN VOOR HET
MILITAIR BEWIJS VAN ONDERHOUDSBEVOEGDHEID LUCHTVAARTUIGEN**

***MAR-66 – MILITARY AVIATION REQUIREMENTS FOR THE
MILITARY AIRCRAFT MAINTENANCE LICENCE***

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MLE-66 – MILITAIRE LUCHTVAARTEISEN VOOR HET MILITAIR BEWIJS VAN ONDERHOUDSBEVOEGDHEID LUCHTVAARTUIGEN (MBvOL)

MAR-66 – MILITARY AVIATION REQUIREMENTS FOR THE MILITARY AIRCRAFT MAINTENANCE LICENCE (MAML)

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Noot:

Vanwege praktische redenen zijn de aanhangsels enkel in de Engelse taal opgenomen. Op verzoek kan de Nederlandse versie opgevraagd worden bij de MLA.

66.1 Militaire Luchtvaart Autoriteit

- a. In deze MLE-66 wordt verstaan onder de Militaire Luchtvaart Autoriteit (MLA):
 - 1. de autoriteit waarbij iemand de afgifte van een Militair Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen (MBvOL) aanvraagt.
- b. De MLA is verantwoordelijk voor het vaststellen van:
 - 1. de lijst met luchtvaartuigtypen; en
 - 2. welke combinaties van casco/motor onder elke specifieke typebevoegdverklaring vallen.

Subdeel A – MILITAIR BEWIJS VAN ONDERHOUDSBEVOEGDHEID LUCHTVAARTUIGEN (MBvOL)

66.A.1 Toepassingsgebied en inwerkingtreding

- a. In deze sectie wordt het MBvOL gedefinieerd en worden de eisen voor de aanvraag, afgifte en verlenging ervan vastgelegd.
- b. Deze beleidsregel treedt in werking met ingang van 1 januari 2014 voor de basisopleiding en 1 januari 2016 voor de type-opleiding.

66.A.3 Categorieën MBvOL

- a. MBvOL's zijn ingedeeld in de volgende categorieën:
 - Categorie A
 - Categorie B1
 - Categorie B2
 - Categorie C
- b. Categorieën A en B1 zijn onderverdeeld in subcategorieën met betrekking tot combinaties van vliegtuigen, helikopters,

66.1. Military Aviation Authority the Netherlands

- a. For the purpose of this MAR-66, the Military Aviation Authority the Netherlands (MAA-NLD) shall be:
 - 1. the authority to whom a person applies for the issuance of an Military Aircraft Maintenance Licence (MAML).
- b. The MAA-NLD shall be responsible for defining:
 - 1. the list of aircraft types; and
 - 2. what airframe/engine combinations are included in each particular aircraft type rating.

Subpart A – MILITARY AIRCRAFT MAINTENANCE LICENCE (MAML)

66.A.1 Scope and entry into force

- a. This section defines the MAML and establishes the requirements for application, issue and continuation of its validity.
- b. This requirement shall enter into force as of January 1, 2014 for the basic training and January 1, 2016 for the type training.

66.A.3 MAML categories

- a. MAMLs include the following categories:
 - Category A
 - Category B1
 - Category B2
 - Category C
- b. Categories A and B1 are subdivided into subcategories relative to combinations of aeroplanes, helicopters, turbine and piston

turbine- en zuigermotoren. Deze subcategorieën zijn:

- A1 en B1.1 Vliegtuigen Turbine
- A3 en B1.3 Helikopters Turbine

66.A.5 Luchtvaartuiggroepen

- a. Alle militaire luchtvaartuigen worden beschouwd als grote (complexe motoraangedreven) luchtvaartuigen.
- b. Uitzonderingen op deze MLE-66 vormen de navolgende door de MLA gedefinieerde types:
 1. X-200 ScanEagle;
 2. RQ-11 Raven.

66.A.7 Definities

- a. **Elektrisch systeem:** De elektrische voedingsbron van het vliegtuig. Het distributiesysteem naar de verschillende componenten in het vliegtuig, de desbetreffende *connectors* en het verlichtingssysteem behoren ook tot deze definitie. Bij het werken aan kabels en *connectors* die deel uitmaken van deze elektrische systemen maken de volgende typische onderhoudspraktijken deel uit van het privilege: Continuïteit, isolatie en verbindingstechnieken en testen. Krimpen en testen van gekrompen verbindingen. *Connector* pinverwijdering en -invoeging. Beschermingstechnieken voor bedrading.
- b. **Avionica systeem:** Een vliegtuig systeem dat analoge of digitale gegevens met behulp van datalijnen, draadloze gegevensoverdracht of een andere drager overdraagt, bestuurt, weergeeft of opslaat, en de onderdelen van het systeem en de *connectors* omvat. Voorbeelden van avionica systemen omvatten het volgende: Automatische vlucht, communicatie & navigatie, instrumenten, *Integrated Modular Avionics (IMA)*, *cabin systems*, *on-board maintenance systems*, informatiesystemen, *fly by wire systems*, *fibre optic control systems*.
- c. **Eenvoudige test:** Een test beschreven in goedgekeurde onderhoudsgegevens die voldoet aan alle volgende criteria: De bruikbaarheid van het systeem kan worden geverifieerd met behulp van *aircraft controls*,

engines. These subcategories are:

- A1 and B1.1 Aeroplanes Turbine
- A3 and B1.3 Helicopters Turbine

66.A.5 Aircraft groups

- a. All military aircraft shall be considered as large (complex motor powered) aircraft.
- b. Exceptions on this MAR-66 are the following types as defined by the MAA-NLD:
 1. X-200 ScanEagle;
 2. RQ-11 Raven.

66.A.7 Definitions

- a. **Electrical system:** The aircraft electrical power supply source. The distribution system to the different components contained in the aircraft, relevant connectors and the lighting system are also included in this definition. When working on cables and connectors which are part of these electrical systems, the following typical practices are included in the privileges: Continuity, insulation and bonding techniques and testing. Crimping and testing of crimped joints. Connector pin removal and insertion. Wiring protection techniques.
- b. **Avionics system:** An aircraft system that transfers, processes, displays or stores analogue or digital data using data lines, wireless or other data transmission medium, and includes the system's components and connectors. Examples of avionics systems include the following: Autoflight, Communication & Navigation, Instruments, Integrated Modular Avionics (IMA), Cabin Systems, On-Board Maintenance Systems, Information Systems, Fly by Wire Systems, Fibre Optic Control Systems.
- c. **Simple test:** A test described in approved maintenance data and meeting all the following criteria: The serviceability of the system can be verified using aircraft controls, switches, BITE, Central Maintenance

schakelaars, BITE, *Central Maintenance Computer* (CMC) of externe testapparatuur waarvoor geen speciale opleiding vereist is. De uitkomst van de test is een eenduidige go - no go indicatie of parameter. Geen interpretatie van de testresultaten of onderlinge afhankelijkheid van de verschillende waarden is toegestaan. De test omvat niet meer dan 10 handelingen, zoals beschreven in de goedgekeurde onderhoudsgegevens (zonder inbegrip van die welke vereist zijn voor het configureren van het vliegtuig voorafgaand aan de test, zoals opkrikken, *flaps down* enz, of om het vliegtuig terug te brengen in de oorspronkelijke configuratie). Bedienen van een hendel, schakelaar of knop, en het lezen van het bijbehorende resultaat kan worden beschouwd als een enkele stap, zelfs indien de onderhoudsgegevens ze gescheiden weergeeft.

- d. **Troubleshooting:** De procedures en activiteiten die nodig zijn, met behulp van goedgekeurde onderhoudsgegevens, om de oorzaak van een defect of storing te identificeren al dan niet met gebruik van BITE of externe testapparatuur.
- e. **Line maintenance:** Elk onderhoud dat wordt uitgevoerd voorafgaand aan een vlucht om ervoor te zorgen dat het vliegtuig geschikt is voor de voorgenomen vlucht. Het kan omvatten: *Troubleshooting*; defectherstel; vervanging van componenten (bijv. motoren, propellers) met, waar nodig, gebruik van externe testapparatuur; gepland onderhoud en/of controles, met inbegrip van visuele inspecties die onbevredigende condities/tekortkomingen detecteren zonder dat een uitgebreide, diepgaande inspectie is vereist; kleine reparaties en modificaties waarvoor geen uitgebreide demontage is vereist en die kunnen worden uitgevoerd met eenvoudige middelen.
- f. **Base maintenance:** Elke taak die buiten de criteria valt voor *Line Maintenance* zoals hierboven beschreven.

66.A.10 Aanvraag

- a. Een aanvraag door een individu voor een MBvOL of wijziging van een dergelijk bewijs dient te geschieden met een MAA-NLD Form 19 en vergezeld te worden van alle

Computer (CMC) or external test equipment not involving special training. The outcome of the test is a unique go – no go indication or parameter. No interpretation of the test result or interdependence of different values is allowed. The test does not involve more than 10 actions as described in the approved maintenance data (not including those required to configure the aircraft prior to the test, e.g. jacking, flaps down etc, or to return the aircraft to its initial configuration). Pushing a control, switch or button, and reading the corresponding outcome may be considered as a single step even if the maintenance data shows them separated.

- d. **Troubleshooting:** The procedures and actions necessary, using approved maintenance data, in order to identify the root cause of a defect or malfunction. It may include the use of BITE or external test equipment.
- e. **Line maintenance:** Any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. It may include: *Troubleshooting*; defect rectification; component replacement (e.g. engines, propellers) with use of external test equipment if required; scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in depth inspection; minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.
- f. **Base maintenance:** Any task falling outside the criteria given above for Line Maintenance.

66.A.10 Application

- a. An application by an individual for a MAML or change to such a licence shall be made on a MAA-NLD Form 19 and accompanied by all documents that are referenced to in point

documenten waarnaar wordt verwezen in punt 66.A.10(f) en dient bij de MLA te worden ingediend.

- b. Een organisatie die van de MLA toestemming heeft gekregen om aanvragen in behandeling te nemen, mag
 - 1. aanbevelingen doen aan de MLA met betrekking tot de aanvraag van een individu voor een MBvOL, zodat de MLA een dergelijk bewijs kan opstellen en afgeven, of
 - 2. wijzigingen van het MBvOL opstellen en afgeven namens de MLA.
- c. De organisatie waarnaar wordt verwezen in punt 66.A.10(b) dient het MAA-NLD Form 19 en alle bijbehorende documenten waarnaar wordt verwezen in punt 66.A.10(f) te controleren op volledigheid en zeker te stellen dat de opgegeven ervaring voldoet aan de eisen van deze MLE-66.
- d. De organisatie waarnaar wordt verwezen in punt 66.A.10(b) dient de examenstatus van een aanvrager na te gaan en/of de geldigheid van eventuele examenvrijstellingen te bevestigen om zeker te zijn dat is voldaan aan alle vereiste modules van Aanhangsel I zoals vereist door deze MLE-66.
- e. Naast de documenten zoals vereist onder punten 66.A.10(a), naargelang het geval, dient de aanvrager bij uitbreiding van basiscategorieën of subcategorieën bij een MBvOL zijn actuele originele MBvOL samen met het MAA-NLD Form 19 te overhandigen aan de MLA, dan wel de organisatie waarnaar wordt verwezen in punt 66.A.10(b).
- f. Elke aanvraag dient te worden ondersteund door documentatie en journaal waaruit blijkt dat is voldaan aan de ten tijde van de aanvraag geldende eisen op het gebied van theoretische kennis, praktijkonderricht en ervaring.

66.A.15 Geschiktheidseisen

Een aanvrager van een MBvOL dient tenminste 18 jaar oud te zijn.

66.A.10(f) and submitted to the MAA-NLD.

- b. An organisation authorised by the MAA-NLD to process applications, may
 - 1. make recommendations to the MAA-NLD regarding the application from an individual for a MAML so that the MAA-NLD may prepare and issue such licence, or
 - 2. prepare and issue changes to the MAML on behalf of the MAA-NLD.
- c. The organisation referred to in point 66.A.10(b) shall verify MAA-NLD Form 19 and any supporting documentation as referred to in point 66.A.10(f) for completeness and ensure that the experience claimed meets the requirements of this MAR-66.
- d. The organisation referred to in point 66.A.10(b) shall verify an applicant's examination status and/or confirm the validity of any credits to ensure that all required modules of Appendix I have been met as required by this MAR-66.
- e. In addition to the documents required in points 66.A.10(a), as appropriate, the applicant for additional basic categories or subcategories to a MAML shall submit his/her current original MAML together with the MAA-NLD Form 19 to either the MAA-NLD, or the organisation referred to in point 66.A.10(b).
- f. Each application shall be supported by documentation and journal to demonstrate compliance with the applicable theoretical knowledge, practical training and experience requirements at the time of application.

66.A.15 Eligibility

An applicant for a MAML shall be at least 18 years of age.

66.A.20 Privileges

a. De volgende privileges zijn van toepassing:

1. een MBvOL van categorie A staat de houder toe certificaten van vrijgave voor gebruik uit te geven na het uitvoeren van klein, gepland *line maintenance* en het herstellen van eenvoudige defecten, voor zover dit valt binnen de grenzen van de op het bewijs van bevoegdheid aangegeven taken, waarnaar wordt verwezen in punt 145.A.35 van MLE-145. Het privilege dient beperkt te zijn tot taken die de houder zelf heeft uitgevoerd binnen de MLE-145-organisatie die het bewijs van bevoegdheid heeft afgegeven.

2. een MBvOL van categorie B1 staat de houder toe certificaten van vrijgave voor gebruik uit te geven na, en als ondersteuningbevoegde van categorie B1 te functioneren voor:

— onderhoud aan de vliegtuigconstructie, de motoren en de mechanische en elektrische systemen;

— werkzaamheden aan avionicasystemen waarbij slechts eenvoudige tests nodig zijn om het goed functioneren aan te tonen en waarbij geen *troubleshooting* vereist is.

Categorie B1 omvat de bijbehorende subcategorie A.

3. een MBvOL van categorie B2 staat de houder toe:

- i. certificaten van vrijgave voor gebruik uit te geven na, en als ondersteuningbevoegde van categorie B2 te functioneren voor:

— onderhoud aan avionica en elektrische systemen; en

— elektrische en avionictaken binnen de motor- en mechanische systemen, waarbij slechts eenvoudige tests nodig zijn om het goed functioneren ervan aan te tonen; en

- ii. certificaten van vrijgave voor gebruik uit te geven na het uitvoeren van

66.A.20 Privileges

a. The following privileges shall apply:

1. a category A MAML permits 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 certification authorisation referred to in point 145.A.35 of MAR-145. The certification privileges shall be restricted to work that the licence holder has personally performed in the maintenance organisation that issued the certification authorisation.

2. a category B1 MAML shall permit the holder to issue certificates of release to service following, and to act as B1 support staff for:

— maintenance on aircraft structure, powerplant and mechanical and electrical systems;

— work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

Category B1 includes the corresponding A subcategory.

3. a category B2 MAML shall permit the holder:

- i. to issue certificates of release to service following, and to act as B2 support staff for:

— maintenance on avionic and electrical systems; and

— electrical and avionics tasks within powerplant and mechanical systems, requiring only simple tests to prove their serviceability; and

- ii. to issue certificates of release to service following minor scheduled line

klein, gepland *line maintenance* en het herstellen van eenvoudige defecten, voor zover dit valt binnen de grenzen van de op het bewijs van bevoegdheid aangegeven taken, waarnaar wordt verwezen in punt 145.A.35 van MLE-145. Het privilege dient beperkt te zijn tot taken die de houder zelf heeft uitgevoerd binnen de MLE-145-organisatie die het bewijs van bevoegdheid heeft afgegeven en geldt uitsluitend voor de luchtvaartuigtypen die reeds zijn aangetekend op het MBvOL van categorie B2.

Het MBvOL van categorie B2 omvat geen enkele subcategorie A.

4. een MBvOL van categorie C staat de houder toe certificaten van vrijgave voor gebruik uit te geven voor luchtvaartuigen na *base maintenance*. De bevoegdheid geldt voor het gehele luchtvaartuig.
- b. De houder van een MBvOL mag het privilege uitsluitend uitoefenen indien:
 1. is voldaan aan de toepasselijke vereisten van MLE-145; en
 2. hij/zij in de voorafgaande periode van 2 jaar ofwel 6 maanden onderhoudservaring heeft in overeenstemming met de privileges op het MBvOL of aan de voorwaarden heeft voldaan voor de uitgifte van de toepasselijke privileges; en
 3. hij/zij beschikt over een toereikende bekwaamheid om onderhoud te certificeren op het overeenkomstige luchtvaartuig; en
 4. hij/zij in staat is te lezen, schrijven en te communiceren op een voldoende niveau in de taal of talen waarin de technische documentatie en procedures - die nodig zijn voor uitgifte van certificaten van vrijgave voor gebruik - zijn opgesteld.

66.A.25 Basiskenniseisen

- a. Een aanvrager van een MBvOL of van de toevoeging van een categorie of subcategorie aan genoemd bewijs dient aan de hand van een examen te bewijzen dat hij beschikt over

maintenance and simple defect rectification within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.A.35 of MAR-145. This certification privilege shall be restricted to work that the licence holder has personally performed in the maintenance organisation which issued the certification authorisation and limited to the aircraft types already endorsed in the B2 licence.

The category B2 licence does not include any A subcategory.

4. a category C MAML shall permit the holder to issue certificates of release to service following base maintenance on aircraft. The privileges apply to the aircraft in its entirety.
- b. The holder of a MAML may not exercise its privileges unless:
 1. in compliance with the applicable requirements of MAR-145; and
 2. in the preceding 2-year period he/she has, either had 6 months of maintenance experience in accordance with the privileges granted by the MAML or, met the provision for the issue of the appropriate privileges; and
 3. he/she has the adequate competence to certify maintenance on the corresponding aircraft; and
 4. he/she is able to read, write and communicate to an understandable level in the language(s) in which the technical documentation and procedures necessary to support the issue of the certificate of release to service are written.

66.A.25 Basic knowledge requirements

- a. An applicant for a MAML, or the addition of a category or subcategory to such a MAML, shall demonstrate by examination a level of knowledge in the appropriate subject modules

kennis van de relevante onderwerp modules overeenkomstig Aanhangsel I en II van deze MLE-66. Dergelijke examens dienen te worden afgenomen door een onderhoudsopleidingorganisatie die is goedgekeurd in overeenstemming met MLE-147, of op een andere manier acceptabel voor de MLA in overeenstemming met MLA *Policy Paper* (PP/MLA/00-001).

- b. De opleidingen en examens moeten zijn gevolgd en afgelegd in de 10 jaar voorafgaand aan de aanvraag van een MBvOL dan wel de toevoeging van een categorie of subcategorie aan een dergelijk bewijs. Als dit niet het geval is, kunnen echter examenvrijstellingen worden verkregen volgens de bepalingen van punt 66.A.25(c).
- c. De aanvrager kan bij de MLA volledige of gedeeltelijke vrijstelling van examens over de basiskenniseisen aanvragen voor:
 - 1. basiskennisexamens die niet voldoen aan de eis beschreven in het bovenstaande punt 66.A.25(b); en
 - 2. eventuele andere technische kwalificaties die door de MLA gelijkwaardig worden geacht aan de kennisnorm van MLE-66.

Uitsluitend door de MLA op haar intranetsite gepubliceerde opleidingen komen in aanmerking voor creditering van basiskennis.

- d. Vrijstellingen komen te vervallen 10 jaar nadat de MLA ze heeft toegekend aan de aanvrager. Na het vervallen kan de aanvrager nieuwe vrijstellingen aanvragen.

66.A.30 Basiservaringseisen

- a. Een aanvrager van een MBvOL dient te hebben opgedaan:
 - 1. voor categorie A:
 - i. 3 jaar praktische onderhoudservaring op operationele luchtvaartuigen, indien de aanvrager geen voorafgaande relevante technische opleiding heeft gehad; of
 - ii. 2 jaar praktische onderhoudservaring op operationele luchtvaartuigen en voltooiing van een opleiding die de

in accordance with the Appendix I and II of this MAR-66. The examination shall be conducted by a maintenance training organisation approved in accordance with MAR-147, or otherwise acceptable to the MAA-NLD in accordance with MAA-NLD Policy Paper (PP/MLA/00-001).

- b. The training courses and examinations shall be passed within 10 years prior to the application for a MAML or the addition of a category or subcategory to such MAML. Should this not be the case, examination credits may however be obtained in accordance with point 66.A.25(c)
- c. The applicant may apply to the MAA-NLD for full or partial examination credit to the basic knowledge requirements for:
 - 1. basic knowledge examinations that do not meet the requirement described in point 66.A.25(b) above; and
 - 2. any other technical qualification considered by the MAA-NLD to be equivalent to the knowledge standard of MAR-66.

Only training published on the intranetsite of the MAA-NLD is eligible for basic knowledge credits.

- d. Credits expire 10 years after they were granted to the applicant by the MAA-NLD. The applicant may apply for new credits after expiration.

66.A.30 Basic experience requirements

- a. An applicant for an MAML shall have acquired:
 - 1. for category A:
 - i. 3 years of practical maintenance experience on operating aircraft, if the applicant has no previous relevant technical training; or
 - ii. 2 years of practical maintenance experience on operating aircraft and completion of training considered

- | | |
|---|--|
| <p>MLA als relevant beschouwt voor een bedreven vakman, in een technisch bedrijf; of</p> | <p>relevant by the MAA-NLD as a skilled worker, in a technical trade; or</p> |
| <p>iii. 1 jaar praktische onderhoudservaring op operationele luchtvaartuigen en voltooiing van een basisopleiding goedgekeurd in overeenstemming met MLE-147, of op een andere manier is goedgekeurd door de MLA.</p> | <p>iii. 1 year of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with MAR-147 or otherwise approved by the MAA-NLD.</p> |
| <p>2. voor categorie B2 en de subcategorieën B1.1 en B1.3:</p> | <p>2. for category B2 and subcategories B1.1 and B1.3:</p> |
| <p>i. 5 jaar praktische onderhoudservaring op operationele luchtvaartuigen, indien de aanvrager geen voorafgaande relevante technische opleiding heeft gehad; of</p> | <p>i. 5 years of practical maintenance experience on operating aircraft if the applicant has no previous relevant technical training; or</p> |
| <p>ii. 3 jaar praktische onderhoudservaring op operationele luchtvaartuigen en voltooiing van een opleiding die de MLA als relevant beschouwt voor een bedreven vakman, in een technisch bedrijf; of</p> | <p>ii. 3 years of practical maintenance experience on operating aircraft and completion of training considered relevant by the MAA-NLD as a skilled worker, in a technical trade; or</p> |
| <p>iii. 2 jaar praktische onderhoudservaring op operationele luchtvaartuigen en voltooiing van een basisopleiding goedgekeurd in overeenstemming met MLE-147, of op een andere manier is goedgekeurd door de MLA.</p> | <p>iii. 2 years of practical maintenance experience on operating aircraft and completion of a basic training course approved in accordance with MAR-147 or otherwise approved by the MAA-NLD.</p> |
| <p>3. voor categorie C:</p> | <p>3. for category C:</p> |
| <p>i. 3 jaar ervaring in het uitoefenen van de privileges uit punt 66.A.20 van categorie B1 of B2. Additioneel, de aanvrager voor categorie C die in het bezit is van een B1 of B2 bewijs dient te bewijzen ten minste 12 maanden ervaring te hebben opgedaan als ondersteuningbevoegde van categorie B1 of B2 overeenkomstig de ervaringseisen behorende bij MAR-145.A.35 in de laatste 3 jaar voorafgaande aan de aanvraag.</p> | <p>i. 3 years of experience exercising category B1 or B2 privileges according point 66.A.20. Additionally, the applicant for category C holding a B1 or B2 license shall demonstrate at least 12 months experience as B1 or B2 support staff according the associated experience requirements of MAR-145.A.35 in the last 3 years preceding the application.</p> |
| <p>4. voor categorie C, verkregen via een academische route: een aanvrager die houder is van een academische graad in een technische specialisatie toegekend door een universiteit of een andere door de MLA erkende instelling voor hoger onderwijs, 3 jaar werkervaring in een onderhoudsomgeving voor militaire</p> | <p>4. 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 recognised by the MAA-NLD, 3 years of experience working in a military aircraft maintenance environment on a representative selection</p> |

luchtvaartuigen, in een representatieve selectie van werkzaamheden direct gerelateerd aan luchtvaartuigonderhoud, waarvan 6 maanden observatie van *base maintenance* werkzaamheden.

of tasks directly associated with aircraft maintenance including 6 months of observation of base maintenance tasks.

- b. Een aanvrager van een uitbreiding van een MBvOL dient te voldoen aan de minimale ervaringseis voor onderhoud aan militaire luchtvaartuigen, van toepassing op de toe te voegen categorie of subcategorie waarop de aanvraag betrekking heeft, zoals bepaald in Aanhangsel IV bij deze MLE-66.
 - c. De ervaring dient praktisch van aard te zijn en moet betrekking hebben op een representatieve doorsnede van de onderhoudswerkzaamheden aan luchtvaartuigen.
 - d. Minstens 1 jaar van de vereiste ervaring dient recente onderhoudservaring te zijn op luchtvaartuigen van de categorie/subcategorie waarvoor het initiële MBvOL wordt aangevraagd. Voor verdere toevoegingen van categorieën/subcategorieën aan een bestaand MBvOL mag de aanvullend vereiste recente onderhoudservaring minder dan 1 jaar bedragen, maar dient deze minstens 3 maanden te bedragen. Deze vereiste ervaring zal afhankelijk zijn van het verschil tussen de categorie/subcategorie waarvoor men reeds een bewijs bezit en die waarop de aanvraag betrekking heeft. Dergelijke aanvullende ervaring dient kenmerkend te zijn voor de aangevraagde nieuwe categorie/subcategorie van het bewijs.
 - e. Ongeacht het gestelde in punt 66.A.30(a) wordt ervaring met onderhoud aan luchtvaartuigen opgedaan buiten de Nederlandse militaire luchtvaart onderhoudsomgeving aanvaard, indien de MLA vaststelt dat het type onderhoud aan luchtvaartuigen equivalent is met datgene vereist in deze MLE-66. Aanvullende ervaring met onderhoud aan militaire luchtvaartuigen in de Nederlandse militaire luchtvaart onderhoudsomgeving is echter vereist om goed begrip van de Nederlandse militaire luchtvaart onderhoudsomgeving te waarborgen.
 - f. De ervaring moet zijn opgedaan in de 10 jaar voorafgaand aan de aanvraag van een MBvOL dan wel de toevoeging van een
- b. An applicant for an extension to a MAML shall meet the minimum military aircraft maintenance experience requirement appropriate to the additional category or subcategory of licence applied for as defined in Appendix IV of this MAR-66.
 - c. The experience shall be practical and involve a representative cross section of maintenance tasks on aircraft.
 - d. At least 1 year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial MAML is sought. For subsequent category/subcategory additions to an existing MAML, the additional recent maintenance experience required may be less than 1 year, but shall be at least 3 months. The required experience shall be dependent upon the difference between the licence category/subcategory held and applied for. Such additional experience shall be typical of the new licence category/subcategory sought.
 - e. Notwithstanding point 66.A.30(a), aircraft maintenance experience gained outside the military aircraft maintenance environment of the Netherlands shall be accepted, when the MAA-NLD establishes that the type of maintenance is equivalent to that required by this MAR-66. Additional experience in military aircraft maintenance in the military aircraft maintenance environment of the Netherlands shall, however, be required to ensure adequate understanding of the military aircraft maintenance environment of the Netherlands.
 - f. Experience shall have been acquired within the 10 years preceding the application for an MAML or the addition of a category or

categorie of subcategorie aan een dergelijk bewijs.

subcategory to such a licence.

66.A.40 Blijvende geldigheid van het MBvOL

- a. Het MBvOL wordt afgegeven voor onbeperkte duur. Het blijft geldig op voorwaarde dat:
 - 1. de houder blijft voldoen aan de eisen van deze MLE-66; en
 - 2. het MBvOL niet is opgeschort, geen afstand is gedaan van het MBvOL of het MBvOL niet is ingetrokken.
- b. Elke certificeringsbevoegdheid die is gebaseerd op een MBvOL wordt ongeldig zodra het MBvOL zijn geldigheid verliest.
- c. Het MBvOL is alleen geldig
 - 1. als het is afgegeven en/of gewijzigd door de MLA; en
 - 2. als de houder het document heeft ondertekend.

66.A.45 Aantekening van militaire *aircraft type ratings*

- a. De houder van een MBvOL is uitsluitend gerechtigd tot het uitoefenen van certificeringsbevoegdheden op een specifiek militair luchtvaartuigtype als de betreffende *aircraft type ratings* zijn aangetekend op zijn/haar bewijs.

— Voor categorie B1, B2 en C: de betreffende *aircraft type ratings*

— Voor categorie A is geen *aircraft type rating* vereist, vooropgesteld dat aan de eisen van punt 145.A.35 van MLE-145 wordt voldaan.
- b. Voor de aantekening van militaire *aircraft type ratings* dient de luchtvaartuigtype-opleiding van de betreffende categorie B1, B2 of C, naar behoren te zijn afgerond.
- c. Naast het voldoen aan de eis onder punt 66.A.45(b) is voor de aantekening van een *aircraft type rating* voor het eerste militaire luchtvaartuigtype van een bepaalde categorie/subcategorie vereist dat de bijbehorende *On the Job Training* zoals

66.A.40 Continued validity of the aircraft maintenance licence

- a. The MAML shall be issued for an unlimited duration. It shall remain valid subject to:
 - 1. the holder remaining in compliance with the requirements in this MAR-66; and
 - 2. the MAML not being suspended, surrendered or revoked.
- b. Any certification privilege based upon a MAML becomes invalid as soon as the MAML is invalid.
- c. The MAML is only valid:
 - 1. when issued and/or changed by the MAA-NLD; and
 - 2. when the holder has signed the document.

66.A.45 Endorsement with military aircraft type ratings

- a. In order to be entitled to exercise certification privileges on a specific military aircraft type, the holder of a MAML needs to have his/her licence endorsed with the relevant aircraft type ratings.

— For category B1, B2 or C, the relevant aircraft type ratings.

— For category A, no aircraft type rating is required, subject to compliance with the requirements of point 145.A.35 of MAR-145.
- b. The endorsement of military aircraft type ratings requires the satisfactory completion of the relevant category B1, B2 or C aircraft type training.
- c. In addition to the requirement of point 66.A.45(b), the endorsement of the first military aircraft type rating within a given category/sub-category requires satisfactory completion of the corresponding *On the Job Training*, as described in Appendix III of this

beschreven in Aanhangsel III van deze MLE-66 naar behoren is afgerond.

- d. Bij een categorie C militaire *aircraft type rating* vanwege het bezit van een academische graad, zoals gespecificeerd in punt 66.A.30(a)(4), moet het eerste relevante luchtvaartuigtype-examen van het niveau van categorie B1 of B2 zijn.

66.A.50 Beperkingen

- a. Beperkingen aangetekend op een MBvOL vormen uitsluitingen van de certificeringsbevoegdheden en hebben gevolgen voor het luchtvaartuig als geheel.
- b. De beperkingen waarnaar wordt verwezen in punt 66.A.70 worden geschrapt:
1. na de noodzakelijke theoretische en/of praktische opleiding en de daaropvolgende bevredigende afronding van het examen aanvaardbaar voor de MLA; en
 2. bij aantonen van de vereiste ervaring.

66.A.55 Bewijs van kwalificatie

Personeel dat certificeringsbevoegdheden uitoefent als ook ondersteuningbevoegden moeten hun bewijs van bevoegdheid binnen 24 uur kunnen voorleggen indien een daartoe bevoegd persoon daarom verzoekt.

66.A.70 Overgangsbepalingen

- a. Ongeacht het gestelde in punt 66.A.40(a), MBvOL's uitgegeven door de MLA onder *Grandfathers Rights* (GR) en gelijksoortige bewijzen van Operationele Commando's van het Ministerie van Defensie vooruitlopend op de oprichting van de MLA, dienen te worden verlengd en gewijzigd volgens deze MLE-66, met dien verstande dat bij verlenging uitsluitend GR MBvOL's worden uitgegeven.
- b. Een GR MBvOL dat, op grond van opleidingsdeficiëntie in de vereisten van Aanhangsel I, beperkingen bevat in de reikwijdte, kan worden aangeboden voor wijziging indien de houder via examinering de deficiëntie heeft opgelost. Oplossing van de deficiëntie moet met relevante certificaten

MAR-66.

- d. In the case of a category C military aircraft type rating for a person qualified by holding an academic degree as specified in point 66.A.30(a)(4), the first relevant aircraft type examination shall be at the category B1 or B2 level.

66.A.50 Limitations

- a. Limitations introduced on a MAML are exclusions from the certification privileges and affect the aircraft in its entirety.
- b. For limitations, referred to in point 66.A.70, limitations shall be removed:
1. after necessary theoretical and/or practical training and subsequent satisfactory completion of examination acceptable to the MAA-NLD; and
 2. upon demonstration of appropriate experience.

66.A.55 Evidence of qualification

Personnel exercising certification privileges as well as support staff shall produce their licence, as evidence of qualification, within 24 hours upon request by an authorised person.

66.A.70 Conversion provisions

- a. Notwithstanding point 66.A.40(a), MAML's issued by the MAA-NLD under Grandfathers Rights (GR) and similar maintenance licences issued by Operational Commands of the Ministry of Defence prior to the establishment of the MAA-NLD, shall be extended and amended in compliance with this MAR-66, provided that extensions will exclusively be issued in the form of a GR MAML.
- b. A GR MAML containing technical limitations in the scope of maintenance, based on training deficit to the requirements of Appendix I, may be submitted for amendment if the holder has raised the deficit following successful examination. Raise of the deficits must be shown with relevant certificates and is open

worden aangetoond en staat open tot 1 januari 2015.

up to January 1, 2015.

66.A.80 Slotbepalingen

- a. Deze beleidsregel wordt aangehaald als: MLE-66.

66.A.80 Final clauses

- a. This ruling is known as: MAR-66.

's-Gravenhage, 21 januari 2014

De Directeur Militaire Luchtvaart Autoriteit

A handwritten signature in black ink, appearing to read 'S.H.P.M. Pellemans', with a long horizontal flourish extending to the right.

S.H.P.M. Pellemans

Kolonel-vlieger

Appendix I - Basic Knowledge Requirements

1. Knowledge levels for Category A, B1, B2 and C MAML

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

The knowledge level indicators are defined on 3 levels as follows:

— *LEVEL 1: A familiarisation with the principal elements of the subject.*

Objectives:

- (a) The applicant should be familiar with the basic elements of the subject.
- (b) The applicant should be able to give a simple description of the whole subject, using common words and examples.
- (c) The applicant should be able to use typical terms.

— *LEVEL 2: A general knowledge of the theoretical and practical aspects of the subject and an ability to apply that knowledge.*

Objectives:

- (a) The applicant should be able to understand the theoretical fundamentals of the subject.
- (b) The applicant should be able to give a general description of the subject using, as appropriate, typical examples.
- (c) The applicant should be able to use mathematical formulae in conjunction with physical laws describing the subject.
- (d) The applicant should be able to read and understand sketches, drawings and schematics describing the subject.
- (e) 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 and a capacity to combine and apply the separate elements of knowledge in a logical and comprehensive manner.*

Objectives:

- (a) The applicant should know the theory of the subject and interrelationships with other subjects.
- (b) The applicant should be able to give a detailed description of the subject using theoretical fundamentals and specific examples.
- (c) The applicant should understand and be able to use mathematical formulae related to the subject.
- (d) The applicant should be able to read, understand and prepare sketches, simple drawings and schematics describing the subject.
- (e) The applicant should be able to apply his knowledge in a practical manner using

manufacturer's instructions.

- (f) 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 each MAML (sub)category shall be in accordance with the following matrix. Applicable subjects are indicated with the symbol '◆'. Not applicable subjects are indicated with the symbol '—'.

Module / Subject <i>Module / Subject</i>		A1 of/or B1.1 Vliegtuigen turbinemotor(en) <i>Aeroplanes turbine engine(s)</i>	A3 of/or B1.3 Helikopters turbinemotor(en) <i>Helicopters turbine engine(s)</i>	B2 Avionica <i>Avionics</i>
1	Wiskunde <i>Mathematics</i>	◆	◆	◆
2	Fysica/natuurkunde <i>Physics</i>	◆	◆	◆
3	Grondbeginselen elektriciteitsleer <i>Electrical fundamentals</i>	◆	◆	◆
4	Grondbeginselen elektronica <i>Electronic fundamentals</i>	◆*	◆*	◆
5	Digitale technieken <i>Digital techniques</i>	◆	◆	◆
6	Materialen en hardware <i>Materials and hardware</i>	◆	◆	◆
7A	Onderhoud <i>Maintenance practices</i>	◆	◆	◆
8	Basis aerodynamica <i>Basic aerodynamics</i>	◆	◆	◆
9A	Arbeidsanalyse/menselijke factoren <i>Human factors</i>	◆	◆	◆
10	Luchtvaartwetgeving Militair <i>Aviation legislation Military</i>	◆	◆	◆
11A	Aerodynamica, structuren en systemen van turbineluchtvaartuigen <i>Aeroplane aerodynamics, structures and systems</i>	◆	—	—
12	Aerodynamica, structuren en systemen van helikopters <i>Helicopter aerodynamics, structures and systems</i>	—	◆	—
13	Aerodynamica structuren en systemen van luchtvaartuigen <i>Aircraft aerodynamics, structures and systems</i>	—	—	◆
14	Voortstuwing <i>Propulsion</i>	—	—	◆
15	Gasturbinemotor <i>Gas Turbine Engine</i>	◆	◆	—
16	n.v.t. <i>N/A</i>	—	—	—
17A	Propeller <i>Propeller</i>	◆	—	—

*Module 4 is only applicable to category B1 and B2.

	LEVEL			
	A	B1.1	B1.3	B2
Simple theory of vibration, harmonics and resonance; Velocity ratio, mechanical advantage and efficiency. <i>2.2.3 Dynamics</i> (a) Mass; Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency; (b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance). <i>2.2.4 Fluid dynamics</i> (a) Specific gravity and density; (b) Viscosity, fluid resistance, effects of streamlining; effects of compressibility on fluids; Static, dynamic and total pressure: Bernoulli's Theorem, venturi.	1 1	2 2	2 2	1 2
2.3 Thermodynamics (a) Temperature: thermometers and temperature scales: Celsius, Fahrenheit and Kelvin; Heat definition. (b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	2 -	2 2	2 2	2 2
2.4 Optics (Light) Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	-	2	2	2
2.5 Wave Motion and Sound Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	-	2	2	2
MODULE 3 ELECTRICAL FUNDAMENTALS				
3.1 Electron Theory Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators.	1	1	1	1

	LEVEL			
	A	B1.1	B1.3	B2
3.9 Capacitance/Capacitor Operation and function of a capacitor; 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.	-	2	2	2
3.10 Magnetism (a) Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor. (b) Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.	-	2	2	2
3.11 Inductance/Inductor Faraday's Law; 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 change of flux, number of conductor turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self induction; Saturation point; Principle uses of inductors.	-	2	2	2
3.12 DC Motor/Generator Theory Basic motor and generator theory; Construction and purpose of components in DC generator; 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; Starter Generator construction.	-	2	2	2

	LEVEL			
	A	B1.1	B1.3	B2
3.13 AC Theory Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power; Triangular/Square waves; Single/3 phase principles.	1	2	2	2
3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits 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; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.	-	2	2	2
3.15 Transformers 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.	-	2	2	2
3.16 Filters Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	-	1	1	1
3.17 AC Generators 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.	-	2	2	2
3.18 AC Motors 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.	-	2	2	2
MODULE 4 ELECTRONIC FUNDAMENTALS				
4.1 Semiconductors 4.1.1 Diodes (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;	-	2	2	2

	LEVEL			
	A	B1.1	B1.3	B2
Functional testing of diodes. (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.	-	-	-	2
4.1.2 Transistors (a) Transistor symbols; Component description and orientation; Transistor characteristics and properties. (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, multi-vibrators, flip-flop circuits.	-	1	1	2
	-	-	-	2
4.1.3 Integrated Circuits (a) Description and operation of logic circuits and linear circuits/operational amplifiers. (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.	-	1	1	-
	-	-	-	2
4.2 Printed Circuit Boards Description and use of printed circuit boards.	-	1	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. (b) Understanding of the following terms: Open and closed loop, follow up,	-	1	1	-
	-	-	-	2

	LEVEL			
	A	B1.1	B1.3	B2
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.				
MODULE 5 DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS				
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	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	1	2
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications; Aircraft Network/Ethernet	-	2	2	2
5.5 Logic Circuits (a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams. (b) Interpretation of logic diagrams.	- - -	2 - -	2 - -	2 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); 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.	1 - -	2 - -	2 - -	- 2
5.7 Microprocessors Functions performed and overall operation of a microprocessor;	-	-	-	2

	LEVEL			
	A	B1.1	B1.3	B2
Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.				
5.8 Integrated Circuits Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.	-	-	-	2
5.9 Multiplexing Operation, application and identification in logic diagrams of multiplexers and de-multiplexers.	-	-	-	2
5.10 Fibre Optics 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.	-	1	1	2
5.11 Electronic Displays Principles of operation of common types of displays used in modern aircraft, including; Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	-	2	2	2
5.12 Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	1	2	2	2
5.13 Software Management Control Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	-	2	2	2
5.14 Electromagnetic Environment 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	-	2	2	2
5.15 Typical Electronic/Digital Aircraft Systems 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 - EICAS-Engine Indication and Crew Alerting System - FBW-Fly by Wire - FMS-Flight Management System - IRS-Inertial Reference System - ECAM-Electronic Centralised Aircraft Monitoring - EFIS-Electronic Flight Instrument System - GPS-Global Positioning System	-	2	2	2

	LEVEL			
	A	B1.1	B1.3	B2
- TCAS-Traffic Alert Collision Avoidance System - Integrated Modular Avionics - Cabin Systems - Information Systems				
MODULE 6 MATERIALS AND HARDWARE				
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	2	1
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	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	2	1
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.3 Aircraft Materials — Composite and Non-Metallic				
6.3.1 <i>Composite and non-metallic other than wood and fabric</i>				
(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	2
(b) The detection of defects/deterioration in composite and non-metallic material; Repair of composite and non-metallic material.	1	2	2	-
6.3.2 <i>Wooden structures</i>	1	2	2	-
Construction methods of wooden airframe 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.				
6.3.3 <i>Fabric covering</i>	1	2	2	-
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	1
(b) Types of corrosion and their identification;	2	3	3	2

	LEVEL			
	A	B1.1	B1.3	B2
Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.				
MODULE 7A MAINTENANCE PRACTICES				
7.1 Safety Precautions-Aircraft and Workshop Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. 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.	3	3	3	3
7.2 Workshop Practices Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	3	3	3	3
7.3 Tools 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.	3	3	3	3
7.4 Avionic General Test Equipment Operation, function and use of avionic general test equipment.	-	2	2	3
7.5 Engineering Drawings, Diagrams and Standards Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.	1	2	2	2
7.6 Fits and Clearances 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.	1	2	2	1
7.7 Electrical wiring Interconnection System 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	1	3	3	3

	LEVEL			
	A	B1.1	B1.3	B2
clamps, protective sleeving techniques including heat shrink wrapping, shielding. EWIS installations, inspections, repair, maintenance and cleanliness standards.				
7.8 Riveting Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	2	2	-
7.9 Pipes and Hoses Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	1	2	2	-
7.10 Springs Inspection and testing of springs.	1	2	2	-
7.11 Bearings Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	1	2	2	-
7.12 Transmissions Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.	1	2	2	-
7.13 Control Cables Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	1	2	2	-
7.14 Material handling 7.14.1 <i>Sheet Metal</i> Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work. 7.14.2 <i>Composite and non-metallic</i> Bonding practices; Environmental conditions; Inspection methods.	- - - - -	2 2 2 2 2	2 2 2 2 2	- - - - -
7.15 Welding, Brazing, Soldering and Bonding (a) Soldering methods; inspection of soldered joints. (b) Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	- - - - -	2 2 2 2 2	2 2 2 2 2	2 - - - -
7.16 Aircraft Weight and Balance (a)	-	2	2	2

	LEVEL			
	A	B1.1	B1.3	B2
Centre of Gravity/Balance limits calculation: use of relevant documents. (b) Preparation of aircraft for weighing; Aircraft weighing.	-	2	2	-
7.17 Aircraft Handling and Storage 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.	2	2	2	2
7.18 Disassembly, Inspection, Repair and Assembly Techniques (a) Types of defects and visual inspection techniques; Corrosion removal, assessment and re-protection. (b) General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes. (c) Non destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods. (d) Disassembly and re-assembly techniques. (e) Trouble shooting techniques.	2 - - 2 -	3 2 2 2 2	3 2 2 2 2	3 - 1 2 2
7.19 Abnormal Events (a) Inspections following lightning strikes and HIRF penetration. (b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2 2	2 2	2 2	2 -
7.20 Maintenance Procedures 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.	1	2	2	2
MODULE 8 BASIC AERODYNAMICS				
8.1 Physics of the Atmosphere International Standard Atmosphere (ISA), application to aerodynamics.	1	2	2	2
8.2 Aerodynamics Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative	1	2	2	2

	LEVEL			
	A	B1.1	B1.3	B2
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 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.	1	2	2	2
8.4 Flight Stability and Dynamics Longitudinal, lateral and directional stability (active and passive).	1	2	2	2
MODULE 9A HUMAN FACTORS				
9.1 General The need to take human factors into account; Incidents attributable to human factors/human error; 'Murphy's' law.	1	2	2	2
9.2 Human Performance and Limitations Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	1	2	2	2
9.3 Social Psychology Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, supervision and leadership.	1	1	1	1
9.4 Factors Affecting Performance Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload and underload; Sleep and fatigue, shiftwork; Alcohol, medication, drug abuse.	2	2	2	2
9.5 Physical Environment Noise and fumes;	1	1	1	1

	LEVEL			
	A	B1.1	B1.3	B2
Illumination; Climate and temperature; Motion and vibration; Working environment.				
9.6 Tasks Physical work; Repetitive tasks; Visual inspection; Complex systems.	1	1	1	1
9.7 Communication Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	2	2	2	2
9.8 Human Error Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents) Avoiding and managing errors.	1	2	2	2
9.9 Hazards in the Workplace Recognising and avoiding hazards; Dealing with emergencies.	1	2	2	2
MODULE 10 AVIATION LEGISLATION				
10.1 Regulatory Framework Role of International Civil Aviation Organisation; Role of the European Defence Agency; Role of the Total Military Aviation System; Role of the Military Aviation Authority; Recognition of Aviation Authorities: - EASA - FAA - Other NMAA's. Relationship between the various MAR's such as MAR-21, MAR-OPS (Subpart-M), MAR-145, MAR-66, MAR-147 and MAR-DSO.	1	1	1	1
10.2 Certifying Staff — Maintenance Detailed understanding of MAR-66.	2	2	2	2
10.3 Approved Maintenance Organisations Detailed understanding of MAR-145 and MAR-OPS (Subpart-M).	2	2	2	2
10.4 MAR-OPS (1 thru 5) — General understanding of MAR-OPS; Military Air Operators Certificates; Operators responsibilities, in particular regarding continuing airworthiness and maintenance; Aircraft Maintenance Programme;	1	1	1	1

	LEVEL			
	A	B1.1	B1.3	B2
MEL/CDL; Documents to be carried on board; Aircraft Placarding (markings).				
10.5 Certification of aircraft, parts and appliances (a) General General understanding of MAR-21 and FAA and EASA certification specifications; General understanding of Mil Handbook LC-516; NATO-STANAG. (b) Documents Certificate of Airworthiness; Permit to fly; Certificate of Registration; Mass and balance.	- -	1 2	1 2	1 2
10.6 Continuing airworthiness Detailed understanding of MAR-21 provisions related to continuing airworthiness; Detailed understanding of MAR-OPS (Subpart-M).	2	2	2	2
10.7 Applicable National and International Requirements for: (a) Maintenance Programmes, Maintenance checks and inspections; Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.; Master Minimum Equipment Lists, Minimum Equipment List; (b) Continuing airworthiness; Minimum equipment requirements - Test flights; <i>Only for B1 to B2 licenses:</i> ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations.	1 -	2 1	2 1	2 1
10.8 Distribution and Material Supplier Organisations General understanding of MAR-DSO.	1	1	1	1
10.9 Maintenance Training Organisations General understanding of MAR-147.	1	1	1	1
MODULE 11A TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS				
11.1 Theory of Flight <i>11.1.1 Aeroplane Aerodynamics and Flight Controls</i> 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, flapaperons; 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	1	2		

	LEVEL			
	A	B1.1	B1.3	B2
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; <i>11.1.2 High Speed Flight</i> 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.	1	2		
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; Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; Drains and ventilation provisions; System installation provisions; Lightning strike protection provision; Aircraft bonding.	2	2		
(b) 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.	1	2		
11.3 Airframe Structures — Aeroplanes				
<i>11.3.1 Fuselage (ATA 52/53/56)</i> 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.	1	2		
<i>11.3.2 Wings (ATA 57)</i> Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	2		
<i>11.3.3 Stabilisers (ATA 55)</i> Construction; Control surface attachment.	1	2		
<i>11.3.4 Flight Control Surfaces (ATA 55/57)</i> Construction and attachment; Balancing — mass and aerodynamic.	1	2		
<i>11.3.5 Nacelles/Pylons (ATA 54)</i> Construction; Firewalls; Engine mounts.	1	2		

	LEVEL			
	A	B1.1	B1.3	B2
11.4 Air Conditioning and Cabin Pressurisation (ATA 21)				
11.4.1 Air supply	1	2		
Sources of air supply including engine bleed, APU and ground cart;				
11.4.2 Air Conditioning	1	3		
Air conditioning systems;				
Air cycle and vapour cycle machines;				
Distribution systems;				
Flow, temperature and humidity control system.				
11.4.3 Pressurisation	1	3		
Pressurisation systems;				
Control and indication including control and safety valves;				
Cabin pressure controllers.				
11.4.4 Safety and warning devices	1	3		
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;				
Glass cockpit;				
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)	2	2		
Emergency equipment requirements;				
Seats, harnesses and belts.				
(b)	1	1		
Cabin lay-out;				
Equipment lay-out;				
Cabin Furnishing Installation;				
Cabin entertainment equipment;				
Galley installation;				
Cargo handling and retention equipment;				
Airstairs.				

	LEVEL			
	A	B1.1	B1.3	B2
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)	1	3		
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.				
11.11 Hydraulic Power (ATA 29)	1	3		
System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation; Filters; 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 repellant; 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;				

	LEVEL			
	A	B1.1	B1.3	B2
Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing.				
11.14 Lights (ATA 33) External: navigation, anti-collision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	3		
11.15 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings;	1	3		
11.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1	3		
11.17 Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing; Corrosion aspects.	2	3		
11.18 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1	2		
11.19 Integrated Modular Avionics (ATA 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Press Indication, Brake Temperature Monitoring, etc.; Core System; Network components	1	2		
11.20 Cabin Systems (ATA 44) The Units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions;	1	2		

	LEVEL			
	A	B1.1	B1.3	B2
The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRUs and they are typically operated via Flight Attendant Panels; The Cabin Network Service typically consists on a server, typically interfacing with, among others, the following systems: — Data/Radio Communication, In-Flight Entertainment System. The Cabin Network Service may host functions such as: — Acces to pre-departure/departure reports, — E-mail/internet/Internet access, — Passenger database Cabin Core System; In-Flight Entertainment System; External Communication System; Cabin Mass Memory System; Cabin Monitoring System; Miscellaneous Cabin System.				
11.21 Information Systems (ATA 46) The units and components wich furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other usues and shared with other systems, such as flight deck printer or general use display; Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information Systems; Flight Deck Information Systems; Maintenance Information Systems; Passenger Cabin Information System; Miscellaneous Information System.	1	2		
MODULE 12 Helicopter Aerodynamics	A3		B1.3	
12.1 Theory of Flight — Rotary Wing Aerodynamics 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.	1		2	
12.2 Flight Control Systems 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: Main and tail rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical and fly-by-wire;	2		3	

	LEVEL			
	A	B1.1	B1.3	B2
Artificial feel; Balancing and rigging.				
12.3 Blade Tracking and Vibration Analysis Rotor alignment; Main and tail rotor tracking; Static and dynamic balancing; Vibration types, vibration reduction methods; Ground resonance.	1		3	
12.4 Transmission 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.	1		3	
12.5 Airframe Structures (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;	2		2	
(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 symmetry: methods of alignment and symmetry checks.	1		2	
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				

	LEVEL			
	A	B1.1	B1.3	B2
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; Glass cockpit; 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 Installation.	1		1	
12.10 Fire Protection (ATA 26) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.	1		3	
12.11 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.	1		3	
12.12 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electric, mechanical, pneumatic; Emergency pressure generation;	1		3	

	LEVEL			
	A	B1.1	B1.3	B2
Filters; Pressure Control; Power distribution; Indication and warning systems; Interface with other systems.				
12.13 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing and De-icing systems: electrical, hot air and chemical; Rain repellent and removal; rope and drain heating; Wiper system.	1		3	
12.14 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warning; Wheels, Tyres, brakes; Steering; Air-ground sensing; Skids, floats.	2		3	
12.15 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2		3	
12.16 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.	1		3	
12.17 Integrated Modular Avionics (ATA 42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Control Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.; Core System; Network Components.	1		2	
12.18 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	1		2	

	LEVEL			
	A	B1.1	B1.3	B2
12.19 Information Systems (ATA 46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display; Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.	1		2	
MODULE 13 Aircraft Aerodynamics, structures and systems				B2
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) Zonal and station identification systems; Electrical bonding; Lightning strike protection provision.				2
13.3 Autoflight (ATA 22)				3
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;				

	LEVEL			
	A	B1.1	B1.3	B2
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.				
13.4 Communication/Navigation (ATA 23/34) Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; 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), — 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 (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.				3
13.5 Electrical Power (ATA 24) 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				3
13.6 Equipment and Furnishings (ATA 25) Electronic emergency equipment requirements; Cabin entertainment equipment.				3
13.7 Flight Controls (ATA 27) (a) Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes;				2

	LEVEL			
	A	B1.1	B1.3	B2
System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems.				
(b) System operation: electrical, fly-by-wire.				3
13.8 Instruments (ATA 31) Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Airspeed indicators; 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; Glass cockpit.				3
13.9 Lights (ATA 33) External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.				3
13.10 On Board Maintenance Systems (ATA 45) Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).				3
13.11 Air Conditioning and Cabin Pressurisation (ATA 21) 13.11.1. <i>Air supply</i> Sources of air supply including engine bleed, APU and ground cart.				2
13.11.2. <i>Air Conditioning</i> Air conditioning systems; Air cycle and vapour cycle machines; Distribution systems;				2 3 1

	LEVEL			
	A	B1.1	B1.3	B2
Flow, temperature and humidity control system.				3
13.11.3. Pressurisation Pressurisation systems; Control and indication including control and safety valves; Cabin pressure controllers.				3
13.11.4. Safety and warning devices Protection and warning devices				3
13.12 Fire Protection (ATA 26) (a) Fire and smoke detection and warning systems; Fire extinguishing systems; System tests.				3
(b) Portable fire extinguisher.				1
13.13 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 1 1 1 2 3 2 3
13.14 Hydraulic Power (ATA 29) System lay-out; Hydraulic fluids; Hydraulic reservoirs and accumulators; Pressure generation: electrical, mechanical, pneumatic; Emergency pressure generation; Filters; Pressure control; Power distribution; Indication and warning systems; Interface with other systems.				1 1 1 3 3 1 3 1 3 3
13.15 Ice and Rain Protection (ATA 30) Ice formation, classification and detection; Anti-icing systems: electrical, hot air and chemical; De-icing systems: electrical, hot air, pneumatic, chemical; Rain repellent; Probe and drain heating; Wiper Systems.				2 2 3 1 3 1
13.16 Landing Gear (ATA 32) Construction, shock absorbing; Extension and retraction systems: normal and emergency; Indications and warnings; Wheels, brakes, antiskid and autobraking; Tyres; Steering; Air-ground sensing.				1 3 3 3 1 3 3

	LEVEL			
	A	B1.1	B1.3	B2
13.17 Oxygen (ATA 35) System lay-out: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.				3 3 3 3
13.18 Pneumatic/Vacuum (ATA 36) System lay-out; Sources: engine/APU, compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interfaces with other systems.				2 2 3 1 3 3
13.19 Water/Waste (ATA 38) Water system lay-out, supply, distribution, servicing and draining; Toilet system lay-out, flushing and servicing.				2
13.20 Integrated Modular Avionics (ATA42) Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others: Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.; Core System; Network Components.				3
13.21 cabin Systems (ATA44) 3 The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, music and video transmissions; The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels; The Cabin Network Service typically consists on a server, typically interfacing with, among others, the following systems: — Data/Radio Communication, In-Flight Entertainment System. The Cabin Network Service may host functions such as: — Access to pre-departure/departure reports, — E-mail/intranet/Internet access, — Passenger database. Cabin Core System; In-flight Entertainment System; External Communication System; Cabin Mass Memory System; Cabin Monitoring System; Miscellaneous Cabin System.				3

	LEVEL			
	A	B1.1	B1.3	B2
13.22 Information Systems (ATA46) The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display; Typical examples include Air Traffic and Information Management Systems and Network Server Systems; Aircraft General Information System; Flight Deck Information System; Maintenance Information System; Passenger Cabin Information System; Miscellaneous Information System.				3
MODULE 14 Propulsion				B2
14.1 Turbine Engines (a) Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbopropeller engines;				1
(b) Electronic Engine control and fuel metering systems (FADEC).				2
14.2 Engine Indicating Systems Exhaust gas temperature/Interstage turbine temperature systems; 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.				2
14.3 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.				2
MODULE 15 GAS TURBINE ENGINE				
15.1 Fundamentals 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.	1	2	2	
15.2 Engine Performance Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption;	-	2	2	

	LEVEL			
	A	B1.1	B1.3	B2
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 Compressor inlet ducts Effects of various inlet configurations; Ice protection.	2	2	2	
15.4 Compressors 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.	1	2	2	
15.5 Combustion Section Constructional features and principles of operation.	1	2	2	
15.6 Turbine Section Operation and characteristics of different turbine blade types; Blade to disk attachment; Nozzle guide vanes; Causes and effects of turbine blade stress and creep.	2	2	2	
15.7 Exhaust Constructional features and principles of operation; Convergent, divergent and variable area nozzles; Engine noise reduction; Thrust reversers.	1	2	2	
15.8 Bearings and Seals Constructional features and principles of operation.	-	2	2	
15.9 Lubricants and Fuels Properties and specifications; Fuel additives; Safety precautions.	1	2	2	
15.10 Lubrication Systems System operation/lay-out and components.	1	2	2	
15.11 Fuel Systems Operation of engine control and fuel metering systems including electronic engine control (FADEC); Systems lay-out and components.	1	2	2	
15.12 Air Systems	1	2	2	

	LEVEL			
	A	B1.1	B1.3	B2
Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.				
15.13 Starting and Ignition Systems Operation of engine start systems and components; Ignition systems and components; Maintenance safety requirements.	1	2	2	
15.14 Engine Indication Systems 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.	1	2	2	
15.15 Power Augmentation Systems Operation and applications; Water injection, water methanol; Afterburner systems.	-	1	1	
15.16 Turbo-prop Engines Gas coupled/free turbine and gear coupled turbines; Reduction gears; Integrated engine and propeller controls; Overspeed safety devices.	1	2	2	
15.17 Turbo-shaft engines Arrangements, drive systems, reduction gearing, couplings, control systems.	1	2	2	
15.18 Auxiliary Power Units (APUs) Purpose, operation, protective systems.	1	2	2	
15.19 Powerplant Installation 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.	1	2	2	
15.20 Fire Protection Systems Operation of detection and extinguishing systems.	1	2	2	
15.21 Engine Monitoring and Ground Operation 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.	1	3	3	

	LEVEL			
	A	B1.1	B1.3	B2
15.22 Engine Storage and Preservation Preservation and depreservation for the engine and accessories/ systems.	-	2	2	
MODULE 16 PISTON ENGINE (NVT)				
MODULE 17A PROPELLER				
17.1 Fundamentals Blade element theory; High/low blade angle, reverse angle, angle of attack, rotational speed; Propeller slip; Aerodynamic, centrifugal, and thrust forces; Torque; Relative airflow on blade angle of attack; Vibration and resonance.	1	2	2	
17.2 Propeller Construction Construction methods and materials used in wooden, composite and metal propellers; Blade station, blade face, blade shank, blade back and hub assembly; Fixed pitch, controllable pitch, constant speed propeller; Propeller/spinner installation.	1	2	2	
17.3 Propeller Pitch Control Speed control and pitch change methods, mechanical and electrical/electronic; Feathering and reverse pitch; Overspeed protection.	1	2	2	
17.4 Propeller Synchronising Synchronising and synchrophasing equipment.	-	2	2	
17.5 Propeller Ice Protection Fluid and electrical de-icing equipment.	1	2	2	
17.6 Propeller Maintenance Static and dynamic balancing; Blade tracking; Assessment of blade damage, erosion, corrosion, impact damage, delamination; Propeller treatment/repair schemes; Propeller engine running.	1	3	3	
17.7 Propeller Storage and Preservation Propeller preservation and depreservation	1	2	2	

Appendix II - Basic Examination Standard

1. General

- 1.1 All basic examinations shall be carried out using the multi-choice question format and essay questions as specified below. The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All of the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length. In numerical questions, the incorrect answers shall correspond to procedural errors such as corrections applied in the wrong sense or incorrect unit conversions: they shall not be mere random numbers.
- 1.2. Each multi-choice question shall have three alternative answers of which only one shall be the correct answer and the candidate shall 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 shall be allowed 20 minutes to answer each such question.
- 1.4. Suitable essay questions shall be drafted and evaluated using the knowledge syllabus in Appendix I Modules 7A, 9A and 10.
- 1.5. Each question will have a model answer drafted for it, which will also include any known alternative answers that may be relevant for other subdivisions.
- 1.6. The model answer will also be broken down into a list of the important points known as Key Points.
- 1.7. The pass mark for each module and sub-module multi-choice part of the examination is 75 %.
- 1.8. The pass mark for each essay question is 75 % in that the candidates answer shall contain 75 % of the required key points addressed by the question and no significant error related to any required key point.
- 1.9. If either the multi-choice part only or the essay part only is failed, then it is only necessary to retake the multi-choice or essay part, as appropriate.
- 1.10. Penalty marking systems shall not be used to determine whether a candidate has passed.
- 1.11. A failed module may not be retaken for at least 90 days following the date of the failed module examination, except in the case of a maintenance training organisation approved in accordance with MAR-147 which conducts a course of retraining tailored to the failed subjects in the particular module when the failed module may be retaken after 30 days.
- 1.12. The time periods required by paragraph MAR-66.A.25 apply to each individual module examination, with the exception of those module examinations which were passed as part of another category licence, where the licence has already been issued.
- 1.13. The maximum number of consecutive attempts for each module is three.
Further sets of three attempts are allowed with a 1 year waiting period between sets.

The applicant shall confirm in writing to the approved maintenance training organisation to which they apply for an examination, the number and dates of attempts during the last year and the organisation where these attempts took place. The maintenance training organisation is responsible for checking the number of attempts within the applicable timeframes.

2. Number of questions per module

Module Module		Categorie Category	Aantal meerkeuze vragen Number of multi- choice questions (MC)	Toegestane tijd [minuten] Meerkeuze vragen Time permitted (minutes) MC	Aantal open vragen Number of essay questions (EQ)	Toegestane tijd [minuten] open vragen Time permitted (minutes) EQ
1	Wiskunde Mathematics	A	16	20	0	
		B1	32	40	0	
		B2	32	40	0	
2	Fysica/natuurkunde Physics	A	32	40	0	
		B1	52	65	0	
		B2	52	65	0	
3	Grondbeginselen elektriciteitsleer Electrical fundamentals	A	20	25	0	
		B1	52	65	0	
		B2	52	65	0	
4	Grondbeginselen elektronica Electronic fundamentals	A	n/a	n/a	n/a	
		B1	20	25	0	
		B2	40	50	0	
5	Digitale technieken Digital techniques	A	16	20	0	
		B1	40	50	0	
		B2	72	90	0	
6	Materialen en hardware Materials and hardware	A	52	65	0	
		B1	72	90	0	
		B2	60	75	0	
7A	Onderhoud Maintenance practices	A	72	90	2	40
		B1	80	100	2	40
		B2	60	75	2	40
8	Basis aerodynamica Basic aerodynamics	A	20	25	0	
		B1	20	25	0	
		B2	20	25	0	
9A	Arbeidsanalyse/menselijke factoren Human factors	A	20	25	1	20
		B1	20	25	1	20
		B2	20	25	1	20
10	Luchtvaartwetgeving Militair Aviation legislation Military	A	32	40	1	20
		B1	40	50	1	20
		B2	40	50	1	20
11A	Aerodynamica, structuren en systemen van turbineluchtvaartuigen Aeroplane aerodynamics, structures and systems	A	108	135	0	
		B1	140	175	0	
		B2	n/a	n/a	n/a	
12	Aerodynamica, structuren en systemen van helikopters Helicopter aerodynamics, structures and systems	A	100	125	0	
		B1	128	160	0	
		B2	n/a	n/a	n/a	
13	Aerodynamica structuren en systemen van luchtvaartuigen Aircraft aerodynamics, structures and systems	A	n/a	n/a	n/a	
		B1	n/a	n/a	n/a	
		B2	180	225	0	
14	Voortstuwing Propulsion	A	n/a	n/a	n/a	
		B1	n/a	n/a	n/a	
		B2	24	30	0	
15	Gasturbinemotor Gas Turbine Engine	A	60	75	0	
		B1	92	115	0	
		B2	n/a	n/a	n/a	
17A	Propeller Propeller	A	20	25	0	
		B1	32	40	0	
		B2	n/a	n/a	n/a	

Appendix III - Aircraft Type Training and Examination Standard - On the Job Training

1. General

Aircraft type training shall consist of theoretical training and examination, and, except for the category C ratings, practical training and assessment.

- (a) Theoretical training and examination shall comply with the following requirements:
 - (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with MAR-147 or, when conducted by other organisations, as directly approved by the MAA-NLD.
 - (ii) Shall comply with the standard described in paragraph 3.1 and 4 of this Appendix III, except as permitted by the differences training described below.
 - (iii) In the case of a category C person qualified by holding an academic degree as specified in paragraph MAR-66.A.30(a)(5), the first relevant aircraft type theoretical training shall be at the category B1 or B2 level.
 - (iv) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.
- (b) Practical training and assessment shall comply with the following requirements:
 - (i) Shall be conducted by a maintenance training organisation appropriately approved in accordance with MAR-147 or, when conducted by other organisations, as directly approved by the MAA-NLD.
 - (ii) Shall comply with the standard described in paragraph 3.2 and 4 of this Appendix III, except as permitted by the differences training described below.
 - (iii) Shall include a representative cross section of maintenance activities based on frequency, complexity, variety, safety, criticality and novelty of tasks to be performed relevant to the aircraft type.
 - (iv) Shall include demonstrations using equipment, components, simulators, other training devices or aircraft.
 - (v) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.
- (c) Differences training
 - (i) Differences training is the training required in order to cover the differences between two different aircraft type ratings of the same manufacturer as determined by the MAA-NLD.
 - (ii) Differences training has to be defined on a case-to-case basis taking into account the requirements contained in this Appendix III in respect of both theoretical and practical elements of type rating training.
 - (iii) A type rating shall only be endorsed on a licence after completion of the required differences training.

2. Aircraft type training levels

The three levels listed below define the objectives, the depth of training and the level of knowledge that

the training is intended to achieve.

- *Level 1: A brief overview of the airframe, systems and powerplant as outlined in the Systems Description Section of the Aircraft Maintenance Manual/Instructions for Continued Airworthiness.*

Course objectives: Upon completion of Level 1 training, the student will be able to:

- (a) provide a simple description of the whole subject, using common words and examples, using typical terms and identify safety precautions related to the airframe, its systems and powerplant;
- (b) identify aircraft manuals, maintenance practices important to the airframe, its systems and powerplant;
- (c) define the general layout of the aircraft's major systems;
- (d) define the general layout and characteristics of the powerplant;
- (e) identify special tooling and test equipment used with the aircraft.

- *Level 2: Basic system overview of controls, indicators, principal components, including their location and purpose, servicing and minor troubleshooting. General knowledge of the theoretical and practical aspects of the subject.*

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

- (a) understand the theoretical fundamentals; apply knowledge in a practical manner using detailed procedures;
- (b) recall the safety precautions to be observed when working on or near the aircraft, powerplant and systems;
- (c) describe systems and aircraft handling particularly access, power availability and sources;
- (d) identify the locations of the principal components;
- (e) explain the normal functioning of each major system, including terminology and nomenclature;
- (f) perform the procedures for servicing associated with the aircraft for the following systems: Fuel, Power Plants, Hydraulics, Landing Gear, Water/Waste, and Oxygen;
- (g) demonstrate proficiency in use of crew "debrief" reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the MEL/CDL;
- (h) demonstrate the use, interpretation and application of appropriate documentation including instructions for continued airworthiness, maintenance manual, illustrated parts catalogue, etc.

- *Level 3: 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 3 training, the student will be able to:

- (a) demonstrate a theoretical knowledge of aircraft systems and structures and interrelationships with other systems, provide a detailed description of the subject using theoretical fundamentals and specific examples and to interpret results from various sources and measurements and apply corrective action where appropriate;

- (b) perform system, powerplant, component and functional checks as specified in the aircraft maintenance manual;
- (c) demonstrate the use, interpret and apply appropriate documentation including structural repair manual, troubleshooting manual, etc.;
- (d) correlate information for the purpose of making decisions in respect of fault diagnosis and rectification to maintenance manual level;
- (e) describe procedures for replacement of components unique to aircraft type.

3. Aircraft type training standard

Although aircraft type training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or for a combination of both.

3.1. Theoretical element

- (a) Objective:

On completion of a theoretical training course the student shall be able to demonstrate, to the levels identified in the Appendix III syllabus, the detailed theoretical knowledge of the aircraft's applicable systems, structure, operations, maintenance, repair, and troubleshooting according to approved maintenance data. The student shall be able to demonstrate the use of manuals and approved procedures, including the knowledge of relevant inspections and limitations.

- (b) Level of training:

Training levels are those levels defined in point 2 above.

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

- (c) Duration:

The theoretical training minimum tuition hours are contained in the following table:

Category	Hours
<i>Military Aeroplanes</i>	
B1.1	150
B2	100
C	30
<i>Military Helicopters</i>	
B1.3	120
B2	100
C	25

For the purpose of the table above, a tuition hour means 60 minutes of teaching and exclude any

breaks, examination, revision, preparation and aircraft visit.

These hours apply only to theoretical courses for complete aircraft/ engine combinations according to the type rating as defined by the MAA-NLD.

(d) Justification of course duration:

Training courses carried out in a maintenance training organisation approved in accordance with MAR-147 and courses directly approved by the MAA-NLD shall justify their hour duration and the coverage of the full syllabus by a training needs analysis based on:

- the design of the aircraft type, its maintenance needs and the types of operation,
- detailed analysis of applicable chapters — see contents table in point 3.1(e) below,
- detailed competency analysis showing that the objectives as stated in point 3.1(a) above are fully met.

Where the training needs analysis shows that more hours are needed, course lengths shall be longer than the minimum specified in the table.

Similarly, tuition hours of differences courses or other training course combinations (such as combined B1/B2 courses), and in cases of theoretical type training courses below the figures given in point 3.1(c) above, these shall be justified to the competent authority by the training needs analysis as described above.

In addition, the course must describe and justify the following:

- The minimum attendance required to the trainee, in order to meet the objectives of the course.
- The maximum number of hours of training per day, taking into account pedagogical and human factors principles.

If the minimum attendance required is not met, the certificate of recognition shall not be issued. Additional training may be provided by the training organisation in order to meet the minimum attendance time.

(e) Content:

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

The training syllabus shall be focused on mechanical and electrical aspects for B1 personnel, and electrical and avionic aspects for B2.

ATA/AECMA No.	Type-opleiding, vereisten naar categorie en vliegtuigtype <i>Type training, requirements to category and aircraft type</i>	(F-16) Cat B1.1	(PC-7) Cat B1.1	(Transport) Cat B1.1	(AH-64D) Cat B1.3	(Helicopters) Cat B1.3	(F-16) Cat B2	(Transport) Cat B2	(AH-64D) Cat B2	(Helicopters) Cat B2	Cat C
	ledere markering verwijst naar het systeem, het (deel)deelsysteem, onderdelen of LRU's <i>Each mark refers to the complete system, (sub)subsystem, components or LRU's as applicable</i>										
	Aircraft System (*: where applicable)										
5	Time limits/maintenance checks	1	1	1	1	1	1	1	1	1	1
6	Dimensions/areas/zonal identification(aircraft general)	1	1	1	1	1	1	1	1	1	1
7	Lifting, jacking & shoring	1	1	1	1	1	1	1	1	1	1
8	Leveling & weighing	3	3	3	3	3	1	1	1	1	1
9	Towing & taxiing	1	1	1	1	1	1	1	1	1	1
10	Parking & mooring, storing & return to service	1	1	1	1	1	1	1	1	1	1
11	Placards & markings	1	1	1	1	1	1	1	1	1	1
12	Servicing	1	1	1	1	1	1	1	1	1	1
18	Vibration and noise analysis & attenuation				3	3					1*
20	Standard practices - Airframe systems	1	1	1	1	1	1	1	1	1	1
21	Environmental control	3	3	3	3	3	3	3	3	3	1
21A	Air supply	3	3	3	3	3	2	2	2	2	1
21B	Pressurisation	3	3	3	3	3	3	3	3	3	1
21C	Safety & warning devices	3	3	3	3	3	3	3	3	3	1
22	Auto flight			2*	2	2*		3*	3	3*	1*
23	Communications	2	3	2	2	2	3	3	3	3	1
24	Electrical power	2	3	3*	2	3*	3	3	3*	3	1*
25	Equipment/furnishings		3	3	3	3		1	1	1	1*
25A	Electronic equipment incl emergency equipment		3	1	1	1		3	3	3	1*
26	Fire protection	3		3	3	3	3	3	3	3	1*
27	Flight controls	3	3	3	3	3	2	2	2	2*	1*
27A	System operations: fly by wire	1		1*	1	1*	3	3*	3	3*	1*
28	Fuel	3	3	3	3	3	2	2	2	2	1
28A	Fuel – monitoring & indicating	3	3	3	3	3	3	3	3	3	1
29	Hydraulic power	3	3	3	3	3	2	2	2	2	1
29A	Hydraulic power - monitoring & indicating	3	3	3	3	3	3	3	3	3	1
30	Ice and rain protection	3	3	3	3	3	3	3	3	3	1
31	Indicating/recording systems/instrument systems	1	3	3*	1	3*	3	3*	3	3*	1*
32	Landing gear	3	3	3	3	3	2	2	2	2	1
32A	Landing gear - monitoring & indicating	3	3	3	3	3	3	3	3	3	1
33	Lights	2	2	2	2	2	3	3	3	3	1
34	Navigation	1	2	2	1	2	3	3	3	3	1
35	Oxygen	3	3	3			2	2			1*
36	Pneumatic	3		3	3	3*		2	2	2*	1*
36A	Pneumatic - monitoring & indicating	3		3	3	3*		3	3	3*	1*
37	Vacuum			3*				2*			1*
38	Water/waste			3				2			1*
39	Attack system management						3		3		
40	Operational attack functions						3		3		
41	Water ballast					3*				1*	1*
42	Cross-technical attack functions	2			2		3		3		1*
43	Tactical communications						3	3*	3	3*	1*
45	Central maintenance system (CMS)			3*	3	3*	3	3*	3	3*	1*
48	In-flight refueling tanker			3*				3*			
49	Airborne auxiliary power components	3		3	3	3*	3	2	3	2*	1*

ATA/AECMA No.	Type-opleiding, vereisten naar categorie en vliegtuigtype <i>Type training, requirements to category and aircraft type</i>										
	ledere markering verwijst naar het systeem, het (deel)deelsysteem, onderdelen of LRU's <i>Each mark refers to the complete system, (sub)subsystem, components or LRU's as applicable</i>										
	Aircraft System (*: where applicable)										
		(F-16) Cat B1.1	(PC-7) Cat B1.1	(Transport) Cat B1.1	(AH-64D) Cat B1.3	(Helicopters) Cat B1.3	(F-16) Cat B2	(Transport) Cat B2	(AH-64D) Cat B2	(Helicopters) Cat B2	Cat C
50	Cargo and accessory compartment			3		3		1		1	1*
51	Standard practices – Structures	3	3	3	3	3	1	1	1	1	1
52	Doors	3	3	3	3	3	1	1	1	1	1
53	Fuselage	3	3	3	3	3*	1	1	1	1	1
54	Nacelles/pylons			3		3*		1		1*	1*
55	Stabilizers	3	3	3	3	3*	1	1	1	1*	1*
56	Windows and canopies	3	3	3	3	3	1	1	1	1	1
57	Wings	3	3	3	3		1	1	1		1
60	Standard practices - Propeller/rotor		3	3*	3	3		1*			1*
61	Propellers/propulsors		3	3*				1*			
62	Main rotors				3	3			1	1	1
62A	Main rotors - monitoring & indicating				3	3			3	3	1
63	Main rotor drives				3	3			1	1	1
63A	Main rotor drives - monitoring & indicating				3	3			3	3	1
64	Tail rotor				3	3			1	1*	1*
64A	Tail rotor - monitoring & indicating				3	3			3	3*	1*
65	Tail rotor drive				3	3			1	1*	1*
65A	Tail rotor drive - monitoring & indicating				3	3			3	3*	1*
66	Folding blades/pylon					3*					1*
67	Rotors flight control					3*				3*	1*
70	Standard practices – Engine	3	3	3	3	3	1	1	1	1	1
70A	Engine - constructional arrangement and operation	3	3	3	3	3	1	1	1	1	1
70B	Engine - performance	3	3	3	3	3	1	1	1	1	1
71	Power plant	3	3	3	3	3	1	1	1	1	1
72	Engine turbine	3	3	3	3	3	1	1	1	1	1
73	Engine fuel and control	3	3	3	3	3	1	1	1	1	1
73A	Engine - FADEC	3	3	3	3	3*	3	3	3	3*	1*
74	Engine ignition	3	3	3	3	3	3	3	3	3*	1
75	Engine air	3		3	3	3	1	1	1	1	1*
76	Engine controls	3	3	3	3	3	1	1	1	1	1
77	Engine indicating	3	3	3	3	3	3	3	3	3*	1*
78	Engine exhaust	3	3	3	3	3	1	1	1	1	1
79	Engine oil	3	3	3	3	3	1	1	1	1	1
80	Engine starting	3	3	3	3	3*	1	2*	3	3*	1*
83	Accessory gearboxes	3			3	3*	1		1	1*	1*
84	Propulsion augmentation				3	3			1	1	1*
90	Recovery (reserved)										
91	Air vehicle wiring	2	2	2	2	2	3	3	3	3	1
92	Radar							3*	3	3*	1*
93	Surveillance							3*		3*	1*
94	Weapons system	2			2	2	3		3		1*
95	Crew escape and safety/armour plating	2	2	3	2	2	2	3*	1	1*	1*
97	Image recording						3	3*	3	3*	1*
99	Electronic warfare	1		1*	1	1*	3	3*	3	3*	1*

- (f) Multimedia Based Training (MBT) methods may be used to satisfy the theoretical training element either in the classroom or in a virtual controlled environment subject to the acceptance of the MAA-NLD approving the training course.

3.2. *Practical element*

- (a) Objective:

The objective of practical training is to gain the required competence in performing safe 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. It includes the awareness of the use of all technical literature and documentation for the aircraft, the use of specialist/special tooling and test equipment for performing removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

- (b) Content:

The maintenance training organisation shall determine the items, which are relevant to the particular aircraft type, and present this listing for approval to de MAA-NLD. At least 50 % of these items shall be completed as part of the practical training.

The selected tasks represent subjects that are important for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks is adequately addressed; particularly where these cannot be fully explained by theoretical training alone.

Tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task. While relatively simple tasks may be included, other more complex tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

4. **Type training examination and assessment standard**

4.1. *Theoretical element examination standard*

After the theoretical portion of the aircraft type training has been completed, a written examination shall be performed, which shall comply with the following:

- (a) Format of the examination is of the multi-choice type. Each multi-choice question shall have 3 alternative answers of which only one shall be the correct answer. The total time is based on the total number of questions and the time for answering is based upon a nominal average of 90 seconds per question.
- (b) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All the alternatives shall be clearly related to the question and of similar vocabulary, grammatical construction and length.
- (c) In numerical questions, the incorrect answers shall correspond to procedural errors such as the use of incorrect sense (+ versus -) or incorrect measurement units. They shall not be mere random numbers.
- (d) The level of examination for each chapter¹ shall be the one defined in point 2 'Aircraft type training levels'. However, the use of a limited number of questions at a lower level is acceptable.

¹ For the purpose of this point 4, a 'chapter' means each one of the rows preceded by a number in the table contained in point 3.1(e).

- (e) The examination shall 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.
- (f) The number of questions shall be at least 1 question per hour of instruction. The number of questions for each chapter and level shall be proportionate to:
 - the effective training hours spent teaching at that chapter and level,
 - the learning objectives as given by the training needs analysis.
- (g) The minimum examination pass mark is 75 %. When the type training examination is split in several examinations, each examination shall be passed with at least a 75 % mark. In order to be possible to achieve exactly a 75 % pass mark, the number of questions in the examination shall be a multiple of 4.
- (h) Penalty marking (negative points for failed questions) is not to be used.
- (i) 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.

4.2. *Practical element assessment standard*

After the practical element of the aircraft type training has been completed, an assessment must be performed, which must comply with the following:

- (a) The assessment shall be performed by designated assessors appropriately qualified.
- (b) The assessment shall evaluate the knowledge and skills of the trainee.

5. Type examination standard

Not applicable (for Military complex aircraft).

6. On the Job Training

On the Job Training (OJT) shall be approved by the MAA-NLD.

It shall be produced at and under the control of a MTO or maintenance organisation appropriately approved for maintenance of the particular aircraft type.

It shall be conducted at and under the control of a MTO or a maintenance organisation appropriately approved for the maintenance of the particular aircraft type and shall be assessed by designated assessors appropriately qualified.

It shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

- (a) Objective:

The objective of OJT is to gain the required competence and experience in performing safe maintenance.

- (b) Content:

OJT shall cover a cross section of tasks acceptable to the competent authority. The OJT tasks to be completed shall be representative of the aircraft and systems both in complexity and in the technical input required to complete that task.

Each task shall be signed off by the student and countersigned by a designated supervisor. The

tasks listed shall refer to an actual job card/work sheet, etc.

The OJT should cover at least 50 % of the tasks contained in OJT Taskbook approved by the MAA-NLD.

The final assessment of the completed OJT is mandatory and shall be performed by a designated assessor appropriately qualified.

In order to facilitate the verification by the competent authority, demonstration of the OJT shall consist of

- (i) detailed worksheets/logbook and
- (ii) a compliance report demonstrating how the OJT meets the requirement of this MAR.

Appendix IV - Experience requirements for extending a MAR-66 MAML

The table below shows the experience requirements for adding a new category or subcategory to an existing MAR-66 license.

The experience shall 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 MAR-147 course relevant to the subcategory.

To From	A1	A3	B1.1	B1.3	B2
A1	-	6 months	24 months	24 months	24 months
A3	6 months	-	24 months	24 months	24 months
B1.1	None	6 months	-	6 months	12 months
B1.3	6 months	None	6 months	-	12 months
B2	6 months	6 months	12 months	12 months	-

Appendix V - Application Form - MAA-NLD Form 19

This Appendix contains an example of the form used for application for the aircraft maintenance licence referred to in MAR-66.

Military Aviation Authority-NLD
MPC 58 B
PO Box 20701
2500 ES The Hague



Ministerie van Defensie

Aanvraag voor een Militair Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen Application for a Military Aircraft Maintenance Licence

1.0 Gegevens aanvrager *):							
Voordat u een MAA-NLD Form 19 Application for a MAML (Aanvraag voor een MBvOL) opstuurt, dient u de toelichting en de vereisten door te nemen. Informatie hierover kunt u vinden in de MLE-66, met name artikel 66.A.25. en 66.A.30, via Intranet Defensie Portaal onder "Publicaties". Daarna "Officiële defensiebrede publicaties", "Militaire Luchtvaartautoriteit" en "Militaire luchtvaartteisen" selecteren.							
Dit formulier kunt u vinden via Intranet Defensie Portaal onder "Publicaties". Daarna "Officiële defensiebrede publicaties", "Militaire Luchtvaartautoriteit", "Formulieren", "6.3 Licenties" en "MAA-NLD Form 19" selecteren.							
Achternaam:							
Voornamen (voluit):							
Straat en huisnummer:							
Postcode:							
Woonplaats:							
Geboortedatum:		man	☐	vrouw	☐		
Geboorteplaats:							
Geboorteland:							
Nationaliteit:							
Telefoon nummer:		E-mail:					
Werknemer ID:							
Rang/schaal:							
Functie:							
1.1 Gegevens Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen (indien van toepassing):							
MBvOL	☐	AML	☐	Anders	☐	Indien anders, welke?	
Nummer:							
Datum van uitgifte:							
Uitgevende instantie:							
1.2 Gegevens werkgever:							
Naam Organisatie:							
MLE-145 goedkeuring:							

*) Aankruisen wat van toepassing is

2.0 Aanvraag Militair Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen *):					
1 ^e afgifte	☐	Wijziging (uitbreiding)	☐	Vernieuwing (onleesbaar of verlies)	☐
Categorie:	A	B1 Mechanisch	B2 Avionica	C	
Vliegtuigen met turbine motor	☐ A1	☐ B1.1	☐ B2	☐ C	
Helikopters met turbine motor	☐ A3	☐ B1.3			
2.1 Type bevoegdheden (indien van toepassing):					
Categorie	Type	Beperking			

*) Aankruisen wat van toepassing is

3.0 Verzoek tot creditering *):

Reductie op de eis over de basiskennis (modules 1-17, ref. MLE-66.A.25)

☐	Module 1	☐	Module 7	☐	Module 13
☐	Module 2	☐	Module 8	☐	Module 14
☐	Module 3	☐	Module 9	☐	Module 15
☐	Module 4	☐	Module 10	☐	Module 16
☐	Module 5	☐	Module 11	☐	Module 17
☐	Module 6	☐	Module 12		

Reductie op de eis over de ervaringsopbouw vanwege MLE-147 opleiding(en) (ref. MLE-66.A.30)

☐	1 jaar	☐	2 jaar	☐	3 jaar
--------------------------	--------	--------------------------	--------	--------------------------	--------

*) Aankruisen wat van toepassing is, kan uitsluitend voor modules waarvan de MLA een creditrapport heeft gepubliceerd op haar Intranetsite

4.0 Bewijsvoering *):

Conform MLE-66	Omschrijving / titel
☐ Kopieën bewijslast basiskennis (ref. MLE-66.A.25):	
☐ Kopie ervaringsverklaring (ref. MLE-66.A.30):	
☐ Kopie certificaat type-opleiding (ref. MLE-66.A.45):	
☐ Kopie eerder verkregen MBvOL (militair) of AML (civiel):	
☐ Kopie MLA goedgekeurde diploma's:	
☐ Kopie vrijstellingen door erkende autoriteiten:	

*) Aankruisen wat van toepassing is

5.0 Ondertekening aanvrager

Ondergetekende verzoekt in aanmerking te komen voor een Militair Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen en verklaart dat de gegevens in deze aanvraag naar juistheid zijn opgemaakt. Ondergetekende is zich bewust van het feit dat een onjuiste of incomplete aanvraag kan leiden tot afwijzing van de aanvraag.

Naam:		Handtekening:	
Datum:			
Plaats:			

Postadres:

Ministerie van Defensie
Militaire Luchtvaart Autoriteit
MPC 58B
Postbus 20701
2500 ES Den Haag

Bezoekadres:

Militaire Luchtvaart Autoriteit
Plein Kalvermarkt Complex,
Kalvermarkt 32
2511 CB Den Haag

Toelichting

Voordat u een MAA-NLD Form 19 Application for a MAML (Aanvraag voor een MBvOL) invult en compleet maakt met de benodigde bijlagen, dient u de vereisten door te nemen. Informatie hierover kunt u vinden in de MLE-66, met name artikel 66.A.25. en 66.A.30, via Intranet Defensie Portaal onder "Publicaties". Daarna "Officiële defensiebrede publicaties", "Militaire Luchtvaartautoriteit" en "Militaire luchtvaartuigen" selecteren.

Dit formulier kunt u vinden via Intranet Defensie Portaal onder "Publicaties". Daarna "Officiële defensiebrede publicaties", "Militaire Luchtvaartautoriteit", "Formulieren", "6.3 Licenties" en "MAA-NLD Form 19" selecteren.

1.0 Gegevens aanvrager:

Hier vult u uw persoonsgegevens in. Voor het verkrijgen van de juiste gegevens op uw MBvOL, dient u deze gegevens voluit in te vullen, dus zonder afkortingen.

1.1 Gegevens Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen (indien van toepassing):

Indien u al in het bezit bent van een MBvOL of een Civiel AML vult u hier uw licentienummer, de datum van uitgifte en de uitgevende instantie in. Indien u in het bezit bent van een ander soort onderhoudsbevoegdheid kruist u "Anders" aan, tevens geeft u aan welke.

1.2 Gegevens werkgever:

Hier vult u de gegevens in van uw werkgever.

2.0 Aanvraag Militair Bewijs van Onderhoudsbevoegdheid Luchtvaartuigen:

Hier kruist u aan om welke soort aanvraag het gaat, namelijk:

- Een **1^e afgifte** van het MBvOL wordt gedaan nadat de basis- (en type-)opleiding is voltooid en aan de gestelde ervaringseis wordt voldaan voor de aangevraagde categorie.
- Een **wijziging** betreft het toevoegen van een (sub)categorie of vliegtuigtype op een bestaand MBvOL.
- Een **vernieuwing** vraagt u aan bij een onleesbaar geworden MBvOL of bij verlies of diefstal. Van het onleesbaar geworden MBvOL dient u alsnog een kopie mee te leveren. Bij verlies of diefstal dient u een "proces verbaal" mee te leveren.

Naast de soort aanvraag dient u aan te kruisen voor welke categorie de aanvraag geldt. Indien dit niet aangegeven is op het afgegeven MBvOL dan hoeft deze niet meer verlengd te worden. Indien dit wel op het MBvOL is aangegeven dient vernieuwing aangekruist te worden.

2.1 Type bevoegdheden:

Hier vult u per categorie in om welke vliegtuigtype(n) het gaat. In het geval dat limitaties van toepassing zijn, verband houdend met de bedrijfsautorisaties, geeft u dit aan in de kolom "limitaties". U kunt hier ook naar "4.0 Bewijsvoering" verwijzen wanneer de limitaties betrekking hebben op afgegeven bedrijfsautorisaties.

3.0 Verzoek tot creditering:

Bij de aanvraag voor een 1^e afgifte kunt u hier aangeven op grond van welke opleiding u in aanmerking meent te komen voor vrijstelling van theorie-examen of vermindering van vereiste praktische ervaring. Voeg indien noodzakelijk een bijlage toe waarop u het verzoek tot creditering toelicht. Dit kan uitsluitend voor modules waarvan de Militaire Luchtvaart Autoriteit een creditrapport heeft gepubliceerd op haar Intranetsite.

4.0 Bewijsvoering:

Bij elke aanvraag dient u afhankelijk van de soort aanvraag de desbetreffende gewaarmerkte kopieën bij de aanvraag te voegen. De kopieën dienen te worden gewaarmerkt door de kwaliteitsmanager van uw organisatie. Het verdient de aanbeveling het aantal bijlagen te benoemen en te nummeren. Geef voor iedere bijlage aan welk deel van de aanvraag onderbouwd wordt.

- Bij een **1^e afgifte** dient u, naast de bewijslast van de basiskennis, voor elk type vliegtuig een certificaat van een MLE-147 geaccepteerde type-opleiding bij te voegen. Tevens dient bij de aanvraag een ervaringsverklaring te zitten. Indien van toepassing voegt u door de MLA goedgekeurde diploma's en vrijstellingen van erkende autoriteiten bij de aanvraag.
- Bij een **wijziging** dient u de bewijslast van de basiskennis en/of van het type vliegtuig waar de wijziging betrekking op heeft een certificaat van een MLE-147 erkende type-opleiding bij te voegen. Tevens dient bij de aanvraag een ervaringsverklaring te zitten. Indien van toepassing voegt u door de MLA goedgekeurde diploma's en vrijstellingen van erkende autoriteiten bij de aanvraag. Na ontvangst van uw nieuwe MBvOL dient u uw huidige MBvOL **direct** in te leveren bij de Militaire Luchtvaart Autoriteit. Zie postadres op pagina 2 van 2 van de aanvraag.
- Bij een **verlenging** dient u een kopie van uw huidige MBvOL bij te voegen. Na ontvangst van uw nieuwe MBvOL dient u uw huidige MBvOL **direct** in te leveren bij de Militaire Luchtvaart Autoriteit. Zie postadres op pagina 2 van 2 van de aanvraag.
- Bij een **onleesbaar geworden MBvOL** dient u een kopie van uw onleesbaar geworden MBvOL bij te voegen. Na ontvangst van uw nieuwe MBvOL dient u uw huidige MBvOL **direct** in te leveren bij de Militaire Luchtvaart Autoriteit. Zie postadres op pagina 2 van 2 van de aanvraag.
- Bij **verlies of diefstal van uw MBvOL** dient u een kopie van het "proces verbaal" bij te voegen waarop duidelijk de reden aangegeven is. Na ontvangst van uw nieuwe MBvOL dient u uw huidige MBvOL **direct** in te leveren bij de Militaire Luchtvaart Autoriteit wanneer deze alsnog wordt gevonden. Zie postadres op pagina 2 van 2 van de aanvraag.

5.0 Ondertekening aanvrager:

U verklaart dat u alle gegevens op dit formulier volledig en naar waarheid heeft ingevuld. Het verstrekken van onjuiste informatie kan reden zijn om u geen MBvOL te verstrekken of deze in te trekken.

Het aanvraagformulier bestaande uit pagina 1 van 2 en 2 van 2 (dus zonder deze toelichting) dient inclusief bescheiden te worden opgestuurd naar de Militaire Luchtvaart Autoriteit. Zie postadres op pagina 2 van 2 van de aanvraag. Vermeld linksboven op de envelop "Aanvraag MBvOL".