

MALAYSIAN STATE AIRWORTHINESS AUTHORITY



MALAYSIAN STATE TECHNICAL AIRWORTHINESS MANUAL

MSTAR 66 - STATE AIRCRAFT MAINTENANCE LICENSING INTERIM VOLUME 5

The Malaysian State Airworthiness Authority (MSAA) issued the Malaysian State Technical Airworthiness Manual (MSTAM) as a Technical Airworthiness Management System. Authority given by the Minister of Defence under Council of Ministers of Defence Meeting Series 02/06 (*Mesyuarat Lembaga Menteri Pertahanan Siri 02/06*) dated 05 September 2006, the State Airworthiness Authority (SAA) issued this MSTAM.

MSTAM contains Airworthiness Management System (AMS) information related to policies, regulatory frameworks, State Technical Airworthiness Regulations (STAR), Airworthiness Requirements, and Implementing Rules specific to the State Technical Airworthiness Program. The Implementing Rules describe the Technical Requirements, Acceptable Means of Compliance, and Guidance Material to give effect to the MSTAR provision applicable to state aircraft set out in the Malaysian State Technical Airworthiness Regulation (MSTAR) produced by the Technical Airworthiness Regulator (TAR). MSTAM and its supplementary documents apply to every person, aircraft, aeronautical product, and maintenance training related to State aircraft.

Non-compliance with these Orders

Any organisation or person subject to and upon the terms and conditions of the agreement who contravenes any provision in this MSTAM shall be liable to the implication imposed under appropriate airworthiness

MSTAR - 66 STATE AIRCRAFT MAINTENANCE LICENCE

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MSTAR 66 STATE AIRCRAFT MAINTENANCE LICENCE**LIST OF ABBREVIATIONS**

Notes:

1. Definitions with no superscript have been sourced directly from the European Military Airworthiness Document (EMAD 1). Those definitions and terminologies with a superscript* are either DGTA-specific or derived from other sources.

| | |
|---------|---|
| AA* | Airworthiness Authority |
| AAC* | Airworthiness Advisory Circular |
| ABDR* | Aircraft Battle Damage Repair |
| AD | Airworthiness Directive |
| AO* | Airworthiness Order |
| AMS* | Airworthiness Management System |
| AM* | Accountable Manager |
| AMC | Acceptable Means Compliance |
| AMO* | Approved Maintenance Organisation |
| AMTO* | Approved Maintenance Training Organisation |
| AB* | Airworthiness Board |
| ASR* | Airworthiness Standards Representative |
| ARC | Airworthiness Review Certificate |
| BoSTA* | Board of State Technical Airworthiness |
| CAA* | Civil Aviation Authority |
| CAAM* | Civil Aviation Authority of Malaysia |
| CAD* | Civil Airworthiness Directive |
| CAESE* | Centre for Aerospace and Engineering Services Establishment |
| CAP* | Competent Authority Procedures |
| CAME | Continuing Airworthiness Management Exposition |
| CAMO | Continuing Airworthiness Management Organisation |
| CAR* | Corrective Action Request |
| CARs* | Canadian Aviation Regulations |
| CDCCL | Critical Design Configuration Control Limitations |
| CDL | Configuration Deviation List |
| CI | Configuration Item |
| Cmaint* | Contingency Maintenance |
| CMM | Component Maintenance Manual |
| CRS | Certificate of Release to Service |
| CoA* | Certificate of Airworthiness |
| CS | Certification Specification |
| DAR* | Delegated Airworthiness Representative |
| DCA* | Department Civil Aviation |
| DGTA* | Directorate General Technical Airworthiness |
| DOE | Design Organisation Exposition |
| DoD* | U.S. Department of Defence |
| DOA | Design Organisation Approval |
| EAC* | Engineering Authority Certificate |
| EASA | European Aviation Safety Agency |
| EDA | European Defence Agency |
| EDP | Electronic Data Processing |
| EMACC | European Military Airworthiness Certification Criteria |

| | |
|--------|--|
| EMAD | European Military Airworthiness Document |
| EMAD R | European Military Airworthiness Document Recognition |
| EMAR | European Military Airworthiness Requirement |
| EMPA | European Military Part Approval |
| EMTSO | European Military Technical Standard Order |
| ESF | Equivalent level of Safety Finding |
| EWIS | Electrical Wiring Interconnect System |
| FAA | Federal Aviation Administration |
| FAR | Federal Aviation Regulations |
| FTS | Fuel Tank Safety or Flight Test Schedule |
| GFE | Government Furnished Equipment |
| GM | Guidance Materials |
| GoM* | Government of Malaysia |
| HF | Human Factor |
| ICA* | Instructions for Continuing Airworthiness |
| ICAO | International Civil Aviation Organisation |
| IQA* | Internal Quality Audit |
| LEA* | Letter of Engineering Authority |
| LEP* | List of Effective Pages |
| LMA* | Letter of Maintenance Authority |
| LMS | Learning Management System |
| LMTA* | Letter of Maintenance Training Authority |
| MA* | Maintenance Authority |
| MAA* | Military Airworthiness Authority |
| MAC* | Maintenance Authority Certificate |
| MAF* | Malaysian Armed Forces |
| MAO* | Maintenance Authorising Office |
| MCAI* | Mandatory Continuing Airworthiness Information |
| MCAR* | Malaysian Civil Aviation Regulations |
| MCOQ* | Multiple Choice Objective Question |
| MM | Maintenance Manager |
| MEL | Minimum Equipment List |
| MSTC* | Malaysian State Type Certificate |
| MTAC | Maintenance Training Authority Certificate |
| MTC | Military Type Certificate |
| MTCH | Military Type Certificate Holder |
| MoD* | Ministry of Defence |
| MoT* | Ministry of Transport |
| MI/S* | Maintenance Inspector/Supervisor |
| MMI* | Maintenance Managed Item |
| MMP* | Maintenance Management Plan |
| MMS* | Maintenance Management System |
| MRM* | Management Review Meeting |
| MSTA* | Malaysian State Technical Airworthiness |
| MSTAR* | Malaysian State Technical Airworthiness Regulation |
| MSTC* | Malaysian State Type Certification |
| MTF* | Maintenance Test Flight |
| MTMP* | Maintenance Training Management Plan |
| NAA* | National Airworthiness Authority |
| NDT | Non-Destructive Test |
| OAA* | Operational Airworthiness Authority |
| OAR | Operational Airworthiness Regulator |
| OEM | Original Equipment Manufacturer |
| OJT* | On-Job Training |

| | |
|----------|---|
| OM* | Operational Maintenance |
| OPPDMEF* | Organisation, People, Procedure, Data, Material, Equipment and Facilities |
| OSH* | Occupational Safety and Health |
| POA* | Production Organisation Approval |
| POE | Product Organisation Exposition |
| PTF | Permit To Fly |
| QM* | Quality Manager |
| QMS* | Quality Management System |
| RMAF* | Royal Malaysian Air Force |
| RMSTC* | Restricted Malaysian State Type Certificate |
| SAA* | State Airworthiness Authority |
| SARPs* | Standards and Recommended Practices |
| SAO* | State Aircraft Operator |
| SB | Service Bulletin |
| SMM* | Senior Maintenance Manager |
| SMS* | Safety Management Systems |
| SOI* | Statement of Operating Intent |
| SOR* | Statement of Operating Requirements |
| SRAO* | State Registered Aircraft Operator |
| SSP* | State Safety Programme |
| STANAG | Standardisation Agreement (in NATO) |
| STAP* | State Technical Airworthiness Policies |
| STAR* | State Technical Airworthiness Regulations |
| STC* | Supplemental Type Certificate |
| STI* | Special Technical Instruction |
| TAA* | Technical Airworthiness Authority |
| TAAC* | Technical Airworthiness Advisory Circular |
| TAC* | Technical Airworthiness Clearance |
| TAD* | Technical Airworthiness Directive |
| TAMM* | Technical Airworthiness Management Manual |
| TC | Type Certificate |
| TCCA* | Transport Canada Civil Aviation |
| TIR* | Technical Information Review |
| TM* | Training Manager |
| TSN* | Training Support Network |
| UAS | Unmanned Aircraft System |

MSTAR 66 STATE AIRCRAFT MAINTENANCE LICENCE**GLOSSARY**

Notes:

1. Definitions with no superscript have been sourced directly from the European Military Airworthiness Document (EMAD 1). Those definitions and terminologies with a superscript* are either DGTA-specific or derived from other sources.

Academic and Curriculum Manager*

A person who oversees the curriculum design, training media, lesson plan, and instructor guides to evaluate the effectiveness of basic and type training courses.

Acceptable Means of Compliance

This illustrates a means, but not the only means, by which regulation can be met, and a regulated entity may decide to show compliance by other means. Hence, only an Authority can agree on alternatives to the published Acceptable Means of Compliance. Acceptable Means of Compliance are strongly recommended practices, and justification will be required of the Authority if they are followed. The burden of proof that regulation is satisfied rests entirely with a regulated entity when alternatives are proposed to the Authority.

Accountable Manager*

A person designated by the Approved Organisation and named in the Exposition who is accountable to the DGTA for maintaining safety standards required by relevant MSTAR and any additional standards specified in the respective Exposition. Also, a key figure with influence within the organisation and the ability to make appropriate resource decisions to ensure compliance with airworthiness regulations.

Addition

The inclusion of further basic categories or sub-categories to a State Aircraft Maintenance Licence that is already held by an individual.

Adopt

To transcribe, with no deviation, the requirements (European Military Airworthiness Requirements) into national regulations using English or the National Language(s).

Advisory Material

Advisory Material provides interpretation of technical airworthiness requirements and standards to assist in understanding and implementation. It also provides guidance on methods and procedures that are in compliance with technical airworthiness requirements and standards. Advisory material, including the described methods and procedures, is not mandatory, and organisations may choose to follow other means of demonstrating compliance.

Aeronautical Product*

Any airframe, aircraft system (airframe, avionics, engine, armament, and egress and survival),

aircraft power train (including engines, auxiliary power units, and transmissions), propeller, rotor and/or components/parts/materials, or equipment parts, including computer systems software/firmware, that, when connected, has a direct effect on the structural and technical integrity of the aircraft.

Aircraft

Any machine that can derive support in the atmosphere from the reactions of the air other than the reactions of the air against the earth's surface.

Aircraft Airborne Equipment*

Equipment that interfaces with and is borne by the aircraft or aircrew during flight. This includes role equipment but not items of cargo.

Aircraft Battle Damage Repair*

Aircraft Battle Damage Repair is the subset of Battle Damage Repair that uniquely applies to aircraft and is used to restore sufficient strength and serviceability to permit damaged aircraft to fly additional operational sorties or to enable those aircraft that are damaged beyond unit repair capability to make a one-time ferry flight to a major repair facility.

Aircraft Flight Manual

An Aircraft Flight Manual is a manual associated with the Malaysian State Type Certificate (MSTC) containing limitations within which the aircraft is to be considered airworthy and instructions and information necessary to the flight crew members for the safe operation of the aircraft.

Aircraft Maintenance Documentation*

The aircraft's maintenance and operational certificate, maintenance forecast, and technical particulars record.

Aircraft Maintenance Program

A document that describes or incorporates by reference the specific schedule maintenance tasks and their frequency of completion, the associated maintenance procedures, and related standard maintenance practices necessary to preserve the airworthiness of those aircraft to which it applies.

Aircraft Non-Airborne Equipment*

Equipment that interfaces with the aircraft, aircrew, or aircraft equipment but which is not usually airborne itself. Such equipment may include but is not limited to aircraft ground servicing equipment, ground test equipment, and some mission planning systems that interface with the aircraft or aircraft equipment.

Aircraft-Related Equipment*

Aircraft-related equipment can be aircraft airborne equipment or aircraft non-airborne equipment whose performance could directly affect airworthiness.

Aircraft Technical Log*

The flight logbook is the primary source of technical and operational data on each flight. It is a system for recording data that includes defects and malfunctions, block times, and fuel consumption during the aircraft's operation. It also records details of all maintenance carried out on an aircraft between scheduled base maintenance visits. Also known as the journey logbook, it records flight safety and maintenance information that the operating crew needs to know.

Airworthiness

The ability of an aircraft or other airborne equipment or system to operate in flight and on the ground without significant hazard to aircrew, ground crew, passengers (where relevant), or to other third parties.

Airworthiness Codes

Product airworthiness requirements are applicable to the design of a product that is approved by a competent airworthiness authority for the use with standardised aircraft categories (e.g. EASA CS, FAA FAR, STANAG, Def-STAN, etc).

Airworthiness Directive

A document issued or adopted by the Authority that mandates actions to be performed on an aircraft to restore an acceptable level of safety when evidence shows that the safety level of this aircraft may otherwise be compromised.

Airworthiness Limitation Item

This is an item arising from a system safety analysis that has been shown to have failure mode(s) associated with an unsafe condition.

Airworthiness Standards Representative*

A Head of Design Organisation with delegated authority from the Technical Airworthiness Regulator (TAR) to set and review airworthiness standards for the State Aircraft Operator (SAO).

Airworthy*

The status of an aircraft, engine, propeller, or part when it conforms to its approved design and is in condition for safe operation.

Approved Basic Training Course*

The Approved basic training course shall consist of knowledge training, knowledge examination, practical training, and a practical assessment.

Approved Maintenance Organisation*

An organisation sponsored by the Maintenance Authorising Office, certified (awarded a Maintenance Authority Certificate) by the TAR and authorised to conduct maintenance on state aircraft and aeronautical products.

Approved Maintenance Training Organisation*

An organisation that has been certified (awarded a Maintenance Training Authority Certificate (MTAC)) by the TAR and authorised by the relevant MAO to conduct training and/or examinations and issue certificates to students upon successful completion of the courses.

Approved Training Course*

This means a defined course of maintenance training designed to give a student a level of knowledge and some experience.

Approved Type Training Course*

Aircraft-type training can be divided into aircraft or helicopter-type ratings for state aircraft maintenance licensing for Category B1 aeromechanical and Category B2 avionics.

Artefact

An airworthiness-related document, either hard copy or electronic, can be used as evidence in making an airworthiness judgment.

Authorised Aircrew*

Nominated aircrew formally authorised by the Senior Maintenance Manager (SMM) or delegate to perform a particular maintenance task.

Authorised Technical Data*

Data that has been reviewed, approved, and released by the TAR or a DOA responsible for the technical equipment to which the technical data applies.

Authorised Tradesperson*

An individual operating as part of an AMO, authorised by the SMM or delegate as competent to carry out a specific scope of maintenance activities.

Authority

Authority means a National Military Airworthiness Authority responsible for the airworthiness of military aircraft.

Aviation Ground Support Equipment*

AGSE is the equipment used to support maintenance and aeronautical equipment directly.

Aviation Software*

Aviation Software is inclusive of the following:

- a. On-aircraft software, off-aircraft software with aircraft interface, and off-aircraft software with no interface but with airworthiness or safety implications.
- b. Technologies that resemble software development.

Base Maintenance

Maintenance tasks falling outside the criteria for line Maintenance.

Board of State Technical Airworthiness*

BoSTA is convened at least four times a year or as and when required. It is a platform for recommending technical airworthiness management to the TAR and issuing Aircraft Certificates, Organisation Approval (DOA, AMO, AMTO, CAMO), and Personnel Licensing. BoSTA ensures that each aircraft type remains airworthy to fly by verifying the technical airworthiness requirements are met. Any issues related to technical airworthiness requirements and procedures shall be reviewed and approved by the BoSTA committee.

Continuing Airworthiness Management Organisation*

The State Aircraft Operator / State Registered Aircraft Operator (SAO/SRAO) responsible for managing the Configuration Item (CI) of the whole aircraft is required to have CAMO approval from TAA-DGTA.

Centre of Expertise*

SAO DOA, in which the Senior Design Engineer (SDE) position is designated as an Airworthiness Standard Representative appointment.

Certification

Recognition that a product, part or, appliance, organisation or person complies with the applicable airworthiness requirement followed by the declaration of compliance.

Certification Basis*

The set of standards that define the criteria against which the design of aircraft or aircraft-related equipment, or changes to that design, are assessed to determine their airworthiness.

Certificate of Release to Service

This statement, signed by an appropriately authorised person on behalf of an approved organisation, asserts that maintenance has been properly carried out. The Certificate of Release to Service contains the basic details of the maintenance carried out, the date it was completed, and the identification details (may include an authorisation stamp) of the person issuing the certificate.

Certification Review Item

A document recording Deviations, Special Conditions, new Means of Compliance, or any other certification issue that requires clarification and interpretation or represents major technical or administrative issues.

Certifying Staff

Personnel responsible for the release of an aircraft or a component after production and/or maintenance.

Chief Invigilator*

This means a person who is appointed to lead the Invigilators.

Chief Executive Officer*

A person who is responsible for a civil company within which the Approved Organisation operates. The Chief Executive Officer may report to a board of directors and may appoint other managers, or he/she may be one of very few people in a small company. In relation to MSTAR M, the Chief Executive Officer is mentioned as he/she may be senior to the Accountable Manager.

Compliance Demonstration

Activities to demonstrate that the product, part, or appliance complies with the requirements in the Certification Basis.

Component

Any engine, propeller, part, or appliance.

Component Maintenance Manual

A formal document that details how off-aircraft maintenance instructions on the specified component shall be accomplished.

Configuration*

The functional and physical characteristics of existing or planned hardware, firmware, software or a combination thereof, as outlined in technical documentation (which includes specifications, standards, and drawings) and ultimately achieved in a product.

Configuration Control

A systematic process that ensures that changes to released configuration documentation are properly identified, documented, evaluated for impact, approved by an appropriate level of authority, incorporated, and verified.

Configuration Deviation List

A list, established by the Type Certificate Holder and approved by the National Military Airworthiness Authority, which identifies any external parts of an aircraft type that may be missing at the commencement of a flight and which contains, where necessary, any information on associated operating limitations and performance correction. Examples of Configuration Deviation List items will vary from aircraft type but typically may include external light covers, retractable landing lights, etc.

Configuration Item

Any component, module, subcomponent, equipment, technical manuals, software, or ground support equipment can be submitted to the configuration control process.

Configuration Management

A management process for establishing and maintaining consistency of a product's performance, functional, and physical attributes with its requirements, design, and operational information throughout its life.

Contingency Maintenance*

Those maintenance activities are performed during a declared contingency operation. CMaint involves revised servicing schedules, component lifting strategies (plans), and repair philosophies, including Battle Damage Repair, which will maximise operational availability while constraining and managing risk.

Continuing Airworthiness

All of the processes ensure that, at any time in its operating life, the aircraft complies with the airworthiness requirements in force and is in a condition for safe operation.

Continued (design) Airworthiness

All tasks to be carried out to verify that the conditions under which a Type Certificate or a Supplemental Type Certificate has been granted continue to be fulfilled at any time during its validity period.

Crew/Aircrew

Include Pilot(s) and other personnel on board the aircraft and/or the Unmanned Aerial Vehicle control station with responsibilities to ensure the safe conduct of the flight.

Critical Design Configuration Control Limitations

Critical Design Configuration Control Limitations identify the critical design features such as proper wire separation, proper installation of a panel gasket, minimum bonding jumper resistance level, etc., that must be maintained in the same manner throughout the life of the aircraft to comply with the (Military) Type Certificate and maintain airworthiness. The purpose of the Critical Design Configuration Control Limitations is to provide instruction to ensure these critical features are present throughout the life of the airplane and are inspected and verified when changes, repairs, or maintenance actions occur in the area.

Declaration of Compliance

A statement, signed by the Head of Design or by an authorised representative, to show compliance with all applicable type certification basis and, where applicable, environmental protection requirements. It declares that the aircraft is airworthy within the specific design limitations.

Deeper Maintenance*

This level of maintenance includes tasks that are more complex than operational maintenance and typically require specialised equipment and technical skills. It relies on access to extensive support equipment and workshop facilities for successful conduct.

Design*

The process or act of creating or changing a product and related technical process descriptions through applying scientific and engineering effort (verb) or the outcome of that process (noun). The design, therefore, encompasses not only the configuration of the product, but also the:

- a. Testing and evaluation are needed to validate that the design meets performance and safety requirements.
- b. Manufacturing processes (including production test requirements) that require special control to ensure the product meets requirements.
- c. In-service monitoring requirements, maintenance processes, and authorised repairs.
- d. Maintenance lives and intervals and fatigue life.
- e. Operating procedures and limits.

Design Acceptance*

The process whereby a design or design change (i.e. an output of the design process) involving aircraft or aircraft-related equipment is determined to be technically acceptable for SAO use based on a determination that the specified requirements and design standards are sufficient and applicable (to the SAO authorised configuration, maintenance policy and procedures, and operations) and that the quality of the design has been proven to the satisfaction of the responsible CAMO - Continuing Airworthiness Manager. Generally, design quality is assured through approval by a DOA against the approved design requirements and standards, plus an acceptable basis for design verification.

Design Acceptance Certification*

The final act of the Design Acceptance process is whereby a CAMO - Continuing Airworthiness Manager provides a certified record of the technical acceptability of a change to aircraft or aircraft-related equipment Type Design.

Delegated Airworthiness Representative*

An individual within the SAO organisations who has been delegated with the authority by TAR to undertake the responsibility and manage the initial airworthiness activities on behalf of TAR.

Design Approval Certification*

The act of approval of design output resulting from a process that formally examines and documents compliance of a design (or design change) with specified requirements and design standards.

Design Change*

A design change is a change in Type Design as defined in MSTAR 21A.91.

Design Engineer*

A professional engineer within a DOA with assigned authority from the SDE to perform specific engineering activities, including judging the significance of design changes and undertaking a design review of significant design changes.

Design Organisation Approval*

An organisation sponsored by the Maintenance Authorising Office and certified (awarded an Engineering Authority Certificate (EAC)) by the TAR to provide design or engineering management services to the SAO.

Design Organisation Exposition*

A controlled quality document containing the details of an organisation's Engineering Management System (EMS). The DOE describes all of the requirements that are satisfied by an organisation to become and remain a DOA.

Design Review*

The act whereby a design (or design change) is independently checked by an authorised person (other than the person who developed the design) to verify the validity of the assumptions, conditions, data, and methods used in design development and to verify that the design output meets the specified design input requirements.

Design Support Network*

A collective term describes a group of agencies that provide design support to a DOA.

Deviation*

A specific written authorisation to depart from an item's current approved configuration documentation. A deviation differs from an engineering change in that an approved engineering change requires revision of documentation defining the affected item. In contrast, a deviation does not revise the applicable document or drawing.

Engineering Authority*

The authority is assigned expressly to an organisation (DOA) or an individual within an organisation to undertake specific engineering activities.

Engineering Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as a DOA.

Engineering Change*

A change to the currently approved configuration documentation of a Configuration Item (CI) at any point in the life cycle of the CI.

Engineering Change Proposal*

An Engineering Change Proposal is defined as a proposed change to the current approved configuration of a CI and the supporting design documentation via which the change is described, justified, and submitted to the Configuration Control Board (CCB).

Examination*

A written or practical examination or combination of both is conducted at the end of every subject.

Examination Department*

Means a department in the training organisation for managing all examinations conducted.

Examination Manager*

A person who oversees the design of question papers, standards of examinations, and invigilation. Such person(s) may also be an Instructor and/or Assessor.

Examiner*

This means a person approved by DGTA or an approved training organisation will conduct and administer the examination.

Exemption*

The TAR grants written authorisation to either a DOA, AMO, CAMO, AMTO, or licensing to depart from a particular technical airworthiness regulation for a specified period.

Exposition

The document or documents that contain the material specifying the scope of work deemed to constitute approval and showing how the organisation complies with an MSTAR.

Extension

Inclusion of additional topics to Categories A, B1, and B2 Military Aircraft Maintenance Licences as detailed in MSTAR 66 Appendix I (which includes Modules 50-55) that are not part of the applicable modules for that category of Military Aircraft Maintenance Licence.

Flight Safety Critical Item*

Any part, assembly, or installation containing a critical characteristic whose failure, malfunction, or absence could cause a catastrophic failure or an uncommon engine shutdown, resulting in loss or severe damage to the aircraft or an unsafe condition.

Fit for Flight

Condition of a type design being certified as compliant with applicable airworthiness requirements as well as of an aircraft having been serviced and inspected as meeting the certified design and prepared for the intended flight.

Guidance Material

This is typically developed to provide additional explanation to assist the application of the requirement and/or explain the Acceptable Means of Compliance.

Human Factors

Principles apply to design, certification, production, training, operation, and maintenance and seek a safe interface between the human and other system components by properly considering human performance.

Human Performance

Human capabilities and limitations have an impact on the safety and efficiency of operations.

Implement*

To introduce MSTAR requirements into regulations by either adoption or compliance.

Instructions for Continuing Airworthiness

Instructions for Continuing Airworthiness detail the methods, inspections, processes, and procedures necessary to keep aircraft and/or products airworthy.

Instructor*

This means a person appointed to carry out instructional duties, compile examination questions, and undertake duties as invigilator and examiner.

Invigilator*

This means a person responsible for overseeing the conduct of the examinations.

Letter of Engineering Authority*

An attachment to an EAC that defines the scope of activity and any caveats and limitations under which the EAC is issued.

Letter of Maintenance Authority*

An attachment to the MAC defines the scope of activity and any caveats and limitations under which the MAC is issued.

Letter of Maintenance Training Authority*

An attachment to the MTAC defines the scope of activity and any caveats and limitations under which the MTAC is issued.

Life Limited Parts

Parts that, as a condition of their type certificate, may not exceed specified operating time, calendar time, number of operating cycles, or any other approved service life consumption units.

Limited Certification Authorisation

This is issued by the Approved Maintenance Organisation, by a procedure approved by the DGTA, for the flight crew, flight engineer, or crew chief to carry out specific tasks (usually away

from their home base or station). The authorisation permits the holder to issue certificates of release to service following specific tasks within the limits of the tasks specifically endorsed on the authorisation.

Line Maintenance

Carried out before flight to ensure that the aircraft is fit for the intended flight.

Maintenance

Any one or combination of overhaul, repair, inspection, replacement, modification, or defect/fault rectification of an aircraft or component, with the exception of pre-flight inspection.

Maintenance Authority*

The authority to undertake specific maintenance activities.

Maintenance Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as an AMO.

Maintenance Authorising Office*

The MAO is the Head of the SAO Aviation Engineering Organisation and is responsible for controlling the resources that enable the maintenance organisation to conduct maintenance.

Maintenance Document*

The orders, instructions, publications, and forms utilised by technical personnel when conducting maintenance include Defence Instructions, Standing Instructions, maintenance forms, Special Technical Instructions, specifications, and worksheets. Maintenance documents may be provided in paper-based and/or electronic formats.

Maintenance Inspector/Supervisor*

A person authorised to conduct compulsory maintenance inspections and/or supervise maintenance activities on nominated aircraft type and aeronautical product. The term applies to all personnel with direct maintenance task supervision or inspection responsibilities and, as such, may include, but is not limited to, trade supervisors, independent/final inspectors, and progressive/mandatory inspectors.

Maintenance Manager*

An authorised person responsible for managing maintenance activities on nominated aircraft type or aeronautical product within an AMO.

Maintenance Manual*

That part of the Instruction for Continuing Airworthiness. Those instructions are required to keep aircraft and aircraft-related equipment in an airworthy condition.

Maintenance Organisation Exposition*

A controlled quality document containing the details of an organisation's maintenance

management system, the MOE, describes all the requirements an organisation must satisfy to become and remain an AMO.

Maintenance Records*

This is an important document that demonstrates compliance with the airworthiness requirements has been met. It is completed and signed by an authorised person to certify that the maintenance work performed has been completed satisfactorily under approved data. Maintenance records information includes:

- a. The total time in service (hours, calendar time, and cycles, as appropriate) of the aeroplane and all life-limited components.
- b. The status of compliance with all mandatory continuing airworthiness information.
- c. Appropriate details of modifications and repairs.
- d. The time in service (hours, calendar time, and cycles, as appropriate) since the last overhaul of the aeroplane or its components subject to a mandatory overhaul life.
- e. The status of the aeroplane's compliance with the maintenance program.
- f. The detailed maintenance records show that all requirements for signing a maintenance release have been met.

Maintenance Training Authority Certificate*

The certificate awarded by the TAR to an organisation to operate as an AMTO.

Maintenance Training Management Plan*

A controlled quality document containing the details of an organisation's training management system. The MTMP describes all of the requirements that are satisfied by an organisation to become and remain an AMTO.

Maintenance Personnel*

Maintenance personnel, including aircrew and Non-Trade Personnel (NTP), are authorised to perform maintenance tasks.

Maintenance Support Network*

A collective term describes a group of agencies that provide maintenance support to an AMO.

Maintenance Test Flight*

It is a flight to ensure that an aircraft meets specifications concerning performance and handling characteristics and to establish, on prescribed occasions, that no standard deterioration has occurred in service.

Malaysia State Airworthiness Authority*

The Competent Authority consists of the State Airworthiness Authority and includes any officer empowered by him to perform all or any of the functions.

Malaysian State Type Certificate*

A certificate issued by the State Airworthiness Authority (SAA) for an aircraft type entered on the register of state aircraft. The MSTC signifies that the SAO has assessed the aircraft type (undergone type certification) as airworthy and supportable in its intended SAO role/s.

Master Minimum Equipment List*

The Master Minimum Equipment List is established for a particular aircraft type by the organisation responsible for the Type Design with the approval of the Malaysian State Airworthiness Authority. It identifies items that may individually be unserviceable at the commencement of a flight and may be associated with special operating conditions, limitations, or procedures.

Material*

Products used in the manufacture of components and in the maintenance and operation of aircraft, including fuels, oils, and lubricants.

Mean of Compliance

The techniques will be used to demonstrate the compliance of the type design against each certification requirement identified on the Certification basis. Examples include tests, analyses, and inspections.

Military Aircraft*

Aircraft (including Unmanned Aircraft Systems) in the military service of the Armed Forces include any aircraft commanded by a member of the Armed Forces in the course of his duties as such a member.

Minor Amendment*

Those changes to the Organisation's Exposition(s) do not affect the Malaysian State Airworthiness Regulation-related approval.

Minor Maintenance

Includes repetitive tasks and simple defect/fault rectification.

Mission Critical Item*

An item whose failure will seriously degrade an aircraft's ability to complete an assigned mission or lead to a mission being aborted.

Modification

A modification is a change of the design to the authorised configuration of the approved type design of a product, part, or appliance. Typical examples are component changes, equipment additions, or software changes and often involve a revision to the drawings and support documentation.

Non-Conformance*

The failure of a product, process or system to meet its regulatory, specification, drawing, or quality requirements.

Non-installed equipment

This means any instrument, equipment, mechanism, apparatus, appurtenance, software, or accessory carried on board an aircraft by the aircraft operator, which is not a part and which is used or intended to be used in operating or controlling an aircraft, support the occupants' survivability, or which could impact the safe operation of the aircraft.

Non-Technical Personnel*

A collective term covering personnel who have not completed formal SAO-recognised technical trade training.

Occurrence Reporting

The reporting to the relevant Authorities, to the Malaysian State Type Certificate Holder, or Restricted Type Certificate Holder, and/or the Supplemental Type Certificate Holder as appropriate, of any failure, malfunction, defect, or other occurrence which has resulted in or may result in an unsafe condition. The Type Certificate Holder can also make an Occurrence Report to the Authority.

Organisation*

This means an organisation is registered as a legal entity. Such an organisation may conduct business from multiple addresses and hold more than one approval.

Original Equipment Manufacturer*

The OEM is the manufacturer listed as the approved source of manufacture for components in the type certificate data sheet. The OEM owns and controls the source drawings, i.e., the component's design.

Operational Maintenance*

Tasks directly related to equipment preparation for immediate use, recovery, and minor repair of the equipment after use. OM tasks require a limited range of support equipment and may involve the limited use of workshop facilities.

Parts and Appliances

Parts and appliances are lower-level components for which a Technical Standard Order may exist.

Period of Operation*

It is the time from the captains' acceptance of an aircraft until it's released back to maintenance. For rotary wing aircraft, the period of operation includes when the aircraft is released to aircrew for ground running of engines with the rotor engaged.

Permit to Fly*

A permit issued under State Technical Airworthiness Regulations.

Practical Assessor*

This means a person approved by the training organisation to conduct the practical assessment.

Procedure*

A documented course of action will be followed to ensure a consistent outcome.

Product

An aircraft, an engine, or a propeller.

Quality Management System*

All activities of the overall management function determine the quality policy, objectives, and responsibilities and implement them through quality planning, quality controls, quality assurance, and quality improvement within the quality system.

Registration

Registration is a formal recording by the National Military Airworthiness Authority (or national equivalent) of individual aircraft on the military aircraft register and the assignment of a tail number.

Repair

A repair means the elimination of damage and/or restoration to an airworthy condition following initial release into service by the manufacturer of any product, part, or appliance.

Shall

Used to express mandatory requirements.

Should

Used to express a preferred, but not mandatory, method of accomplishment. An alternative method of accomplishment shall be agreed upon by the relevant authority.

Sign-Off*

A 'sign-off' is a statement issued by the 'authorised person' that indicates that the task or group of tasks has been correctly performed. A 'sign-off' relates to one step in the maintenance process and is, therefore, different from a certificate of release to service.

Special Conditions

Special conditions are included in the Certification Basis of the aircraft when the design features of a particular product or the experience in operation render any of the airworthiness code provisions inadequate or inappropriate to ensure conformity with essential requirements.

Specification*

A document defines a product's essential function and performance requirements and identifies the relevant standards for the acquisition process. In contrast to standards, specifications provide a more complete description of requirements and include the basis for establishing conformance (particularly during test and evaluation), hence validation for the acceptance of material.

Standard*

A description of a material, product, doctrine, or process meant for repeated applications by many users.

Standard Parts

A standard part is a part designated as such by the design approval holder responsible for the product, part or appliance in which it is intended to be used and manufactured in complete compliance with an established specification, which includes design, manufacturing, testing, and acceptance criteria, an uniform identification requirements. Examples of standard parts are aircraft general spares as defined by the design approval holder, such as nuts, bolts, washers, split pins, etc. All design, manufacturing, inspection data, and marking requirements necessary to demonstrate the conformity of the part will be in the public domain or established as part of recognised specifications.

State Airworthiness Authority*

The Chief of Air Force is appointed by the Minister of Defence under Section 7 to take accountability for the State's Airworthiness.

Statement of Operating Intent*

A document that sufficiently details the intended roles, missions, tasks, and in-service usage of the proposed Aeronautical Product Type Design permits an engineering analysis and assessment to determine and apply the appropriate Airworthiness Standards.

Statement of Operational Requirement*

A document or document defining the complete set of DAR requirements on a design agency to allow DAR acceptance of an aircraft or aircraft-related equipment design or design change. The SOR includes or references a *Specification*, the document defining the specific essential function and performance requirements for the product design or design change.

State Aircraft Maintenance Licence*

A categorised license which, dependent upon completion of all relevant approved training and examinations and the requisite levels of practical experience, permits an authorised individual to issue certificates of release to service or act as support staff for scheduled and/or unscheduled maintenance performed on an aircraft or aircraft systems as defined by MSTAR 66.

State Aircraft Operator*

The SAO are the military organisations or Government of Malaysia enforcement agencies that operate and maintain state-registered aircraft. SAOs that are currently under the ambit

of the SAA are as follows:

- a. Royal Malaysian Air Force (RMAF).
- b. Malaysian Army Air Wing.
- c. Royal Malaysian Navy (RMN) Air Wing.
- d. Malaysian Fire and Rescue Department (Air Wing).
- e. Malaysian Maritime Enforcement Agency (MMEA) Air Wing.
- f. Malaysian Armed Forces Headquarters.
- g. Malaysian Joint Forces Headquarters.

State Registered Aircraft*

State aircraft registered with MSAA through DGTA shall be known as state-registered aircraft.

Student*

This means a person who has been enrolled in the training organisation.

Supplemental Type Certificate*

A certificate issued by the Chief of Air Force for an aircraft that undergoes a major design change or role change that is beyond the type design defined in the original MSTC but is not substantial enough to require a complete re-investigation of the aircraft's compliance with the applicable airworthiness standards (i.e., does not require a new MSTC).

Support Staff*

Those staff holding MSTAR 66 SAML in category B1 and/or B2 with the appropriate extension and Military Aircraft Type Ratings are working in a base maintenance environment while not necessarily holding certification privileges.

Task Authorisation*

The legal authority allows a person to perform a specified maintenance task, recognising that the person has completed the prerequisite training relevant to the task and has demonstrated competency in performing the task. Task authorisations are recorded in the person's logbook (RMAF License Without Type Rating-RMAF LWTR) or equivalent document.

Technical Airworthiness*

A concept that defines the condition of an aircraft and supplies the basis for the judgment of its sustainability for flight in that it has been designed, constructed, and maintained to approved standards by competent and approved individuals who are acting as members of an approved organisation and whose work is certified as correct and accepted on behalf of the SAO.

Technical Airworthiness Regulator*

The person with delegated responsibility from the State Airworthiness Authority for technical airworthiness management of state aircraft and aircraft-related equipment.

Technical Data*

All recorded scientific, technical, and engineering nature relating to a weapon system. Includes specifications, standards, engineering drawings, instructions, reports, manuals, tabular data, test results, and software documentation used in the development, production, in-service operation, and logistics support (such as maintenance, provisioning, codification, testing, and modification), and disposal of a weapon system.

Technical Integrity*

Refers to the state of airworthiness of a platform, combat system, or ancillary item to fulfil its intended mission safely and effectively throughout its planned life. This requires evidence to demonstrate that the material has been designed, constructed, and maintained to approved standards by competent and formally approved personnel acting as members of an approved organisation whose work is certified as correct and accepted on behalf of the SAO.

Technical Record*

A set of documents describing the airworthiness of a particular aeronautical product must be maintained throughout its life cycle. The documents in a technical record generally fall into one of the following sub-categories:

- a. In-service product certification documentation, including Maintenance Release records, aircraft release records, Flight Authority records, and Certificates of Conformance; and
- b. Product status documentation, including operating records, maintenance records, configuration status data, airworthiness directive records, and product-related deviations/waivers.

Terms of Reference*

This means the scope of work that a person is responsible for and authorised to carry out on behalf of the approved maintenance training organisation.

Tool Control*

A systematic means of controlling tool usage to eliminate the risk of tools being inadvertently left in an aircraft or aircraft components/equipment.

Training Manager*

A person who leads and manages the training management team and is responsible for all training functions in the AMTO.

Training Support Manager*

A person shall be appointed to plan and administer training resources to fulfil the knowledge and practical training.

Training Support Network*

A collective term describes a group of agencies that provide training support to an AMTO.

Type Certification*

The process of:

- a. Prescribing and revising minimum standards governing the design of aircraft, engines, propellers, and other aircraft equipment as may be required for safety.
- b. Administering a program to determine compliance with those prescribed standards and maintain certification integrity with a higher level of oversight, specification, and compliance than the normal Design Acceptance process requires. Successful type certification activity leads to the issue of an MSTC.

Type Certification Basis

An agreed set of airworthiness requirements (including code, special condition, etc.) that a product must be compliant with in order to obtain a Type Certificate.

Type Certificate Holder

The organisation is responsible for the relevant Type Design and applying for, and then holding, the Type Certificate and accepting the rights and obligations for the product.

Type Design

The set of approved design information necessary to define the product type, as detailed in MSTAR 21.A.31.

Type Record*

A set of documents describes the state of airworthiness for a particular aeronautical product approved type design, which must be maintained throughout its life. It consists of a summary document that defines the (aircraft) type design at the time of acceptance by Malaysia by providing an index to the issue status of all type design data.

Unapproved Aeronautical Product*

Any part, component, or material that has not been manufactured and certified to conform with the technical data against which type certification is provided

MSTAR 66 - STATE AIRCRAFT MAINTENANCE LICENCE**PART 1****CHAPTER 1****TECHNICAL REQUIREMENT****66. A.1 Scope**

This section defines the State Aircraft Maintenance Licence (SAML) and establishes the requirements for application, issue and continuation of its validity.

66. A.3 SAML categories and subcategories

AMC

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(a) SAML include the following categories and, where applicable, subcategories and system ratings:

1. Category A - Aircraft Maintenance Mechanic
 - (i) Category A is an aeromechanical mechanic licence which is divided into the following subcategories:
 - a. A1 Aeroplanes Turbine.
 - b. A2 Aeroplanes Piston.
 - c. A3 Helicopters Turbine.
 - d. A4 Helicopters Piston.
2. Category B1 - Aircraft Maintenance Technician
 - (i) Category B1 is an aeromechanical technician licence which is divided into the following subcategories:
 - a. B1.1 Aeroplanes Turbine.
 - b. B1.2 Aeroplanes Piston.
 - c. B1.3 Helicopters Turbine.
 - d. B1.4 Helicopters Piston.
3. Category B2 - Aircraft Maintenance Technician
 - (i) Category B2 is an avionics technician licence that applies to all aircraft.
4. **Category B4 - Aircraft Maintenance Technician (MY)**
 - (i) **Category B4 is an armament technician licence that applies to all aircraft equipped with the military-specific system.**

5. Category C - Aircraft Maintenance Supervisor

(i) Category C is the maintenance supervisor licence which is divided into the following subcategories (MY):

- a. C1 Aeromechanical.
- b. C2 Avionic.
- c. C4 Armament.

6. Category LAE - Licence Aviation Engineer

(i) Category LAE combinations of Category B1, B2 and B4 is a certified aviation engineer responsible for state airworthiness program activities consisting of design, production, maintenance, and personnel.

66. A.5 Aircraft groups

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For ratings on state aircraft maintenance licence, state-registered aircraft shall be classified as complex motor-powered aircraft.

66. A.10 Application and Issue

AMC

(a) Under MSTAR 66, a person may apply to sit an examination or test for the SAML. The applicant to such examination shall be made with the MSTAR Form 19, MSTAR 66.

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(b) An application for a state aircraft maintenance licence or change to such licence shall be made with the MSTAR Form 19, MSTAR 66 in a manner established by the TAA and submitted thereto.

(c) An application for the change to a state aircraft maintenance licence shall be made to the DGTA as TAA that issued the state aircraft maintenance licence.

(d) In addition to the documents required in point 66.A.10 (a) and 66.A.10 (b), as appropriate, the applicant for additional basic categories or subcategories to state aircraft maintenance licence shall submit his/her current original state aircraft maintenance licence to the DGTA together with the MSTAR Form 19.

(e) Each application shall be supported by documentation to demonstrate compliance with the applicable theoretical knowledge, practical training and experience requirements at the time of application.

(f) For SAO, SAML validity is unlimited throughout his/her service, while for commercial, SAML validity is unlimited within the same AMO only. Both SAO and commercial SAML remain valid unless suspended or revoked by the DGTA.

(g) An application for approval or the change of an existing approval is subject to compliance with MSTAR 66.

(h) Applicants may submit an application for SAML Basic without type rating to DGTA after meeting any of the following requirements:

1. After performing OJT in an approved MSTAR 145 organisation where the applicant has already employed or intends to be employed, upon completion and passing of the relevant aircraft type training as defined in point 66.A.45(a); or
2. Having completed the practical maintenance experience requirements as defined in point 66.A.30 in approved MSTAR 145 or Part 145 organisation after completing the basic knowledge requirements as defined in point 66.A.25.

66. A.15 Eligibility

(a) An applicant for the grant of a SAML Category LAE, must:

1. At least 21 years of age; and
2. Degree holder in engineering; or
3. Holding SAML Category C; or
4. Passed in military aircraft engineer course; or
5. Passed in bridging basic training course for Category LAE; and
6. Subject to be employed as Aviation Engineer or Aircraft Maintenance Engineer; and
7. Sponsored by MSTAR 145 organisation or any approval organisation under MSTAR M, MSTAR 147 or MSTAR 21.

(b) An applicant for the grant other than SAML Category LAE, must:

1. At least 21 years of age; and
2. Academic degree or diploma holder in engineering; or
3. Holding Approved Basic Knowledge Course Certification relevant to the category of SAML; or
4. Holding relevant technical training certification considered as a skilled worker; and
5. Holding Basic Examination Standard Certification relevant to the category of SAML; and
6. Sponsored by MSTAR 145 organisation or any approved organisation under MSTAR M, MSTAR 147, or MSTAR 21, at where the applicant is already employed or its intention to employ.

66. A.20 Privileges

(a) The following privileges shall apply:

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1. SAML Category A, Aircraft Maintenance Mechanic permits the holder to act as an aeromechanical mechanic and sign off 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 MSTAR 145. The privileges shall be restricted to work that the licence holder has personally performed in the maintenance organisation that issued the certification authority.

2. SAML Category B1, Aircraft Maintenance Technician shall permit the holder to act as support staff of aeromechanical technician B1 and sign off for the following:

(i) Maintenance performed on aircraft structure, power plant and mechanical and electrical systems; and

(ii) Work on avionic systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.

This 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 ratings already endorsed in the B1 licence.

Category B1 includes the corresponding A subcategory.

3. SAML Category B2, Aircraft Maintenance Technician shall permit the holder:

(i) To act as support staff of avionics technician B2 and sign off for the following:

a. Maintenance performed on avionic and electrical systems; and

b. Electrical and avionics tasks within the power plant and mechanical systems, requiring only simple tests to prove their serviceability; and

(ii) To act as an aeromechanical mechanic and sign off 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 MSTAR 145. This 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 ratings already endorsed in the B2 licence.

The Category B2 licence does not include any A subcategory.

4. SAML Category B4, Aircraft Maintenance Technician shall permit the holder to sign off and act as support staff of armament technician B4 for the following:

- (i) Maintenance performed on military-specific systems; and
- (ii) Work on avionics systems requiring only simple tests to prove their serviceability and not requiring troubleshooting.
This 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 ratings already endorsed in the B4 licence.

5. SAML Category C, Aircraft Maintenance Supervisor shall permit the holder:

- (i) To exercising Maintenance Supervisor privileges, consist of:
 - a. Maintenance performs supervision, counter-signed and releases the maintenance tasks. This privilege shall be restricted to Category B type ratings that have been endorsed in the SAML.
 - b. Act as maintenance inspector to verify on all required maintenance are carried out accordingly and signing off the maintenance records/logbook/maintenance release.

This privilege does not issue a CRS. Therefore, they are not required to hold certification privileges.

- (ii) Act as certifying staff to issue the aircraft CRS. These certification privileges apply to the aircraft in its entirety.

6. SAML Category LAE, Licence Aviation Engineer shall permit the holder to exercise Aviation Engineer privileges consist of:

- (i) To perform aircraft inspections to determine airworthiness requirements.
- (ii) To conduct engineering maintenance.
- (iii) To conduct engineering design and modification.
- (iv) To conduct an airworthiness review.
- (v) To conduct a maintenance program review.
- (vi) To conduct an assessment on faults of aircraft.
- (vii) To act as Certifying Staff to certify on all required maintenance records are signed off before approval for issuing the aircraft CRS.
- (viii) Participating in aircraft accident investigations and providing the technical report in the technical management of sections under their control.

(ix) Permits to exercising Category B and Category C SAML privileges.

7. Any category of state aircraft maintenance licence can have extensions referred to in point 66. A.52 to address one or more of the military-specific topics (Modules 50 - 55). These shall permit the holder to act as certifying staff, act as maintenance supervisor, and act as support staff appropriate to the basic knowledge gained from all modules and as approved by the DGTA for maintenance performed on armament, rescue and escape systems and other military-specific systems.

(b) The holder of a state aircraft maintenance licence may not exercise its privileges unless:

1. In compliance with the applicable requirements of MSTAR M and MSTAR 145.

2. In the preceding 2 years period, he/she has either had 6 months of maintenance experience under the privileges granted by the state aircraft maintenance licence or met the provision for the issue of the appropriate privileges.

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3. He/she has the adequate competence to certify maintenance on the corresponding aircraft.

AMC

4. He/she can 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.

GM

5. He/she must hold approval certification authorisation with the appropriate privileges issued by the approval organisation MSTAR 145.

AMC

6. In compliance with requirement 66.A.45 (a), the holders of a state aircraft maintenance licence have endorsed their licence with the relevant aircraft type ratings.

AMC

(c) SAML holders may not exercise their privileges if they know or suspect that their physical or mental condition renders them unfit to exercise those privileges.

66. A.25 Basic knowledge requirements

AMC

(a) An applicant for state aircraft maintenance licence, or for the addition of a category or subcategory to such a licence, shall demonstrate by examination a level of knowledge of the appropriate subject modules defines in Appendix I, MSTAR 66. The examination shall comply with the standard set out in Appendix II, MSTAR 66 and shall be conducted either by a training organisation appropriately approved under MSTAR 147 or by the DGTA.

GM

(b) An applicant being a person qualified by holding an academic degree or diploma in engineering discipline from a recognised university or other higher education institute the need for any examination will depend upon the course taken compared standard set out in Appendix I, MSTAR 66.

(c) The training courses and examinations shall have been passed within 10 years before the application for a state aircraft maintenance licence or the addition of a category or subcategory to such a licence. Should this not be the case, examination credits may be obtained under point (d).

(d) The applicant may apply to the DGTA for full or partial examination credits for the basic knowledge requirements for:

GM

1. Basic knowledge examinations that do not meet the requirement laid down in point (c);
2. Any other technical qualification considered by the DGTA to be equivalent to the knowledge standard of MSTAR 66.

(e) Credits expire 10 years after they were granted to the applicant by the DGTA. The applicant may apply for new credits after expiration.

(f) Credit for examinations can only be granted by the DGTA. No credit can be granted unless there is a statement of compliance against each module and sub-module, stating where, in the technical qualification, the equivalent standard can be found.

(g) Bridging training programmes for the basic knowledge requirement can only be granted by the DGTA to applicants under point (b). However, they must demonstrate through examination the level of knowledge of Module 60 defined in Appendix II, MSTAR 66:

1. Category LAE. Only for SAO aircraft engineering officers who have academic qualifications.
2. Category B1.
3. Category B2.
4. Category B4.

(h) Modules 50-55 shall be used to provide extensions to a SAML for military-specific systems. Module 53 includes sub-modules that can also be used to provide extensions to a SAML for military-specific systems.

66. A.30 Basic experience requirements

GM

(a) An applicant for a state aircraft maintenance licence shall have acquired:

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1. For Category A, subcategories B4, B1.2 and B1.4:

- (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 relevant by the DGTA as a skilled worker, in a technical trade; or
 - (iii) 1 year of practical maintenance experience on operating aircraft and completion of a basic training course approved under MSTAR 147.
2. For Category B2 and subcategories B1.1 and B1.3:
- (i) 5 years of practical maintenance experience on operating aircraft if the applicant has no previous relevant technical training; or
 - (ii) 3 years of practical maintenance experience on operating aircraft and completion of training considered relevant by the DGTA as a skilled worker, in a technical trade; or
 - (iii) 2 years of practical maintenance experience on operating aircraft and completion of a basic training course approved under MSTAR 147.
3. For Category B obtained through the academic route:
- (i) Holding an academic degree in engineering discipline from a university or other higher educational institution recognised by the DGTA, 2 years of experience working in aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance, 1 year of practical maintenance experience on operating state aircraft, and completion of type training course approved under MSTAR 147; or
 - (ii) Holding an academic degree in engineering discipline from a university or other higher educational institution recognised by the DGTA, 1 year of practical maintenance experience on operating state aircraft with completion of a bridging basic training course and type training course approved under MSTAR 147; or
 - (iii) Holding an academic diploma in engineering discipline from a university or other higher educational institution recognised by the DGTA, 2 years of experience exercising Category A privileges working in aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance, 1 year of practical maintenance experience on operating state aircraft, and completion of type training course approved under MSTAR 147; or
 - (iv) Holding an academic diploma in engineering discipline from a university or other higher educational institution recognised by the DGTA, 1 year of practical maintenance experience on operating state aircraft with completion of a bridging basic training course and type training course approved under MSTAR 147.

4. For Category C:
- (i) 3 years of experience exercising Category B1.1, B1.3, B2 or B4 privileges as support staff according to point 145.A.35; or
 - (ii) 5 years of experience exercising Category B1.2 or B1.4 privileges as support staff according to point 145.A.35.
5. For Category C obtained through the academic route: 2 years of experience exercising Category B privileges as support staff according to point 145.A.35.
6. For Category LAE:
- (i) An applicant obtained an academic degree in engineering discipline, from a university or other higher educational institution recognised by the DGTA, and 5 years of experience working in a state aircraft maintenance environment in the selection of tasks directly related to the management of aircraft configuration items including 2 years maintenance experience exercising as support staff according to point 145.A.35; or
 - (ii) Aircraft engineering officer of the State Aircraft Operator (SAO) who has an academic qualification, and 6 months of practical maintenance experience on technical management of sections under their control with completion of a bridging basic training course for Category LAE approved under MSTAR 147.
7. For Category LAE obtained through the Category C route: 4 years of experience exercising Category C privileges on aircraft as Maintenance Supervisor, including 1-year maintenance experience as Certifying Staff.
- (b) An applicant for an extension to a state aircraft maintenance licence shall have a minimum state aircraft maintenance experience requirement appropriate to the additional category or subcategory of licence applied for as defined in Appendix IV, MSTAR 66.
- (c) For categories A, B1, B2 and B4, the experience shall be practical and involve a representative cross-section of maintenance tasks on aircraft.

AMC

- (d) Except in the case of a point (a) (7), At least 1 year of the required experience shall be recent maintenance experience on aircraft of the category/subcategory for which the initial aircraft maintenance licence is sought. For subsequent category/subcategory additions to an existing aircraft maintenance licence, the additional recent maintenance experience required may be less than 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.

AMC

(e) Notwithstanding point (a), aircraft maintenance experience gained outside a state aircraft maintenance environment shall be accepted when such maintenance is equivalent to that required by this MSTAR 66 as established by the DGTA. Additional recent practical maintenance experience on the maintenance of state aircraft maintenance shall, however, be required to ensure an adequate understanding of the state aircraft maintenance environment.

AMC

(f) Experience shall have been acquired within the 10 years preceding the application for a state aircraft maintenance licence or the addition of a category or subcategory to such a licence.

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

GM

(a) The SAML shall be issued for an unlimited duration. It shall remain valid subject to the holder remaining in compliance with the requirements in this MSTAR 66 and the SAML not being suspended, surrendered or revoked.

(b) The holder of state aircraft maintenance licence shall complete the relevant parts of MSTAR Form 19 and submit it with the holder's copy of the licence to the DGTA that issued the original state aircraft maintenance licence unless the holder works in a maintenance organisation approved under MSTAR 145 that has a procedure in its organisation exposition (hereinafter referred to as the "Maintenance Management Plan (MMP)") whereby such organisation may submit the necessary documentation on behalf of the state aircraft maintenance licence holder.

(c) Any certification privilege based upon state aircraft maintenance licence becomes invalid as soon as the state aircraft maintenance licence is invalid.

(d) The state aircraft maintenance licence is only valid:

1. When issued and/or changed by the DGTA, and
2. When the holder has signed the document.
3. When holder still in service of SAO.
4. When holder remain holding valid Certificate of Authorised Personnel issued by AMO where he/she is employed (Commercial).

(e) The SAML holder shall inform the DGTA of any change in the particulars which will affect the information contained in the licence.

66. A.45 Endorsement with aircraft ratings

GM

(a) To be entitled to exercise certification privileges on a specific aircraft type, the holder of a state aircraft maintenance licence needs to have their licence endorsed with the relevant aircraft ratings:

1. For Category LAE or C, the relevant appropriate aircraft type rating.
2. For Category B1 or B2, the relevant appropriate aircraft type rating.
3. For Category B4, the relevant rating is 'military-specific system'.

4. For Category A, no rating is required, subject to compliance with task training and the requirements of point 145.A.35 of MSTAR 145.

(b) The endorsement of aircraft type ratings requires the satisfactory completion of the relevant category B1, B2, C or LAE aircraft type training defined in Appendix III, MSTAR 66;

AMC

(c) For other than Category C and LAE licences, in addition to the requirements of point (b), the endorsement of the first aircraft type rating within a given category/subcategory requires satisfactory completion of the corresponding on-the-job training. This on-the-job training shall comply with Appendix III, MSTAR 66, where it shall be directly approved by the DGTA.

AMC

(d) For the Category B4 licence:

The endorsement of the 'military-specific system' rating requires satisfactory completion of aircraft armament type rating and demonstration of 1-year practical maintenance experience, which shall include a cross-section of the representative maintenance activities relevant to the licence category.

(e) In the case of a Category A, a rating is not required, for applicants holding a diploma without attending a bridging training programme can apply examination credit to DGTA for basic knowledge requirements, subject to Level 1 and Level 2 course type training compliance. Applicant must demonstrate 1 year of recent practical maintenance experience on the aircraft for which an initial aircraft maintenance licence is sought.

AMC

(f) In the case of a Category C rating, for a person qualified through the academic degree/diploma route as referred to in point (a) (5) of point 66.A.30, the first relevant aircraft type-examination shall be either Category B1, B2 or B4.

(g) Any Category C applicants whether awarded examination credit under point 66.A.25(d) or a bridging training programme for the academic diploma pathway under point 66.A.25(g) must meet the requirements in point 66.A.25(a) or holding an academic degree in engineering discipline to be eligible for the certification privileges, unless the applicant is a qualified government employee for a supervisory career authorised by the SAO.

(h) For Category LAE rating, which a person qualified through the academic degree route as referred to in point (a) (6) (a) of point 66.A.30, the relevant aircraft type-examination shall be combination of Category B1 and Category B2 level.

(i) Any Category LAE obtained through the Category C route as referred to in point (a) (7) of point 66.A.30, must hold an academic degree in an engineering discipline to be eligible for the engineering design privileges, unless the applicant is a qualified government employee for an aviation engineer career authorised by the SAO.

(j) The limitations introduced in point 66.A.50 will apply to MSTAR 66 SAMLs issued under points 66.A.25 and 66.A.70 when the modules required for basic knowledge and aircraft type training do not meet the eligibility requirements for certification privileges.

66. A.50 Limitations

(a) Limitations introduced on a state aircraft maintenance licence are exclusions from the certification privileges and, in the case of limitations referred to in point 66.A.45 (j), they affect the aircraft in its entirety.

AMC

(b) For limitations referred to in point 66.A.45 (j), limitations shall be removed upon:

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1. Satisfactory hold an academic degree in aeronautics, aviation, mechanical, or electronics; or

2. Satisfactory completion of the examination for the module/submodule subjects specified in Appendix VII, MSTAR 66; and

3. Demonstration of appropriate 6 months of practical maintenance experience.

(c) Removal of limitation on type ratings of SAML is subject to the following condition:

1. The applicant is required to provide evidence of theoretical and practical training related to the aircraft type.

2. The applicant is required to submit documented evidence of appropriate 2 weeks of on job training related to the aircraft type; and

3. Limitation on type ratings shall not be removed unless such limitation has been removed from the basic category.

(d) Applicants shall submit appropriate application forms supported by the documentation to demonstrate compliance with the theoretical knowledge, practical training and experiences as defined in Appendix V, MSTAR 66.

(e) Limitations on SAML may be removed when the licence holder successfully applies to the DGTA for their removal after fulfilling the necessary MSTAR 66 requirements.

66. A.52 Extensions

AMC

(a) Extensions introduced on a SAML may allow additional certification privileges.

(b) The extensions introduced at point 66. A.25 (h) may allow the privilege of a military-specific system for state aircraft equipped with a weapons system or equivalent.

66. A.55 Evidence of qualification

(a) 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.

(b) The Certifying Staff qualified under this MSTAR 66 may be issued with SAML respectively Category LAE or Category C by the DGTA as evidence of one of the qualifications necessary for the grant of approval organisation MSTAR 145 approval Certification Authorisation.

66. A.70 Conversion provisions

AMC

GM

(a) The holder of an Internal Maintenance Authority (IMA) qualification or a person undergoing an IMA qualification process valid under PU 2103 2nd Edition Technical Airworthiness Management Manual (TAMM), before the date of entry into force of MSTAR 66 may continue to be qualified and shall follow the procedures for conversion into SAML established by the TAA.

(b) Where necessary, the state aircraft maintenance licence shall contain limitations defined in point 66.A.50 to reflect the differences between:

1. The scope of the Internal Maintenance Authority (IMA) qualification valid in the MSAA before the entry into force of the applicable licence category or subcategory provided for in this MSTAR 66.

2. The basic knowledge requirements and the basic examination standards laid down in Appendices I and II, MSTAR 66.

(c) By derogation from point 66. A.70 (c), the state aircraft maintenance licence shall contain limitations stipulated in point 66.A.50 to ensure that the certifying staff privileges valid in the MSAA before the entry into force of the applicable MSTAR 66 licence category/subcategory and those of the converted Part 66 aircraft maintenance licence remain the same.

GM

(d) An aircraft maintenance licence issued by a foreign or civil Licensing Authority before the effective date of this MSTAR 66 shall be replaced with a MSTAR 66 state aircraft maintenance licence upon application without further examination and subject to limitations.

GM

(e) Persons taking examinations under foreign or civil Part 66 requirements and persons qualified under Basic and Advance Training under military aviation or civil apprenticeships before the effective date of this MSTAR 66 may continue to be qualified under MSTAR 66 requirements but required to pass MSTAR 66 Module M10.

(f) Conversion of Category B4 to Category B1 or Category B2 is subject to limitation when the modules required for basic knowledge do not meet the eligibility requirements for certification privileges.

66.A.80 Revocation, suspension or limitation (MY)

AMC

(a) The DGTA may, on reasonable grounds after due enquiry, revoke, suspend or limit the SAML or direct the approval organisation MSTAR 145 to revoke, suspend or limit the approval organisation MSTAR 145 approval certification authorisation if the DGTA is not satisfied that the holder of the licence and authorisation is a fit and proper person to hold such licence and authorisation.

(b) In the case where the DGTA has determined that the safe operation of the aircraft is adversely affected, the DGTA may provisionally suspend the SAML without prior notice.

(c) The holder of a SAML that has been suspended or revoked shall forthwith forward the licence to the DGTA.

MSTAR 66 - STATE AIRCRAFT MAINTENANCE LICENCE**PART 2****CHAPTER 1****ACCEPTABLE MEANS COMPLIANCE (AMC) / GUIDANCE MATERIAL (GM)****AMC 66. A.3 SAML categories and subcategories (MY)**

1. The following state aircraft maintenance licence category designated to applicable category and system rating:

- (a) Category A: Aeromechanical Mechanic.
- (b) Category B1: Aeromechanical Technician.
- (c) Category B2: Avionic Technician.
- (d) Category B4: Armament Technician
- (e) Category C: Maintenance Supervisor.
- (f) Category LAE: Aviation Engineer.

2. Individual state aircraft maintenance licence holders need not be restricted to a single category. Provided that each qualification requirement is satisfied, any combination of categories may be granted.

GM 66. A.3 Licence categories

1. There is no specific order in which the system ratings should be applied for. Any combination of system ratings is possible.

2. The description of systems covered by the different system ratings are provided in Appendix I to MSTAR 66 - Basic Knowledge Requirements under paragraph 2. 'Modularisation', subparagraph related to 'Categories A, B1, B2, B4 and Bridging Program'.

GM 66. A.5 Aircraft groups (MY)

1. The following table summarises the applicability of categories of MSTAR 66 licences versus the categories of aircraft classified as complex motor-powered aircraft:

| Group | Category | A & B1 | B2 | B4 | C | LAE |
|--------------|---|-------------------|-----------|-----------|----------|------------|
| 1 | (a) Multi-engine aeroplanes (b) Turbine aeroplanes (c) Multi-engine helicopters (d) Turbine helicopter (e) Aircraft with fly-by-wire systems (f) Any other aircraft when defined by the DGTA | X | X | | X | X |
| 2 | (a) Single turboprop aeroplanes | X | X | | X | X |

| Group | Category | A & B1 | B2 | B4 | C | LAE |
|-------|---|--------|----|----|---|-----|
| | (b) Single turbine helicopters (c) Single piston helicopters (d) Piston engine aeroplanes | | | | | |
| 3 | (a) Weapon Systems on any of the above category aircraft | | | X | X | X |

AMC 66. A.10 Application

- Maintenance experience should be written up in a manner that the reader has a reasonable understanding of where, when and what maintenance constitutes the experience. A task-by-task account is not necessary but at the same time a bland statement 'X years maintenance experience completed' is not acceptable. A logbook of maintenance experience is desirable and some competent authorities may require such logbooks to be kept. It is acceptable to cross-refer in the MSTAR Form 19B to other documents containing information on maintenance.
- Applicants claiming the maximum reduction in 66.A.30(a) total experience based upon having completed 147.A.200 approved basic training should include the MSTAR 147 certificate of recognition for approved basic training.
- Applicants claiming reduction in 66.A.30(a) total experience based upon having completed technical training in an organisation or institute recognised by the DGTA as a competent organisation or institute, should include the relevant certificate of successful completion of training.

GM 66.A.10 (a) Application (MY)

When an application is made for an aircraft maintenance licence, the applicant should specify on the MSTAR Form 19B:

- The category of licence the applicant applies for; and
- The aircraft rating.

AMC 66.A.20(a) Privileges (MY)**1. Category A**

(a) Performed minor scheduled line maintenance check within limitation on following groups of tasks:

(i) Visual inspections that will detect obvious unsatisfactory conditions/discrepancies but do not require extensive in-depth inspection. The scope of these inspections may include internal structure, systems and power plant items which are visible through quick opening access panels/doors;

(ii) Tests that determine the serviceability of aircraft systems using switches, Built-In-Test-Equipment (BITE) or external test equipment not involving special training. The results of such a test must be a clear go-no go indication or parameter, which does not involve interpretations of the test results or is dependent on other test results; and

- (iii) Routine fluid servicing.
- (b) Perform limited tasks in line maintenance after completing appropriate task training and specifically endorsed on the certification authority.
- (c) Tasks permitted for the sign off maintenance records as part of minor scheduled line maintenance check are contained in the following list:
 - (i) Visual inspection and replacement of wheel assemblies.
 - (ii) Visual inspection and replacement of wheel brake units.
 - (iii) Visual inspection and replacement of emergency equipment but excluding the replacement of emergency slides.
 - (iv) Visual inspection, operation checks and replacement of ovens, boilers, chillers, beverage makers and other galley inserts.
 - (v) Operation checks and replacement of internal and external lights, filaments and flash tubes.
 - (vi) Replacement of windscreen wiper blades.
 - (vii) Visual inspection, operation checks and replacement of passenger and cabin crew seats, seat belts and other seat components.
 - (viii) Operation of cowlings and re-fitment of quick access inspection panels.
 - (ix) Visual inspection, operation checks and replacement of toilet system components but excluding gate valves.
 - (x) Visual inspection, simple repairs and replacement of internal compartment doors but excluding doors forming part of a pressure structure and flight compartment doors.
 - (xi) Visual inspection, operation checks, simple repairs and replacement of overhead storage compartment doors and cabin furnishing items.
 - (xii) Visual inspection and replacement of static wicks.
 - (xiii) Visual inspection, operation checks and replacement of inflight entertainment system components and media content, but excluding public address.
 - (xiv) Lubrication and replenishment of all system fluids and gases.
 - (xv) Cleaning.
 - (xvi) Recording of part numbers, serial numbers and dates of parts and components.
 - (xvii) Recording of measurements from direct reading indicators.

(xviii) Replacement of placards for internal compartments but excluding placards in the flight deck.

(xix) Removal, installation and visual inspection of non-structural panels, both internal and external, which do not form part of the pressure structure.

(d) Permitted to perform and sign off work on servicing and ground handling tasks upon completion and passing of the types training Course level 1 and Course level 2 as defined in Appendix III, MSTAR 66.

(e) Not permitted to sign off work on systems that require duplicate inspection or independent inspection, as defined in MSTAR 145.

(f) Not permitted to perform defect diagnosis, critical maintenance task or supervise individuals and certify for their work.

2. **Category B**

(a) The Category B1 and Category B4 licence permits to sign off maintenance records of work involving avionic systems provided the serviceability of the system can be established by a simple self-test facility, other onboard test systems/equipment or by simple ramp test equipment. Defect rectification involving test equipment that requires an element of decision making in its application. Other than a simple go/no-go decision he or she cannot be certified.

(b) The Category B2 and Category B4 licence holder will need to be qualified as Category A to carry out simple mechanical tasks and be able to sign off maintenance records if he or she was needed to exercise the privileges of Category A licence holder.

(c) A Category B1 and Category B2 licence must apply for a military-specific system extension to be eligible to perform armament tasks and may sign off maintenance records if he or she is required to exercise Category B4 licence privileges.

3. **Category C**

(a) The Category C licence permits the holder to act as maintenance inspector to release scheduled maintenance records by the issue of a single certificate of maintenance release with cross-reference to the work package after the completion of all such maintenance. The basis for this single certificate of maintenance release is that the maintenance has been carried out and signed off by Category B support staff for the maintenance within the limits of tasks specifically endorsed on the certification authorisation referred to in point 145.A.35 of MSTAR 145, and any maintenance done by the technician under supervision has been countersigned by the respective maintenance supervisor.

(b) To act as maintenance inspector to verify on all required maintenance are carried out accordingly by signing off the certificates of release to service. The principal function of the Category C maintenance inspector is to ensure that all required maintenance has been called up and signed off by the Category B support staff, and Category C supervisor before Certifying Staff certify and issue the certificate of release to service (CRS).

4. **Category Licence Aviation Engineer (LAE)**

(a) The Category LAE licence permits exercising aviation engineering management of sections under their control to ensure that all maintenance, supervision and inspection of work performed by, or on behalf of, the approval organisation is conducted by competent under approved standards and authorised individuals. The principal function of Category LAE is to act as Certifying Staff to ensure that all technical airworthiness requirements have been complied with and is responsible for;

(i) Ensuring that the maintenance release contains a certification that includes the details of the work, the date and identity of the organization and the signatory; and

(ii) Sign and issue a certificate of release to service (CRS) to certify and confirm that the maintenance work performed has been completed satisfactorily under the procedures described in the maintenance organization's procedure manual and the aircraft is considered ready for release to service.

GM 66.A.20(a) Privileges

1. The following definitions apply:

(a) **Electrical system** means the aircraft electrical power supply source, plus the distribution system to the different components contained in the aircraft and relevant connectors. Lighting systems 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:

(i) Continuity, insulation and bonding techniques and testing.

(ii) Crimping and testing of crimped joints.

(iii) Connector pin removal and insertion.

(iv) Wiring protection techniques.

(b) **Avionics system** means an aircraft system that transfers, processes, displays or stores analogue or digital data using data lines, data buses, coaxial cables, wireless or other data transmission medium, and includes the system's components and connectors. Examples of avionics systems include the following:

(i) Auto flight.

- (ii) Communication, Radar and Navigation.
- (iii) Instruments (see NOTE below).
- (iv) In-Flight Entertainment Systems.
- (v) Integrated Modular Avionics (IMA).
- (vi) On-Board Maintenance Systems.
- (vii) Information Systems.
- (viii) Fly by Wire Systems (related to ATA 27 'Flight Controls').
- (ix) Fibre Optic Control Systems.

NOTE: Instruments are formally included within the privileges of the B2 with system rating instruments. However, maintenance on electromechanical and pitot-static components may also be released by a B1 licence holder.

(c) **Armament, rescue and escape systems and other military-specific systems** means systems associated with the carriage, targeting and release of weapons; reconnaissance and surveillance equipment; self-protection, electronic warfare and aircrew escape systems. Examples of armament, rescue and escape systems and other military-specific systems include the following:

- (i) Weapons;
- (ii) Weapons release/launch mechanisms;
- (iii) Ejection seats.

(d) **Simple test** means a test described in approved maintenance data and meeting all the following criteria:

- (i) The serviceability of the system can be verified using aircraft controls, switches, Built-in Test Equipment (BITE), Central Maintenance Computer (CMC) or external test equipment not involving special training.
- (ii) The outcome of the test is a unique go - no go indication or parameter, which can be a single value or a value within an interval tolerance. No interpretation of the test result or interdependence of different values is allowed.
- (iii) The test does not involve more than 10 actions as described in the approved maintenance data (not including those required to configure the aircraft before the test, i.e., 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.

(e) **Troubleshooting** means the procedures and actions necessary, using approved maintenance data, to identify the root cause of a defect or malfunction. It may include the use of BITE or external test equipment.

(f) **Line maintenance** means any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. It may include:

(i) Troubleshooting.

(ii) Defect rectification.

(iii) Component replacement with the use of external test equipment, if required. The component replacement may include components such as engines and propellers.

(iv) Scheduled maintenance and/or checks including visual inspections that will detect obvious unsatisfactory conditions/ discrepancies but do not require extensive in-depth inspection. It may also include internal structure, systems and powerplant items which are visible through quick opening access panels/doors.

(v) Minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.

(vi) For temporary or occasional cases (airworthiness directives, hereinafter AD; service bulletins, hereinafter SB) the senior maintenance manager may accept base maintenance tasks to be performed by a line maintenance organisation provided all requirements are fulfilled. The member state will prescribe the conditions under which these tasks may be performed.

(g) **Base Maintenance** means any task falling outside the criteria that are given above for *Line Maintenance*.

NOTE:

Aircraft maintained under 'progressive' type programmes need to be individually assessed. In principle, the decision to allow some 'progressive' checks to be carried out is determined by the assessment that all tasks within the check can be carried out safely to the required standards at the designated line maintenance station.

2. The Category C licence permitted to acts as maintenance inspector to verify all required maintenance tasks have been duly closed and issue a single maintenance release certificate upon completion of all such scheduled maintenance. The principal function of the maintenance inspector is to ensure that all required maintenance has been called up and signed off by the Category B1, B2 and B4 support staff, and maintenance done by the technician under supervision has been countersigned by the respective maintenance supervisor, as appropriate, prior to the issuance of a single certificate of base maintenance release.

3. The certifying staff permits the certification of scheduled base maintenance by issuing a single certificate of release to service for the complete aircraft after certifying that all required maintenance tasks have been properly completed and a single maintenance release certificate has been issued.

AMC 66.A.20 (b) (2) Privileges

1. The 6 months of maintenance experience in the preceding 2 years period should be understood as consisting of two elements, duration and nature of the experience. The minimum to meet the requirements for these elements may vary depending on the size and complexity of the aircraft and type of operation and maintenance.

(a) Duration:

Within an approved maintenance organisation:

- (i) 6 months of continuous employment within the same organisation; or
- (ii) 6 months split up into different blocks, employed within the same or in different organisations.

The 6 months maintenance experience shall demonstrate at least a minimum of 100 days or 300 hours of maintenance experience under the privileges.

(b) Nature of the experience:

Depending on the category of the aircraft maintenance licence, the following activities are considered relevant for maintenance experience:

- (i) Servicing;
- (ii) Inspection;
- (iii) Operational and functional testing;
- (iv) Trouble-shooting;
- (v) Repairing;
- (vi) Modifying;
- (vii) Changing component;
- (viii) Supervising these activities;
- (ix) Releasing aircraft to service.

For Category A licence holders, the experience should include exercising the privileges by performing tasks related to the authorisation on at least one aircraft type for each licence subcategory. This means

tasks as mentioned in AMC 145.A.30(g), including servicing, component changes and simple defect rectifications.

For Categories B1, B2 and B4, for every aircraft included in the authorisation the experience should be on that particular aircraft or a similar aircraft within the same licence (sub)category. Two aircraft can be considered to be similar when they have similar technology, construction and comparable systems, which means equally equipped with the following (as applicable to the licence category):

- (i) Propulsion systems (piston, turboprop, turbofan, turboshaft, jet-engine or push propellers); and
- (ii) Flight control systems (only mechanical controls, hydro-mechanically powered controls or electro-mechanically powered controls); and
- (iii) Avionic systems (analogue systems or digital systems); and
- (iv) Structure (manufactured of metal, composite or wood).

For Category C, the experience should cover at least one of the aircraft types endorsed on the licence.

For a combination of categories, the experience should include some activities of the nature shown in paragraph 1(b) in each category.

A maximum of 20% of the experience duration required may be replaced by the following relevant activities on an aircraft type of similar technology, construction and with comparable systems:

- (i) Aircraft maintenance related training as an instructor/assessor or as a student;
- (ii) Maintenance technical support/engineering;
- (iii) Maintenance management/planning.

The experience should be documented in an individual logbook or schedule of experience (SOE) or in any other recording system (which may be an automated one) containing the following data:

- (i) Date;
- (ii) Aircraft type;
- (iii) Aircraft identification i.e., registration;
- (iv) ATA chapter (optional);
- (v) An operation performed e.g., 100 FH check, MLG wheel change, engine oil check and complement, SB embodiment, troubleshooting, structural repair, STC embodiment, etc.;

- (vi) In the particular case of MSTAR-145 organisations, the type of maintenance i.e., base, line;
- (vii) Type of activity i.e., perform, supervise, release;
- (viii) Subcategory used (A1, A2, A3, A4, B1.1, B1.2, B1.3, B1.4, B2, B4, or C);
- (ix) Duration in days or partial days.

GM 66.A.20 (b) (2) Privileges

The sentence *'met the provision for the issue of the appropriate privileges'* included in 66.A.20 (b) (2) means that during the previous 2 years the person has met all the requirements for the endorsement of the corresponding aircraft rating (for example, theoretical plus practical element plus, if applicable, on-the-job training). This supersedes the need for 6 months of experience for the first 2 years. However, the requirement of 6 months of experience in the preceding 2 years will need to be met after the second year.

AMC 66.A.20 (b) (3) Privileges

1. The wording *'has the adequate competence to certify maintenance on the corresponding aircraft'* means that the licence holder and, if applicable, the organisation where he/she is contracted/employed, should ensure that he/she has acquired the appropriate knowledge, skills, attitude and experience to release the aircraft being maintained. This is essential because some systems and technology present in the particular aircraft being maintained may not have been covered by the training/examination/experience required to obtain the licence and ratings.
2. This is typically the case, among others, in the following situations:
 - (a) Work being carried out on a model/variant for which the technical design and maintenance techniques have significantly evolved from the original model used in type training/on-the-job training.
 - (b) Specific technology and options selected by each customer may not have been covered by type training/on-the-job training.
 - (c) The endorsement of group/subgroup ratings based on experience on a representative number of tasks/aircraft or based on type training/examination on a representative number of aircraft.
 - (d) Persons meeting the requirements of 6 months of experience every 2 years only on certain similar aircraft types as allowed by AMC 66.A.20 (b) (2).
 - (e) Persons holding a MSTAR 66 licence with limitations, obtained through the conversion of Internal Maintenance Authority (IMA) qualifications (66.A.70), where such limitations are going to be lifted after performing the corresponding basic knowledge examinations. In this case, the type ratings endorsed in the licence may have been obtained in the IMA system (PU 2103 Technical Airworthiness Maintenance Manual) without covering all the aircraft systems (because of the previous limitations) and there will be a need to assess and, if applicable, to train this person on the missing systems.

Additional information is provided in AMC 145.A.35 (a).

GM 66.A.20 (b) (4) Privileges

1. Holders of a MSTAR 66 aircraft maintenance licence may not exercise certification privileges unless they have a general knowledge of the language used within the maintenance environment including knowledge of common aeronautical terms in the language. The level of knowledge should be such that the licence holder can:

(a) Read and understand the instructions and technical manuals used for the performance of maintenance.

(b) Read and understand the maintenance organisation procedures.

(c) Communicate at such a level as to prevent any misunderstanding when exercising certification privileges.

(d) Make written technical entries and any maintenance documentation entries, which can be understood by those with whom they are normally required to communicate.

2. In all cases, the level of understanding should be compatible with the level of certification privileges exercised.

AMC 66. A.25 Basic knowledge requirements

1. An engineering degrees or diplomas obtained from any academic institution must be accredited by the Malaysian Qualifications Agency (MQA). The fields of academic qualifications accepted are as stated in Appendix X, MSTAR 66.

2. Knowledge gained and examinations passed during previous experiences, for example, in military aviation and civilian apprenticeships will be credited where the DGTA is satisfied that such knowledge and examinations are equivalent to the standard required by Appendix I, MSTAR 66.

3. Basic knowledge examination for each module comprises a Multiple-Choice Question (MCQ) examination paper except for Module M07, Modules M09 and M10, which comprise MCQ examination paper each and a combined essay/subjective examination paper.

4. For an application for SAML or the addition of a category or subcategory to such SAML, a pass in a basic knowledge examination paper for all subject modules is valid for 10 years, except for passes in the examination papers for Human Factors (Module M09) and Airworthiness Legislation (Module M10), where a pass in the MCQ examination paper and the essay/subjective examination paper are each valid for 5 years.

5. A person who fails a basic knowledge examination twice within 3 months period shall be ineligible to reapply for that examination for 3 months.

GM 66.A.25 (a) Basic knowledge requirements

The levels of knowledge for each licence (sub)category are directly related to the complexity of the certifications related to the corresponding licence (sub)category, which means that Category A should demonstrate a limited but adequate level of knowledge, whereas Category B1, B2 and B4 should demonstrate a complete level of knowledge in the appropriate subject modules.

GM 66.A.25 (d) Basic knowledge requirements

As explained in 66.A.25 (d).

GM 66. A.30 Basic experience requirements

1. The following definitions apply:

(a) **Practical maintenance experience on operating aircraft** means the experience of having actively participated in the carrying out of maintenance tasks on aircraft which are being operated by state or airlines. The point is to gain sufficient experience in the environment of state aircraft maintenance as opposed to only the training school environment. Such experience may be combined with approved training so that periods of training can be intermixed with periods of experience rather like the apprenticeship. The time necessary for any additional classroom training should be added to the practical maintenance experience time.

(b) **A skilled worker** means a person who has completed a course of technical training acceptable to the Authority, involving the manufacture, repair, overhaul or inspection of mechanical, electrical or electronic equipment. The training would include the use of tools and measuring devices.

2. Basic skills and practical maintenance experience training completed under Basic Training recorded in Basic Skills and Experience Practical Log Book as in Appendix XIII, MSTAR 66 can be submitted as Schedule of Experience (SOE).

AMC 66.A. 30 (a) Basic experience requirements

1. The wording '*practical maintenance experience on operating aircraft*' means the experience of having actively participated in the carrying out of maintenance tasks on aircraft which are being operated by state or airlines. The point is to gain sufficient experience in the environment of state aircraft maintenance as opposed to only the training school environment. Such experience may be combined with approved training so that periods of training can be intermixed with periods of experience rather like the apprenticeship. The time necessary for any additional classroom training should be added to the practical maintenance experience time.

2. The wording '*practical maintenance experience*' means the experience gained in an appropriate subcategory immediately before the date of application for an initial grant or extension of an aircraft maintenance licence. Except for the SAML Category LAE, practical maintenance experience may be presented in a form of a schedule of experience (SOE) as defined in Appendix VI, MSTAR 66. Persons applying for a state aircraft maintenance licence should submit a compilation of such a schedule as part of the licence application:

- (a) The SOE Logbook shall be able to prove completion of practical maintenance tasks that represent the relevant aircraft type for Category A, B1, B2 or B4 type rating licensing.
- (b) The tasks contained in Table 1 of Appendix VI, MSTAR 66 relevant to the licence category and the applicable aircraft type rating or aircraft (sub)group ratings to be verified.
- (c) Practical maintenance tasks should be extracted from the list of tasks contained in Appendix VII, MSTAR 66, the selection list of extracted maintenance tasks should not be less than 50%.
3. For Category B applicants holding an academic route may qualify by having experience working in a state or civil aircraft maintenance environment maintenance and practical maintenance experience on operating state aircraft. The representative selection of tasks should include the maintenance with supervision, observation of hangar maintenance, configuration item planning, maintenance planning, quality assurance, record-keeping, approved spare parts control and engineering development.
4. A Category C licence may qualify as Maintenance Inspector, shall acquire at least 2 years of experience exercising Category C privileges on aircraft as Maintenance Supervisor.
5. A Category C licence may qualify as Certifying Staff, shall acquire at least 3 years of experience exercising Category C privileges on aircraft as Maintenance Supervisor, including 1-year experience as Maintenance Inspector.
6. A skilled worker is a person who has successfully completed a training, acceptable to the DGTA, involving the manufacture, repair, overhaul or inspection of mechanical, electrical or electronic equipment. The training would include the use of tools and measuring devices.
7. Maintenance experience on operating aircraft:
- (a) Means the experience of being involved in maintenance tasks on aircraft which are being operated by State Aircraft Operator, airlines, air taxi organisations, aero clubs, owners, etc., as relevant to the licence category/subcategory;
- (b) Should cover a wide range of tasks in terms of length, complexity and variety;
- (c) Aims at gaining sufficient experience in the real environment of maintenance as opposed to only the training school environment;
- (d) May be gained within different types of maintenance organisations (Part-145, M.A. Subpart F, Part-CAO, FAR-145, etc.) or under the supervision of independent certifying staff;
- (e) May be combined with MSTAR 147 approved training (or other training approved by the DGTA) so that periods of training can be intermixed with periods of experience, similar to an apprenticeship;

(f) May be full-time or part-time, either as professional or voluntarily;

8. In the case of an applicant for a licence including several categories/subcategories, it is acceptable to combine the periods of experience as long as there is sufficient experience for each category/subcategory during the required period. Examples:

(a) Application for a B1.1 (turbine aeroplanes) + B1.3 (turbine helicopters): The Regulation requires 5 years of experience for B1.1 and 5 years of experience for B1.3 for an applicant with no relevant previous technical training:

(i) It is not acceptable to combine the experience in a single 5-year period where the applicant has been working for 3 years on turbine aeroplanes and 2 years on turbine helicopters.

(ii) However, it is acceptable to combine the experience in a single 5-year period if the applicant has been working for 5 years on turbine aeroplanes and turbine helicopters (for example, aeroplanes in the morning, helicopters in the afternoon, or a few days every week on aeroplanes and a few days every week on helicopters).

(b) Application for a B1.1 (turbine aeroplanes) + B2 (avionics): The Regulation requires 5 years of experience for B1.1 and 5 years of experience for B2 for an applicant with no relevant previous technical training.

(i) It is not acceptable to combine the experience in a single 5-year period where the applicant has been working for 3 years on turbine aeroplanes (with no avionics work) and 2 years on avionics systems.

(ii) However, it is acceptable to combine the experience in a single 5-year period if the applicant has been working for 5 years on structures, powerplant, mechanical and electrical systems and avionics (for B1.1 task in the morning, B2 tasks in the afternoon, or a few days every week for B1.1 task and a few days every week for B2 tasks).

(c) Application for a B1.1, B1.2, B1.3, B1.4, B2 and B4: The Regulation requires 5 years of experience for B1.1, B1.3 and B2; and 3 years of experience for B4, B1.2 and B1.4 for an applicant with no relevant previous technical training.

(i) In this case, it is very unlikely that the experience for each category/ subcategory would be sufficient.

AMC 66.A.30 (c) Basic experience requirements (MY)

In the case of the Category A, B1, B2 and B4 licence, the sentence 'a representative cross-section of maintenance tasks on aircraft' refers to the person that has carried out some maintenance tasks that are representative of the systems corresponding to the system ratings for which he/she applies (see 66.A.3). These tasks may include troubleshooting, modifications or repairs.

AMC 66.A.30 (d) Basic experience requirements

1. Recent maintenance experience is the experience gained in an appropriate (sub)category immediately before the date of application for an initial grant or extension of an aircraft maintenance licence.
2. To be considered as recent maintenance experience; at least 50% of the required 12-month recent experience should be gained within the 12-month period prior to the date of application for the aircraft maintenance licence. The remainder of the recent experience should have been gained within the 7-year period prior to application. It must be noted that the rest of the basic experience required by 66.A.30 must be obtained within the 10 years prior to the application as required by 66.A.30(f).
3. As a guide, all computations of the number of minimum working days necessary to comply with the SOE requirement should be based on 180 days or 540 hours per year. For example, a requirement for 1 year of recent practical maintenance experience should be interpreted as a requirement to demonstrate such experience in the SOE for a minimum of 180 days or 540 hours in the 1 year immediately preceding the date of application for an aircraft maintenance licence. Similarly, a requirement for 6 months of recent practical maintenance experience should be interpreted as a minimum of 90 days or 270 hours (180 days divided by 2) of SOE accumulated in the 6 months immediately preceding the date application for a state aircraft maintenance licence or its extension.
4. The applicant must demonstrate recent practical maintenance experience on operating aircraft and in the relevant subcategory by submitting the SOE or logbook for the minimum number of days or hours:
 - (a) At least 180 days or 540 hours in the one (1) year period immediately preceding the date of application of an aircraft maintenance licence.
5. For a Category LAE or equivalent, applicants through academic route have the intention to employ as Aviation Engineers, Line and/or Base Maintenance Engineer shall present of evidence on the maintenance experiences in a form of the confirmation letter from their employer;
 - (a) With 5 years of experience working in a state aircraft maintenance environment including exercising maintenance support staff privileges in the two (2) years period immediately preceding the date of application for the extension of the aircraft maintenance licence; or
 - (b) With completion of a bridging basic training course approved under MSTAR 147, at least 180 days, of technical management of section under their control or on operating an aircraft, or a combination of both in the 6 months immediately preceding the date of application of an aircraft maintenance licence.

AMC 66.A.30 (e) Basic experience requirements

1. For Categories A and Category B4, the additional recent practical maintenance experience should be a minimum of 6 months in a state aircraft maintenance environment. For Categories B1 and B2, the additional recent practical maintenance experience should be a minimum of 12 months in a state aircraft maintenance environment.

2. Aircraft maintenance experience gained in a state aircraft maintenance environment may include aircraft maintenance experience gained in armed forces, coast guards, police etc. or in aircraft manufacturing.

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

The validity of the aircraft maintenance licence is not affected by recency of maintenance experience whereas the validity of the 66.A.20 privileges is affected by maintenance experience as specified in 66.A.20 (a).

GM 66. A.45 Endorsement with aircraft ratings

1. The training session should be able to provide learning outcomes required to award competence certification to Maintenance Engineer, Maintenance Supervisor, Maintenance Technician and Maintenance Mechanic with combination of the appropriate level of knowledge aircraft system before being certified as Aviation Engineer, Certifying Staff, Inspector, Supervisor, Support Staff, technician under supervision or mechanic by Approved Maintenance Organization (AMO) based on qualification, training and experience (QTE)

2. The training development should correspond with skill and knowledge needs by functional grouping or work proficiency or groups job position of maintenance organization chart to undertake job task activities defined in job description. Aircraft type training level of course should determine on the knowledge level of student should be able to conduct maintenance task activities defined under their job description or work proficiency as stipulated in Appendix XII, MSTAR 66.

3. The following table shows a summary of the aircraft rating requirements contained in 66.A.45, 66.A.50 and Appendix III, MSTAR 66.

| Aircraft Rating Requirements | | | | |
|-------------------------------------|---|---|---|---|
| Aircraft | B1 licence | B2 licence | B4 licence | LAE and C licence |
| Complex motor-powered Aircraft | Type training: - Theory + examination - Practical + assessment PLUS OJT (for the first aircraft in licence subcategory) | Type training: - Theory + examination - Practical + assessment PLUS OJT (for the first aircraft in licence subcategory) | Type training: - Theory + examination - Practical + assessment PLUS OJT (for the first aircraft in licence subcategory) | Type training: - Theory + examination |

Note: OJT means 'On-the-Job Training' (Appendix III, MSTAR 66) and is only required for the first aircraft rating in the licence (sub)category.

AMC 66.A.45 (b) Endorsement with aircraft ratings (MY)

The aircraft rating training should be able to provide learning outcomes relevant to Category B1, B2, B4, C or LAE with the combination of the appropriate level of the knowledge aircraft system.

AMC 66.A.45 (c) Endorsement with aircraft ratings (MY)

The OJT Logbook should be able to prove completion of tasks training contained in Appendix VII, MSTAR 66 as appropriate. The completed OJT tasks must be representative of the relevant aircraft type for Category B1, B2 or B4 type rating licensing. The on-the-job training logbook format is as described in Appendix IX, MSTAR 66.

AMC 66.A.45 (e) Endorsement with aircraft ratings

1. Applicants from diplomas eligible for Category A as stated in Appendix X, MSTAR 66 with exemption credit in the examination must obtain at least 180 days or 540 hours during the period of one (1) year immediately preceding the date of application for the aircraft maintenance licence.
2. The SOE Logbook should be able to prove completion of tasks training contained in Appendix VII, MSTAR 66 as appropriate.

AMC 66.A.50 (a) Limitations

As explained in 66.A.50 (a).

AMC 66.A.50 (b) Limitations

1. The appropriate experience required to remove the limitations referred to in 66.A.45 (j) should consist of the performance of a variety of tasks appropriate to the limitations under the supervision of an authorised supervisor. This should include the tasks required by a scheduled annual inspection. Alternatively, this experience may also be gained, if agreed by the DGTA, by theoretical and practical training provided by the manufacturer, as long as an assessment is further carried out and recorded by this manufacturer. It is acceptable to have this experience in just one aircraft type, provided this type is representative of the (sub)group in relation to the limitation being removed.
2. The application for the limitation removal should be supported by a record of experience signed by the authorised certifying staff or by an assessment signed by the manufacturer after completion of the applicable theoretical and practical training.

AMC 66. A.52 Extensions

As explained in 66.A.52.

AMC 66. A.70 Conversion provisions (MY)

1. Conversion of several licences or unlicensed authorisation privileges to MSTAR 66 state aircraft maintenance licence:

(a) Applicants holding licences from several NAA's can submit a licensing application for conversion to MSTAR 66 licence by DGTA.

(b) Applicants not holding a licence from any NAA must have an authorisation certificate issued by approval organisation MSTAR 145 where they last held privileges.

(c) The converted licence will only take into consideration the privileges granted by the DGTA issuing the MSTAR 66 licence, unless the applicant provides the DGTA with duly completed evidence, specifying the additional privileges granted by other competent Authorities that are also eligible for conversion.

(d) An applicant holding a Category B4 licence may submit a licensing application for conversion to Category B1 or Category B2 if he meets the requirements in point 66.A.25 (a).

2. Scheduled of experiences (SOE):

To assist both basic category and type rating applicants to demonstrate that they meet the licensing requirements, the applicant shall submit the SOE document in support of an application.

GM 66. A.70 Conversion provisions

1. As described in point 66.A.70, the conversion provisions apply to the holder of an Internal Maintenance Authority (IMA) qualification valid under PU 2103 Technical Airworthiness Management Manual (TAMM) before the date of entry into force of MSTAR 66. The sentence 'the holder of an Internal Maintenance Authority (IMA) qualification valid under PU 2103 Technical Airworthiness Management Manual (TAMM)' means any person who had a qualification valid under PU 2103 Technical Airworthiness Management Manual (TAMM) allowing that person the performance of activities identical to the privileges of 'Authorised Person' contained in TAMM. This means that the signature of that person was sufficient to declare that the maintenance had been properly performed and the aircraft was ready for service and fit for flight in respect to such maintenance.

2. The conversion applies to 'Internal Maintenance Authority (IMA)' such as, for example:

(a) Holding a civil licence (or completed the process to obtain such a civil licence).

(b) Having completed a qualification process defined by the approval organisation MSTAR 145 to become Authorised Person.

(c) Having completed the qualification requirements for Maintenance Manager, Maintenance Inspector/Supervisor or Authorised Tradespersons within a maintenance organisation, as defined in their procedures.

3. This does not mean that to be entitled to a conversion process, the applicant must be exercising certification privileges. A person may hold an 'Internal Maintenance Authority (IMA) qualification' while not having certification privileges (or while

exercising very limited certification privileges below his/her qualification) for different reasons such as, for example, the following:

- (a) The person is working as 'Support Staff' in the base maintenance environment.
- (b) The person has been authorised only for a very limited range of tasks (lower than what he/she would be entitled if his/her qualification is considered) since the person is working in a line station where the scope of tasks is very limited.
- (c) The person holds a licence with a wider scope than the scope of the organisation where he/she is employed.
- (d) The person is working outside the aviation industry or is temporarily on leave due to different reasons (medical, personal, etc).

These persons are entitled to have the conversion performed under the full scope of their qualification and the full privileges that they would be entitled to hold based on such qualification.

4. As described in point 66.A.70, Internal Maintenance Authority (IMA) qualifications eligible for conversion are those valid 'before the date of entry into force of SAML.

5. Although only those Internal Maintenance Authority (IMA) qualifications gained before the dates indicated above are eligible for conversion, this does not mean that the application for conversion has to be submitted before those dates. The applicant is entitled to have the conversion performed irrespective of when he/she applies for conversion.

GM 66.A.70 (c) Conversion provisions

1. For example, a limitation could be where a person holds a pre-existing certifying staff qualification which covered, to the standard of Appendix I and II to MSTAR 66, all the modules/subjects corresponding to the B1 licence except for electrical power systems. This person would be issued a MSTAR 66 aircraft maintenance licence in the B1 category with a limitation (exclusion) on electrical power systems.

2. For removal of limitations, refer to 66.A.50 (c).

GM 66.A.70 (d) Conversion provisions

As explained in 66.A.70 (d).

AMC 66. A.80 Revocation, suspension or limitation

The Authority may revoke, suspend or limit a MSTAR 66 SAML if the person has knowingly carried out or involved in one or more of the following activities:

1. Obtained the MSTAR 66 state aircraft maintenance licence and/or the MSTAR-145 certification authorisation by falsification of submitted evidence.

2. Failed to carry out requested maintenance combined with failure to report such fact to the organisation that requested the maintenance.
3. Failed to carry out required maintenance resulting from own inspection combined with failure to report such fact to the organisation for whom the maintenance was intended to be carried out.
4. Negligent maintenances.
5. Falsification of maintenance records.
6. Issuing a certificate of release to service knowing that the maintenance specified on the certificate of release to service has not been carried out or without verifying that such maintenance has been carried out.
7. Carrying out maintenance or issuing a certificate of release to service when adversely affected by alcohol or drugs.

MSTAR 66 - STATE AIRCRAFT MAINTENANCE LICENCE**PART 2****CHAPTER 1****APPENDICES****Appendix I to 66. A.25, GM 66. A.3, AMC 66. A.25 & GM 66.A.70 (c)****BASIC KNOWLEDGE REQUIREMENTS****1. Knowledge levels for Category A, B1, B2, B4, C and LAE state aircraft maintenance licence**

- (a) Basic knowledge for Categories A, B1, B2 and B4 are indicated by the allocation of knowledge levels indicators (1, 2 or 3) against each applicable subject.
- (b) Category C applicants must meet training standards equivalent to a level of basic knowledge of either Category B1, Category B2 or Category B4.
- (c) Category B applicant who obtains a degree or diploma in engineering field, DGTA may consider attending a bridging programme for basic knowledge of Category B1.1, Category B1.3, Category B2 or Category B4.
- (d) Category LAE applicants from SAO who obtain an academic qualification in engineering field, must complete and pass a bridging program for basic knowledge consisting of Category B1 and Category B2, or Category B1, Category B2 and military-specific systems modules.
- (e) The levels of knowledge are directly related to the complexity of certifications appropriate to the particular SAML subcategory, which means that Category A must demonstrate a limited but adequate level of knowledge, whereas Category B1, B2 and B4 must demonstrate a complete level of knowledge in the appropriate subject modules.
- (f) The basic training course shall consist of theoretical training and examination, and, except for the Category LAE under the bridging program, shall include practical training in basic skills, maintenance operations experience task, and practical assessment. At least 30% of the practical training elements of line maintenance operations shall be conducted in a realistic maintenance work environment.
- (g) Applicants who obtain a pass grade in Mathematics and Physics, as part of an engineering course at a polytechnic or university, will be credited with the basic knowledge requirements for Mathematics (M01) and Physics (M02) subject modules in the bridging program.

(h) Any category of state aircraft maintenance licence may apply for an extension for Category B4 certification privileges of one or more military-specific topics (Modules 50 - 55).

1.1 The knowledge level indicators are defined as follows:

(a) **Knowledge Level 1:** Denotes a basic understanding of a subject. Trainees should have a basic understanding of the subject but are not expected to be able to apply it in practice. Familiarization with the principal elements of the subject.

Course Objectives: Provide a simple description of the whole subject using typical terms, common words and examples to technical personnel with knowledge of the modularisation basic subjects.

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

- (1) Be familiar with the basic elements of the subject.
- (2) Give a simple description of the whole subject, using common words and examples.
- (3) Use typical terms.

(b) **Knowledge Level 2:** Denotes an understanding of the subject and the ability, where applicable, to apply it in practice with the help of reference materials and instructions. General knowledge of the theoretical and practical aspects of the subject. An ability to apply that knowledge.

Course Objectives: To provide technical personnel with knowledge and skill of the modularisation basic subjects.

Course Training Outcome: Upon completion of Level 2 training, the student will be able to:

- (1) Understand the theoretical fundamentals of the subject.
- (2) Give a general description of the subject using, as appropriate, typical examples.
- (3) Use mathematical formulae in conjunction with physical laws describing the subject.
- (4) Read and understand sketches, drawings and schematics describing the subject.

(5) Apply his knowledge in a practical manner using detailed procedures.

- (c) **Knowledge Level 3:** Denotes a thorough understanding of the subject and the ability to apply it with speed, accuracy and judgement appropriate to the circumstances. Detailed knowledge of the theoretical and practical aspects of the subject. A capacity to combine and apply the separate elements of knowledge logically and comprehensively.

Course Objectives: To provide technical personnel with detailed and comprehensively description of the theoretical knowledge and practical skill of the modularisation basic subjects.

Course Training Outcome: Upon completion of Level 3 training, the student will be able to:

- (1) Know the theory of the subject and its interrelationships with other subjects.
- (2) Give a detailed description of the subject using theoretical fundamentals and specific examples.
- (3) Understand and be able to use mathematical formulae related to the subject.
- (4) Read, understand and prepare sketches, simple drawings and schematics describing the subject.
- (5) Apply his knowledge in a practical manner using the manufacturer's instructions.
- (6) Interpret results from various sources and measurements and apply corrective action where appropriate.

2. Modularisation

- (a) Eligibility for the foundation subjects for SAML categories or subcategories should be under the following matrix:

(1) Relevant modules are indicated with 'X'.

(2) '**' for qualification requirements in elective subjects for the relevant subcategory:

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2.1 For categories A, B1 and B2:

| Module No. | Module Name | A / B1 aeroplane with: | | A / B1 helicopter with: | | B2 |
|------------|--|------------------------|---------------|-------------------------|---------------|----------|
| | | Turbine engine | Piston engine | Turbine engine | Piston engine | Avionics |
| M01 | Mathematics | x / x | x / x | x / x | x / x | x |
| M02 | Physics | x / x | x / x | x / x | x / x | x |
| M03 | Electrical Fundamentals | x / x | x / x | x / x | x / x | x |
| M04 | Electronic Fundamentals | - / x | - / x | - / x | - / x | x |
| M05 | Digital Techniques/ Electronic Instrument Systems | x / x | x / x | x / x | x / x | x |
| M06 | Materials and Hardware | x / x | x / x | x / x | x / x | x |
| M07 | Maintenance Practices | x / x | x / x | x / x | x / x | x |
| M08 | Basic Aerodynamics | x / x | x / x | x / x | x / x | x |
| M09 | Human Factors | x / x | x / x | x / x | x / x | x |
| M10 | Airworthiness Legislation | x / x | x / x | x / x | x / x | x |
| M11A | Turbine Aeroplane Aerodynamics, Structures and Systems | x / x | | | | |
| M11B | Piston Aeroplane Aerodynamics, Structures and Systems | | x / x | | | |
| M12 | Helicopter Aerodynamics, Structures and Systems | | | x / x | x / x | |
| M13 | Aircraft Aerodynamics, Structures and Systems | | | | | x |
| M14 | Propulsion | | | | | x |
| M15 | Gas Turbine Engine | x / x | | x / x | | |
| M16 | Piston Engine | | x / x | | x / x | |
| M17 | Propeller | x / x | x / x | | | |
| M50 | Principles of Armament | | | | | |

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| Module No. | Module Name | A / B1 aeroplane with: | | A / B1 helicopter with: | | B2 |
|------------|-------------------------------------|------------------------|---------------|-------------------------|---------------|----------|
| | | Turbine engine | Piston engine | Turbine engine | Piston engine | Avionics |
| M51 | Weapon Stores System | | | | | |
| M52 | Operational Attack Systems | | | | | |
| M53 | Surveillance and Electronic Warfare | | | | | |
| M54 | Crew Safety | | | | | |
| M55 | Military Communication Systems | | | | | |

2.2 For categories B4 and Bridging:

| Module No. | Module Name | B4 | Bridging | | | |
|------------|--|----------|----------|----|----|-----|
| | | Armament | B1 | B2 | B4 | LAE |
| M01 | Mathematics | x | | | | |
| M02 | Physics | x | | | | |
| M03 | Electrical Fundamentals | x | x | x | x | x |
| M04 | Electronic Fundamentals | x | x | x | x | x |
| M05 | Digital Techniques / Electronic Instrument Systems | x | x | x | x | x |
| M06 | Materials and Hardware | x | x | x | x | x |
| M07 | Maintenance Practices | x | x | x | x | x |
| M08 | Basic Aerodynamics | x | x | x | x | x |
| M09 | Human Factors | x | x | x | x | x |
| M10 | Airworthiness Legislation | x | x | x | x | x |
| M11A | Turbine Aeroplane Aerodynamics, Structures and Systems | * | * | | * | x |
| M11B | Piston Aeroplane Aerodynamics, Structures and Systems | | * | | | |

| Module No. | Module Name | B4 | Bridging | | | |
|------------|---|----------|----------|----|----|-----|
| | | Armament | B1 | B2 | B4 | LAE |
| M12 | Helicopter Aerodynamics, Structures and Systems | * | * | | * | X |
| M13 | Aircraft Aerodynamics, Structures and Systems | * | | X | * | X |
| M14 | Propulsion | * | | X | * | X |
| M15 | Gas Turbine Engine | * | * | | * | X |
| M16 | Piston Engine | | * | | | |
| M17 | Propeller | * | * | | * | X |
| M50 | Essential Principles of Armament | X | | | X | X |
| M51 | Weapon Stores System | X | | | X | X |
| M52 | Operational Attack System | X | | | X | X |
| M53 | Surveillance and Electronic Warfare | X | | | X | X |
| M54 | Crew Safety | X | | | X | X |
| M55 | Military Communication Systems | X | | | X | X |

2.3 Level training session on modularisation basic subjects:

MODULE 1. MATHEMATICS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|------------------------------|------------------|--|-------|-----|-----|-----|------|
| | | | A | B 1 | B 2 | B 4 | LA E |
| Module 1: Mathematics | 1.1 Arithmetic | Explain the arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots. | 1 | 2 | 2 | 2 | |

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| | | | | | | | |
|--|--------------|---|---|---|---|---|--|
| | 1.2 Algebra | a. Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions; | 1 | 2 | 2 | 2 | |
| | | | - | 1 | 1 | 1 | |
| | | b. Linear equations and their solutions; Indices and powers, negative and fractional indices; Binary and other applicable numbering systems; Simultaneous equations and second-degree equations with one unknown; logarithms. | | | | | |
| | 1.3 Geometry | a. Simple geometrical constructions; | - | 1 | 1 | 1 | |
| | | b. Graphical representation; nature and uses of graphs, graphs of equations/functions; | 2 | 2 | 2 | 2 | |
| | | c. Simple trigonometry; trigonometrical relationships, use of tables and rectangular and polar coordinates. | - | 2 | 2 | 2 | |

MODULE 2. PHYSICS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|------------------------------|------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 2: Physics | 2.1 Matter | Nature of matter: - The chemical elements, the structure of atoms, molecules; - Chemical compounds; - States: solid, liquid and gaseous; - Changes between states. | 1 | 1 | 1 | 1 | |
| | 2.2 Mechanic | Statics - Forces, moments and couples, representation as vectors; - Centre of gravity; | 1 | 2 | 1 | 1 | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------|--|--------|--------|--------|--------|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Elements of the theory of stress, strain and elasticity: tension, compression, shear and torsion; - Nature and properties of solid, fluid and gas; - Pressure and buoyancy in liquids (barometers); | | | | | |
| | | Kinetics <ul style="list-style-type: none"> - Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity); - Rotational movement: uniform circular motion (centrifugal/ centripetal forces); - Periodic motion: pendular movement; - Simple theory of vibration, harmonics and resonance; - Velocity ratio, mechanical advantage and efficiency. | 1 | 2 | 1 | 1 | |
| | | Dynamics <ul style="list-style-type: none"> i. Mass; <ul style="list-style-type: none"> - Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency; ii. Momentum, conservation of momentum; Impulse; <ul style="list-style-type: none"> - Gyroscopic principles; - Friction: nature and effects, coefficient of friction (rolling resistance). | 1 1 | 2 2 | 1 2 | 1 1 | |
| | | Fluid dynamics <ul style="list-style-type: none"> i. Specific gravity and density; ii. Viscosity, fluid resistance, effects of streamlining; <ul style="list-style-type: none"> - Effects of compressibility on fluids; | 2 1 | 2 2 | 2 1 | 2 2 | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|---------------------------|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | - Static, dynamic and total pressure: Bernoulli's Theorem, Venturi effect. | | | | | |
| | 2.3 Thermodynamics | a. Temperature: thermometers and temperature scales: <ul style="list-style-type: none"> - Celsius, Fahrenheit and Kelvin; - Heat definition; b. Heat capacity, specific heat; <ul style="list-style-type: none"> - Heat transfer: convection, radiation and conduction; - Volumetric expansion; - The 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 heat of fusion and evaporation, thermal energy, the heat of combustion. | 2 | 2 | 2 | 2 | |
| | | | - | 2 | 2 | 2 | |
| | 2.4 Optics (Light) | Nature of light; the speed of light; <ul style="list-style-type: none"> - Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; - Fibre optics | - | 2 | 2 | - | |
| | 2.5 Wave Motion and Sound | Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; <ul style="list-style-type: none"> - Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect. | - | 2 | 2 | - | |

MODULE 3. ELECTRICAL FUNDAMENTALS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|--|---------------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| 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 | 1 |
| | 3.2 Static Electricity and Conduction | Static electricity and distribution of electrostatic charges; - Electrostatic laws of attraction and repulsion; - Units of charge, Coulomb's Law; - Conduction of electricity in solids, liquids, gases and a vacuum. | 1 | 2 | 2 | 2 | 2 |
| | 3.3 Electrical Terminology | The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow. | 1 | 2 | 2 | 2 | 2 |
| | 3.4 Generation of Electricity | Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion. | 1 | 1 | 1 | 1 | 1 |
| | 3.5 DC Sources of Electricity | a. Construction and basic chemical action of primary cells, secondary cells, lead-acid cells, nickel-cadmium cells, Li-ion cells, other alkaline cells; - Cells connected in series and parallel; - Internal resistance and its effect on a battery; - Construction, materials and operation of thermocouples; - Operation of photo-cells. | 1 | 2 | 2 | 2 | 2 |
| | 3.6 DC Circuits | Ohms Law, Kirchhoff's Voltage and Current Laws; - Calculations using the above laws to find resistance, voltage and current; - Significance of the internal resistance of a supply. | - | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|---------------------------|---|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | 3.7 Resistance/Resistor | a. Resistance and affecting factors; <ul style="list-style-type: none"> - Specific resistance; - Resistor colour code, values and tolerances, preferred values, wattage ratings; - Resistors in series and parallel; - Calculation of total resistance using series, parallel and series-parallel combinations; - Operation and use of potentiometers and rheostats; - Operation of Wheatstone Bridge; b. Positive and negative temperature coefficient conductance; <ul style="list-style-type: none"> - Fixed resistors, stability, tolerance and limitations, methods of construction; - Variable resistors, thermistors, voltage-dependent resistors; - Construction of potentiometers and rheostats; - Construction of Wheatstone Bridge. | - | 2 | 2 | 2 | 2 |
| | | | - | 1 | 1 | - | 1 |
| | 3.8 Power | Power, work and energy (kinetic and potential); <ul style="list-style-type: none"> - Dissipation of power by a resistor; - Power formula; - Calculations involving power, work and energy. | - | 2 | 2 | 1 | 2 |
| 3.9 Capacitance/Capacitor | Operation and function of a capacitor; <ul style="list-style-type: none"> - Factors affecting capacitance area of plates, the 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; | - | 2 | 2 | 1 | 2 | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Exponential charge and discharge of a capacitor, time constants; - Testing of capacitors | | | | | |
| | 3.10 Magnetism | a. Theory of magnetism; <ul style="list-style-type: none"> - Properties of a magnet; - The action of a magnet suspended in the Earth's magnetic field; - Magnetisation and demagnetisation; - Magnetic shielding; - Various types of magnetic material; - Electromagnet's construction and principles of operation; - Handclasp rules to determine: magnetic field around current carrying conductor; b. Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentively, coercive force reluctance, saturation point, eddy currents; <ul style="list-style-type: none"> - Precautions for care and storage of magnets. | - | 2 | 2 | 1 | 2 |
| | 3.11 Inductance/ Inductor | Faraday's Law; <ul style="list-style-type: none"> - The 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 conductors turns; - Mutual induction; - The effect on the rate of change of primary current and mutual inductance has on induced voltage; | - | 2 | 2 | 1 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|---|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Factors affecting mutual inductance: number of turns in the coil, the physical size of the coil, the permeability of coil, the position of coils concerning each other; - Lenz's Law and polarity determining rules; - Back emf, self-induction; - Saturation point; - Principle uses of inductors. | | | | | |
| | 3.12 DC Motor/ Generator Theory | Basic motor and generator theory; <ul style="list-style-type: none"> - 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 | 1 | 2 |
| | 3.13 The AC Theory | Sinusoidal waveform: <ul style="list-style-type: none"> - Phase, period, frequency, cycle; - Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, about voltage, current and power; - Triangular/Square waves; - Single/3 phase principles. | 1 | 2 | 2 | 1 | 2 |
| | 3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits | The phase relationship of voltage and current in L, C and R circuits, parallel, series and series-parallel; <ul style="list-style-type: none"> - Power dissipation in L, C and R circuits; - Impedance, phase angle, power factor and current calculations; | - | 2 | 2 | 1 | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--------------------|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | - True power, apparent power and reactive power calculations. | | | | | |
| | 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; Autotransformers. | - | 2 | 2 | 1 | 2 |
| | 3.16 Filters | Operation, application and uses of the following filters: low pass, high pass, bandpass, 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 advantage and uses; - Permanent Magnet Generators. | - | 2 | 2 | 1 | 2 |
| | 3.18 AC Motors | Construction, principles of operation and characteristics of AC synchronous and induction motors both single and more polyphase; - Methods of speed control and direction of rotation; | - | 2 | 2 | 1 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | - Methods of producing a rotating field: capacitor, inductor, shaded or split pole. | | | | | |

MODULE 4. ELECTRONIC FUNDAMENTALS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|--|--------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 4: Electronic Fundamentals | 4.1 Semiconductors | Diodes | - | 2 | 2 | 2 | 2 |
| | | i. Diode symbols; <ul style="list-style-type: none"> - Diode characteristics and properties; - Diodes in series and parallel; - Main characteristics and use of silicon-controlled rectifiers (thyristors), light-emitting diode, photoconductive diode, varistor, rectifier diodes; - Functional testing of diodes; | - | - | 2 | - | 2 |
| | | ii. Materials, electron configuration, electrical properties; <ul style="list-style-type: none"> - P and N-type materials: effects of impurities on conduction, majority and minority characters; - PN junction in a semiconductor, development of 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 | | | | | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | half-wave rectifiers, bridge rectifiers, voltage doublers and triples; - Detailed operation and characteristics of the following devices: silicon-controlled rectifier (thyristor), light-emitting diode, Schottky diode, photoconductive diode, varactor diode, varistor, rectifier diodes, and Zener diode. | | | | | |
| | | a. Transistors i. Transistor symbols; - Component description and orientation; - Transistor characteristics and properties; ii. Construction and operation of PNP and NPN transistors; - Base, collector and emitter configurations; - Testing of transistors; - A basic appreciation of other transistor types and their uses; - Application of transistors: classes of the amplifier (A, B, C); - Simple circuits including bias, decoupling, feedback and stabilisation; - Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits. | - | 1 | 2 | 2 | 2 |
| | | - Base, collector and emitter configurations; - Testing of transistors; - A basic appreciation of other transistor types and their uses; - Application of transistors: classes of the amplifier (A, B, C); - Simple circuits including bias, decoupling, feedback and stabilisation; - Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits. | - | - | 2 | - | 2 |
| | | b. Integrated Circuits i. Description and operation of logic circuits and linear circuits/operational amplifiers; ii. Description and operation of logic circuits and linear circuits; | - | 1 | - | 1 | 1 |
| | | i. Description and operation of logic circuits and linear circuits/operational amplifiers; ii. Description and operation of logic circuits and linear circuits; | - | - | 2 | - | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|----------------------------|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Introduction to operation and function of an operational amplifier used as an 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. | | | | | |
| | 4.2 Printed Circuit Boards | Description and use of printed circuit boards. | - | 1 | 2 | - | 2 |
| | 4.3 Servomechanisms | a. Understanding of the following terms: Open and closed-loop systems, feedback, follow up, analogue transducers; <ul style="list-style-type: none"> - Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters; | - | 1 | - | - | 1 |
| | | b. Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, dead-band; <ul style="list-style-type: none"> - Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; - Servomechanism defects, reversal of synchro leads, hunting. | - | - | 2 | - | 2 |

MODULE 5. DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|--|--|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 5: Digital Techniques/ Electronic Instrument Systems | 5.1 Electronic Instrument Systems | Typical systems arrangements and cockpit layout of electronic instrument systems. | 1 | 2 | 3 | 2 | 2 |
| | 5.2 Numbering Systems | Numbering systems: binary, octal and hexadecimal; - Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. | - | 1 | 2 | 2 | 2 |
| | 5.3 Data Conversion | Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types. | - | 1 | 2 | 2 | 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 | 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 | 1 | 2 |
| | | | - | - | 2 | 1 | 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; | 1 | 2 | - | - | 2 | |
| | | - | - | 2 | 2 | 2 | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--------------------------------------|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Operation of typical memory devices; - Operation, advantages and disadvantages of the various data storage systems | | | | | |
| | 5.7 Microprocessors | <ul style="list-style-type: none"> a. Functions performed and overall operation of a microprocessor; b. Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit. | - | - | 2 | 2 | 2 |
| | 5.8 Integrated Circuits | <ul style="list-style-type: none"> a. Operation and use of encoders and decoders; b. Function of encoder types; c. Uses of medium, large and very large-scale integration. | - | - | 2 | 2 | 2 |
| | 5.9 Multiplexing | <ul style="list-style-type: none"> d. Operation, application and identification in logic diagrams of multiplexers and demultiplexers. | - | - | 2 | 2 | 2 |
| | 5.10 Fibre Optics | <ul style="list-style-type: none"> a. Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; b. Fibre optic data bus; c. Fibre optic related terms; d. Terminations; e. Couplers, control terminals, remote terminals; f. Application of fibre optics in aircraft systems. | - | 1 | 2 | 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 | 1 | 2 |
| | 5.12 Electrostatic Sensitive Devices | <ul style="list-style-type: none"> a. Special handling of components sensitive to electrostatic discharges; b. Awareness of risks and possible damage, component and personnel anti-static protection devices. | 1 | 2 | 2 | 1 | 2 |
| | 5.13 Software Management Control | Awareness of restrictions, airworthiness requirements and possibly catastrophic effects of unapproved changes to software programmes. | - | 2 | 2 | 2 | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | 5.14 Electromagnetic Environment | Influence of the following phenomena on maintenance practices for the electronic system: <ul style="list-style-type: none"> - EMC-Electromagnetic Compatibility - EMI-Electromagnetic Interference - HIRF-High Intensity Radiated Field - Lightning/lightning protection | - | 2 | 2 | 2 | 2 |
| | 5.15 Typical Electronic/Digital Aircraft Systems | The general arrangement of typical electronic/digital aircraft systems and associated BITE (Built-In Test Equipment): <ul style="list-style-type: none"> - 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, TCAS-Traffic Alert Collision Avoidance System. - Integrated Modular Avionics, Cabin Systems, Information Systems. | - | 2 | 2 | 1 | 1 |

MODULE 6. MATERIALS AND HARDWARE

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|--|--|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| 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 | 1 | 1 | 1 |
| | | b. Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance. | - | 1 | 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 | 1 | 1 | 1 |
| | | b. Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance. | - | 1 | 1 | 1 | 1 |
| | 6.3 Aircraft Materials - Composite and Non-Metallic | a. Composite and non-metallic other than wood and fabric - Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents; - The detection of defects/deterioration in composite and non-metallic material; Repair of composite and non-metallic material. | 1 | 2 | 2 | 2 | 1 |
| | | | 1 | 2 | 2 | - | 2 |
| 1 | | | 2 | - | 2 | 2 | |
| b. Wooden Structures - Construction methods of wooden airframe structures; - Characteristics, properties and types of wood and glue used in aeroplanes; - Preservation and maintenance of the wooden structure; - Types of defects in wood material and wooden structures; - The detection of defects in the wooden structure; - Repair of the wooden structure. | | | | | | | |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | c. Fabric Covering <ul style="list-style-type: none"> - Characteristics, properties and types of fabrics used in aeroplanes; - Inspections methods for fabric; - Types of defects in the fabric; - Repair of fabric covering. | 1 | 2 | - | 2 | 2 |
| | 6.4 Corrosion | a. Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; | 1 | 1 | 1 | 1 | 1 |
| | | b. Types of corrosion and their identification; Causes of corrosion; <ul style="list-style-type: none"> - Material types, susceptibility to corrosion. | 2 | 3 | 2 | 2 | 2 |
| | 6.5 Fasteners | a. Screw threads <ul style="list-style-type: none"> - Screw nomenclature; - Thread forms, dimensions and tolerances for standard threads used in aircraft; - Measuring screw threads. | 2 | 2 | 2 | 2 | 2 |
| | | b. Bolts, Studs and screws <ul style="list-style-type: none"> - Bolt types: specification, identification and marking of aircraft bolts, international standards; - Nuts: self locking, anchor, standard types; - Machine screws: aircraft specifications; - Studs: types and uses, insertion and removal; - Self tapping screws, dowels. | 2 | 2 | 2 | 2 | 2 |
| | | c. Locking devices <ul style="list-style-type: none"> - Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins | 2 | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|---------------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | d. Aircraft rivets - Types of solid and blind rivets: specifications and identification, heat treatment. | 1 | 2 | 1 | 1 | 2 |
| | 6.6 Pipes and Unions | a. Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; | 2 | 2 | 2 | 2 | 2 |
| | | b. Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes. | 2 | 2 | 1 | 1 | 2 |
| | 6.7 Springs | a. Types of springs, materials, characteristics and applications | - | 2 | 1 | 1 | 2 |
| | 6.8 Bearings | a. Purpose of bearings, loads, material, construction; b. Types of bearings and their application | 1 | 2 | 2 | 2 | 2 |
| | 6.9 Transmissions | a. Gear types and their application; b. Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; c. Belts and pulleys, chains and sprockets. | 1 | 2 | 2 | 1 | 2 |
| | 6.10 Control Cables | a. Types of cables; b. End fittings, turnbuckles and compensation devices; c. Pulleys and cable system components; d. Bowden cables; e. Aircraft flexible control systems. | 1 | 2 | 1 | 2 | 2 |
| | 6.11 Electrical Cables and Connectors | a. Cable types, construction and characteristics; b. High tension and co-axial cables; c. Crimping; d. Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes. | 1 | 2 | 2 | 2 | 2 |

MODULE 7. MAINTENANCE PRACTICES

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|--|--|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 7: Maintenance Practices | 7.1 Safety Precautions-Aircraft and Workshop | a. Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals; b. 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 | 2 |
| | 7.2 Workshop Practices | a. Care of tools, control of tools, use of workshop materials; b. Dimensions, allowances and tolerances, standards of workmanship; c. Calibration of tools and equipment, calibration standards. | 3 | 3 | 3 | 3 | 2 |
| | 7.3 Tools | a. Common hand tool types; b. Common power tool types; c. Operation and use of precision measuring tools; d. Lubrication equipment and methods; e. Operation, function and use of electrical general test equipment. | 3 | 3 | 3 | 3 | 2 |
| | 7.4 Avionic General Test Equipment | a. Operation, function and use of avionic general test equipment. | - | 2 | 3 | 3 | 2 |
| | 7.5 Engineering Drawings, Diagrams and Standards | a. Drawing types and diagrams, their symbols, dimensions, tolerances and projections; b. Identifying title block information; c. Microfilm, microfiche and computerised presentations; d. Specification 100 of the Air Transport Association (ATA) of America; e. Specification S1000D; f. Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; g. Wiring diagrams and schematic diagrams | 1 | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|---|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | 7.6 Fits and Clearances | a. Drill sizes for bolt holes, classes of fits; b. Common system of fits and clearances; c. Schedule of fits and clearances for aircraft and engines; d. Limits for bow, twist and wear; e. Standard methods for checking shafts, bearings and other parts. | 1 | 2 | 1 | 1 | 2 |
| | 7.7 Electrical Wiring Interconnection System (EWIS) | a. Continuity, insulation and bonding techniques and testing; b. Use of crimp tools: hand and hydraulic operated; c. Testing of crimp joints; d. Connector pin removal and insertion; e. Co-axial cables: testing and installation precautions; f. Identification of wire types, their inspection criteria and damage tolerance; g. Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding; h. EWIS installations, inspection, repair, maintenance and cleanliness standards. | 1 | 3 | 3 | 2 | 2 |
| | 7.8 Riveting | a. Riveted joints, rivet spacing and pitch; b. Tools used for riveting and dimpling; c. Inspection of riveted joints. | 1 | 2 | - | - | 2 |
| | 7.9 Pipes and Hoses | a. Bending and belling/flaring aircraft pipes; b. Inspection and testing of aircraft pipes and hoses; c. Installation and clamping of pipes | 1 | 2 | - | - | 2 |
| | 7.10 Springs | a. Inspection and testing of springs. | 1 | 2 | - | - | 2 |
| | 7.11 Bearings | a. Testing, cleaning and inspection of bearings; b. Lubrication requirements of bearings; c. Defects in bearings and their causes. | 1 | 2 | - | - | 2 |
| | 7.12 Transmissions | a. Inspection of gears, backlash; b. Inspection of belts and pulleys, chains and sprockets; | 1 | 2 | - | - | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | c. Inspection of screw jacks, lever devices, push-pull rod systems. | | | | | |
| | 7.13 Control Cables | a. Swaging of end fittings; b. Inspection and testing of control cables; c. Bowden cables; aircraft flexible control systems. | 1 | 2 | - | - | 2 |
| | 7.14 Material handling | a. Sheet Metal - Marking out and calculation of bend allowance; - Sheet metalworking, including bending and forming; - Inspection of sheet metal work. b. Composite and non-metallic - Bonding practices; - Environmental conditions; - Inspection methods. | - | 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 | 1 |
| | 7.16 Aircraft Weight and Balance | a. Centre of Gravity/Balance limits calculation: use of relevant documents; b. Preparation of aircraft for weighing; Aircraft weighing. | - | 2 | 2 | 2 | 2 |
| | 7.17 Aircraft Handling and Storage | a. Aircraft taxiing/towing/marshalling and associated safety precautions; b. Aircraft jacking, chocking, securing and associated safety precautions; c. Aircraft storage methods; d. Refuelling/de-fuelling procedures; e. De-icing/anti-icing procedures; f. Electrical, hydraulic and pneumatic ground supplies; | 2 | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | g. Effects of environmental conditions on aircraft handling and operation; h. Pre-flight and Post-flight servicing. | | | | | |
| | 7.18 Disassembly, Inspection, Repair and Assembly Techniques | a. Types of defects and visual inspection techniques; - Corrosion removal, assessment and reprotection; b. General repair methods, SRM; - Ageing, fatigue and corrosion control programmes; c. Non-destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and borescope methods; d. Disassembly and re-assembly techniques; e. Troubleshooting techniques. | 2 | 3 | 3 | 3 | 2 |
| | | | - | 2 | - | - | 2 |
| | | | - | 2 | 1 | 1 | 2 |
| | | | 2 | 2 | 2 | 2 | 2 |
| | | | - | 2 | 2 | 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 | - | 2 | 2 |
| | 7.20 Maintenance Procedures | a. Maintenance planning; b. Modification procedures; c. Store's procedures; d. Certification/release procedures; e. Interface with aircraft operation; f. Maintenance Inspection/Quality Control/Quality Assurance; g. Additional maintenance procedures; h. Control of life-limited components; i. Independent Inspection Procedure; j. Preservation Procedure; k. Maintenance records procedure; | 1 | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|----------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | l. Technical Defect Report System; m. Technical Investigation and Report Procedure; n. Technical Instruction Procedure; o. Technical Airworthiness Directive Procedure. | | | | | |
| | 7.21 Armament Safety | a. Safety principles and elements with armed aircraft, ammunition; b. Safety aspects of the canopy, ejection seat and other pyrotechnic devices. | 2 | 2 | 2 | 2 | 2 |

MODULE 8. BASIC AERODYNAMICS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|---|-----------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 8: Basic Aerodynamics | 8.1 Physics of the Atmosphere | International Standard Atmosphere (ISA), application to aerodynamics | 1 | 2 | 2 | 2 | 2 |
| | 8.2 Aerodynamics | a. Airflow around a body; b. Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; c. The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, the centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; d. Thrust, Weight, Aerodynamic Resultant; e. Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; f. Aerofoil contamination including ice, snow, frost | 1 | 2 | 2 | 2 | 2 |
| | 8.3 Theory of Flight | a. Relationship between lift, weight, thrust and drag; b. Glide ratio; c. Steady-state flights, performance; d. Theory of the turn; e. Influence of load factor: stall, flight envelope and structural limitations; f. Lift augmentation. | 1 | 2 | 2 | 2 | 2 |
| | 8.4 Flight Stability and Dynamics | Longitudinal, lateral and directional stability (active and passive). | 1 | 2 | 2 | 2 | 2 |

MODULE 9. HUMAN FACTORS

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|------------------------------------|---------------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 9: Human Factors | 9.1 General | a. The need to take human factors into account; b. Incidents attributable to human factors/human error; c. "Murphy's" law. | 1 | 2 | 2 | 2 | 2 |
| | 9.2 Human Performance and Limitations | a. Vision; b. Hearing; c. Information processing; d. Attention and perception; e. Memory; f. Claustrophobia and physical access. | 1 | 2 | 2 | 2 | 2 |
| | 9.3 Social Psychology | a. Responsibility: individual and group; b. Motivation and de-motivation; c. Peer pressure; d. "Culture" issues; e. Team working; f. Management, supervision and leadership; g. Military environment and other military factors. | 1 | 1 | 1 | 1 | 1 |
| | 9.4 Factors Affecting Performance | a. Fitness/health; b. Stress: domestic and work related; c. Time pressure and deadlines; d. Workload: overload and underload; e. Sleep and fatigue, shift work; f. Alcohol, medication, drug abuse. | 2 | 2 | 2 | 2 | 2 |
| | 9.5 Physical Environment | a. Noise and fumes; b. Illumination; c. Climate and temperature; d. Motion and vibration; e. Military Working environments | 1 | 1 | 1 | 1 | 1 |
| | 9.6 Tasks | a. Physical work; b. Repetitive tasks; c. Visual inspection; d. Complex systems | 1 | 1 | 1 | 1 | 1 |

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | 9.7 Communication | a. Within and between teams; b. Work logging and recording; c. Keeping up to date, currency; d. Dissemination of information | 2 | 2 | 2 | 2 | 2 |
| | 9.8 Human Error | a. Error models and theories; b. Types of error in maintenance tasks; c. Implications of errors (i.e., accidents); d. Avoiding and managing errors. | 1 | 2 | 2 | 2 | 2 |
| | 9.9 Hazards in the Workplace | a. Recognising and avoiding hazards; b. Dealing with emergencies. | 1 | 2 | 2 | 2 | 2 |

MODULE 10. AIRWORTHINESS LEGISLATION

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|---|---|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| Module 10: Airworthiness Legislation | 10.1 Airworthiness Regulatory Framework | a. Airworthiness; International Civil Aviation Organisation (ICAO): - Chicago Convention - Standards and Recommended Practices (SARPs) - Airworthiness Regulatory System | 1 | 1 | 1 | 1 | 2 |
| | | b. State Airworthiness Regulatory: - Malaysian State Airworthiness Authority (MSAA) - State Airworthiness - State airworthiness legislation - State airworthiness regulatory framework - State Airworthiness Program Management System - State airworthiness committee | 1 | 1 | 1 | 1 | 2 |
| | | c. State Technical Airworthiness Regulatory: - DGTA - Technical airworthiness regulatory system | 2 | 2 | 2 | 1 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|--|---|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Technical airworthiness regulatory framework - State Technical Airworthiness Program - Technical Airworthiness Management System | | | | | |
| | 10.2 Certifying Staff - Maintenance | <ul style="list-style-type: none"> a. Understanding of MSTAR-66 SAML b. Certifying Staff c. Authorisation Certification d. Maintenance release and Single Certificate of Maintenance Release e. Aircraft Release and Certificate Release to Service (CRS) f. Maintenance Inspector Supervisor g. Support Staff | 2 | 2 | 2 | 2 | 2 |
| | 10.3 Approved Maintenance Organisations | <ul style="list-style-type: none"> a. Understanding of MSTAR-145 | 2 | 2 | 2 | 2 | 2 |
| | 10.4 Air operations | <ul style="list-style-type: none"> a. Operating Authority's responsibilities, in particular regarding continuing airworthiness and maintenance; b. Aircraft Maintenance Programme; c. MEL/CDL or National equivalent; d. Documents to be carried on board; e. Aircraft placarding (markings). | 1 | 2 | 2 | 2 | 2 |
| | 10.5 Certification of aircraft, parts and appliances | <ul style="list-style-type: none"> a. General; General understanding of MSTAR-21 and airworthiness codes/criteria; | - | 1 | 1 | 1 | 2 |
| | | <ul style="list-style-type: none"> b. Documents; <ul style="list-style-type: none"> - Malaysian State Type-Certificates; - State Restricted Type-Certificates; - State Supplemental Type-Certificates; - State Certificates of Airworthiness; - State Restricted Certificates of Airworthiness; - State Permit to Fly; - Special Flight Permit - State Certificate of Registration; | - | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|----------------|---------------------------------|--|-------|----|----|----|-----|
| | | | A | B1 | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Weight & Balance - National Noise Certificate if required | | | | | |
| | 10.6 Continuing airworthiness | a. Understanding of MSTAR-21 provisions related to continuing airworthiness; | 2 | 2 | 2 | 2 | 2 |
| | | b. Understanding of MSTAR-M. | 2 | 2 | 2 | 2 | 2 |
| | | c. Understanding of MSTAR-147. | | | | | |
| | 10.7 Applicable Requirements | a. Maintenance Programmes, Maintenance checks & inspections; <ul style="list-style-type: none"> - Airworthiness Directives, - Service Bulletins, manufacturers' service information; - Modifications and repairs; - Maintenance documentation: maintenance manuals, structural repair manual, illustrated parts catalogue; - Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists or National equivalent; | 1 | 2 | 2 | 2 | 2 |
| | | b. Continuing airworthiness; <ul style="list-style-type: none"> - Minimum equipment requirements - Test flights; - Maintenance and dispatch requirements | - | 1 | 1 | 1 | 2 |
| | 10.8 Airworthiness Legislation | a. State Airworthiness Act | 2 | 2 | 2 | 2 | 2 |
| | | b. State Technical Airworthiness Regulations (STAR) | | | | | |
| | 10.9 Airworthiness Requirements | a. Essential Requirements | 2 | 2 | 2 | 2 | 2 |
| | | b. Initial & Continuing Airworthiness Requirements | | | | | |
| | | c. Airworthiness Orders | | | | | |

MODULE 11A. TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|---|---|--|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| Module 11A: Turbine Aeroplane Aerodynamics, Structures and Systems | 11.1 Theory of Flight | <p>a. Aeroplane Aerodynamics and Flight Controls Operation and effect of:</p> <ul style="list-style-type: none"> - roll control: ailerons and spoilers, - pitch control: elevators, stabilators, variable incidence stabilisers and canards, - yaw control, rudder limiters; - Control using elevons, rudder elevators; - High lift devices, slots, slats, flaps, flaperons; - Drag inducing devices, spoilers, lift dumpers, speed brakes; - Effects of wing fences saw tooth reheat hedges; - Boundary layer control using, vortex generators, stall wedges or leading-edge devices; - Operation and effect of trim tabs, balance and anti-balance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels; - Effects of external stores; <p>b. High-Speed Flight</p> <ul style="list-style-type: none"> - 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; - Effects of external stores. | 1 | 2 | 2 | 2 |
| | 11.2 Airframe Structures - General Concepts | <p>a. Airworthiness requirements for structural strength/integrity;</p> <ul style="list-style-type: none"> - Structural classification, primary, secondary and tertiary; - Fail-safe, safe life, damage tolerance concepts; | 2 | 2 | 2 | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|---------------------------------------|---|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Zonal and station identification systems; - Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; - Drains and ventilation provisions; - System installation provisions; - Lightning strike protection provision; - Aircraft bonding; <p>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;</p> <ul style="list-style-type: none"> - Structure assembly techniques: riveting, bolting, bonding; - Methods of surface protection, such as chromatis, anodising, painting; - Surface cleaning; - Airframe symmetry: methods of alignment and symmetry checks. | 1 | 2 | 2 | 2 |
| | 11.3 Airframe Structures – Aeroplanes | <p>a. Fuselage (ATA 52/53/56)</p> <ul style="list-style-type: none"> - Construction and pressurisation sealing; - Wing, stabiliser, pylon and undercarriage attachments; - Seat installation and cargo loading system; - Doors and emergency exit: construction, mechanisms, operation and safety devices; - Windows and windscreen construction and mechanisms; - Canopy construction and mechanism; <p>b. Wings (ATA 57)</p> <ul style="list-style-type: none"> - Construction; - Fuel storage; | 1 | 2 | 2 | 2 |
| | | | 1 | 2 | 2 | 2 |

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|----------------|---|--|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Landing gear, pylon, control surface and high lift/drag attachments; | 1 | 2 | 2 | 2 |
| | | <ul style="list-style-type: none"> c. Stabilisers (ATA 55) <ul style="list-style-type: none"> - Construction; - Control surface attachment; | 1 | 2 | 2 | 2 |
| | | <ul style="list-style-type: none"> d. Flight Control Surfaces (ATA 55/57) <ul style="list-style-type: none"> - Construction and attachment; - Balancing - mass and aerodynamic; | 1 | 2 | 2 | 2 |
| | | <ul style="list-style-type: none"> e. Nacelles/Pylons (ATA 54) <ul style="list-style-type: none"> - Nacelles/Pylons: Construction, Firewalls and Engine mounts. | 1 | 2 | 2 | 2 |
| | 11.4 Air Conditioning & Cabin Pressurisation (ATA 21) | <ul style="list-style-type: none"> a. Air supply <ul style="list-style-type: none"> - Sources of air supply including engine bleed, APU & ground cart; b. Air Conditioning <ul style="list-style-type: none"> - Air conditioning systems; - Air cycle and vapour cycle machines; - Distribution systems; - Flow, temperature and humidity control system; c. Pressurisation <ul style="list-style-type: none"> - Pressurisation systems; - Control & indication including control & safety valves; - Cabin pressure controllers; - Canopy seal, anti-g system; d. Safety and warning devices <ul style="list-style-type: none"> - Protection and warning devices | 1 | 2 | 2 | 2 |
| | | | 1 | 3 | 3 | 2 |
| | | | 1 | 3 | 3 | 2 |
| | | | 1 | 3 | 3 | 2 |
| | 11.5 Instruments/Avionic Systems | <ul style="list-style-type: none"> a. Instrument Systems (ATA 31) <ul style="list-style-type: none"> Pitot static: altimeter, airspeed indicator, vertical speed indicator; | 1 | 2 | 2 | |

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|----------------|---|---|--------|--------|--------|--------|
| | | | A | B1.1 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; - Compasses: direct reading, remote reading; - The angle of attack indication, stall warning systems; - Glass cockpit; - Other aircraft system indication <p>b. Avionic Systems</p> <ul style="list-style-type: none"> - Fundamentals of system lay-outs and operation of: Auto Flight (ATA 22), Communications (ATA 23) and Navigation Systems (ATA 34). | 1 | 1 | 1 | |
| | 11.6 Electrical Power (ATA 24) | <ul style="list-style-type: none"> a. Batteries Installation and Operation; b. DC power generation; c. AC power generation; d. Emergency power generation; e. Voltage regulation; f. Power distribution; g. Inverters, transformers, rectifiers; Circuit protection; h. External/Ground power. | 1 | 3 | 3 | |
| | 11.7 Equipment and Furnishings (ATA 25) | <ul style="list-style-type: none"> a. Emergency equipment requirements; <ul style="list-style-type: none"> - Seats, harnesses and belts; b. Cabin layout: <ul style="list-style-type: none"> - Equipment layout; - Cabin Furnishing installation; - Cargo handling and retention equipment; - Airstairs | 2 1 | 2 1 | 2 1 | 2 1 |
| | 11.8 Fire Protection (ATA 26) | <ul style="list-style-type: none"> a. Fire and smoke detection and warning systems; <ul style="list-style-type: none"> - Fire extinguishing systems; - System tests; b. Portable fire extinguisher. | 1 1 | 3 2 | 3 2 | 2 2 |

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|----------------|--|--|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | | | | | |
| | 11.9 Flight Controls (ATA 27) | <ul style="list-style-type: none"> a. Primary controls: aileron, elevator, rudder, spoiler; b. Trim control; c. Active load control; d. High lift devices; e. Lift dump, speed brakes; f. System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust lock systems; g. Balancing and rigging; h. Stall protection/warning system | 1 | 3 | 3 | |
| | 11.10 Fuel Systems (ATA 28) | <ul style="list-style-type: none"> a. System layout; b. Fuel tanks; c. Supply systems; d. Dumping, venting and draining; e. Cross-feed and transfer; f. Indications and warnings; g. Refuelling and de-fuelling including Air to Air Refuelling (AAR); h. Longitudinal balance fuel systems including during AAR. | 1 | 3 | 3 | 2 |
| | 11.11 Hydraulic Power (ATA 29) | <ul style="list-style-type: none"> a. System layout; b. Hydraulic fluids; Hydraulic reservoirs and accumulators; c. Pressure generation: electric, mechanical, pneumatic; d. Emergency pressure generation; e. Filters; Pressure Control; f. Power distribution; Indication and warning systems; g. Interface with other systems | 1 | 3 | 3 | 2 |
| | 11.12 Ice and Rain Protection (ATA 30) | <ul style="list-style-type: none"> a. Ice formation, classification and detection; b. Anti-icing systems: electrical, hot air and chemical; c. De-icing systems: electrical, hot air, pneumatic and chemical; d. Rain repellent; e. Probe and drain heating; | 1 | 3 | 3 | |

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|---|---|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | f. Wiper systems. | | | | |
| | 11.13 Landing Gear (ATA 32) | a. Construction, shock absorbing; b. Extension and retraction systems: normal and emergency; c. Indications and warning; d. Wheels, brakes, antiskid and autobraking; e. Tyres; f. Steering; g. Air-ground sensing; h. Drag-chute and Arresting hook/landing assistance equipment. | 2 | 3 | 3 | 2 |
| | 11.14 Lights (ATA 33) | a. External: navigation, anti-collision, landing, taxiing, ice, formation; b. Internal: cabin, cockpit, cargo, Night Vision Devices; c. Emergency. | 2 | 3 | 3 | |
| | 11.15 Oxygen (ATA 35) | a. System lay-out: cockpit, cabin; b. Sources, storage, charging and distribution; c. Supply regulation; d. Indications and warnings. | 1 | 3 | 3 | 2 |
| | 11.16 Pneumatic/ Vacuum (ATA 36) | a. System layout; b. Sources: engine/APU, compressors, reservoirs, ground supply; c. Pressure control; d. Distribution; e. Indications and warnings; f. Interfaces with other systems. | 1 | 3 | 3 | 2 |
| | 11.17 Water/Waste (ATA 38) | a. Water system lay-out, supply, distribution, servicing and draining; b. Toilet system lay-out, flushing and servicing; c. Corrosion aspects. | 2 | 3 | 2 | 2 |
| | 11.18 On-Board Maintenance Systems (ATA 45) | a. Central maintenance computers; b. Data loading system; c. Electronic library system; | 1 | 2 | 2 | |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|---|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | d. Printing; Structure monitoring (damage tolerance monitoring) | | | | |
| | 11.19 Integrated Modular Avionics (ATA 42) | a. Functions that may be typically integrated into the Integrated Modular Avionic (IMA) modules are, among others: b. 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; Core System; c. Network Components. | 1 | 2 | 2 | |
| | 11.20 Cabin Systems (ATA 44) | a. The units and components provide a means of communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data, and video transmissions. b. 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 Crew Panels. c. The Cabin Network Service typically consists of a server, typically interfacing with, among others, the Data/Radio Communication System; d. The Cabin Network Service may host functions such as access to pre-departure/departure reports; e. Cabin Core System; Cabin Monitoring System; Miscellaneous Cabin System. f. External Communication System; | 1 | 2 | 2 | |
| | 11.21 Information Systems (ATA 46) | a. The units and components furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are | 1 | 2 | 2 | |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|------------------|--|-------|------|----|-----|
| | | | A | B1.1 | B4 | LAE |
| | | <p>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.</p> <p>b. Typical examples include Air Traffic and Information Management Systems and Network Server Systems;</p> <p>c. Aircraft General Information System;</p> <p>d. Flight Deck Information System;</p> <p>e. Maintenance Information System;</p> <p>f. Passenger Cabin Information System;</p> <p>g. Miscellaneous Information System.</p> | | | | |

MODULE 11B. PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | |
|--|---|--|-------|------|
| | | | A2 | B1.2 |
| Module 11B: Piston Aeroplane Aerodynamics, Structures and Systems | 11.1 Theory of Flight | <p>a. Aeroplane Aerodynamics and Flight Controls Operation and effect of:</p> <ul style="list-style-type: none"> - roll control: ailerons and spoilers, - pitch control: elevators, stabilators, variable incidence stabilisers and canards, - yaw control, rudder limiters; - Control using elevons, rudder elevators; - High lift devices, slots, slats, flaps, flaperons; - Drag inducing devices, spoilers, lift dumpers, speed brakes; - Effects of wing fences saw tooth reheat hedges; - Boundary layer control using, vortex generators, stall wedges or leading-edge devices; - Operation and effect of trim tabs, balance and anti-balance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels; - Effects of external stores; <p>b. High-Speed Flight - N/A</p> <ul style="list-style-type: none"> - 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; - Effects of external stores. | 1 | 2 |
| | 11.2 Airframe Structures - General Concepts | <p>a. Airworthiness requirements for structural strength/integrity;</p> <ul style="list-style-type: none"> - 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; | 2 | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | |
|----------------|---------------------------------------|---|-------|------|
| | | | A2 | B1.2 |
| | | <ul style="list-style-type: none"> - System installation provisions; - Lightning strike protection provision; - Aircraft bonding; <p>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;</p> <ul style="list-style-type: none"> - Structure assembly techniques: riveting, bolting, bonding; - Methods of surface protection, such as chromatin, anodising, painting; - Surface cleaning; - Airframe symmetry: methods of alignment and symmetry checks | 1 | 2 |
| | 11.3 Airframe Structures – Aeroplanes | <p>a. Fuselage (ATA 52/53/56)</p> <ul style="list-style-type: none"> - Construction and pressurisation sealing; - Wing, stabiliser, pylon and undercarriage attachments; - Seat installation and cargo loading system; - Doors and emergency exit: construction, mechanisms, operation and safety devices; - Windows and windscreen construction and mechanisms; - Canopy construction and mechanism; <p>b. Wings (ATA 57)</p> <ul style="list-style-type: none"> - Construction; - Fuel storage; - Landing gear, pylon, control surface and high lift/drag attachments; <p>c. Stabilisers (ATA 55)</p> <ul style="list-style-type: none"> - Construction; - Control surface attachment; <p>d. Flight Control Surfaces (ATA 55/57)</p> <ul style="list-style-type: none"> - Construction and attachment; - Balancing - mass and aerodynamic; | 1 | 2 |
| | | | 1 | 2 |
| | | | 1 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | |
|----------------|---|--|-------|------|
| | | | A2 | B1.2 |
| | 11.9 Flight Controls (ATA 27) | a. Primary controls: aileron, elevator, rudder, spoiler; b. Trim control; c. High lift devices; d. System operation: manual; e. Gust lock systems; f. Balancing and rigging; g. Stall warning system | 1 | 3 |
| | 11.10 Fuel Systems (ATA 28) | a. System layout; b. Fuel tanks; c. Supply systems; d. Dumping, venting and draining; e. Cross-feed and transfer; f. Indications and warnings; g. Refuelling and de-fuelling. | 1 | 3 |
| | 11.11 Hydraulic Power (ATA 29) | a. System layout; b. Hydraulic fluids; c. Hydraulic reservoirs and accumulators; d. Pressure generation: electric, mechanical, e. Filters; f. Pressure Control; g. Power distribution; h. Indication and warning systems. | 1 | 3 |
| | 11.12 Ice and Rain Protection (ATA 30) | a. Ice formation, classification and detection; b. De-icing systems: electrical, hot air, pneumatic and chemical; c. Probe and drain heating; d. Wiper systems. | 1 | 3 |
| | 11.13 Landing Gear (ATA 32) | a. Construction, shock absorbing; b. Extension and retraction systems: normal and emergency; c. Indications and warning; d. Wheels, brakes, antiskid and autobraking; e. Tyres; f. Steering; g. Air-ground sensing; | 2 | 3 |

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| Modularisation | Training Session | Assessment Criteria | Level | |
|----------------|-------------------------------------|---|-------|------|
| | | | A2 | B1.2 |
| | 11.14 Lights (ATA 33) | a. External: navigation, anti-collision, landing, taxiing, ice, formation; b. Internal: cabin, cockpit, cargo, Night Vision Devices; c. Emergency. | 2 | 3 |
| | 11.15 Oxygen (ATA 35) | a. System lay-out: cockpit, cabin; b. Sources, storage, charging and distribution; c. Supply regulation; d. Indications and warnings. | 1 | 3 |
| | 11.16 Pneumatic/ Vacuum (ATA 36) | a. System layout; b. Sources: engine/APU, compressors, reservoirs, ground supply; c. Pressure control; d. Distribution; e. Indications and warnings; f. Interfaces with other systems. | 1 | |
| | 11.17 Water/Waste (ATA 38) | a. Water system lay-out, supply, distribution, servicing and draining; b. Toilet system lay-out, flushing and servicing; c. Corrosion aspects. | 2 | 3 |

MODULE 12. HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|---|--|--|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| Module 12: Helicopter Aerodynamics, Structures and Systems | 12.1 Theory of Flight - Rotary Wing Aerodynamics | a. Terminology; b. Effects of gyroscopic precession; c. Torque reaction and directional control; d. Dissymmetry of lift, Blade tip stall; e. Translating tendency and its correction; f. Coriolis effect and compensation; g. Vortex ring state, power settling, overpitching; h. Auto-rotation; i. Ground effect. | 1 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|--|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | 12.2 Flight Control Systems | a. Cyclic control; b. Collective control; c. Swashplate; d. Yaw control: Anti-Torque Control, Tail rotor, bleed air; e. Main Rotor Head: Design and Operation features; f. Blade Dampers: Function and construction; g. Rotor Blades: Main and tail rotor blade construction and attachment; h. Trim control, fixed and adjustable stabilisers; i. System operation: manual, hydraulic, electrical and fly-by-wire; j. Artificial feel; k. Balancing and rigging. | 2 | 3 | 3 | 2 |
| | 12.3 Blade Tracking and Vibration Analysis | a. Rotor alignment; b. Main and tail rotor tracking; c. Static and dynamic balancing; d. Vibration types, vibration reduction methods; e. Ground resonance. | 1 | 3 | 3 | 2 |
| | 12.4 Transmission | a. Gearboxes, main and tail rotors; b. Clutches, freewheel units and rotor brake; c. Tail rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers. | 1 | 3 | 3 | 2 |
| | 12.5 Airframe Structures | a. Airworthiness requirements for structural strength/integrity; <ul style="list-style-type: none"> - 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 | 2 | 2 |

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--------------------------------|---|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | | 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; <ul style="list-style-type: none"> - 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 chromatis, anodising, painting; - Surface cleaning; - Airframe symmetry: methods of alignment and symmetry checks. | 1 | 2 | 2 | 2 |
| | 12.6 Air Conditioning (ATA 21) | a. Air supply <ul style="list-style-type: none"> - Sources of air supply including engine bleed and ground cart. b. Air conditioning <ul style="list-style-type: none"> - Air conditioning systems; - Distribution systems; - Flow and temperature control systems; - Protection and warning devices. | 1 | 2 | 2 | |
| | | | 1 | 3 | 3 | |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|--|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | 12.7 Instruments/ Avionic Systems | a. Instrument Systems (ATA 31) <ul style="list-style-type: none"> - 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 | 2 | 1 |
| | | b. Avionic Systems. Fundamentals of system layouts and operation of: <ul style="list-style-type: none"> - Auto Flight (ATA 22); - Communications (ATA 23); - Navigation Systems (ATA 34). | 1 | 1 | 1 | |
| | 12.8 Electrical Power (ATA 24) | a. Batteries Installation and Operation; b. DC power generation, AC power generation; c. Emergency power generation; d. Voltage regulation, Circuit protection; e. Power distribution; f. Inverters, transformers, rectifiers; g. External/Ground power | 1 | 3 | 3 | |
| | 12.9 Equipment and Furnishings (ATA 25) | a. Emergency equipment requirements; <ul style="list-style-type: none"> - Seats, harnesses and belts; - Lifting systems; | 2 | 2 | 2 | 2 |
| | | b. Emergency flotation systems; Cargo handling and retention equipment. | 1 | 1 | 1 | 1 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|--|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | 12.10 Fire Protection (ATA 26) | a. Fire and smoke detection and warning systems; b. Fire extinguishing systems; c. System tests. | 1 | 3 | 3 | |
| | 12.11 Fuel Systems (ATA 28) | System layout; - Fuel tanks; - Supply systems; - Dumping, venting and draining; - Cross-feed and transfer; - Indications and warnings; - Refuelling and defueling. | 1 | 3 | 3 | 2 |
| | 12.12 Hydraulic Power (ATA 29) | System layout; - 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. | 1 | 3 | 3 | 2 |
| | 12.13 Ice and Rain Protection (ATA 30) | a. Ice formation, classification and detection; b. Anti-icing and De-icing systems: electrical, hot air and chemical; c. Rain repellent and removal; d. Probe and drain heating; e. Wiper system. | 1 | 3 | 3 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|--|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | 12.14 Landing Gear (ATA 32) | <ul style="list-style-type: none"> a. Construction, shock absorbing; b. Extension and retraction systems: normal and emergency; c. Indications and warning; d. Wheels, Tyres, brakes; e. Steering; f. Air-ground sensing; g. Skid's float. | 2 | 3 | 3 | 2 |
| | 12.15 Lights (ATA 33) | <ul style="list-style-type: none"> a. External: navigation, landing, taxiing, ice, formation; b. Internal: cabin, cockpit, cargo, Night Vision Devices' Lighting; c. Emergency. | 2 | 3 | 3 | |
| | 12.16 Pneumatic/ Vacuum (ATA 36) | System layout; <ul style="list-style-type: none"> - Sources: engine/APU, compressors, reservoirs, ground supply; - Pressure control; - Distribution; - Indications and warnings; - Interfaces with other systems. | 1 | 3 | 3 | |
| | 12.17 Integrated Modular Avionics (ATA 42) | Functions that may be typically integrated into the Integrated Modular Avionic (IMA) modules are, among others: <ul style="list-style-type: none"> - 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. | 1 | 2 | 2 | |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|---|---|----------|--------------|----|-----|
| | | | A3 A4 | B1.3 B1.4 | B4 | LAE |
| | 12.18 On-Board Maintenance Systems (ATA 45) | <ul style="list-style-type: none"> a. Central maintenance computers; b. Data loading system; c. Electronic library system; d. Printing; e. Structure monitoring (damage tolerance monitoring). | 1 | 2 | 2 | |
| | 12.19 Information Systems (ATA 46) | <ul style="list-style-type: none"> a. The units and components 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. b. Typical examples include Air Traffic and Information Management Systems and Network Server Systems; c. Aircraft General Information System; d. Flight Deck Information System; e. Maintenance Information System; f. Passenger Cabin Information System; g. Miscellaneous Information System. | 1 | 2 | 2 | |

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | | |
|---|------------------------------------|--|--------|--------|-----|
| | | | B2 | B4 | LAE |
| Module 13: Aircraft Aerodynamics, Structures and Systems | 13.1 Theory of Flight | a. Aeroplane Aerodynamics and Flight Controls Operation and effect of: <ul style="list-style-type: none"> - Roll control: ailerons and spoilers, - Pitch control: elevators, stabilators, variable incidence stabilisers & canards, - Yaw control, rudder limiters; - Control using elevons, rudder elevators; - 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; b. High-Speed Flight <ul style="list-style-type: none"> - Speed of sound, subsonic flight, transonic flight, supersonic flight; Mach number, critical Mach number; c. Rotary Wing Aerodynamics Terminology; <ul style="list-style-type: none"> - Operation and effect of cyclic, collective and anti-torque controls. | 1 | 1 | |
| | 13.2 Structures - General Concepts | a. Fundamentals of structural systems; b. Zonal and station identification systems; <ul style="list-style-type: none"> - Electrical bonding; - Lightning strike protection provision. | 1 2 | 1 2 | |
| | 13.3 Auto flight (ATA 22) | a. Fundamentals of automatic flight control including working principles and current terminology; b. Command signal processing; c. Modes of operation: roll, pitch and yaw channels; d. Yaw dampers; e. Stability Augmentation System in helicopters; f. Automatic trim control; g. Autopilot navigation aids interface; | 3 | 3 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|---|---|-------|----|-----|
| | | | B2 | B4 | LAE |
| | | h. Auto throttle heat-shrink airspeed systems; i. 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) | a. Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; | 3 | 3 | 2 |
| | | b. Working principles of the following systems: <ul style="list-style-type: none"> - Very High Frequency (VHF) communication, - High Frequency (HF) communication, - Audio, - Emergency Locator Transmitters (ELT), - Cockpit Voice Recorder (CVR), - Very High-Frequency On-Board omnidirectional range (VOR), - Tactical air navigation system (TACAN), - Automatic Direction Finding (ADF), - Instrument Landing System (ILS), - Flight Director systems, Distance Measuring Equipment (DME), - Doppler navigation, - Area navigation, RNAV systems, - Flight Management Systems (FMS), - Global Positioning System (GPS), - Global Navigation Satellite Systems (GNSS), - GNSS Landing System (GLS), - Transponder Landing System (TLS), - Inertial Navigation System (INS), - Air Traffic Control transponder, secondary surveillance radar, - Traffic Alert and Collision Avoidance System (TCAS), - Weather avoidance radar, - Radio altimeter, - Data-link communication and reporting; - Microwave Landing System (MLS), | 3 | 3 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|---|---|--------|--------|--------|
| | | | B2 | B4 | LAE |
| | | - Very Low Frequency and hyperbolic navigation (VLF/Omega). | | | |
| | 13.5 Electrical Power (ATA 24) | a. Batteries Installation and Operation; b. DC power generation; c. AC power generation; d. Emergency power generation; e. Voltage regulation; f. Power distribution; g. Inverters, transformers, rectifiers; h. Circuit protection; i. External/Ground power. | 3 | 3 | 2 |
| | 13.6 Equipment and Furnishings (ATA 25) | a. Electronic emergency equipment requirements; b. Cabin entertainment equipment. | 3 3 | 3 3 | 2 2 |
| | 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; - 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. | 2 3 | 2 3 | 2 2 |
| | 13.8 Instruments (ATA 31) | a. Classification; b. Atmosphere; c. Terminology; d. Pressure measuring devices and systems; e. Pitot static systems; f. Altimeters; g. Vertical speed indicators; h. Airspeed indicators; i. Machmeters; j. Altitude reporting/alerting systems; | 3 3 | 3 3 | 2 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|--------------------------------|---|-------------------------------------|-------------------------------------|-----|
| | | | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Air conditioning systems; - Flow, temperature and humidity control system; - Air cycle and vapour cycle machines <p>c. Pressurisation</p> <ul style="list-style-type: none"> - Pressurisation systems; - Control and indication including control and safety valves; - Cabin pressure controllers - Canopy seal and anti-g system; <p>d. Safety and warning devices</p> <ul style="list-style-type: none"> - Protection and warning devices. | 2 3 3 3 3 3 1 | 2 3 3 3 3 3 1 | |
| | 13.12 Fire Protection (ATA 26) | <p>a. Fire and smoke detection and warning systems; Fire extinguishing systems; System tests;</p> <p>b. Portable fire extinguisher.</p> | 3 1 | 2 1 | |
| | 13.13 Fuel Systems (ATA 28) | <p>a. System layout;</p> <ul style="list-style-type: none"> - Fuel tanks; - Supply systems; - Dumping, venting and draining; <p>b. Cross-feed and transfer;</p> <ul style="list-style-type: none"> - Refuelling and defueling including AAR; <p>c. Longitudinal balance fuel systems;</p> <ul style="list-style-type: none"> - Indications and warnings. | 1 2 3 | 1 2 3 | |
| | 13.14 Hydraulic Power (ATA 29) | <p>a. System layout;</p> <ul style="list-style-type: none"> - Hydraulic fluids; - Hydraulic reservoirs and accumulators; Filters; - Power distribution; - <p>b. Pressure control;</p> <ul style="list-style-type: none"> - Pressure generation: electrical, mechanical, pneumatic; | 1 3 | 1 3 | |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|--|--|-------|----|-----|
| | | | B2 | B4 | LAE |
| | | <ul style="list-style-type: none"> - Emergency pressure generation; - Indication and warning systems; - Interface with other systems. | | | |
| | 13.15 Ice and Rain Protection (ATA 30) | <ul style="list-style-type: none"> a. Rain repellent; <ul style="list-style-type: none"> - Wiper Systems; b. Ice formation, classification and detection; <ul style="list-style-type: none"> - Anti-icing systems: electrical, hot air and chemical; c. De-icing systems: electrical, hot air, pneumatic, chemical; <ul style="list-style-type: none"> - Probe and drain heating. | 1 | 1 | |
| | | | 2 | 2 | |
| | | | 3 | 3 | |
| | 13.16 Landing Gear (ATA 32) | <ul style="list-style-type: none"> a. Construction, shock absorbing; Tyres; b. Extension and retraction systems: normal and emergency; <ul style="list-style-type: none"> - Indications and warnings; - Wheels, brakes, antiskid and autobraking; - Steering; - Air-ground sensing. | 1 | 1 | |
| | | | 3 | 3 | |
| | 13.17 Oxygen (ATA 35) | <ul style="list-style-type: none"> a. System lay-out: cockpit, cabin; b. Sources, storage, charging and distribution; c. Supply regulation; Indications and warnings. | 3 | 3 | |
| | 13.18 Pneumatic/Vacuum (ATA 36) | <ul style="list-style-type: none"> a. Distribution b. System layout; <ul style="list-style-type: none"> - Sources: engine/APU, compressors, reservoirs, ground supply; c. Pressure control; <ul style="list-style-type: none"> - Indications and warnings; Interfaces with other systems. | 1 | 1 | |
| | | | 2 | 2 | |
| | | | 3 | 3 | |
| | 13.19 Water/Waste (ATA 38) | <ul style="list-style-type: none"> a. Water system lay-out, supply, distribution, servicing and draining; b. Toilet system lay-out, flushing and servicing. | 2 | 2 | |
| | 13.20 Integrated Modular Avionics (ATA 42) | <ul style="list-style-type: none"> a. Core System; b. Network Components. | 3 | 3 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|------------------------------------|---|-------|----|-----|
| | | | B2 | B4 | LAE |
| | | <p>c. Functions that may be typically integrated into the Integrated Modular Avionic (IMA) modules are, among others:</p> <ul style="list-style-type: none"> - 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. | | | |
| | 13.21 Cabin Systems (ATA 44) | <p>a. The units and components provide a means of communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service). Includes voice, data transmissions.</p> <p>b. 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 Crew Panels.</p> <p>c. The Cabin Network Service typically consists of a server, typically interfacing with, among others, the Data/Radio Communication System;</p> <p>d. The Cabin Network Service may host functions such as access to pre-departure/departure reports; Cabin Core System;</p> <p>e. External Communication System;</p> <p>f. Cabin Monitoring System; Miscellaneous Cabin System.</p> | 3 | 3 | 2 |
| | 13.22 Information Systems (ATA 46) | <p>a. The units and components 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.</p> | 3 | 3 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------|------------------|---|-------|----|-----|
| | | | B2 | B4 | LAE |
| | | b. Typical examples include: <ul style="list-style-type: none"> - 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. | | | |

MODULE 14. PROPULSION

| Modularisation | Training Session | Assessment Criteria | Level | | |
|----------------------------------|------------------------------------|---|-------|----|-----|
| | | | B2 | B4 | LAE |
| Module 14: Propulsion | 14.1 Turbine Engines | a. Constructional arrangement and operation of turbojet, turbofan, turboshaft and turbo-propeller engines; | 1 | 1 | 1 |
| | | b. Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC). | 2 | 2 | 2 |
| | 14.2 Engine Indicating Systems | a. Exhaust gas temperature/Interstage turbine temperature systems; b. Engine speed; c. Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; d. Oil pressure and temperature; e. Fuel pressure, temperature and flow; f. Manifold pressure; g. Engine torque; h. Propeller speed. | 2 | 2 | 2 |
| | 14.3 Starting and Ignition Systems | a. Operation of engine start systems and components; b. Ignition systems and components; c. Maintenance safety requirements. | 2 | 2 | 2 |

MODULE 15. GAS TURBINE ENGINE

| Modularisation | Training Session | Assessment Criteria | Level | | | |
|--|-------------------------|---|----------|--------------|----|-----|
| | | | A1 A3 | B1.1 B1.3 | B4 | LAE |
| Module 15: Gas Turbine Engine | 15.1 Fundamentals | a. Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; b. The relationship between force, work, power, energy, velocity, acceleration; c. Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop. | 1 | 2 | 2 | 2 |
| | 15.2 Engine Performance | a. Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; b. Engine efficiencies; c. By-pass ratio and engine pressure ratio; d. Pressure, temperature and velocity of the gas flow; e. Engine ratings, static thrust, the influence of speed, altitude and hot climate, flat rating, limitations. | - | 2 | 2 | 2 |
| | 15.3 Inlet | a. Compressor inlet ducts; b. Effects of various inlet configurations; Ice protection. | 2 | 2 | 2 | 2 |
| | 15.4 Compressors | a. Axial and centrifugal types; b. Constructional features and operating principles and applications; c. Fan balancing; d. Operation: Causes and effects of compressor stall and surge; e. Methods of airflow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; f. Compressor ratio. | 1 | 2 | 2 | 2 |
| | 15.5 Combustion Section | Constructional features and principles of operation. | 1 | 2 | 2 | 2 |
| | 15.6 Turbine Section | a. Operation and characteristics of different turbine blade types; b. Blade to disk attachment; c. Nozzle guide vanes; | 2 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|-------------------------------------|--|----------|--------------|----|-----|
| | | | A1 A3 | B1.1 B1.3 | B4 | LAE |
| | | d. Causes and effects of turbine blade stress and creep. | | | | |
| | 15.7 Exhaust | a. Constructional features and principles of operation; b. Convergent, divergent and variable area nozzles; c. Engine noise reduction; d. Thrust reversers. | 1 | 2 | 2 | 2 |
| | 15.8 Bearings and Seals | Constructional features and principles of operation. | - | 2 | 2 | 2 |
| | 15.9 Lubricants and Fuels | a. Properties and specifications; b. Fuel additives; c. Safety precautions | 1 | 2 | 2 | 2 |
| | 15.10 Lubrication Systems | System operation/layout and components | 1 | 2 | 2 | 2 |
| | 15.11 Fuel Systems | a. Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC); b. Systems layout and components. | 1 | 2 | 2 | 2 |
| | 15.12 Air Systems | Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services. | 1 | 2 | 2 | 2 |
| | 15.13 Starting and Ignition Systems | a. Operation of engine start systems and components; b. Ignition systems and components; c. Maintenance safety requirements. | 1 | 2 | 2 | 2 |
| | 15.14 Engine Indication Systems | a. Exhaust Gas Temperature/Interstage Turbine Temperature; b. Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; c. Oil pressure and temperature; d. Fuel pressure and flow; e. Engine speed; f. Vibration measurement and indication; g. Torque; h. Power. | 1 | 2 | 2 | 2 |

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| Modularisation | Training Session | Assessment Criteria | Level | | | |
|----------------|--|---|----------|--------------|----|-----|
| | | | A1 A3 | B1.1 B1.3 | B4 | LAE |
| | 15.15 Power Augmentation Systems | a. Operation and applications; b. Water injection, water-methanol; c. Afterburner systems. | - | 2 | 2 | 2 |
| | 15.16 Turboprop Engines | a. Gas coupled/free turbine and gear coupled turbines; b. Reduction gears; c. Integrated engine and propeller controls; d. Overspeed safety devices. | 1 | 2 | 2 | 2 |
| | 15.17 Turbo-shaft Engines | Arrangements, drive systems, reduction gearing, couplings, control systems. | 1 | 2 | 2 | 2 |
| | 15.18 Auxiliary Power Units (APUs) | Purpose, operation, protective systems. | 1 | 2 | 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 | 2 |
| | 15.20 Fire Protection Systems | Operation of detection and extinguishing systems. | 1 | 2 | 2 | 2 |
| | 15.21 Engine Monitoring and Ground Operation | a. Procedures for starting and ground run-up; b. Interpretation of engine power output and parameters; c. Trend (including oil analysis, vibration and borescopes) monitoring; d. Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer; e. Compressor washing/cleaning; f. Foreign Object Damage. | 1 | 3 | 3 | 2 |
| | 15.22 Engine Storage and Preservation | Preservation and de-preservation for the engine and accessories/systems. | 1 | 2 | 2 | 2 |

MODULE 16. PISTON ENGINE

| Modularisation | Training Session | Assessment Criteria | Level | |
|---|---|--|----------|--------------|
| | | | A1 A4 | B1.2 B1.4 |
| Module 16: Piston Engine | 16.1 Fundamentals | a. Mechanical, thermal and volumetric efficiencies; b. Operating principles - 2 strokes, 4 strokes, Otto and Diesel; c. Piston displacement and compression ratio; d. Engine configuration and firing order. | 1 | 2 |
| | 16.2 Engine Performance | a. Power calculation and measurement; b. Factors affecting engine power; c. Mixtures/leaning, pre-ignition. | 1 | 2 |
| | 16.3 Engine Construction | a. Crankcase, crankshaft, camshafts, sumps; b. Accessory gearbox; c. Cylinder and piston assemblies; d. Connecting rods, inlet and exhaust manifolds; e. Valve mechanisms; f. Propeller reduction gearboxes. | 1 | 2 |
| | 16.4 Engine Fuel Systems | a. Carburettors - Types, construction and principles of operation; - Icing and heating. b. Fuel injection systems - Types, construction and principles of operation. c. Electronic engine control - Operation of engine control and fuel metering systems including Full Authority Digital Engine (or Electronics) Control (FADEC); - Systems layout and components | 1 | 2 |
| | | | 1 | 2 |
| | | | 1 | 2 |
| 16.5 Starting and Ignition Systems | a. Starting systems, pre-heat systems; b. Magneto types, construction and principles of operation; c. Ignition harnesses, spark plugs; d. Low- and high-tension systems. | 1 | 2 | |
| 16.6 Induction, Exhaust and Cooling Systems | a. Construction and operation of induction systems including alternate air systems; b. Exhaust systems, engine cooling systems - air and liquid. | 1 | 2 | |

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| Modularisation | Training Session | Assessment Criteria | Level | |
|----------------|---|---|----------|--------------|
| | | | A1 A4 | B1.2 B1.4 |
| | 16.7 Supercharging/ Turbocharging | a. Principles and purpose of supercharging and its effects on engine parameters; b. Construction and operation of supercharging/turbocharging systems; c. System terminology; d. Control systems; e. System protection. | 1 | 2 |
| | 16.8 Lubricants and Fuels | a. Properties and specifications; b. Fuel additives; c. Safety precautions | 1 | 2 |
| | 16.9 Lubrication Systems | System operation/layout and components. | 1 | 2 |
| | 16.10 Engine Indication Systems | a. Engine speed; b. Cylinder head temperature; c. Coolant temperature; d. Oil pressure and temperature; e. Exhaust Gas Temperature; f. Fuel pressure and flow; g. Manifold pressure. | 1 | 2 |
| | 16.11 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 |
| | 16.12 Engine Monitoring and Ground Operation | a. Procedures for starting and ground run-up; b. Interpretation of engine power output and parameters; c. Inspection of engine and components: criteria, tolerances, and data specified by engine manufacturer. | 1 | 2 |
| | 16.13 Engine Storage and Preservation | Preservation and de-preservation for the engine and accessories/systems. | - | 3 |

MODULE 17A. PROPELLER

| Modularisation | Training Session | Assessment Criteria | Level | | | | |
|---------------------------------|---|---|----------|------|------|----|-----|
| | | | A1 A2 | B1.1 | B1.2 | B4 | LAE |
| Module 17: Propeller | 17.1 Fundamentals | a. Blade element theory; b. High/low blade angle, reverse angle, angle of attack, rotational speed; c. Propeller slip; d. Aerodynamic, centrifugal, and thrust forces; e. Torque; f. Relative airflow on blade angle of attack; g. Vibration and resonance. | 1 | 2 | 2 | 2 | 2 |
| | 17.2 Propeller Construction | a. Construction methods and materials used in propellers; b. Blade station, blade face, blade shank, blade back and hub assembly; c. Fixed pitch, controllable pitch, constant speeding propeller; Propeller/spinner installation. | 1 | 2 | 2 | 2 | 2 |
| | 17.3 Propeller Pitch Control | a. Speed control and pitch change methods, mechanical and electrical/electronic; b. Feathering and reverse pitch; Overspeed protection. | 1 | 2 | 2 | 2 | 2 |
| | 17.4 Propeller Synchronising | Synchronising and synchro phasor equipment. | - | 2 | 2 | 2 | 2 |
| | 17.5 Propeller Ice Protection | Fluid and electrical de-icing equipment. | 1 | 2 | 2 | 2 | 2 |
| | 17.6 Propeller Maintenance | a. Static and dynamic balancing; Blade tracking; b. Assessment of blade damage, erosion, corrosion, impact damage, delamination; c. Propeller treatment/repair schemes; d. Propeller engine running. | 1 | 3 | 3 | 3 | 2 |
| | 17.7 Propeller Storage and Preservation | Propeller preservation and de-preservation. | 1 | 2 | 2 | 2 | 2 |

MODULE 50. PRINCIPLES OF ARMAMENT

| Modularisation | Training Session | Assessment Criteria | Level | |
|--|---------------------------------------|--|-------|-----|
| | | | B4 | LAE |
| Module 50: Principles Of Armament | 50.1 Essential principles of Armament | a. Propellants and explosives; - Pyrotechnics (including Flares); Store's loading/unloading (to include chaff and flares) including hang-up and misfire; Ammunition's transportation; Air-to-air missile; Air-to-ground missile; Air-to-sea missile; Aerial torpedo; Bombs (freefall and guided); | 1 | 1 |
| | | b. Missile guidance methods: radar, infrared, electro-optical, passive anti-radiation; - Missile warheads and detonation mechanisms; - Guided weapon (missiles) aerodynamics and flight controls; | 1 | 1 |
| | | c. Storage, de-stocking and ammunitions assembly; - Documents for storage, release and transportation of explosive items and firearms and explosive regulations. | 1 | 1 |

MODULE 51. WEAPONS SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | |
|---|-------------------------------------|--|-------|-----|
| | | | B4 | LAE |
| Module 51: Weapons Systems | 51.1 Weapons stores system (ATA 94) | a. Weapon and stores release, fire and jettison stores; - Weapon suspension system; Interconnecting equipment to transport and release/fire weapons; Gunnery; | 3 | 2 |
| | | b. Weapon control, designating and acquiring a target. | 3 | 2 |

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MODULE 52. OPERATIONAL ATTACK SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | |
|--|---|--|-------|-----|
| | | | B4 | LAE |
| Module 52: Operational Attack Systems | 52.1 Attack System Management (ATA 39) | <ul style="list-style-type: none"> a. Architecture, management; Attack system functions; b. General rules of man-machine communication; c. Digital Networks, hardware and software, other information networks, the network for video signals, the network for blanking signals, MIL-STD-1553B (STANAG 3838 and STANAG 3910), MIL-STD-1773; d. Stores management hardware and software; e. Attack system resources, contributing resources; f. Role during mission phases. | 3 | 2 |
| | 52.2 Operational attack functions (ATA 40) | <ul style="list-style-type: none"> a. Air-to-air functions: fire control functions, bullet gun firing, short-range, medium-range or beyond visual range missiles firing, air-to-air management after weapons launch, management of on-board guidance; b. Air-to-surface functions, Air-to-sea functions; Information exchange and cooperation; c. Navigational functions, localisation, flight management, approach and landing management; d. The nap of the earth flight: terrain following and obstacle avoidance management; Self-protection: defensive manoeuvres and tactics elaboration against threats; e. Identification: aerial and surface objects identification based on autonomous and external identification means. | 3 | 2 |
| | 52.3 Cross-technical attack functions (ATA 42A) | <ul style="list-style-type: none"> a. Tactical situation awareness; b. Aircraft Mission preparation and restitution, hardware and software; Cautions and warnings management; c. Mission system control and management; d. Trajectory management; e. Attack system compatibilities management, electromagnetic compatibility between all the transmitters and receivers. | 3 | 2 |

MODULE 53. SURVEILLANCE AND ELECTRONIC WARFARE

| Modularisation | Training Session | Assessment Criteria | Level | |
|---|-------------------------------------|---|-------|-----|
| | | | B4 | LAE |
| Module 53: Surveillance and Electronic Warfare | 53.1 Surveillance (ATA 93) | a. Data processing; b. Data display; c. Recording; d. Identification; e. Infra-red and laser sensors; f. Surveillance radar; g. Magnetic sensors; h. Sonar sensors (active and passive). | 3 | 2 |
| | 53.2 Image recording (ATA 97) | a. Optical systems; b. Specificities of aerial photography; c. Cameras. | 3 | 2 |
| | 53.3 Electronic warfare (ATA 99) | a. Active electromagnetic; b. Passive electromagnetic; c. ELINT; d. Infrared and Laser systems; e. Electromagnetic countermeasures. | 3 | 2 |

MODULE 54. CREW SAFETY

| Modularisation | Training Session | Assessment Criteria | Level | |
|-----------------------------------|---|---|-------|-----|
| | | | B4 | LAE |
| Module 54: Crew Safety | 54.1 Crew escape and safety (ATA 95) | a. Ejection seats; b. Escape hatches/canopy, Miniature Detonating Cord (MDC); c. Global survival kits; d. Impact protection. | 3 | 2 |

MODULE 55. MILITARY COMMUNICATION SYSTEMS

| Modularisation | Training Session | Assessment Criteria | Level | |
|--|-------------------------------------|---|-------|-----|
| | | | B4 | LAE |
| Module 55: Military Communication Systems | 55.1 Military communication systems | a. Tactical Data Links: b. Link 11, Link 16, Link 22; c. Tactical communications systems. | 3 | 2 |

AMC to Appendix I

1. Basic knowledge training programs can be organized in three training phases as follows:
 - a. **Phase One - Knowledge.** Provide basic theoretical knowledge of scientific principles, structure, engine, aeromechanics and avionics in aeronautical engineering in preparing trainees to have the necessary background in terms of aircraft maintenance knowledge.
 - (1) Modularization of training can be divided into two categories of training sessions as follows:
 - (a) **Fundamental Knowledge Training.** Provide basic modules from M01 to M10 for basic theoretical knowledge information on aviation related situations or features in preparing trainees to have the necessary background in terms of knowledge of scientific principles.
 - (b) **Elective Knowledge Training.** Provides elective modules from M11 to M55 for basic theoretical knowledge of aircraft systems in preparing trainees to have the necessary background in terms of knowledge of aircraft systems.
 - (2) Objectively to provide a brief description of the entire subject using common terms, common words and examples to technical personnel who have knowledge of basic subject modularization. Trainees should have a basic understanding of the subject but are not expected to be able to apply it in practice.
 - (3) The aim is to become familiar with the main elements of the subject, and at the end of the completion is to ensure that the trainee has the necessary background in terms of knowledge to proceed to Phase Two of the Basic Training.
 - b. **Phase Two - Skill.** Provide basic theoretical knowledge and basic practical skills of materials, hardware and maintenance practices in preparing trainees to have the necessary background in terms of aircraft maintenance knowledge.
 - (1) Objectively provide general technical knowledge and basic skill practice of basic modularization subjects. Demonstrates an understanding of the subject and the ability, where applicable, to apply it in practice with the help of reference materials and instructions.
 - (2) The training session covers basic engineering practice, practical skills and attitude training to master essential skills before proceeding with aircraft or component maintenance activities that are fit to fly. Basic skills training provides basic theory and practice in the workshop or on the aircraft consisting of:
 - (a) Basic workshop and maintenance practices.
 - (b) Repair, maintenance and function testing of aircraft systems/component.

- (c) Job/task documentation and control practices.
- c. **Phase Three - Experience.** The training session for this phase was to apply practical training in line and base maintenance operations. This phase can be arranged in an approved maintenance organization work environment or simulated using unairworthy aircraft/components at a training centre.
- (1) Objectively provide technical personnel with a detailed and comprehensive description of theoretical knowledge and practical maintenance experience related to good aircraft maintenance practices in the subject of aviation modularization. Marks a thorough understanding of the subject and the ability to apply it with speed, accuracy and judgment appropriate to the situation. The ability to combine and apply separate elements of knowledge in a logical and comprehensive manner.
- (2) Basic experiential training consists of practical on-the-job training (simulated on airworthy aircraft/components or actual tasks on unairworthy aircraft/components under supervision) and job-oriented maintenance experience. Training provides maintenance experience on aircraft and components in performing the following maintenance task activities (simulated or actual):
- (a) **Inspection:** Inspection, servicing, cleaning, visual check or any work done on a component or installation.
- (b) **Component Change:** Removal/replacement of components.
- (c) **Testing:** Functional/operational check, adjustment, calibration, compensation, circuit testing or rigging of a component or installation.
- (d) **Troubleshooting & Rectification:** Rectification and/or troubleshooting of component or system faults.
- (e) **Ground Handling:** Launching, towing, mooring, lifting, recharge, replenishment, refuel or role change etc.
2. The bridging program for Category LAE shall cover the subject modules in phase one with the required level of knowledge up to level 2 for each relevant subject defined in paragraph 2.2 to Appendix 1 to MSTAR 66.
3. The basic knowledge requirements training program should contain practical training elements for basic skills and maintenance practice experience. Practical training shall be conducted under the full supervision of a practical instructor and meet the task / competency requirements. The practicum instructor must ensure that the trainee has participated in or carried out the prescribed work activities and the following supervisory tasks must be recorded:
- a. **Supervised:** Performs supervision on maintenance tasks.
- b. **Verifying:** Check that the appropriate level of maintenance tasks has been completed and are satisfactory.
- c. **Certifying:** Ensures all maintenance tasks are properly recorded and signed.

4. The elements of practical training selected for basic practical training shall be extracted from the list of tasks contained in paragraph 5. The percentage instructions below must be met to qualify for a basic category.
- Category A and B.** At least 80% of the basic skills task list and 80% of the maintenance operation experience task list in each relevant MSTAR 66 knowledge module reference must be performed.
 - Bridging Program.** At least 80% of the basic skills task list and 50% of the maintenance operational experience task list in each relevant MSTAR 66 knowledge module reference must be performed.
5. The basic skills and experience in practical training for state aircraft maintenance personnel are as follows:
- Basic Skills Task List**

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|--|---------------|--------------|---|
| 1.0 | M 06 | Materials and Hardware | | | |
| 1.1 | 6.3 | Aircraft Materials - Composite and Non-Metallic. (Wooden Structure Practices) | | | |
| 1.2 | 6.3 | Discuss construction methods used in wooden structures | - | B1.2 | - |
| 1.3 | 6.3 | Identify the correct glue for various wooden joints | A | B1.2 | - |
| 1.4 | 6.3 | Identify common tools for wooden structure repair. | A | B1.2 | - |
| 1.5 | 6.3 | Carry out a moisture check on a selected piece of wood | A | B1.2 | - |
| 1.6 | 6.3 | Perform various inspections of wooden structure for damage i.a.w. AMM. | - | B1.2 | - |
| 1.7 | 6.3 | Evaluate different levels of damage classes of wooden structure i.a.w. AMM. | - | B1.2 | - |
| 1.8 | 6.3 | Perform different wooden structure repairs i.a.w. AMM. | - | B1.2 | - |
| 1.9 | 6.3 | Aircraft Materials - Composite and Non-Metallic. (Fabric Covering Practices) | | | |
| 1.10 | 6.3 | Demonstrate correct lacing in a section of fabric | A | B1.1 B1.2 | - |
| 1.11 | 6.3 | Construct a fabric patch including correct stitching | A | B1.1 B1.2 | - |
| 1.12 | 6.3 | Carry out doping in a suitable fabric area | A | B1.1 B1.2 | - |
| 1.13 | 6.3 | Identify common tools for fabric covering structure repair | A | B1.1 B1.2 | - |
| 1.14 | 6.3 | Perform various inspections of fabric structure for damage i.a.w. AMM. | - | B1.1 B1.2 | - |
| 1.15 | 6.3 | Evaluate different levels of damage classes of fabric structure i.a.w. AMM | - | B1.1 B1.2 | - |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|---|---------------|--------------|----|
| | | | | | |
| 1.16 | 6.3 | Perform various repair and/or recover fabric on wing/ fuselage and/or control surface elements i.a.w. AMM | - | B1.1 B1.2 | - |
| 2.0 | M 07 | Maintenance Practices | | | |
| 2.1 | 7.1 | Demonstrate safety precautions when working with electricity, fluids, gasses, oxygen, and chemicals. | A | B1 | B2 |
| 2.2 | 7.1 | Demonstrate the identification and use of fire extinguishing agents. | A | B1 | B2 |
| 2.3 | 7.2 | Identify hazards in workshop environment and demonstrate safe working practices. | A | B1 | B2 |
| 2.4 | 7.2 | Demonstrate proper care and control of tools and equipment. | A | B1 | B2 |
| 2.5 | 7.2 | Check validity of calibration of tools and equipment. | A | B1 | B2 |
| 2.6 | 7.3 | Demonstrate the use of measuring equipment e.g., rulers, callipers, micrometres, verniers, height gauges, squares, v-blocks and surface tables. | A | B1 | B2 |
| 2.7 | 7.3 | Demonstrate to adjust, set and use torque spanners. | A | B1 | B2 |
| 2.8 | 7.3 | Demonstrate use of a torque meter with and without extension. | A | B1 | B2 |
| 2.9 | 7.3 | Use basic tools and equipment for: cutting, forming and joining commonly used materials. (Ferrous and non-ferrous). | A | B1 | B2 |
| 2.10 | 7.3 | Use a range of hand tools and power tools to achieve a dimensional accuracy of ± 0.010 in/ 0.25 mm. | A | B1 | B2 |
| 2.11 | 7.3 | Select and use feeler, slip, limit, go/ no go gauges. | A | B1 | B2 |
| 2.12 | 7.3 | Using appropriate tool, measure the pitch of some screw threads. | A | B1 | B2 |
| 2.13 | 7.3 | Demonstrate how to remove a sheared screw | A | B1 | B2 |
| 2.14 | 7.3 | Identify standards and specifications of common use parts i.e., nuts, bolts, washers and split pins. | A | B1 | B2 |
| 2.15 | 7.3 | Fit and remove a range of common use components e.g., split pins, tabs, spring and plain washers, plain and lock nuts. | A | B1 | B2 |
| 2.16 | 7.3 | Demonstrate competence when wire locking a variety of assemblies including a turn-barrel. | A | B1 | B2 |
| 2.17 | 7.4 | Use test meters to measure volts, amps, and resistance in practical task circumstances. | - | B1 | B2 |
| 2.18 | 7.4 | Using multi-meter, check an aircraft electrical circuit for continuity and resistance in conjunction with an electrical wiring diagram. | - | B1 | B2 |
| 2.19 | 7.4 | Using megger, check an aircraft electrical circuit for insulation resistance in conjunction with an electrical wiring diagram. | - | B1 | B2 |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|--------|---|---------------|----|----|
| | | | | | |
| 2.20 | 7.4 | Carry out basic fault-finding techniques using a range of test meters. | - | B1 | B2 |
| 2.21 | 7.5 | Interpret and work to engineering drawings. | A | B1 | B2 |
| 2.22 | 7.5 | Demonstrate familiarity with ATA 100 specs and ISO, AN, MS, NAS, MIL standards. | A | B1 | B2 |
| 2.23 | 7.5 | Identify standards and specifications of common use parts i.e., nuts, bolts, washers and split pins. | A | B1 | B2 |
| 2.24 | 7.6 | Fit and remove thread inserts. | A | B1 | B2 |
| 2.25 | 7.6 | Drill and tap a threaded hole. | A | B1 | B2 |
| 2.26 | 7.6 | Drill and ream perpendicular holes in ferrous and non-ferrous material. | A | B1 | B2 |
| 2.27 | 7.7 | Identify a range of electrical component symbols. | - | B1 | B2 |
| 2.28 | 7.7 | Carry out bonding tests for equipment bonding and metallic surface banding. | A | B1 | B2 |
| 2.29 | 7.7 | Select and use appropriate cable stripping tools. | A | B1 | B2 |
| 2.30 | 7.7 | Using at least two crimping systems, select appropriate cable crimping tools and crimp cables to prepare cable ends or plug/socket terminals. | A | B1 | B2 |
| 2.31 | 7.7 | Demonstrate insertion/extraction of electrical inserts (pins and sockets) in a variety of electrical connectors. | A | B1 | B2 |
| 2.32 | 7.7 | Perform repair or replace different types of electrical connectors. | A | B1 | B2 |
| 2.33 | 7.7 | Demonstrate selecting and wire splicing to different gauge of wires. | A | B1 | B2 |
| 2.34 | 7.7 | Inspect coaxial cable installations, correct them if necessary. | - | B1 | B2 |
| 2.35 | 7.7 | Identify wire types and check the damage tolerance by reference to the manuals. | - | B1 | B2 |
| 2.36 | 7.7 | Inspect electrical cable looms, bundles and connectors for damage and corrosion. | - | B1 | B2 |
| 2.37 | 7.7 | Inspection of cable feedthroughs. | - | B1 | B2 |
| 2.38 | 7.7 | Inspect and replace various types of wiring clamps. | A | B1 | B2 |
| 2.39 | 7.7 | Prepare and install a simple loom, using at least two binding methods. | - | B1 | B2 |
| 2.40 | 7.8 | Use hand & power tools to position and drill rivet holes to an accuracy of ± 0.030 ins/0.75 mm. | A | B1 | B2 |
| 2.41 | 7.8 | Identify a range of solid and blind rivets and fasteners. | A | B1 | - |
| 2.42 | 7.8 | Identify, select and use a range of rivet setting equipment. | A | B1 | - |
| 2.43 | 7.8 | Set a range of raised and countersunk rivets in aluminium sheet using various methods. | A | B1 | - |
| 2.44 | 7.8 | Select and use a range of appropriate rivet closing tools. | A | B1 | - |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|--------|---|---------------|----|----|
| | | | | | |
| 2.45 | 7.8 | Identify rivet setting faults. | - | B1 | - |
| 2.46 | 7.8 | Remove defective rivets without causing further damage to skin. | A | B1 | - |
| 2.47 | 7.8 | Select and install oversize rivets as instructed by Structure Repair Manual (SRM). | - | B1 | - |
| 2.48 | 7.8 | Set a range of different fasteners in aluminium sheet. | A | B1 | - |
| 2.49 | 7.9 | Replace & test flexible hose including clamps and brackets. | A | B1 | - |
| 2.50 | 7.9 | Bend, replace and test a rigid pipe, including clips and brackets. | A | B1 | - |
| 2.51 | 7.9 | Demonstrate the correct way to tighten pipes and hoses. | A | B1 | - |
| 2.52 | 7.10 | Discuss methods for inspection and testing of springs. | A | B1 | - |
| 2.53 | 7.11 | Inspect roller bearing for wear and damage. | A | B1 | - |
| 2.54 | 7.11 | Use a puller to remove a bearing, repack with grease and install. | A | B1 | - |
| 2.55 | 7.12 | Inspect screw jacks, levers, push-pull rod, belts, pulleys, chain and sprocket. | A | B1 | - |
| 2.56 | 7.12 | Check backlash of gears. | A | B1 | - |
| 2.57 | 7.13 | Inspect and assess condition of Bowden cables/flexible control cables (flex ball cables). | A | B1 | - |
| 2.58 | 7.13 | Demonstrate swaging of end fitting. | A | B1 | - |
| 2.59 | 7.14 | Identify alclad sheeting by part number. | - | B1 | - |
| 2.60 | 7.14 | Use a range of hand tools, folding and bending machines and guillotine to shape aluminium alloy to an accuracy of ± 0.5 mm x of bend angle, ± 0.030 ins / 0.075 mm. | - | B1 | - |
| 2.61 | 7.14 | Interpret engineering drawings and calculate size of material required to produce a component of material with one or more bends. | - | B1 | - |
| 2.62 | 7.14 | Demonstrate removal of corrosion / re-protection on an aluminium sheet. | - | B1 | - |
| 2.63 | 7.14 | Cut and shape sheet metal material to required profile, finish edges and deburr using approved procedures. | - | B1 | - |
| 2.64 | 7.14 | Identify the characteristics and properties of common composite and non-metallic materials. | - | B1 | - |
| 2.65 | 7.14 | Identify a range of sealing and bonding agents used in composite and non-metallic material. | - | B1 | - |
| 2.66 | 7.14 | Explain methods to detect defects/deterioration in composite and non-metallic material. | - | B1 | - |
| 2.67 | 7.14 | Perform a small repair of a composite structure | - | B1 | - |
| 2.68 | 7.14 | Perform a tap check of composite material and identify de-bonding. | - | B1 | - |
| 2.69 | 7.15 | Perform simple soldering tasks. | - | B1 | B2 |
| 2.70 | 7.15 | Solder cables to single and multipin connectors and inspection of joints. | - | B1 | B2 |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|--------|--|---------------|----|----|
| | | | | | |
| 2.71 | 7.15 | Inspect welded and brazed joints. | - | B1 | - |
| 2.72 | 7.15 | Discuss bonding methods, inspection of bonded joints. | - | B1 | - |
| 2.73 | 7.16 | Calculate Centre of Gravity/Balance limits, use relevant documents. | - | B1 | B2 |
| 2.74 | 7.18 | Use of a range of common assembly and disassembly tools plus specific application tools. | A | B1 | B2 |
| 2.75 | 7.18 | Measure shafts, bores, flanges, and adjacent surfaces using precision measuring instruments. | A | B1 | B2 |
| 2.76 | 7.18 | Demonstrate application of two-component sealers and compounds. | A | B1 | B2 |
| 2.77 | 7.18 | Demonstrate disconnecting and reconnecting of electrical connectors. | A | B1 | B2 |
| 2.78 | 7.18 | Discuss & implement Electrostatic Discharge (ESD) procedures. | A | B1 | B2 |

b. **Experience Task List - Line Maintenance Operation**

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|---|---------------|----|----|
| | | | | | |
| 3.0 | M 07 | Maintenance Practices | | | |
| 3.1 | 7.1 | Identify hazards and demonstrate safe working practices when working with moving surfaces, propellers, rotors, intakes, exhausts, heat and noise. | A | B1 | B2 |
| 3.2 | 7.3 | Demonstrate the use of lubrication equipment according to the AMM. | A | B1 | B2 |
| 3.3 | 7.5 | Identify part numbers from an approved component overhaul manual or illustrated parts catalogue. | A | B1 | B2 |
| 3.4 | 7.5 | Demonstrate correct reading and interpretation of schematic diagrams and wiring diagrams. | A | B1 | B2 |
| 3.5 | 7.7 | Demonstrate correct reading and interpretation of schematic diagrams and wiring diagrams. | - | B1 | B2 |
| 3.6 | 7.16 | Prepare aircraft for weighing. | - | B1 | - |
| 3.7 | 7.17 | Assist jacking an aircraft. | A | B1 | B2 |
| 3.8 | 7.17 | Park, chock and ground aircraft. | A | B1 | B2 |
| 3.9 | 7.17 | Perform long time parking. | A | B1 | B2 |
| 3.10 | 7.17 | Assist in the towing of an aircraft and discuss safety precautions. | A | B1 | B2 |
| 3.11 | 7.17 | Assist in servicing of toilet and potable water system (if installed). | A | B1 | B2 |
| 3.12 | 7.17 | Perform refuelling/defueling of aircraft. | A | B1 | B2 |
| 3.13 | 7.17 | Check & replenish oil and hydraulic systems, tyre pressures. | A | B1 | B2 |
| 3.14 | 7.17 | Perform lubrication of bearings (flight controls/ landing gear). | A | B1 | - |
| 3.15 | 7.17 | Remove and refit aircraft access panels. | A | B1 | B2 |

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| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|--------|---|---------------|----|----|
| | | | A | B1 | B2 |
| 3.16 | 7.17 | Connect and use external air supply (if adapter installed). | A | B1 | B2 |
| 3.17 | 7.17 | Connect and use external electrical power. | A | B1 | B2 |
| 3.18 | 7.17 | Assist de-icing/anti-icing procedures. | A | B1 | B2 |
| 3.19 | 7.17 | Discuss/demonstrate on aircraft preservation. | A | B1 | - |
| 3.20 | 7.17 | Discuss/demonstrate on engine preservation. | A | B1 | - |
| 3.21 | 7.18 | Locate components using referencing system, e.g station numbers. | A | B1 | B2 |
| 3.22 | 7.18 | Identify part and serial numbers from a component overhaul manual or IPC. | A | B1 | B2 |
| 3.23 | 7.18 | Replace static discharge wick. | A | B1 | B2 |
| 3.24 | 7.19 | In an event of lightning strike, Show the inspection procedure and required action according to AMM. | A | B1 | B2 |
| 3.25 | 7.19 | Discuss/demonstrate how to inspect aircraft areas for High Intensity Radiated Fields (HIRF) protection. | A | B1 | B2 |
| 3.26 | 7.19 | In an abnormal event of hard/ overweight landing, show the unscheduled inspection procedure and required action according to AMM. | A | B1 | - |
| 3.27 | 7.19 | In an abnormal event of flight through severe turbulence, show the unscheduled inspection procedure and required action according to AMM. | A | B1 | - |
| 3.28 | 7.20 | Explain the procedures for material storage and handling. | A | B1 | B2 |
| 3.29 | 7.20 | Assist and explain a scheduled check (e.g., 100 hrs check or A-check). | A | B1 | B2 |
| 3.30 | 7.20 | Demonstrate close-up of documentation following performance of maintenance tasks. | A | B1 | B2 |

c. **Experience Task List - Base Maintenance Operation**

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|---|---------------|----|----|
| | | | A | B1 | B2 |
| 3.0 | M 07 | Maintenance Practices | | | |
| 3.31 | 7.13 | Perform a rigging procedure of cables with tensiometer. | A | B1 | - |
| 3.32 | 7.18 | Disassemble and assemble an aircraft component i.a.w manufacturers overhaul manual. | A | B1 | B2 |
| 3.33 | 7.18 | Demonstrate replacement of circuit breakers. | A | B1 | B2 |
| 3.34 | 7.18 | Inspection of a structure using a mirror and a light source. | A | B1 | B2 |
| 3.35 | 7.18 | Perform non-destructive inspections (e.g., penetrant inspection). | A | B1 | - |
| 3.36 | 7.18 | Perform boroscope inspection of engine. | A | B1 | - |
| 3.37 | 7.18 | Demonstrate proficiency in troubleshooting techniques using Troubleshooting Manual (TSM) and on- board reporting systems. | - | B1 | B2 |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|------------------------|--|---------------|--------------|---|
| 4.0 | M 11A M 11B | Turbine/ Piston aeroplane aerodynamics, structures and systems | | | |
| 4.1 | 11.3 | Demonstrate the procedure for a structural inspection (from nose to tail). | - | B1.1 B1.2 | - |
| 4.2 | 11.3 | Check door seals and replace, if required. | A | B1.1 B1.2 | - |
| 4.3 | 11.3 | Discuss procedure for cleaning/polishing windows. | A | B1.1 B1.2 | - |
| 4.4 | 11.3 | Remove/install cockpit windshield. | A | B1.1 B1.2 | - |
| 4.5 | 11.3 | Replace a crew or passenger seat. | A | B1.1 B1.2 | - |
| 4.6 | 11.4 | Check operation of air conditioning system. | - | B1.1 B1.2 | - |
| 4.7 | 11.5 | Carry out a VHF Radio check. | - | B1.1 B1.2 | - |
| 4.8 | 11.5 | Identify flight data and voice recorder and perform tests. | - | B1.1 B1.2 | - |
| 4.9 | 11.5 | Assist a remote compass/ standby compass compensation swing and calculations. | - | B1.1 B1.2 | - |
| 4.10 | 11.5 | Assist calibration check of a pitot static system using a leak tester. | - | B1.1 B1.2 | - |
| 4.11 | 11.5 | Replace LRUs related to air data system and perform associated BITE. | - | B1.1 B1.2 | - |
| 4.12 | 11.5 | Run BITE tests on these navigation systems (VOR, ADF, LOC/GS, Marker, DME, Radio Altimeter, TCAS, GPWS, ATC, GPS). | - | B1.1 B1.2 | - |
| 4.13 | 11.6 | Remove/refit main battery and perform system test. | A | B1.1 B1.2 | - |
| 4.14 | 11.6 | Replace generator/alternator and run a functional test according to AMM. | A | B1.1 B1.2 | - |
| 4.15 | 11.6 | Remove/Refit Power Distribution Control & Protection equipment. | A | B1.1 B1.2 | - |
| 4.16 | 11.7 | Inspect cabin/cockpit emergency equipment for serviceability. | A | B1.1 B1.2 | - |
| 4.17 | 11.7 | Perform replacement of ovens, boilers and beverage makers. | A | B1.1 | - |
| 4.18 | 11.7 | Check seat belts for serviceability. | A | B1.1 B1.2 | - |
| 4.19 | 11.7 | Check condition and function of emergency equipment. | A | B1.1 B1.2 | - |
| 4.20 | 11.8 | Perform weight check on fire extinguisher container and replace, if necessary. | A | B1.1 B1.2 | - |
| 4.21 | 11.8 | Inspect and test Engine and Airframe fire detecting systems. | - | B1.1 B1.2 | - |
| 4.22 | 11.8 | Inspect and test Engine and Airframe fire protection systems. | - | B1.1 B1.2 | - |
| 4.23 | 11.9 | Perform gust lock operational check. | - | B1.1 B1.2 | - |
| 4.24 | 11.9 | Run a functional check on flap system. | - | B1.1 | - |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|--------|---|---------------|--------------|---|
| | | | | | |
| | | | | B1.2 | |
| 4.25 | 11.9 | Run a functional check on auto flap retraction. | - | B1.1 | - |
| 4.26 | 11.9 | Run a functional check on ailerons, elevators, rudder and spoilers. | - | B1.1 B1.2 | - |
| 4.27 | 11.9 | Use the on-board reporting system for troubleshooting of a faulty flight control system. | - | B1.1 | - |
| 4.28 | 11.9 | Run a functional check on a fly-by-wire system. | - | B1.1 | - |
| 4.29 | 11.9 | Discuss precaution and safety measures required before operating flight controls. | A | B1.1 B1.2 | - |
| 4.30 | 11.9 | Run a functional check on hydraulically operated flight control systems. | - | B1.1 B1.2 | - |
| 4.31 | 11.9 | Perform rigging of flight controls following component replacement. | - | B1.1 B1.2 | - |
| 4.32 | 11.9 | Discuss/review replacement procedure for a hydraulic flight control actuator. | - | B1.1 B1.2 | - |
| 4.33 | 11.10 | Replace and test a fuel booster pump. | A | B1.1 B1.2 | - |
| 4.34 | 11.11 | Discuss precaution and safety measures required before pressurising the hydraulic system. | A | B1.1 B1.2 | - |
| 4.35 | 11.11 | Replace hydraulic pump (electrical or engine driven). | A | B1.1 B1.2 | - |
| 4.36 | 11.11 | Inspect hydraulic reservoir, replenish fluid and recharge reservoir if required. | A | B1.1 B1.2 | - |
| 4.37 | 11.11 | Inspect hydraulic filters for foreign particles i.a.w. AMM. | A | B1.1 B1.2 | - |
| 4.38 | 11.11 | Check/replenish hydraulic and/or pneumatic accumulator pressure. | A | B1.1 B1.2 | - |
| 4.39 | 11.12 | Check function of anti-ice or de-icing system. | - | B1.1 B1.2 | - |
| 4.40 | 11.12 | Remove and refit windshield wiper blades. | A | B1.1 B1.2 | - |
| 4.41 | 11.13 | Replace landing gear wheels. | A | B1.1 B1.2 | - |
| 4.42 | 11.13 | Replace wheel brake. | A | B1.1 B1.2 | - |
| 4.43 | 11.13 | Bleed hydraulic brakes. | A | B1.1 B1.2 | - |
| 4.44 | 11.13 | Assess shock strut fluid level and recharge if required. | A | B1.1 B1.2 | - |
| 4.45 | 11.13 | Check function of landing gear indication system. | - | B1.1 B1.2 | - |
| 4.46 | 11.13 | Assist or discuss replacement of seals on shock strut. | A | B1.1 B1.2 | - |
| 4.47 | 11.13 | Prepare airplane for landing gear retraction/extension operation. | A | B1.1 B1.2 | - |
| 4.48 | 11.13 | Perform functional test of anti-skid system | - | B1.1 | - |
| 4.49 | 11.14 | Check the operation of internal and external lights. | A | B1.1 B1.2 | - |

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| | | | | | |
| 4.50 | 11.15 | Replenish oxygen system, or replace O ₂ -cylinder. | A | B1.1 B1.2 | - |
| 4.51 | 11.16 | Prepare and start APU. | - | B1.1 | - |
| 4.52 | 11.17 | Replenish portable water. | A | B1.1 | - |
| 4.53 | 11.17 | Inspect toilet and galley units for serviceability. | A | B1.1 | - |
| 4.54 | 11.18 | Retrieve data from on board maintenance system - if installed. | - | B1.1 | - |
| 5.0 | M 12 | Helicopter aerodynamics, structures and systems | | | |
| 5.1 | 12.2 | Demonstrate helicopter mooring and picketing. | A | B1.3 B1.4 | - |
| 5.2 | 12.2 | Secure main/tail rotor blades. | A | B1.3 B1.4 | - |
| 5.3 | 12.2 | Remove/refit main rotor. | A | B1.3 B1.4 | - |
| 5.4 | 12.2 | Perform main rotor flight control rigging. | - | B1.3 B1.4 | - |
| 5.5 | 12.2 | Remove/refit tail rotor. | A | B1.3 B1.4 | - |
| 5.6 | 12.2 | Perform tail rotor flight control rigging. | - | B1.3 B1.4 | - |
| 5.7 | 12.2 | Remove/refit main rotor head. | A | B1.3 B1.4 | - |
| 5.8 | 12.2 | Remove/refit main rotor gear box. | A | B1.3 B1.4 | - |
| 5.9 | 12.2 | Check rotor static and dynamic balancing. | - | B1.3 B1.4 | - |
| 5.10 | 12.3 | Check main and tail rotor tracking. | - | B1.3 B1.4 | - |
| 5.11 | 12.4 | Remove/refit transmission drive shaft. | A | B1.3 B1.4 | - |
| 5.12 | 12.5 | Demonstrate the procedure for a structural inspection (from nose to tail). | - | B1.3 B1.4 | - |
| 5.13 | 12.6 | Check operation of heating and ventilation system. | - | B1.3 B1.4 | - |
| 5.14 | 12.7 | Carry out a VHF Radio check. | - | B1.3 B1.4 | - |
| 5.15 | 12.7 | Identify flight data and voice recorder and perform tests. | - | B1.3 B1.4 | - |
| 5.16 | 12.7 | Assist a remote compass/ standby compass compensation swing and calculations. | - | B1.3 B1.4 | - |
| 5.17 | 12.7 | Assist calibration check of a pitot static system using a leak tester. | A | B1.3 B1.4 | - |
| 5.18 | 12.7 | Run BITE tests on these navigation systems (VOR, ADF, LOC/GS, Marker, DME, Radio Altimeter, TCAS, GPWS, ATC, GPS). | A | B1.3 B1.4 | - |
| 5.19 | 12.7 | Replace LRUs related to air data system and perform associated BITE. | - | B1.3 B1.4 | - |
| 5.20 | 12.8 | Remove/ Refit Batteries. | A | B1.3 B1.4 | - |

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|-----------|-------------|--|---------------|--------------|----|
| | | | | | |
| 5.21 | 12.8 | Conduct generator power check/voltage adjustment. | - | B1.3 B1.4 | - |
| 5.22 | 12.8 | Remove/Refit Power Distribution Control & Protection equipment. | A | B1.3 B1.4 | - |
| 5.23 | 12.8 | Operational check of ground power. | - | B1.3 B1.4 | - |
| 5.24 | 12.9 | Inspect cockpit emergency equipment for serviceability. | A | B1.3 B1.4 | - |
| 5.25 | 12.9 | Check seat belts for serviceability. | A | B1.3 B1.4 | - |
| 5.26 | 12.9 | Replace a crew seat. | A | B1.3 B1.4 | - |
| 5.27 | 12.10 | Inspect and test Engine and Airframe fire detecting systems. | - | B1.3 B1.4 | - |
| 5.28 | 12.10 | Inspection and functional testing of fire protection systems. | - | B1.3 B1.4 | - |
| 5.29 | 12.10 | Replace fire bottle. | A | B1.3 B1.4 | - |
| 5.30 | 12.11 | Perform refuelling and defueling. | A | B1.3 B1.4 | - |
| 5.31 | 12.11 | Perform a fuel quantity indicating system test. | - | B1.3 B1.4 | - |
| 5.32 | 12.11 | Replace and test a fuel booster pump. | A | B1.3 B1.4 | - |
| 5.33 | 12.12 | Inspect hydraulic reservoir, replenish fluid and recharge reservoir if required. | A | B1.3 B1.4 | - |
| 5.34 | 12.13 | Check function of anti-ice or de-icing system. | - | B1.3 B1.4 | - |
| 5.35 | 12.13 | Operational test of the pitot-probe ice protection. | - | B1.3 B1.4 | - |
| 5.36 | 12.13 | Remove and refit windshield wiper blades. | A | B1.3 B1.4 | - |
| 5.37 | 12.15 | Perform internal and external lights test. | A | B1.3 B1.4 | - |
| 5.38 | 12.18 | Retrieve data from on board maintenance system - (if installed). | - | B1.3 B1.4 | - |
| 5.39 | 12.18 | Check operation of on-board maintenance system - (if installed). | - | B1.3 B1.4 | - |
| 6.0 | M 13 | Aircraft aerodynamics structures and systems | | | |
| 6.1 | 13.3 | Perform an auto throttle system test. | - | - | B2 |
| 6.2 | 13.3 | Perform an auto pilot system test. | - | - | B2 |
| 6.3 | 13.3 | Stability Augmentation Systems functional testing (helicopters only). | - | - | B2 |
| 6.4 | 13.3 | Demonstrate BITE test practices on flight management system. | - | - | B2 |
| 6.5 | 13.4 | Carry out a VHF Radio check. | - | - | B2 |
| 6.6 | 13.4 | Discuss/review a typical VHF antenna replacement procedure. | - | - | B2 |
| 6.7 | 13.4 | Radio Standing Wave Measurement Tests. | - | - | B2 |
| 6.8 | 13.4 | Carry out a HF Radio check. | - | - | B2 |

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|-----------|--------|---|---------------|---|----|
| | | | | | |
| 6.9 | 13.4 | Replace various antennas. | - | - | B2 |
| 6.10 | 13.4 | Locate cockpit voice recorder and perform system test. | - | - | B2 |
| 6.11 | 13.4 | Intercommunication/Passenger Address Component replacement and testing. | - | - | B2 |
| 6.12 | 13.4 | ADF component replacements and functional tests. | - | - | B2 |
| 6.13 | 13.4 | VOR/ILS components replacement and Test using appropriate test equipment e.g., Nav 401/402. | - | - | B2 |
| 6.14 | 13.4 | Replace Radio Altimeter system components and test utilising appropriate (555) test set. | - | - | B2 |
| 6.15 | 13.4 | Replace DME components and Testing utilising appropriate test set. | - | - | B2 |
| 6.16 | 13.4 | Replace weather radar system components and functional test. | - | - | B2 |
| 6.17 | 13.4 | TCAS system component replacement and tests. | - | - | B2 |
| 6.18 | 13.4 | Inertial Reference Unit/ Platform Initialisation Check. | - | - | B2 |
| 6.19 | 13.5 | Replace battery and perform the operational checks. | - | - | B2 |
| 6.20 | 13.5 | Conduct generator power check/voltage adjustment. | - | - | B2 |
| 6.21 | 13.5 | Remove/Refit Electrical Control & Protection equipment. | - | - | B2 |
| 6.22 | 13.5 | Replace a circuit breaker and perform the operational check. | - | - | B2 |
| 6.23 | 13.6 | Replace IFE Equipment and test its functions (if available). | - | - | B2 |
| 6.24 | 13.6 | Locate emergency locator transmitter (ELT) and perform system test. | - | - | B2 |
| 6.25 | 13.7 | Discuss precaution and safety measures required before operating flight controls. | - | - | B2 |
| 6.26 | 13.7 | Run a functional check on a fly-by-wire system. | - | - | B2 |
| 6.27 | 13.8 | Discuss maintenance practices on EFIS (Electronic Flight Instrument System). | - | - | B2 |
| 6.28 | 13.8 | Locate flight data recorder and perform system test. | - | - | B2 |
| 6.29 | 13.8 | Perform fuel quantity indicating system calibration test. | - | - | B2 |
| 6.30 | 13.8 | Perform initialisation check on inertial reference unit/platform. | - | - | B2 |
| 6.31 | 13.8 | Perform few remote compass and standby compass compensation swing and calculations. | - | - | B2 |
| 6.32 | 13.8 | Removal/installation of Pitot Static Instruments. | - | - | B2 |
| 6.33 | 13.8 | Replace an LRU related to air data system, perform associated BITE. | - | - | B2 |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|--|---------------|--------------|----|
| 6.34 | 13.8 | Perform calibration check of a pitot static system using a leak tester. | - | - | B2 |
| 6.35 | 13.8 | Gyroscopic Instrument component replacements and functional tests. | - | - | B2 |
| 6.36 | 13.8 | Flight Direct or Systems functional tests. | - | - | B2 |
| 6.37 | 13.9 | Perform internal and external lights test. | - | - | B2 |
| 6.38 | 13.10 | Check operation of on-board maintenance system (BITE). | - | - | B2 |
| 6.39 | 13.11 | Assist in pressurisation test. | - | - | B2 |
| 6.40 | 13.12 | Perform inspection of engine fire wire detection systems. | - | - | B2 |
| 6.41 | 13.12 | Perform system test of fire/smoke detection and warning system. | - | - | B2 |
| 6.42 | 13.12 | Perform squib test of a fire extinguisher bottle. | - | - | B2 |
| 6.43 | 13.15 | Test propeller de-icing system. | - | - | B2 |
| 6.44 | 13.15 | Test wing leading edge de-icing boot. | - | - | B2 |
| 6.45 | 13.15 | Operational test of the pitot-probe ice protection. | - | - | B2 |
| 6.46 | 13.16 | Perform functional test of anti-skid system. | - | - | B2 |
| 6.47 | 13.20 | Integrated Modular Avionics, run a system test. | - | - | B2 |
| 6.48 | 13.21 | Cabin Systems, run a functional test. | - | - | B2 |
| 6.49 | 13.22 | Information Systems, run a system test. | - | - | B2 |
| 7.0 | M 14 | Propulsion | | | |
| 7.1 | 14.1 | Perform a FADEC system test. | - | - | B2 |
| 7.2 | 14.2 | Demonstrate replacement of thermocouple/ temperature sensor. | - | - | B2 |
| 7.3 | 14.2 | Demonstrate replacement of temperature, pressure, or flow indication components. | - | - | B2 |
| 7.4 | 14.2 | Perform functional test on engine temperature, pressure, or flow indication systems. | - | - | B2 |
| 7.5 | 14.3 | Replace igniter plug and check operation. | - | - | B2 |
| 7.6 | 14.3 | Perform ignition system functional test. | - | - | B2 |
| 7.7 | 14.3 | Assist replacement of starter turbine or starter valve. | - | - | B2 |
| 7.8 | 14.3 | perform test of starter and starter valve. | - | - | B2 |
| 8.0 | M 15 | Gas Turbine Engine | | | |
| 8.1 | 15.10 | Check oil quantity level, refill to correct level, if necessary. | A | B1.1 B1.3 | - |
| 8.2 | 15.11 | Perform a FADEC system test. | - | B1.1 B1.3 | - |
| 8.3 | 15.11 | Discuss/review fuel system layout and locate components. | A | B1.1 B1.3 | - |
| 8.4 | 15.11 | Perform a fuel injection system check. | - | B1.1 B1.3 | - |
| 8.5 | 15.11 | Rig engine power lever/ throttle control. | - | B1.1 B1.3 | - |
| 8.6 | 15.12 | Discuss/review the bleed air system layout and locate the components. | A | B1.1 B1.3 | - |
| 8.7 | 15.13 | Perform ignition system test. | - | B1.1 B1.3 | - |

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| | | | | | |
| 8.8 | 15.13 | Replace igniter plug and operation check. | A | B1.1 B1.3 | - |
| 8.9 | 15.13 | Demonstrate replacement of starter turbine or starter valve and system test. | A | B1.1 B1.3 | - |
| 8.10 | 15.14 | Perform functional test on engine indication systems. | - | B1.1 B1.3 | - |
| 8.11 | 15.14 | Demonstrate replacement of thermocouple/ temperature sensor. | A | B1.1 B1.3 | - |
| 8.12 | 15.14 | Demonstrate replacement of temperature, pressure or flow indication components. | A | B1.1 B1.3 | - |
| 8.13 | 15.19 | Assist in an engine removal & installation. | A | B1.1 B1.3 | - |
| 8.14 | 15.21 | Perform engine built-up. | - | B1.1 B1.3 | - |
| 8.15 | 15.21 | Inspect engine using boroscope. | - | B1.1 B1.3 | - |
| 8.16 | 15.21 | Assist in an engine test run-up. | - | B1.1 B1.3 | - |
| 9.0 | M 16 | Piston Engine | | | |
| 9.1 | 16.3 | Perform engine inlet/out let valve adjustment. | - | B1.2 B1.4 | - |
| 9.2 | 16.3 | Perform vacuum pump check. | - | B1.2 B1.4 | - |
| 9.3 | 16.4 | Perform a fuel injection system check. | - | B1.2 B1.4 | - |
| 9.4 | 16.4 | Perform carburettor fuel mixer and id le RPM adjustment. | - | B1.2 B1.4 | - |
| 9.5 | 16.4 | Rig engine power lever. | - | B1.2 B1.4 | - |
| 9.6 | 16.5 | Perform magnetos adjustment. | - | B1.2 B1.4 | - |
| 9.7 | 16.5 | Replace spark plug and check function. | A | B1.2 B1.4 | - |
| 9.8 | 16.5 | Perform ignition system test. | A | B1.2 B1.4 | - |
| 9.9 | 16.5 | Perform replacement of starter motor. | A | B1.2 B1.4 | - |
| 9.10 | 16.6 | Check baffles for condition. | A | B1.2 B1.4 | - |
| 9.11 | 16.7 | Demonstrate turbocharger and waste gate test and adjustment. | - | B1.2 B1.4 | - |
| 9.12 | 16.9 | Check oil quantity level, refill to correct level, if necessary. | A | B1.2 B1.4 | - |
| 9.13 | 16.10 | Perform functional test on engine indication system. | - | B1.2 B1.4 | - |
| 9.14 | 16.10 | Demonstrate replacement of temperature sensor. | - | B1.2 B1.4 | - |
| 9.15 | 16.11 | Perform engine built-up. | - | B1.2 B1.4 | - |
| 9.16 | 16.11 | Inspect engine using boroscope. | - | B1.2 B1.4 | - |

| Index No. | Module | Task / Competence | SAML Category | | |
|-----------|-------------|---|---------------|--------------|---|
| | | | A | B1.2 B1.4 | - |
| 9.17 | 16.11 | Assist in an engine removal & installation. | A | B1.2 B1.4 | - |
| 9.18 | 16.12 | Assist in an engine test run-up. | A | B1.2 B1.4 | - |
| 10.0 | M 17 | Propeller | | | |
| 10.1 | 17.2 | Perform removal and installation of propeller. | A | B1.1 B1.2 | - |
| 10.2 | 17.3 | Demonstrate adjustment of propeller RPM. | - | B1.1 B1.2 | - |
| 10.3 | 17.4 | Demonstrate propeller synchronising procedure with synchrophasing equipment. | - | B1.1 B1.2 | - |
| 10.4 | 17.4 | Perform synchronisation adjustment of engine parameter on a multiengine driven airplane. | - | B1.1 B1.2 | - |
| 10.5 | 17.5 | Check propeller de-icing system and components. | A | B1.1 B1.2 | - |
| 10.6 | 17.6 | Perform various inspections of propeller (including propeller blades, hub, spinner, backplate). | - | B1.1 B1.2 | - |
| 10.7 | 17.6 | Perform various inspection of propeller mounting bolts and mounting flange on engine. | - | B1.1 B1.2 | - |
| 10.8 | 17.6 | Perform inspection and classification of blade damage on a propeller i.a.w AMM. | - | B1.1 B1.2 | - |
| 10.9 | 17.6 | Perform propeller lubrication. | A | B1.1 B1.2 | - |
| 10.10 | 17.6 | Perform check of propeller track. | - | B1.1 B1.2 | - |
| 10.11 | 17.6 | Perform propeller static and dynamic balancing. | - | B1.1 B1.2 | - |
| 10.12 | 17.6 | Perform adjustment of governor system i.a.w. AMM. | - | B1.1 B1.2 | - |
| 10.13 | 17.6 | Check operation during ground run. | - | B1.1 B1.2 | - |
| 10.14 | 17.6 | Perform various minor repair on a composite/metal propeller blade damage i.a.w. AMM. | - | B1.1 B1.2 | - |

6. The assessment of basic skills and experience for state aircraft maintenance personnel is as follows:

a. **Assessment Task List.** At least one assessment for each task/competency of the relevant index number must be performed.

| Index No. | Task / Competence | SAML Category | | |
|-----------|---|---------------|----|----|
| | | A | B1 | B2 |
| 11.0 | Carry out inspection: Inspection, servicing, cleaning, visual check or any work done on a component or installation. | A | B1 | B2 |
| 11.1 | Carry out component change: Removal/replacement of components | - | B1 | B2 |
| 11.2 | Carry out testing: Functional/operational check, adjustment, calibration, compensation, circuit testing or | - | B1 | B2 |

| | | | | |
|------|--|---|----|----|
| | rigging of a component or installation. | | | |
| 11.3 | Carry out troubleshooting & Rectification: Rectification and/or troubleshooting of component or system faults. | - | B1 | B2 |
| 11.4 | Carry out ground handling: Launching, towing, mooring, lifting, recharge, replenishment, refuel or role change etc. | A | B1 | B2 |

7. Basic skills training and experience should be recorded in the student's practical logbook containing the tasks/competencies that have been completed. The following data should be entered in the Basic Skills and Experience Practical logbook:

- a. Introduction
- b. Part 1 - Personal Information
 1. Personal Data
 2. Training Record
- c. Part 2 - Compilation of Basic Skills Practical

| Index No. | Module | Task / Competence | Aircraft / Workshop | Practical Instructor | Date |
|-----------|--------|-------------------|---------------------|----------------------|------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

- d. Part 3 - Compilation of Practical Experience

| Index No. | Module | Task / Competence | Aircraft / Workshop | Practical Instructor | Date |
|-----------|--------|-------------------|---------------------|----------------------|------|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

- e. Part 4 - Compilation of Practical Assessment

| Index No. | Task / Competence | Aircraft / Workshop | Practical Assessor | Date |
|-----------|-------------------|---------------------|--------------------|------|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

Appendix II to 66. A.25**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 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 to MSTAR 66 Modules 7, 9 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 candidate's 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 under MSTAR 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 periods required by point 66.A.25 apply to each module examination, except for 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 or the DGTA to which they apply for an examination, the number and dates of attempts during the last year and the organisation or the DGTA where these attempts took place. The maintenance training organisation or the DGTA is responsible for checking the number of attempts within the applicable timeframes.
- 1.14 The answer to an essay question is expected to follow a 'report' style that presents a logical progression from introduction to conclusion. The essay will be marked for contents and overall presentation. Contents will account for 60% of the marks, while overall presentation will account for the remaining 40%.
- 1.15 Any AMTO who has the privilege of conducting the basic examination standard on behalf of DGTA for a state aircraft maintenance licence must provide three (3) sets of examination papers containing 30% different questions for each set. The DGTA will decide which one examination paper will be issued for each examination session.

2. **Basic Examination Standard: Number of questions per module**

2.1. MODULE 1 - MATHEMATICS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.
Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B2: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B4: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.2. MODULE 2 - PHYSICS

Category A: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B4: 28 multi-choice and 0 essay questions. Time allowed 35 minutes.

2.3. MODULE 3 - ELECTRICAL FUNDAMENTALS

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B2: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B4: 24 multi-choice and 0 essay questions. Time allowed 30 minutes.

2.4. MODULE 4 - ELECTRONIC FUNDAMENTALS

Category B1: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B2: 40 multi-choice and 0 essay questions. Time allowed 50 minutes.
Category B4: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

2.5. MODULE 5 - DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

Category A: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.
Category B1.1 and B1.3: 40 multi-choice and 0 essay questions. Time allowed 50 minutes.
Category B1.2 and B1.4: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

Category B2: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B4: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

2.6. MODULE 6 - MATERIALS AND HARDWARE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B1: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B2: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.
Category B4: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.

2.7. MODULE 7 - MAINTENANCE PRACTICES

Category A: 72 multi-choice and 2 essay questions. Time allowed 90 minutes plus 40 minutes.
Category B1: 80 multi-choice and 2 essay questions. Time allowed 100 minutes plus 40 minutes.
Category B2: 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.
Category B4: 60 multi-choice and 2 essay questions. Time allowed 75 minutes plus 40 minutes.

2.8. MODULE 8 - BASIC AERODYNAMICS

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B2: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B4: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

2.9. MODULE 9 - HUMAN FACTORS

Category A: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B1: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B2: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.
Category B4: 20 multi-choice and 1 essay question. Time allowed 25 minutes plus 20 minutes.

2.10. MODULE 10 - AIRWORTHINESS LEGISLATION

Category A: 32 multi-choice and 1 essay question. Time allowed 40 minutes plus 20 minutes.
Category B1: 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.
Category B2: 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.
Category B4: 40 multi-choice and 1 essay question. Time allowed 50 minutes plus 20 minutes.

2.11. MODULE 11A - TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 108 multi-choice and 0 essay questions. Time allowed 135 minutes.

Category B1: 140 multi-choice and 0 essay questions. Time allowed 175 minutes.
Category B4: 140 multi-choice and 0 essay questions. Time allowed 175 minutes

2.12. MODULE 11B - PISTON AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.
Category B1: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.

2.13. MODULE 12 - HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A: 100 multi-choice and 0 essay questions. Time allowed 125 minutes.
Category B1: 128 multi-choice and 0 essay questions. Time allowed 160 minutes.
Category B4: 128 multi-choice and 0 essay questions. Time allowed 160 minutes.

2.14. MODULE 13 - AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

Category B2: 180 multiple-choice and 0 essay questions. Time allowed: 225 minutes.
Category B4: 180 multiple-choice and 0 essay questions. Time allowed: 225 minutes.
Questions and time allowed may be split into two examinations, as appropriate.

2.15. MODULE 14 - PROPULSION

Category B2: 24 multiple-choice and 0 essay questions. Time allowed 30 minutes.
Category B4: 24 multiple-choice and 0 essay questions. Time allowed 30 minutes.

2.16. MODULE 15 - GAS TURBINE ENGINE

Category A: 60 multi-choice and 0 essay questions. Time allowed 75 minutes.
Category B1: 92 multi-choice and 0 essay questions. Time allowed 115 minutes.
Category B4: 92 multi-choice and 0 essay questions. Time allowed 115 minutes.

2.17. MODULE 16 - PISTON ENGINE

Category A: 52 multi-choice and 0 essay questions. Time allowed 65 minutes.
Category B1: 72 multi-choice and 0 essay questions. Time allowed 90 minutes.

2.18. MODULE 17 - PROPELLER

Category A: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.
Category B1: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.
Category B4: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

2.19. MODULE 50 - PRINCIPLES OF ARMAMENT

Category B4: 12 multi-choice and 0 essay questions. Time allowed 15 minutes.

2.20. MODULE 51 - WEAPONS SYSTEMS

Category B4: 32 multi-choice and 0 essay questions. Time allowed 40 minutes.

2.21. MODULE 52 - OPERATIONAL ATTACK SYSTEMS

Category B4: 80 multi-choice and 0 essay questions. Time allowed 100 minutes.

2.22. MODULE 53 - SURVEILLANCE AND ELECTRONIC WARFARE

Category B4: 48 multi-choice and 0 essay questions. Time allowed 60 minutes.

2.23. MODULE 54 - CREW SAFETY

Category B4: 20 multi-choice and 0 essay questions. Time allowed 25 minutes.

2.24. MODULE 55 - MILITARY COMMUNICATION SYSTEMS

Category B4: 16 multi-choice and 0 essay questions. Time allowed 20 minutes.

3. **Bridging Examination Standard: Number of questions per Category**

3.1 MODULE 60 - BRIDGING TRAINING PROGRAMME

Eligibility for the bridging programme for the SAML categories shall be under the following examination standard matrix. Relevant modules are indicated with 'X' and '*' for qualification requirements in elective subjects for the relevant conversion category:

| Number of Questions | Cat LAE | Cat B1 | Cat B2 | Cat B4 |
|--|---------|--------|--------|--------|
| Module 60A: Fundamental - 100 multi-choices. - Time allowed 125 minutes | X | X | X | X |
| Module 60B: Aeromechanical - 180 multi-choices. - Time allowed 225 minutes. - Questions and time allowed may be split into two examinations, as appropriate. | X | X | | * |
| Module 60C: Avionics - 180 multi-choices. - Time allowed 225 minutes. - Questions and time allowed may be split into two examinations, as appropriate. | X | | X | * |
| Module 60D: Armament - 100 multi-choices. - Time allowed 125 minutes | X | | | X |
| Module 7: Maintenance Practices - 2 essay questions. - Time allowed 40 minutes | X | X | X | X |
| Module 9: Human Factors - 1 essay question. - Time allowed 20 minutes | X | X | X | X |
| Module10: Airworthiness Legislation - 1 essay question. - Time allowed 20 minutes | X | X | X | X |

Appendix III to 66. A.45, AMC 66.A.20(a) & GM 66. A.45**AIRCRAFT TYPE/TASK TRAINING AND EXAMINATION STANDARD, AND ON THE JOB TRAINING****1. General**

The endorsement of aircraft type ratings requires the satisfactory completion of the relevant Category B1, B2, C or LAE aircraft type training, Category B4 aircraft armament type rating and Category A aircraft task training.

State aircraft type/task training shall consist of theoretical training and examination, and, except for the Category C and Category LAE ratings, practical training and performance assessment.

Where state aircraft type training includes military-specific systems, the prerequisite is that the student shall have gained the relevant 50-series modules (or sub-modules).

(a) Theoretical training and examination shall comply with the following requirements:

(1) Shall be conducted by a maintenance training organisation appropriately approved under MSTAR 147 or, when conducted by other organisations, as directly approved by the DGTA.

(2) Shall comply, except as permitted by the differences training provided for in point (c), with the standard set out in point 3.1 of this Appendix.

(3) In the case of a Category C person qualified by holding an academic route as specified in point 66.A.30(a)(5), the first relevant aircraft type theoretical training shall be at the Category B1, Category B2 or Category B4 level.

(4) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.

(5) In the case of a Category LAE person qualified by holding an academic qualification and passed bridging basic training course as specified in point 66.A.30(a)(6)(b), the first relevant aircraft type theoretical training shall be a combination of Category B1 and Category B2 levels, or a combination of Category B1, Category B2 and military-specific system levels.

(b) Practical training and assessment shall comply with the following requirements:

(1) Shall be conducted by a maintenance training organisation appropriately approved under MSTAR 147 or, when conducted by other organisations, as directly approved by the DGTA.

(2) Shall comply, except as permitted by the differences training described in point (c), with the standard set out in point 3.2 of this Appendix.

(3) Shall include a representative cross-section of maintenance activities relevant to the aircraft type.

- (4) Shall include demonstrations using equipment, components, simulators, other training devices or aircraft.
- (5) Shall have been started and completed within the 3 years preceding the application for a type rating endorsement.
- (c) Differences Training
- (1) Difference's training is the training required to cover the differences between military, civil or state aircraft type ratings of the same manufacturer as determined by the Authority.
- (2) Difference's 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.
- (3) A type rating shall only be endorsed on a licence after differences training when the applicant also complies with one of the following conditions:
- i. Having already endorsed on the licence the aircraft type rating from which the differences are being identified, or
 - ii. Having completed the type training requirements for the aircraft from which the differences are being identified.

2. **Aircraft Type Training Levels**

- (a) Aircraft Type Training Level Course is defining the depth of training and the level of knowledge that the training is intended to achieve corresponding to work proficiency/skill level, functional grouping or group's job position of the maintenance organization chart.
- (b) SAML type training consists of five (5) Course Levels (CL) with different course objectives. Course Level 1, Level 2 and Level 3 are type training packages for Aircraft Maintenance Technician Category B1, Category B2 or Category B4. Whereas Course Level 4 is type training for Aircraft Maintenance Supervisor Category C and Course Level 5 is type training for Aviation Engineer Category LAE.
- (c) The training levels listed below define the objectives, the depth of training and the level of knowledge that the training is intended to achieve.

2.1 **Type Training for Aircraft Maintenance Technician Category B1, B2 and B4**

- (a) **Course Level 1: General Familiarization.** A Brief and explain on safety precaution, human factors, technical publication, aircraft general overview, system configuration, basic system description, system overview of controls, indicators and principal components function & location of the group airframe, systems, propeller/rotor, and power plants as outlined in the Systems Description Section of the Aircraft Maintenance Manual or Instructions for Continuing Airworthiness.

Course Objectives: Provide a simple description of the whole subject using typical terms, common words and examples to technical personnel with knowledge of the aircraft general overview, system configuration and basic

system description before recertification or to proceed on next Course Level 2, Service and Ground Handling Training.

Course Training Outcome: Upon completion of Level 1 training (minimum 30 hours of ATA chapter), the student will be able to:

- (1) Identify safety precautions related to the airframe, its systems and power plant during maintenance activities
- (2) Identify special tooling and test equipment used with the aircraft.
- (3) Identify aircraft manuals, maintenance practices important to the airframe, its systems and power plant.
- (4) Define the general aircraft overview, role and characteristics.
- (5) Define system description, general layout, characteristics, major component location and function.
- (6) Explain the normal functioning of each major system, including terminology and nomenclature.

Course Modules: Course Level 1 - General Familiarization

| Module | Training Session | Assessment Criteria |
|---|--|--|
| 1. Aircraft Maintenance and Management. | 1.4 Maintenance Safety Management. | <ol style="list-style-type: none"> a. Explain the work environment floor plan and emergency evacuation procedure. b. Explain the aircraft hazard, danger zone area and safety precautions. c. Explain the type of danger on aircraft. d. Explain the cockpit safety precaution. e. Explain the Maintenance Safety Management. |
| | 1.5 Tools and Equipment Management. | <ol style="list-style-type: none"> a. Describe the tools and equipment control management procedure. b. Describe the Foreign Object Debris & Damage (FOD). c. Explain the two types of FOD. d. Describe the loose article check e. Describe the Illustrated Tool and Equipment Manual (ITEM). |
| | 1.6 Petroleum, Oil & Lubricates Management. | <ol style="list-style-type: none"> a. Explain the Petroleum, Oil & Lubricates (P.O.L) control procedure. b. Explain the P.O.L characteristic and hazard category. c. Explain the Petroleum, Oil & Lubricates Management. |
| | 1.7 Maintenance Reference, Manual and Documentation. | <ol style="list-style-type: none"> a. Describe the Maintenance Manual. b. Describe the Component Manual. c. Describe the Wiring Diagram Manual. d. Describe on Illustrated Part Catalogue. e. Describe on Structure Repair Manual. f. Describe on Minimum Equipment List. |

| Module | Training Session | Assessment Criteria |
|------------------------|--|---|
| | | <ul style="list-style-type: none"> g. Describe the Aircraft Log Book. h. Describe Maintenance Reference, Manual and Documentation. |
| 2. Human Factor | 2.1 Human Factor in Aircraft Maintenance and Inspection. | <ul style="list-style-type: none"> a. Explain the main category of maintenance error. b. Discuss why technical personnel make errors in maintenance. c. Describe the "Dirty Dozen" to show human error in the maintenance environment. d. Explain Human Factors in Aircraft Maintenance and Inspection. |
| 3. Aircraft General. | 3.1 Aircraft General Overview. | <ul style="list-style-type: none"> a. State general aircraft information. b. State on aircraft interior and exterior furnishing. c. State on aircraft Placards and Markings. d. State on Aircraft General Overview. |
| | 3.2 Aircraft Role and Function. | <ul style="list-style-type: none"> a. State on categories of aircraft role equipment and function. b. State on Aircraft Role and Function. |
| | 3.3 Aircraft Characteristics and Specification. | <ul style="list-style-type: none"> a. Explain aircraft dimensions and areas. b. Explain on ground servicing diagram and specification. c. Explain the main physical geometry. d. Explain zonal and structural stations. e. Explain Aircraft Characteristics and Specification. |
| 4. Airframe System. | 4.1 ATA Chapter under Group Airframe System. | <ul style="list-style-type: none"> a. Explain on system introduction and general layout. b. Explain on System Description. c. State the main components. d. Explain on main component function. e. Points on main component location. f. Explain the ATA Chapter under the Group Airframe System. |
| 5. Airframe Structure. | 5.1 ATA Chapter under Group Airframe Structure. | <ul style="list-style-type: none"> a. Explain on system introduction and general layout. b. Explain on System Description. c. State on main components. d. Explain the main component function. e. Points on main component location. f. Explain the ATA Chapter under Group Airframe Structure. |
| 6. Propeller. | 6.1 ATA Chapter under Group Propeller. | <ul style="list-style-type: none"> a. Explain on system introduction and general layout. b. Explain on System Description. c. State on main components. d. Explain the main component function. e. Points on main component location. f. Explain the ATA Chapter under Group Propeller. |

| Module | Training Session | Assessment Criteria |
|------------------------------|---|--|
| 7. Engine. | 7.1 ATA Chapter under Group Engine. | a. Explain on system introduction and general layout. b. Explain on System Description. c. State on main components. d. Explain the main component function. e. Points on main component location. f. Explain the ATA Chapter under Group Engine. |
| 8. Helicopter. | 8.1 ATA Chapter under Group Helicopter Rotor. | a. Explain on system introduction and general layout. b. Explain on System Description. c. State on main components. d. Explain the main component function. e. Points on main component location f. Explain the ATA Chapter under Group Helicopter Rotor. |
| 9. Military Specific Systems | 9.1 ATA Chapter under Group Military Specific System. | a. Explain on system introduction and general layout. b. Explain on System Description. c. State on main components. d. Explain the main component function. e. Points on main component location. f. Explain the ATA Chapter under Group Military Specific System. |
| 10. Site Visits | 10.1 Workplace and Aircraft. | a. Explain workplace identification b. Explain the identification of the aircraft structure. c. Explain the location of the main components |

- (b) **Course Level 2: Service and Ground Handling.** Explain the maintenance record and report documentation, maintenance safety precaution, aircraft ground handling, aircraft servicing & standard practice, minor troubleshooting, Airworthiness Limitation and Maintenance Program. General knowledge of the theoretical and practical aspects of the subject.

Course Objectives: To provide technical personnel with knowledge and skill of service and ground handling jobs task before award competency certification, or to proceed with the Course Level 3, Line & Base Maintenance Training.

Course Training Outcome: In addition to the information contained in the Level 1 training, after Level 2 training, the student will be able to:

- (1) Recall the safety precautions to be observed when working on or near the aircraft, power plant and systems.
- (2) Demonstrate proficiency in the use of crew reports and on-board reporting systems (minor troubleshooting) and determine aircraft airworthiness per the Minimum Equipment List (MEL)/ Configuration Deviation List (CDL);

(3) Demonstrate the use, interpretation and application of appropriate documentation including instructions for continued airworthiness, maintenance manual, and illustrated parts catalogue.

(4) Identify the inspection of the location of the principal components and recall the type maintenance program check & airworthiness limitation.

(5) Understand the theoretical fundamentals; practically apply knowledge using detailed procedures.

(6) Perform the procedure for service and ground handling activities including systems and aircraft handling particularly to servicing access, power availability and sources associated with the aircraft for the following systems: Fuel, Power Plants, Hydraulics, Landing Gear, Water/Waste, and Oxygen.

Course Modules: Course Level 2 - Service and Ground Handling

| Module | Training Session | Assessment Criteria |
|---|--|---|
| 1. Maintenance Safety Precaution. | 1.1 Work environment safety. | <ul style="list-style-type: none"> a. Explain workplace hazards, danger areas and safety precautions. b. Explain the appropriate type of PPE. c. Explain the emergency aids and shower. d. Explain and demonstrate fire extinguishers bottle. e. Explain work environment safety. |
| | 1.2 Aircraft maintenance safety | <ul style="list-style-type: none"> a. State on aircraft movement handling hazard and safety precaution. b. Explain maintenance procedure. c. Explain important maintenance compliance with maintenance references and procedures. d. Explain aircraft maintenance safety. |
| 2. Maintenance Record and Report Procedure. | 2.1 Maintenance servicing record system. | <ul style="list-style-type: none"> a. Describe a Maintenance Job Order and Task Card. b. Explain the Technical Maintenance Record. c. Explain on component logbook and log card. d. Explain on Maintenance Work Package. e. Explain and demonstrate on Aircraft Release Record. f. Explain the maintenance servicing record system. |
| | 2.2 Maintenance defective record system | <ul style="list-style-type: none"> a. Explain a defective definition. b. Describe a defect report system. c. Explain the component defect report system. d. Explain maintenance of defective record systems. |
| 3. Service and Ground Handling | 3.1 Aircraft servicing and standard practices. | <ul style="list-style-type: none"> a. Explain servicing terminology. b. Explain standard practices. |

| Module | Training Session | Assessment Criteria |
|--|------------------------------|---|
| | | <ul style="list-style-type: none"> c. Explain and demonstrate on aircraft Flight Servicing inspection. d. Explain and demonstrate replenishment nitrogen, hydraulic and oil. e. Explain and demonstrate fuel/hydraulic sampling. f. Explain and demonstrate Tire Pressure checks and recharges. g. Explain and demonstrate refuelling/defueling/hot refuelling. h. Explain and demonstrate aircraft washing. i. Explain Aircraft servicing and standard practices. |
| | 3.2 Aircraft Ground Handling | <ul style="list-style-type: none"> a. Explain and demonstrate a return to services, launching and marshalling. b. Explain and demonstrate towing, taxiing, parking and mooring/tie-down c. Explain lifting and shoring. d. Explain levelling and weighing. e. Explain and demonstrate on fire drill f. Explain and demonstrate role equipment and configuration change. g. Explain Aircraft Ground Handling. |
| 4. Instructions for Continuing Airworthiness (ICA) | 4.1 Airworthiness Limitation | <ul style="list-style-type: none"> a. Describe aircraft Airworthiness characteristic limitations. b. Describe Airworthiness life components limitation/time limit. c. Describe on Airworthiness Maintenance Program/ maintenance checks. d. Describe an Airworthiness Directive. e. Describe Airworthiness Limitation. |
| | 4.2 Scheduled Maintenance. | <ul style="list-style-type: none"> a. Explain on Special Inspections. b. Explain on aircraft and engine Preservation/De-preservation Inspection. c. Explain corrosion Inspection. d. Explain and demonstrate Scheduled Maintenance Task Card Inspection. e. Explain on Schedule Maintenance. |
| | 4.3 Unscheduled Maintenance. | <ul style="list-style-type: none"> a. Explain on Bird strike Inspection. b. Explain over-speed Inspection. c. Explain on Hard Landing Inspection. d. Explain on Lightning Strike Inspection. e. Explain on Over G Limit Inspection. f. Explain Hydraulic Contamination Inspection. g. Explain and demonstrate on Unscheduled Maintenance Task Card Inspection. h. Explain Unscheduled Maintenance. |

- (c) **Course Level 3: Line & Base Maintenance.** Describe detailed description on system operation, system interface, system functional, measurement and adjustment, rigging, component location, component function, component removal, component installation, BITE and troubleshooting procedures to maintenance manual level.

Course Objectives: To complete the aircraft type training for Support Staff Category B1/B2/B4 with appropriate combination knowledge of the aeromechanical/avionic/armament aircraft system.

Course Training Outcome: In addition to the information contained in Level 1 and Level 2 training, after Level 3 training, the student will be able to:

- (1) Demonstrate a theoretical and practical knowledge of aircraft systems and structures and interrelationships with other systems.
- (2) Provide a detailed aircraft system 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.
- (3) Perform system, power plant, component and functional checks as specified in the aircraft maintenance manual.
- (4) Demonstrate the use, interpret and apply appropriate documentation including structural repair manual, troubleshooting manual.
- (5) Describe procedures for the replacement of components unique to aircraft type.
- (6) Correlate information to make decisions in respect of fault diagnosis and rectification to maintenance manual level.

Course Modules: Course Level 3 - Line & Base Maintenance

| Module | Training Session | Assessment Criteria |
|------------------------|---|---|
| 1. Airframe System. | 1.1 ATA Chapter under Group Airframe System. | a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe adjustment/test. g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |
| 2. Airframe Structure. | 2.1 ATA Chapter under Group Airframe Structure. | a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe adjustment/test. |

| Module | Training Session | Assessment Criteria |
|------------------------------|--|--|
| | | <ul style="list-style-type: none"> g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |
| 3. Propeller. | 3.1 ATA Chapter under Group Propeller. | <ul style="list-style-type: none"> a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe on adjustment/test. g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |
| 4. Engine. | 4.1 ATA Chapter under Group Engine. | <ul style="list-style-type: none"> a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe on adjustment/test. g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |
| 5. Helicopter. | 5.1 ATA Chapter under Group Helicopter Rotor. | <ul style="list-style-type: none"> a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe on adjustment/test. g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |
| 6. Military Specific Systems | 6.1 ATA Chapter under Group Military Specific Systems. | <ul style="list-style-type: none"> a. Describe system description & operation. b. Describe and explain fault isolation. c. Explain maintenance practice. d. Explain on servicing. e. Explain part removal & installation. f. Describe on adjustment/test. g. Explain on Inspection/Check. h. Explain Cleaning/Painting. i. Describe on Approved Repairs. j. Perform practical training elements. |

2.2 Type Training for Aircraft Maintenance Supervisor Category C

- (d) **Course Level 4: Supervisor.** Brief on role and function of supervisor, independent check, airworthiness limitation, quality assurance, human factors, airworthiness limitation, maintenance program, maintenance management procedure, and general system description overview of the airframe, systems and power plants as outlined in the maintenance manual.

Course Objectives: To provide the aircraft type training for Supervisor, Inspector or Certifying Staff Category C with the combination of the appropriate skill and knowledge of the maintenance management procedure and aircraft system.

Course Training Outcome: Upon completion of Level 4 training, the student will be able to:

- (1) 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 power plant during maintenance activities
- (2) Recognize and understand the supervisor role, function and responsibilities.
- (3) Recognize and understanding maintenance management procedures, continued airworthiness requirements, engineering practices and safety awareness related to aircraft maintenance supervision.
- (4) Identify maintenance practices, special tooling and test equipment unique to the aircraft type.
- (5) Identify and monitor on using appropriate aircraft manual, records, technical reports and maintenance practices important to the airframe, its systems and power plant.
- (6) Define the aircraft overview, aircraft role, system description, general layout and characteristics of the airframe, its systems and power plant.
- (7) Define system description, general layout, characteristics, major component location and basic normal functioning of each major component including terminology and nomenclature.
- (8) Explain the normal functioning of each major system, including terminology and nomenclature.

Course Modules: Course Level 4 - Supervisor

| Module | Training Session | Assessment Criteria |
|--|------------------------------------|---|
| 1. Aircraft Maintenance and Management | 1.1 Maintenance Safety Management. | a. Explain workplace hazards, danger areas and safety precautions. b. State on hazard and danger zone area. c. Explain types of danger on aircraft. d. Explain the cockpit safety precaution. e. Explain the appropriate type of PPE. |

| Module | Training Session | Assessment Criteria |
|---------------------------------------|---|---|
| | | <ul style="list-style-type: none"> f. Explain the procedure of Tool Control and FOD. g. Explain on loose article check. h. Explain P.O.L Management & Control Procedure. i. Explain Maintenance Safety Management. |
| 2. Human Factor | 2.1 Human Factor in Aircraft Maintenance and Inspection | <ul style="list-style-type: none"> a. Explain the main category of maintenance error. b. Discuss why technical personnel make errors in maintenance. c. Describe the SHEL Model of Human Factors. d. Describe the twelve local factors that contributed to maintenance error. e. Discuss eight organizational factors that contributed to maintenance error. f. Explain Human Factors in Aircraft Maintenance and Inspection. |
| 3. Maintenance Inspector / Supervisor | 3.1 Supervisor Responsibility. | <ul style="list-style-type: none"> a. Explain management level and expectations as a junior manager. b. Explain the role and function of the maintenance supervisor. c. Define maintenance culture. d. Explain on Supervisor Responsibility. |
| | 3.2 Inspector Responsibility. | <ul style="list-style-type: none"> a. Explain role and function of maintenance inspector b. Describe the safety critical system. c. Describe the critical maintenance task. d. Describe the error capturing method. e. Define independent check. f. State the purpose of the independent check. g. Explain the applications of the independent check. h. Explain the responsibility of independent check. i. Explain Inspector Responsibility. |
| | 3.3 Quality Assurance (QA) | <ul style="list-style-type: none"> a. Explain the Quality Assurance (QA). b. Explain the Concepts of Quality Assurance (QA). c. Explain the Quality Assurance (QA) Responsibilities. d. Describe the Quality Assurance Representatives (QARs). e. Explain the person being considered for selection as QARs. f. Describe the QA inspections performed during/after task performance criteria. g. Explain on Quality Assurance (QA). |
| 4. Airworthiness Requirement | 4.1 Maintenance Management. | <ul style="list-style-type: none"> a. Explain handing over & taking over duty. b. Describe malpractice of maintenance. |

| Module | Training Session | Assessment Criteria |
|---------------------|--|--|
| | | <ul style="list-style-type: none"> c. Describe accident prevention. d. State Petroleum, Oil & Lubrication Management. e. State tools control. f. Describe Ground Support Equipment & Precision Measurement Equipment Management. g. Explain the Cannibalize procedure. h. Explain Maintenance Management. |
| | 4.2 Technical Data Management | <ul style="list-style-type: none"> a. Explain maintenance publication and documentation management. b. Describe the proposal of amendment. c. Explain on Instruction of Continued Airworthiness. d. Explain on Assist Job. e. Explain on Defect Report. f. Explain on Certification Maintenance to Release g. Explain on Aircraft Certification Release to Services h. Explain maintenance deviation. i. Explain on carried forward unserviceability. j. Explain Interval Extension request. |
| | 4.3 Crash & Salvage. | <ul style="list-style-type: none"> a. Explain on Illustrated Tool and Equipment Manual. b. Explain on introduction aircraft crash and salvage. c. Describe general crash and salvage equipment. d. Explain the use of equipment crash and salvage. e. Explain the preparation crash and salvage. f. Explain on Crash & Salvage. |
| | 4.4 Occurrence Report | <ul style="list-style-type: none"> a. Describe the unsafe condition that hazards seriously the flight safety. b. Describe the internal occurrence reporting system. c. Describe the unserviceable condition reporting. d. Describe the unairworthy conditions reporting. |
| 5. Airframe System. | 5.1 ATA Chapter under Group Airframe System. | <ul style="list-style-type: none"> a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature. b. Describe System Description. c. State on main components location and function. |

| Module | Training Session | Assessment Criteria |
|--------------------------------|--|--|
| 6. Airframe Structure. | 6.1 ATA Chapter under Group Airframe Structure. | a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature b. Describe System Description. c. State on main components location and function. |
| 7. Propeller. | 7.1 ATA Chapter under Group Propeller. | a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature. b. Describe System Description. c. State on main components location and function. |
| 8. Engine. | 8.1 ATA Chapter under Group Engine. | a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature. b. Describe System Description. c. State on main components location and function. |
| 9. Helicopter | 9.1 ATA Chapter under Group Helicopter Rotor. | a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature. b. Describe System Description. c. State on main components location and function. |
| 10. Military Specific Systems. | 10.1ATA Chapter under Group Military Specific Systems. | a. Describe on system introduction and general layout of the aircraft's major systems, using proper terminology and nomenclature. b. Describe System Description. c. State on main components location and function. |

2.3 Type Training for Aviation Engineer Category LAE

- (e) **Course Level 5: Aviation Engineer.** Brief and explain on safety precaution, human factors, technical manual and publication, Airworthiness Limitation, Maintenance Program, Maintenance Management Procedure, aircraft general overview, system configuration, system description, system overview of controls, indicators, principal components function & location, describe detailed on system operation, system interface, system functional, BITE and troubleshooting procedures to maintenance manual level.

Course Objectives: To provide the aircraft type training for Aviation Engineer Category LAE with appropriate combination knowledge of the B1 and B2 aircraft system.

Course Training Outcome: Upon completion of Level 5 training, the student will be able to:

- (1) Identify safety precautions during maintenance activity.
- (2) Identify special tooling and test equipment used with the aircraft.
- (3) Identify aircraft manuals and maintenance practices.
- (4) Define the general aircraft overview, role and characteristics.
- (5) Identify the type of maintenance program & airworthiness limitation.
- (6) Define system description, system operation, general layout, characteristics, major component location and basic normal functioning of each major component including terminology and nomenclature.
- (7) Explain the normal functioning of each major system, including terminology and nomenclature.

Course Modules: Course Level 5 - Aviation Engineer

| Module | Training Session | Assessment Criteria |
|---|--|--|
| 1. Aircraft Maintenance and Management. | 1.1 Maintenance Safety Management. | <ol style="list-style-type: none"> a. Describe the work environment floor plan and emergency evacuation procedure. b. Describe workplace hazards and safety precautions. c. State on aircraft danger zone area and safety precautions. d. Explain types of danger on aircraft. e. Explain the cockpit safety precaution. f. Explain Maintenance Safety Management. |
| | 1.2 Tools and Equipment Management. | <ol style="list-style-type: none"> a. Explain Tools & Equipment Management. b. Explain the procedure of Tool Control and FOD. c. Explain on loose article check d. Explain on Illustrated Tool and Equipment Manual. e. Explain Tools and Equipment Management. |
| | 1.3 Petroleum, Oil & Lubricates Management. | <ol style="list-style-type: none"> a. Explain P.O.L Management & Control Procedure. b. State on type of P.O.L. c. Explain P.O.L characteristic and hazard category. d. Define Petroleum, Oil & Lubricates Management. |
| | 1.4 Maintenance Reference, Manual and Documentation. | <ol style="list-style-type: none"> a. Explain on Maintenance Manual. b. Explain on Component Manual. c. Explain on Wiring Diagram Manual. d. Explain the Illustrated Part Catalogue. e. Explain on Structure Repair Manual. f. Explain on the Minimum Equipment List. g. Explain in the Aircraft Log Book. |

| Module | Training Session | Assessment Criteria |
|--|--|--|
| | 1.5 Maintenance Record and Report Procedure. | <ul style="list-style-type: none"> h. Explain Maintenance Reference, Manual and Documentation. a. Describe the Maintenance servicing record system. b. Explain on Certification Maintenance to Release c. Explain on Aircraft Certification Release to Services d. Describe a maintenance defective record system. e. Explain the defective definition f. Describe on defect report system g. Describe on Airworthiness Occurrence Reporting System h. Explain Maintenance Record and Report Procedure. |
| 2. Human Factor | 2.1 Human Factors in Aircraft Maintenance and Inspection | <ul style="list-style-type: none"> a. Explain the main category of maintenance error. b. Discuss why technical personnel make errors in maintenance. c. Describe the SHELL Model of Human Factors. d. Describe the twelve local factors that contributed to maintenance error. e. Discuss eight organizational factors that contributed to maintenance error. f. Explain Human Factors in Aircraft Maintenance and Inspection. |
| 3. Instructions for Continuing Airworthiness (ICA) | 3.1 Airworthiness Limitation | <ul style="list-style-type: none"> a. Describe aircraft Airworthiness characteristic limitations. b. Describe Airworthiness life components limitation/time limit. c. Describe on Airworthiness Maintenance Program/ maintenance checks. d. Describe an Airworthiness Directive. e. Explain maintenance deviation. f. Explain on carried forward unserviceability g. Describe Airworthiness Limitation. |
| | 3.2 Scheduled Maintenance. | <ul style="list-style-type: none"> a. Explain on Special Inspections. b. Explain on Preservation/ De-preservation Inspection. c. Explain corrosion Inspection. d. Explain on Flight Servicing. e. Explain on Schedule Maintenance Program f. Explain on Schedule Maintenance |
| | 3.3 Unscheduled Maintenance. | <ul style="list-style-type: none"> a. Explain on Bird strike Inspection. b. Explain over-speed Inspection. c. Explain on Hard Landing Inspection. d. Explain on Lightning Strike Inspection. e. Explain on Over G Limit Inspection. |

| Module | Training Session | Assessment Criteria |
|------------------------|---|--|
| | | <ul style="list-style-type: none"> f. Explain on Aircraft Contamination Procedure. g. Explain Unscheduled Maintenance. |
| 4. Aircraft General. | 4.1 Aircraft General Overview. | <ul style="list-style-type: none"> a. Explain general aircraft information. b. State on aircraft interior and exterior furnishing placards and marking. c. State on categories of aircraft role equipment and function. d. Explain on Aircraft General Overview. |
| | 4.2 Aircraft Characteristics and Specification. | <ul style="list-style-type: none"> a. Explain aircraft dimensions and areas. b. Explain on ground servicing diagram and specification. c. Explain the main physical geometry. d. Explain zonal and structural stations. e. Explain Aircraft Characteristics and Specification. |
| 5. Airframe System. | 5.1 ATA Chapter under Group Airframe System. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe on adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. j. Describe on Approved Repairs. k. Describe on ATA Chapter under Group Airframe System. |
| 6. Airframe Structure. | 6.1 ATA Chapter under Group Airframe Structure. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. j. Describe on Approved Repairs. k. Describe the ATA Chapter under Group Airframe Structure. |
| 7. Propeller. | 7.1 ATA Chapter under Group Propeller. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. |

| Module | Training Session | Assessment Criteria |
|--------------------------------|--|---|
| | | <ul style="list-style-type: none"> j. Describe on Approved Repairs. k. Describe the ATA Chapter under Group Propeller. |
| 8. Engine. | 8.1 ATA Chapter under Group Engine. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. j. Describe on Approved Repairs. k. Describe the ATA Chapter under Group Engine. |
| 9. Helicopter. | 9.1 ATA Chapter under Group Helicopter Rotor. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. j. Describe on Approved Repairs. k. Describe the ATA Chapter under Group Helicopter Rotor. |
| 10. Military Specific Systems. | 10.1ATA Chapter under Group Military Specific Systems. | <ul style="list-style-type: none"> a. Describe system description & operation. b. State on main component location and function. c. Describe and explain fault isolation. d. Explain maintenance practice. e. Explain on servicing. f. Explain part removal & installation. g. Describe adjustment/test. h. Explain on Inspection/Check. i. Explain Cleaning/Painting. j. Describe on Approved Repairs. k. Describe the ATA Chapter under Group Military Specific Systems. |

3. Aircraft Type Training Standard

The training curriculum should develop by the training development authority. The development of the training curriculum should correspond with competency-based training and assessment (CBTA) and aircraft maintenance licence training standards.

The training level should determine the knowledge level of students who should be able to conduct maintenance task activities defined under their job description or work proficiency.

The focus of curriculum development is to provide a structured set of learning activities that allow the progressive development of skills, attitudes and knowledge that leads to the achievement of competency.

Although aircraft type training includes both theoretical and practical elements, courses can be approved for the theoretical element, the practical element or 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 of knowledge defined in point 2 above, 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:**

(1) Training levels are those levels defined in point 2 above.

(2) For Category C Supervisor, after the first type rating course, all subsequent type rating courses (same subcategories) need only be to level 4. As an alternative if Course Level 4 is not available, Course Level 1 consisting of ATA Specification Chapter theoretical instructional hours not less than 30 total hours may be conducted. For Non-ATA Chapter training session corresponding with Course Level 4 (Para 2.2) shall be carried out by an approved organisation MSTAR 145.

(3) For extending different licence subcategories, after the first type rating course, the next type rating course must be completed and pass the relevant subcategory Course Level.

(i) Category LAE Aviation Engineer - Course Level 5.

(ii) Category C Supervisor - Course Level 1, 2 & 3.

(iii) Category B Support Staff - Course Level 1, 2 & 3.

(c) **Duration:**

Requirement on theoretical minimum tuition hours defined in the table below specifically to ATA Specification Chapter.

For the table below, a tuition hour means 60 minutes of teaching and excludes 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 Agency.

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

| Category | Hours |
|--|-------|
| Aeroplanes with a maximum take-off mass above 30000 kg: | |
| B1.1 | 150 |
| B1.2 | 120 |
| B2 | 100 |
| B4 | 80 |
| C | 30 |
| LAE | 180 |

| Category | Hours |
|---|-------|
| Aeroplanes with a maximum take-off mass equal or less than 30000 kg and above 5700 kg: | |
| B1.1 | 120 |
| B1.2 | 100 |
| B2 | 100 |
| B4 | 80 |
| C | 30 |
| LAE | 150 |

| Category | Hours |
|--|-------|
| Aeroplanes with a maximum take-off mass of 5700 kg and below: | |
| B1.1 | 80 |
| B1.2 | 60 |
| B2 | 60 |
| B4 | 60 |
| C | 30 |
| LAE | 120 |

| Category | Hours |
|--------------------|-------|
| Helicopters | |
| B1.3 | 120 |
| B1.4 | 100 |
| B2 | 100 |
| B4 | 60 |
| C | 30 |
| LAE | 150 |

(d) **Justification of Course Duration:**

Training courses carried out in a maintenance training organisation approved under MSTAR 147 and courses directly approved by the DGTA shall justify their hour duration and the coverage of the full syllabus by a training needs analysis based on:

- (1) The design of the aircraft type, its maintenance needs and the types of operation,
- (2) Detailed analysis of applicable chapters - see contents table in point 3.1(e) below,
- (3) 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 different courses or other training course combinations (such as combined B1/B2/B4 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 DGTA by the training needs analysis as described above.

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

- (1) The minimum attendance required of the trainee, to meet the objectives of the course.
- (2) The maximum number of hours of training per day, considering 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 to meet the minimum attendance time.

(e) **Content:**

As a minimum, the ATA Chapter elements in the training syllabus contained in Table 1 below that are specific to the aircraft type course level 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, electrical and avionics aspects for B2 and military-specific system aspects for B4.

For Engineers (Category LAE) it is sufficient to use a combination of Course Level 3 Category B1 and B2 including B4 if applicable as defined in the Table 1 syllabus below.

For Supervisor (Category C) it is sufficient to use a combination of Course Level 1 Category B1, and B2 including B4 if applicable as defined in the Table 1 syllabus below.

- (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 DGTA approving the training course.

TABLE 1: ATA CHAPTER TRAINING SYLLABUS SUBJECT

| Course Level | 1 | | | | | | 2 | 3 | | | | | | 4 | 5 |
|--|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|----------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (I, A/C) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| Group: Aircraft General | | | | | | | | | | | | | | | |
| 05 Time limits/ maintenance checks | | | | | | | x | | | | | | | x | x |
| 06 Dimensions/ Areas (MTOM, etc.) | x | x | x | x | x | x | | | | | | | | x | x |
| 07 Lifting and Shoring | | | | | | | x | | | | | | | x | x |
| 08 Levelling and weighing | | | | | | | x | | | | | | | x | x |
| 09 Towing and taxiing | | | | | | | x | | | | | | | x | x |
| 10 Parking/ mooring, Storing and Return to Service | | | | | | | x | | | | | | | x | x |
| 11 Placards and Markings | x | x | x | x | x | x | | | | | | | | x | x |
| 12 Servicing | | | | | | | x | | | | | | | x | x |
| 14 Product loading, offloading and hardware | x | x | x | x | x | x | | | | | | | | x | x |
| 20 Standard practices - only type particularly | | | | | | | x | | | | | | | x | x |
| Group: Helicopters | | | | | | | | | | | | | | | |
| 18 Vibration and Noise Analysis (Blade tracking) | | | | | | | | | | x | x | | | x | x |
| 60 Standard Practices Rotor | | | | | | | | | | x | x | | | x | x |
| 62 Main Rotors | | | x | x | x | x | | | | x | x | | | x | x |
| 62A Main Rotors - Monitoring and indicating | | | x | x | x | x | | | | x | x | x | | x | x |

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|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| Chapter | B1.1 | B1.2 | B1.3 | B1.4 | | | | B1.1 | B1.2 | B1.3 | B1.4 | | | | |
| 63 Main Rotor Drives | | | x | x | x | x | | | | x | x | | | x | x |
| 63A Main Rotor Drives - Monitoring and indicating | | | x | x | x | x | | | | x | x | x | | x | x |
| 64 Tail Rotor | | | x | x | x | x | | | | x | x | | | x | x |
| 64A Tail rotor - Monitoring and indicating | | | x | x | x | x | | | | x | x | x | | x | x |
| 65 Tail Rotor Drive | | | x | x | x | x | | | | x | x | | | x | x |
| 65A Tail Rotor Drive - Monitoring and indicating | | | x | x | x | x | | | | x | x | x | | x | x |
| 66 Folding Blades/ Pylon | | | x | x | x | x | | | | x | x | | | x | x |
| 67 Rotors Flight Control | | | x | x | x | x | | | | x | x | | | x | x |
| 53 Airframe Structure (Helicopter) | | | x | x | x | x | | | | x | x | | | x | x |
| 25 Emergency Flotation Equipment | | | x | x | x | x | | | | x | x | | | x | x |
| Group: Airframe Structures | | | | | | | | | | | | | | | |
| 51 Standard practices and structures (damage classification, assessment and repair) | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 53 Fuselage | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 54 Nacelles/ Pylons | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 55 Stabilisers | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 56 Windows | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 57 Wings | x | x | | | x | x | | x | x | | | | | x | x |

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| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| 27A Flight Control Surfaces (All) | x | x | | | x | x | | x | x | | | | | x | x |
| 52 Doors | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 06 Zonal and Station Identification Systems. | x | x | x | x | x | x | | | | | | | | x | x |
| Group: Airframe Systems | | | | | | | | | | | | | | | |
| 21 Air Conditioning | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 21A Air Supply | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 21B Pressurisation | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 21C Safety and Warning Devices | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 22 Auto flight | x | x | x | x | x | x | | | | | | x | | x | x |
| 23 Communication | x | x | x | x | x | x | | | | | | x | | x | x |
| 24 Electrical Power | x | x | x | x | x | x | | x | x | x | x | x | x | x | x |
| 25 Equipment and Furnishings | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 25A Electronic Equipment including emergency equipment | x | x | x | x | x | x | | | | | | x | | x | x |
| 26 Fire Protection | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 27 Flight Controls | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 27A Sys. Operation: Electrical/ Fly-by-Wire | x | x | x | x | x | x | | | | | | x | | x | x |
| 28 Fuel Systems | x | x | x | x | x | x | | x | x | x | x | | | x | x |

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|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| 28A Fuel Systems - Monitoring and indicating | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 29 Hydraulic Power | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 29A Hydraulic Power - Monitoring and indicating | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 30 Ice and Rain Protection | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 31 Indicating/ Recording Systems | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 31A Instrument Systems | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 32 Landing Gear | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 32A Landing Gear - Monitoring and indicating | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 33 Lights | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 34 Navigation | x | x | x | x | x | x | | | | | | x | | x | x |
| 35 Oxygen | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 36 Pneumatic | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 36A Pneumatic - Monitoring and indicating | x | x | x | x | x | x | | x | x | x | x | x | | x | x |
| 37 Vacuum | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| 38 Water/Waste | x | x | x | x | x | x | | x | x | | | | | x | x |
| 39 Attack System Management | x | x | x | | x | x | | | | | | | x | x | x |
| 40 Operational Attack Functions | x | x | x | | x | x | | | | | | | x | x | x |

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|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| 41 Water Ballast | x | x | x | x | x | x | | x | x | | | | | x | x |
| 42 Integrated modular avionics | x | x | x | x | x | x | | | | | | x | x | x | x |
| 42A Cross-technical Attack Functions | x | x | x | | x | x | | | | | | x | x | x | x |
| 44 Cabin Systems | x | x | x | x | x | x | | | | | | x | | x | x |
| 45 On-Board Maintenance System / Central Maintenance system (or covered in 31) | x | x | x | x | x | x | | x | x | x | | x | | x | x |
| 46 Information Systems | x | x | x | x | x | x | | | | | | x | x | x | x |
| 48 Inflight Refuelling Tanker | x | | x | | x | x | | x | | x | | x | | x | x |
| 48A Inflight Refuelling Tanker - Monitoring and Indicating | x | | x | | x | x | | x | | x | | x | | x | x |
| 50 Cargo and Accessory Compartments | x | x | x | x | x | x | | x | x | x | x | | | x | x |
| Group: Turbine Engine | | | | | | | | | | | | | | | |
| 70 Standard Practices - Engines, | x | | x | | x | x | | x | | x | | | | x | x |
| 70A constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems). | x | | x | | x | x | | x | | x | | | | x | x |
| 70B Engine Performance | x | | x | | x | x | | x | | x | | | | x | x |

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|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| 71 Power plant | x | | x | | x | x | | x | | x | | | | x | x |
| 72 Engine Turbine/Turboprop/ Ducted Fan/ Unducted fan | x | | x | | x | x | | x | | x | | | | x | x |
| 73 Engine Fuel and Control | x | | x | | x | x | | x | | x | | | | x | x |
| 75 Air | x | | x | | x | x | | x | | x | | | | x | x |
| 76 Engine controls | x | | x | | x | x | | x | | x | | | | x | x |
| 78 Engine Exhaust | x | | x | | x | x | | x | | x | | | | x | x |
| 79 Engine Oil | x | | x | | x | x | | x | | x | | | | x | x |
| 80 Starting | x | | x | | x | x | | x | | x | | | | x | x |
| 82 Water Injections | x | | x | | x | x | | x | | x | | | | x | x |
| 83 Accessory Gearboxes | x | | x | | x | x | | x | | x | | | | x | x |
| 84 Propulsion Augmentation | x | | x | | x | x | | x | | x | | | | x | x |
| 85 Reciprocating Engine | x | | x | | x | x | | x | | x | | | | x | x |
| 73A FADEC | x | | x | | x | x | | x | | x | | x | | x | x |
| 74 Ignition | x | | x | | x | x | | x | | x | | x | | x | x |
| 77 Engine Indicating Systems | x | | x | | x | x | | x | | x | | x | | x | x |
| 49 Auxiliary Power Units (APUs)/ Airborne Auxiliary Power | x | | x | | x | x | | x | | x | | | | x | x |
| Group: Piston Engine | | | | | | | | | | | | | | | |
| 70 Standard Practices - Engines | | x | | x | x | x | | | x | | x | | | x | x |

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|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | Chapter | B1.1 | B1.2 | B1.3 | | | | B1.4 | B1.1 | B1.2 | B1.3 | | | | |
| 70A Constructional arrangement and operation (Installation, Carburettors, Fuel injection systems, Induction, Exhaust and Cooling Systems, Supercharging/ Turbocharging, Lubrication Systems). | | x | | x | x | x | | | x | | x | | | x | x |
| 70B Engine Performance | | x | | x | x | x | | | x | | x | | | x | x |
| 71 Power plant | | x | | x | x | x | | | x | | x | | | x | x |
| 73 Engine Fuel and Control | | x | | x | x | x | | | x | | x | | | x | x |
| 76 Engine Control | | x | | x | x | x | | | x | | x | | | x | x |
| 79 Oil | | x | | x | x | x | | | x | | x | | | x | x |
| 80 Starting | | x | | x | x | x | | | x | | x | | | x | x |
| 81 Turbines | | x | | x | x | x | | | x | | x | | | x | x |
| 82 Water Injections | | x | | x | x | x | | | x | | x | | | x | x |
| 83 Accessory Gearboxes | | x | | x | x | x | | | x | | x | | | x | x |
| 84 Propulsion Augmentation | | | | | x | x | | | x | | x | | | x | x |
| 85 Reciprocating Engine | | | | | x | x | | | x | | x | | | x | x |
| 73A FADEC | | | | | x | x | | | x | | x | x | | x | x |
| 74 Ignition | | | | | x | x | | | x | | x | x | | x | x |
| 77 Engine Indication Systems | | | | | | x | | | | | | x | | x | x |

| Course Level | 1 | | | | | | 2 | 3 | | | | | | 4 | 5 |
|---|---------------------------------|------|----------------------------------|------|---------------|---------------|--|---------------------------------|------|----------------------------------|------|---------------|---------------|----------------|-------------------------|
| Category | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | Aero-mechanical (B1) Aeroplanes | | Aero-mechanical (B1) Helicopters | | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| | B1.1 | B1.2 | B1.3 | B1.4 | | | | B1.1 | B1.2 | B1.3 | B1.4 | | | | |
| Chapter | B1.1 | B1.2 | B1.3 | B1.4 | Avionics (B2) | Armament (B4) | Aero-mechanical (B1) Avionics (B2) & Armament (B4) | B1.1 | B1.2 | B1.3 | B1.4 | Avionics (B2) | Armament (B4) | Supervisor (C) | Aviation Engineer (IAE) |
| Group: Propeller | | | | | | | | | | | | | | | |
| 60A Standard Practices - Propeller | x | x | | | x | x | | x | x | | | | | x | x |
| 61 Propellers/ Propulsion | x | x | | | x | x | | x | x | | | | | x | x |
| 61A Propeller Construction | | | | | | x | | x | x | | | | | x | x |
| 61B Propeller Pitch Control | | | | | | x | | x | x | | | | | x | x |
| 61C Propeller Synchronising | x | x | | | x | x | | x | x | | | | | x | x |
| 61D Propeller Electronic control | x | x | | | x | x | | | | | | x | | x | x |
| 61E Propeller Ice Protection | | | | | | x | | x | x | | | | | x | x |
| 61F Propeller Maintenance | x | x | | | x | x | | x | x | | | | | x | x |
| Military-Specific Systems | | | | | | | | | | | | | | | |
| 92 Radar | x | x | x | x | x | x | | | | | | | x | x | x |
| 93 Surveillance | x | x | x | x | x | x | | | | | | | x | x | x |
| 94 Weapon System | x | x | x | x | x | x | | | | | | | x | x | x |
| 95 Crew Escape and Safety (partially covered by 25 for Helicopters) | x | x | x | x | x | x | | | | | | | x | x | x |
| 97 Image Recording | x | x | x | x | x | x | | | | | | | x | x | x |
| 99 Electronic Warfare | x | x | x | x | x | x | | | | | | | x | x | x |

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 practical elements for Category B shall at least 50 % of the crossed items in Table 2 below excluding location-related practical training, which are relevant to the particular aircraft type, shall be completed as part of the practical training.

Tasks crossed represent subjects that are important for practical training purposes to ensure that the operation, function, installation and safety significance of key maintenance tasks are adequately addressed; particularly where these cannot be fully explained by theoretical training alone. Although the list details the minimum practical training subjects, other items may be added where applicable to the particular aircraft type.

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.

When the identified practical elements cannot be completed within type rating training sessions, the outstanding remaining can be carried out during conducting the job training program.

TABLE 2: PRACTICAL ELEMENTS

Glossary of the table: LOC: Location; FOT: Functional/Operational Test; SGH: Service and Ground Handling; R/I: Removal/ Installation; MEL: Minimum Equipment List; TS: Troubleshooting

| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|--|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| Group: Aircraft General | | | | | | | | | | | | | | | | |
| 5 Time limits/ maintenance checks | x/x/x | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 6 Dimensions/ Areas (MTOM, etc.) | x/x/x | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 7 Lifting and Shoring | x/x/x | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 8 Levelling and weighing | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| 9 Towing and taxiing | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| 10 Parking/ mooring, Storing and Return to Service | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| 11 Placards and Markings | x/x/x | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 12 Servicing | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| 14 Product loading and offloading | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| 20 Standard practices - only type particularly | x/x/x | - | X | - | - | - | - | X | - | - | - | - | X | - | - | - |
| Group: Helicopters | | | | | | | | | | | | | | | | |
| 18 Vibration and Noise Analysis (Blade tracking) | x/-/- | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - |
| 60 Standard Practices Rotor - only type-specific | x/x/- | - | X | - | - | - | - | X | - | - | - | - | - | - | - | - |
| 62 Rotors | x/-/- | - | X | X | - | X | - | - | - | - | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|---|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 62A Rotors - Monitoring and indicating | x/x/x | x | x | x | x | x | - | - | x | - | x | - | - | - | - | - |
| 63 Rotor Drives | x/-/- | x | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 63A Rotor Drives - Monitoring and indicating | x/x/- | x | - | x | x | x | - | - | x | - | x | - | - | - | - | - |
| 64 Tail Rotor | x/-/- | - | x | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 64A Tail rotor - Monitoring and indicating | x/x/- | x | - | x | x | x | - | - | x | - | x | - | - | - | - | - |
| 65 Tail Rotor Drive | x/-/- | x | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 65A Tail Rotor Drive - Monitoring and indicating | x/x/- | x | - | x | x | x | - | - | x | - | x | - | - | - | - | - |
| 66 Folding Blades/Pylon | x/-/- | x | x | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 67 Rotors Flight Control | x/-/- | x | x | - | x | x | - | - | - | - | - | - | - | - | - | - |
| 53 Airframe Structure (Helicopter) | | | | | | | | | | | | | | | | |
| Note: covered under Airframe structures | | | | | | | | | | | | | | | | |
| 25 Emergency Flotation Equipment | x/x/x | x | x | x | x | x | x | x | - | - | - | - | - | - | - | - |
| Group: Airframe Structures | | | | | | | | | | | | | | | | |
| 51 Standard Practices and Structures (damage classification, assessment and repair) | | | | | | | | | | | | | | | | |
| 53 Fuselage | x/-/x | - | - | - | - | x | - | - | - | - | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|--|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 54 Nacelles/Pylons | x/-/x | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 55 Stabilizers | x/-/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 56 Windows | x/-/- | - | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 57 Wings | x/-/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 27A Flight Control Surfaces | x/-/- | - | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 52 Doors | x/x/x | x | x | - | - | - | - | x | - | - | - | - | x | - | - | - |
| Group: Airframe Systems | | | | | | | | | | | | | | | | |
| 21 Air Conditioning | x/x/- | x | x | - | x | x | x | x | - | x | x | - | - | - | - | - |
| 21A Air Supply | x/x/- | x | - | - | - | - | x | - | - | - | - | - | - | - | - | - |
| 21B Pressurization | x/x/- | x | - | - | x | x | x | - | - | x | x | - | - | - | - | - |
| 21C Safety & warning Devices | x/x | - | x | - | - | - | - | x | - | - | - | - | - | - | - | - |
| 22 Auto flight | x/x/- | - | - | - | x | - | x | x | x | x | x | - | - | - | - | - |
| 23 Communications | x/x/x | - | x | - | x | - | x | x | x | x | x | - | - | - | - | - |
| 24 Electrical Power | x/x/x | x | x | x | x | x | x | x | x | x | x | x | x | x | x | x |
| 25 Equipment and Furnishings | x/x/- | x | x | x | - | - | x | x | x | - | - | - | - | - | - | - |
| 25A Electronic Equipment include emergency equip | x/x/- | x | x | x | - | - | x | x | x | - | - | - | - | - | - | - |
| 26 Fire Protection | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 27 Flight Controls | x/x/- | x | x | x | x | x | x | - | - | - | - | - | - | - | - | - |
| 27A Sys. Operation: Electrical/Fly-by-Wire | x/x/- | x | x | x | x | - | x | - | x | - | x | - | - | - | - | - |
| 28 Fuel Systems | x/x/- | x | x | x | x | x | x | x | - | x | - | - | - | - | - | - |
| 28A Fuel Systems - Monitoring and indicating | x/x/- | x | - | - | - | - | x | - | x | - | x | - | - | - | - | - |
| 29 Hydraulic Power | x/x/- | x | x | x | x | x | x | x | - | x | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|---|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 29A Hydraulic Power - Monitoring and indicating | x/x/- | x | - | x | x | x | x | - | x | x | x | - | - | - | - | - |
| 30 Ice and Rain Protection | x/x/- | x | x | - | x | x | x | x | - | x | x | - | - | - | - | - |
| 31 Indicating/Records Sys | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 31A Instrument Systems | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 32 Landing Gear | x/x/- | x | x | x | x | x | x | x | x | x | - | - | - | - | - | - |
| 32A Landing Gear - Monitoring and indicating | x/x/- | x | - | x | x | x | x | - | x | x | x | - | - | - | - | - |
| 33 Lights | x/x/- | x | x | - | x | - | x | x | x | x | - | - | - | - | - | - |
| 34 Navigation | x/x/- | - | x | - | x | - | x | x | x | x | x | - | - | - | - | - |
| 35 Oxygen | x/-/- | x | x | x | - | - | x | x | - | - | - | - | - | - | - | - |
| 36 Pneumatic | x/-/- | x | - | x | x | x | x | - | x | x | x | - | - | - | - | - |
| 36A Pneumatic - Monitoring and indicating | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 37 Vacuum | x/-/- | x | - | x | x | x | - | - | - | - | - | - | - | - | - | - |
| 38 Water/Waste | x/-/- | x | x | - | - | - | x | x | - | - | - | - | - | - | - | - |
| 39 Attack Management System | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 40 Operational Attack Functions | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 41 Water Ballast | x/-/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 42 Integrated modular avionics | x/x/x | - | - | - | - | - | x | x | x | x | x | x | x | x | x | x |
| 42A Cross-technical Attack Functions | x/x/x | x | - | - | - | - | x | x | x | x | x | x | x | x | x | x |
| 44 Cabin Systems | x/x/- | - | - | - | - | - | x | x | x | x | x | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|--|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 45 On-Board Maintenance System (or covered in 31) | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 46 Information Systems | x/x/x | - | - | - | - | - | x | - | x | x | x | x | x | x | x | x |
| 48 Inflight Refuelling Tanker | x/x/- | x | x | x | x | x | x | x | - | x | - | - | - | - | - | - |
| 48A Inflight Refuelling Tanker - Monitoring and Indicating | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 50 Cargo and Accessory Compartments | x/x/- | - | x | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Group: Turbine/Piston Engines Module | | | | | | | | | | | | - | - | - | - | - |
| 70 Standard Practices - Engines - only type particular | - | - | x | - | - | - | - | x | - | - | - | - | - | - | - | - |
| 70A Constructional arrangement and operation (Installation Inlet, Compressors, Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems) | x/x/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Group: Turbine Engine | | | | | | | | | | | | - | - | - | - | - |
| 70B Engine Performance | - | - | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 71 Power Plant | x/-/- | x | x | - | - | - | - | x | - | - | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|--|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 72 Engine Turbine/Turbo Prop/Ducted Fan/Unducted fan | x/-/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 73 Engine Fuel and Control | x/x/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 73A FADEC Systems | x/x/- | x | - | x | x | x | x | - | x | x | x | - | - | - | - | - |
| 74 Ignition | x/x/- | x | - | - | - | - | x | - | - | - | - | - | - | - | - | - |
| 75 Air | x/-/- | - | - | x | - | x | - | - | - | - | - | - | - | - | - | - |
| 76 Engine Controls | x/-/- | x | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 77 Engine Indicating | x/x/- | x | - | - | x | x | x | - | - | x | x | - | - | - | - | - |
| 78 Exhaust | x/-/- | x | - | - | x | - | - | - | - | - | - | - | - | - | - | - |
| 79 Oil | x/-/- | - | x | x | - | - | - | - | - | - | - | - | - | - | - | - |
| 80 Starting | x/-/- | x | - | - | x | x | - | - | - | - | - | - | - | - | - | - |
| 82 Water Injection | x/-/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 83 Accessory Gearboxes | x/-/- | - | x | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 84 Propulsion Augmentation | x/-/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 85 Reciprocating Engine | x/-/- | - | x | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 49 Auxiliary Power Units (APUs) | x/-/- | x | x | - | - | x | - | - | - | - | - | - | - | - | - | - |
| Group: Piston Engines | | | | | | | | | | | | - | - | - | - | - |
| 70 Standard Practices - Engines - only type particular | - | - | x | - | - | - | - | x | - | - | - | - | - | - | - | - |
| 70A Constructional arrangement and operation (Installation Inlet, Compressors, | x/x/- | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|--|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| Combustion Section, Turbine Section, Bearings and Seals, Lubrication Systems) | | | | | | | | | | | | | | | | |
| 70B Engine Performance | - | - | - | - | - | X | - | - | - | - | - | - | - | - | - | - |
| 71 Power Plant | x/-/- | x | x | - | - | - | - | x | - | - | - | - | - | - | - | - |
| 73 Engine Fuel and Control | x/x/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 73A FADEC Systems | x/x/- | x | - | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 74 Ignition | x/x/- | x | - | - | - | - | x | - | - | - | - | - | - | - | - | - |
| 76 Engine Controls | x/-/- | x | - | - | - | x | - | - | - | - | - | - | - | - | - | - |
| 77 Engine Indicating | x/x/- | x | - | - | x | x | x | - | - | x | x | - | - | - | - | - |
| 78 Exhaust | x/-/- | x | - | - | x | x | - | - | - | - | - | - | - | - | - | - |
| 79 Oil | x/-/- | - | x | x | - | - | - | - | - | - | - | - | - | - | - | - |
| 80 Starting | x/-/- | x | - | - | x | x | - | - | - | - | - | - | - | - | - | - |
| 81 Turbines | x/-/- | x | x | x | - | x | - | - | - | - | - | - | - | - | - | - |
| 82 Water Injection | x/-/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 83 Accessory Gearboxes | x/-/- | - | x | x | - | - | - | - | - | - | - | - | - | - | - | - |
| 84 Propulsion Augmentation | x/-/- | x | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 85 Reciprocating Engine | x/-/- | - | x | - | - | - | - | - | - | - | - | - | - | - | - | - |
| Group: Propeller | | | | | | | | | | | | - | - | - | - | - |
| 60A Standard Practices - Propeller | - | - | - | x | - | - | - | - | - | - | - | - | - | - | - | - |
| 61 Propellers/ Propulsion | x/x/- | x | x | - | x | x | - | - | - | - | - | - | - | - | - | - |
| 61A Propeller Construction | x/x/- | - | x | - | - | - | - | - | - | - | - | - | - | - | - | - |

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| Chapters | B1/B2/B4 | Aeromechanical (B1) | | | | | Avionics (B2) | | | | | Armament (B4) | | | | |
|---|----------|---------------------|-----|-----|-----|----|---------------|-----|-----|-----|----|---------------|-----|-----|-----|----|
| | LOC | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS | FOT | SGH | R/I | MEL | TS |
| 61B Propeller Pitch Control | x/-/- | x | - | x | x | x | - | - | - | - | - | - | - | - | - | - |
| 61C Propeller Synchronizing | x/-/- | x | - | - | - | x | - | - | - | x | - | - | - | - | - | - |
| 61D Propeller Electronic control | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| 61E Propeller Ice Protection | x/-/- | x | - | x | x | x | - | - | - | - | - | - | - | - | - | - |
| 61F Propeller Maintenance | x/x/- | x | x | x | x | x | x | x | x | x | x | - | - | - | - | - |
| Military-Specific Systems | | | | | | | | | | | | | | | | |
| 92 Radar | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 93 Surveillance | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 94 Weapon System | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 95 Crew Escape and Safety (partially covered by 25 for Helicopters) | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 97 Image Recording | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |
| 99 Electronic Warfare | x/x/x | - | - | - | - | - | - | - | - | - | - | x | x | x | x | x |

4. **Type Training Examination and Assessment Standard**

Theoretical and practical assessment on students should be conducted at each course level appropriately assessment in accordance with under point 147.A.135 and AMC 147.A.135. The examination shall ensure that the following objectives are met:

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

Assessment is conducted under the assessment plan set out in the curriculum. All Learning Outcomes are proposed to be assessed according to the following manner:

| Course Level | Knowledge Examination | Knowledge Assessment | Practical Assessment |
|-----------------------------|-----------------------|----------------------|----------------------|
| General Familiarization | Yes | Option | No |
| Service and Ground Handling | Option | Yes | Yes |
| Line & Base Maintenance | Option | Yes | Yes |
| Supervisor | Yes | No | No |
| Aviation Engineer | Option | Yes | No |

4.1 **Theoretical Element Examination**

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) The knowledge examination question paper should have three sets containing a minimum of 30% different questions for each set.
- (b) The knowledge examination question paper design for Course Level 1 shall Part A and Part B.
- (c) The design of the knowledge assessment question paper should not be less than two Parts of the question format containing 64 questions.
- (d) The examination session on Part A and B shall be conducted of closed book type. No reference material is permitted. Only Part C is authorized to conduct of opened book type in the case of examining a Category B1, Category B2 or Category B4 candidate's ability to interpret technical documents
- (e) Format multi-choice questions shall have 3 alternative answers of which only one shall be the correct answer.

- (f) The total number of examinations and/or assessments is based on the type of assessment method and grading system used under point 147.A.135.
- (g) The number of questions for each chapter and level shall be proportionate to:
 - (1) The effective training hours spent teaching at that chapter and level,
 - (2) The learning objectives as given by the training needs analysis.
- (h) The total examination time for one session is based on the total number of questions. The average time answering one question as follows:
 - (1) The MCOQ is based on a nominal average of 75 seconds per question, except for Course Level 3 and Course Level 5 which is 120 seconds per question.
 - (2) Short Answer Subjective Questions is 15 minutes per question.
 - (3) Selection Subjective Questions is 30 minutes per question.
- (i) The incorrect alternatives shall seem equally plausible to anyone ignorant of the subject. All the alternatives shall be related to the question and of similar vocabulary, grammatical construction and length.
- (j) 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.
- (k) The DGTA will assess the number and the level of the questions when approving the course.
- (l) Penalty marking (negative points for failed questions) is not to be used.
- (m) The minimum examination pass mark is 75 %. When the type of training examination is split into several examinations, each examination shall be passed with at least a 75 % mark. To be able to achieve exactly a 75 % pass mark, the number of questions in the examination shall be a multiple of 4.
- (n) 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

- (a) After the practical element of the aircraft type training has been completed, an assessment must be performed, which must comply with the following:
 - (1) The performance assessment shall be performed by designated assessors appropriately qualified.
 - (2) The assessment shall evaluate the knowledge and skills of the trainee.
- (b) Practical assessment time for one session is based on the critical level of task maintenance or depth of inspection. The minimum duration to complete one

task practical assessment is 15 minutes for task location (LOC), and one hour for other task activities.

- (c) The practical assessment must be performed at least one (1) on each maintenance task activity below:
- (1) **Inspection:** Inspection, servicing, cleaning, visual check or any work done on a component or installation.
 - (2) **Component Change:** Removal/replacement of components.
 - (3) **Testing:** Functional/operational check, adjustment, calibration, compensation, circuit testing or rigging of a component or installation.
 - (4) **Troubleshooting & Rectification:** Troubleshooting and/or rectification of component or system faults.
 - (5) **Ground Handling:** Launching, towing, mooring, lifting, recharge, replenishment, refuel or role change etc.

4.3 Training Assessment Standards

The theoretical examination and/or practical assessment conducted on students shall comply with the training assessment defined in Appendix III to MSTAR 147.

5. On the Job Training

For other than Category C and Category LAE licences, the endorsement of the first aircraft type rating requires satisfactory completion of the corresponding on-the-job training (OJT).

The OJT program shall be structured to satisfy the practical training elements that are unable to conduct by an approved training organisation under MSTAR 147 or any other Part 147.

OJT programmes shall be approved by the DGTA who has issued the licence.

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

(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 contained in Appendix VII (Chapter 7 to Part 3 to MSTAR 66) and acceptable to the DGTA. 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. While relatively simple tasks may be included, other more complex maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type.

Selected practical training tasks should be extracted from the list of approved tasks. A proportional number of practical training tasks should be included in case of a differences or bridging type course.

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/worksheet, etc.

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

To facilitate the verification by the DGTA, demonstration of the OJT shall consist of:

1. Detailed worksheets/logbooks, and
2. A compliance report demonstrating how the OJT meets the requirement of this MSTAR 66.

The format of the on-the-job training logbook is as defined in Appendix IX (Chapter 9 to Part 3 to MSTAR 66).

The following data shall be addressed on the OJT worksheets/logbook:

1. Name of Trainee;
2. Date of Birth/NRIC/Service Number;
3. SAML Licence Number (if any);
4. Approved Maintenance Organisation;
5. Location;
6. Name of supervisor(s) and assessor, (including licence number if applicable);
7. Date of task completion;
8. Description of task and job card/work order/tech log, etc.;
9. Aircraft type and aircraft registration;
10. Aircraft rating applied for.

(c) **Duration:**

The OJT program normally required between 2 weeks and 4 months, however, in the case of a structured OJT performed at line stations, due to the occasional unavailability of aircraft, its duration may need to be extended in order to fulfil the required list of supervised tasks.

For first type training courses without evidence of recorded maintenance experience on aircraft of the type sought, 4 months of OJT practical training is required for the relevant aircraft type. The OJT requirement for a basic category shall present at least 80 days of the practical training task.

After the first type rating course for Category B, the subsequent OJT at a minimum of 2 weeks is recommended.

6. **Task Training**

(a) An individual holding a SAML Category A licence is eligible to hold authorisation for one or more of the tasks listed in Appendix VII (Chapter 7 to Part 3 to MSTAR 66).

(b) The certification authority cannot be granted by the MSTAR 145 AMO until the individual has undertaken the required specific task training on the aircraft types that the licence holder is to be authorised upon and has passed the task performance assessment.

(c) When the task training is complete, the individual must also demonstrate an understanding of the organisation's procedures and the paperwork control systems that are in use before being authorised. This should cover those procedures that are both general and type-specific as relevant to the task authorisation being issued. The task authorisation when issued should show the individual tasks that are authorised as well as the relevant aircraft types.

(d) Task training should be conducted by MSTAR 145 AMO on the type of aircraft or MSTAR 147 AMTO training agency.

AMC to Aircraft Type/task Training and Examination Standard - On the Job Training**AMC to Section 1 of Appendix III - Aircraft Type Training**

1. Aircraft type training may be subdivided into the airframe and/or power plant and/or avionics/electrical systems type training courses.
 - d. Airframe type training course means a type training course including all relevant aircraft structure and electrical and mechanical systems excluding the power plant.
 - e. Power plant type training course means a type training course on the bare engine, including the build-up to a quick engine change unit.
 - f. The interface of the engine/airframe systems should be addressed by either airframe or power plant type training course. In some cases, such as for general aviation, it may be more appropriate to cover the interface during the airframe course due to the large variety of aircraft that can have the same engine type installed.
 - g. Avionics/electrical systems type training course means type training on avionics and electrical systems covered by but not necessarily limited to ATA (Air Transport Association) Chapters 22, 23, 24, 25, 27, 31, 33, 34, 42, 44, 45, 46, 73 and 77 or equivalent.
2. Practical training may be performed either following or integrated with the theoretical elements. However, it should not be performed before theoretical training.
3. The content of the theoretical and practical training should:
 - (a) Address the different parts of the aircraft which are representative of the structure, the systems/components installed and the cabin; and
 - (b) Include training on the use of technical manuals, maintenance procedures and the interface with the operation of the aircraft.
4. The content of the theoretical and practical training should be based on the following elements:
 - (a) Type design including relevant type design variants, new technology and techniques;
 - (b) Feedback from in-service difficulties, occurrence reporting, etc;
 - (c) Significantly applicable airworthiness directives and service bulletins;
 - (d) Known human factor issues associated with the particular aircraft type;
 - (e) Use of common and specific documentation, (when applicable, such as MMEL, AMM, Maintenance Planning Document (MPD), SRM, WD, AFM, tool handbook), philosophy of the troubleshooting, etc.;

- (f) Knowledge of the maintenance on-board reporting systems and Extended Twin-Engine Operations (ETOPS) maintenance conditions where applicable;
 - (g) Use of special tooling and test equipment and specific maintenance practices including critical safety items and safety precautions;
 - (h) Significant and critical tasks/aspects from the MMEL, Configuration Deviation List (CDL), Fuel Tank Safety (FTS), airworthiness limitation items (ALI) including Critical Design Configuration Control Limitations (CDCCL), Certification Maintenance Requirements (CMR) and all ICA documentation such as Maintenance Review Board (MRB), MPD, SRM, AMM, etc., when applicable.
 - (i) Maintenance actions and procedures to be followed as a consequence of specific certification requirements, such as but not limited to, Reduced Vertical Separation Minimum (RVSM) and Night Vision Imaging Systems (NVIS);
 - (j) Knowledge of relevant inspections and limitations as applicable to the effects of environmental factors or operational procedures such as cold and hot climates, wind, moisture, sand, de-icing / anti-icing, etc.
5. Limited avionic system training should be included in the category B1 type training as the B1 privileges include work on avionics systems requiring simple tests to prove their serviceability.
6. Electrical systems should be included in both categories of B1 and B2 type training.
7. The theoretical and practical training should be complementary and may be:
- (a) Integrated or split
 - (b) Supported by the use of training aids, such as trainers, virtual aircraft, aircraft components, synthetic training devices (STD), computer-based training devices (CBT), etc.

AMC to Paragraphs 1(b), 3.2 and 4.2 of Appendix III - Practical Element of the Aircraft Type Training

1. The practical training may include instruction in a classroom or simulators but part of the practical training should be conducted in a real maintenance environment.
2. The tasks should be selected because of their frequency, complexity, variety, safety, criticality, novelty, etc. The selected tasks should cover all the chapters described in the table contained in paragraph 3.2 of Appendix III to MSTAR-66.
3. The duration of the practical training should ensure that the content of training required by paragraph 3.2 of Appendix III to MSTAR-66 is completed.

The duration for the practical element of a type rating training course should not be less than two weeks.
4. The organisation providing the practical element of the Type Training should provide trainees with a schedule or plan indicating the list of tasks to be performed under instruction or supervision. A record of the tasks completed should be entered into a

logbook which should be designed such that each task or group of tasks may be countersigned by the designated assessor. The logbook format and its use should be clearly defined.

5. In paragraph 4.2 of Appendix III to MSTAR-66, the term 'designated assessors appropriately qualified' means that the assessors should demonstrate training and experience on the assessment process being undertaken and be authorised to do so by the organisation.

Further guidance about the assessment and the designated assessors is provided in Appendix VIII (Chapter 8 to Part 3 to MSTAR 66).

6. The practical element (for power plant and avionics systems) of the Type Rating Training may be subcontracted by the approved MSTAR 147 organisation under its quality system according to the provisions of 147.A.145 (d) 3 and the corresponding Guidance Material.
7. Practical Training Worksheets must be prepared and executed by a certified practical instructor for the practical training elements selected for the aircraft type training. Below are the elements to consider in designing the Practical Training Worksheet.

Element 1: Prepare The Training Aids / Tools

- 1.1 Ensure the technical manual available.
- 1.2 Ensure using the correct technical manual.
- 1.3 Ensure using the correct tool and equipment as required.
- 1.4 Ensure the Consumable items and non-consumable items sufficient

Element 2: Knowledge

- 2.1 Organize Pre-Maintenance Process
- 2.2 Identify Manual/Publication/Checklist
- 2.3 State on Main Component
- 2.4 Identify on Main Component Location
- 2.5 Describe on Main Component Function
- 2.6 Identify Tools and Equipment
- 2.7 Describe on type of maintenance/servicing / inspection/ground handling as stipulated in ICA
- 2.8 Describe inspection/ servicing/ cleaning/ on the component as per Technical Manual
- 2.9 Describe functional check/test on the system
- 2.10 Describe safety precautions during maintenance

Element 3: Skill

- 3.1 Perform functional check/test on the system
- 3.2 Perform inspection/ servicing/ cleaning / ground handling
- 3.3 Identified on physical criteria and condition
- 3.4 Recognized abnormal condition
- 3.5 Accurate and correct references used
- 3.6 Accurate and correct in performing maintenance
- 3.7 Accurate and correct in engineering practice
- 3.8 Correct of material or component used
- 3.9 Correct measurement and judgement on limitation
- 3.10 Correct maintenance documentation and records
- 3.11 Perform working sequence as per Technical Manual
- 3.12 Perform using the correct tool and equipment

Element 4: Attitude

- 4.1 To know the knowledge, skills and positive attitude towards work
- 4.2 Focusing on practical learning processes
- 4.3 A bilateral relationship with the instructor
- 4.4 Show curiosity
- 4.5 Ability to work in a team and willing to help and collaborate with colleagues
- 4.6 The ability to guide and lead subordinates well
- 4.7 Diligent, dedicated, and committed
- 4.8 Is responsible for all personal and subordinate behaviour
- 4.9 Can be trusted and trusted to perform the tasks that have been assigned
- 4.10 Always obeys and enforces the law
- 4.11 Displayed a commitment to the RMAF Core Values
- 4.12 Displayed a positive approach toward technician duties
- 4.13 Choose to respect a person as individual

ELEMENT 5: SAFETY

- 5.1 Choose to adhere to the Safety Precautions and Procedures
- 5.2 Positive attitude towards Safety Environment as per OSH policy
- 5.3 Ensuring in performing Loose Article Check/ Inspection
- 5.4 Confident level and precaution measure alert

AMC to Paragraph 1(c) of Appendix III - Differences Training

Approved difference training is not required for different variants within the same aircraft type rating (as specified in Appendix VI (Chapter 6 to Part 3 to MSTAR 66)) for type rating endorsement on the aircraft maintenance licence.

However, this does not necessarily mean that no training is required before a certifying staff authorisation can be issued by the maintenance organisation (refer to AMC 66.A.20 (b) 3).

AMC to point 3.1(d) of Appendix III - Training Needs Analysis for the Theoretical Element of the Aircraft Type Training

1. The minimum duration for the theoretical element of the type rating training course, as described in Appendix III to MSTAR 66, has been determined based on:
 - (a) Generic categories of aircraft and minimum standard equipment fit.
2. The purpose of the Training Needs Analysis (TNA) is to adapt and justify the duration of the course for a specific aircraft type. This means that the TNA is the main driver for determining the duration of the course, regardless of whether it is above or below the minimum duration described in Appendix III to MSTAR 66.
3. The content and the duration deriving from this TNA may be supported by an analysis from the Type Certificate holder.
4. When developing the TNA, the following should be considered:
 - (a) The TNA should include an analysis identifying all the areas and elements where there is a need for training as well as the associated learning objectives, considering the design philosophy of the aircraft type, the operational

environment, the type of operations and the operational experience. This analysis should be written in a manner that provides a reasonable understanding of which areas and elements constitute the course to meet the learning objectives.

- (b) As a minimum, the Training Need Analysis (TNA) should take into account all the applicable elements contained in paragraph 3.1 of MSTAR 66 Appendix III and associated AMCs.
- (c) The TNA should set up the course content considering the Appendix III objectives for each level of training and the prescribed topics in the theoretical element table contained in paragraph 3.1 of MSTAR 66 Appendix III.
- (d) For each chapter described in the theoretical element table contained in paragraph 3.1 of MSTAR 66 Appendix III, the corresponding training time should be recorded.
- (e) Typical documents to be used to identify the areas and elements where there is a need for training typically include, among others, the Aircraft Maintenance Manual, MRB report, CMRs, airworthiness limitations, Troubleshooting Manual, Structural Repair Manual, Illustrated Parts Catalogue, Airworthiness Directives and Service Bulletins.
- (f) During the analysis of these documents:
 - (4) Consideration should be given to the following typical activities:
 - (c) Activation/reactivation;
 - (d) Removal/Installation;
 - (e) Testing;
 - (f) Servicing;
 - (g) Inspection, check and repairs;
 - (h) Troubleshooting/diagnosis.
 - (5) For the purpose of identifying the specific elements constituting the training course, it is acceptable to use a filtering method based on criteria such as:
 - i. Frequency of the task;
 - ii. Human factor issues associated with the task;
 - iii. The difficulty of the task;
 - iv. Criticality and safety impact of the task;
 - v. In-service experience;
 - vi. Novel or unusual design features (not covered by MSTAR 66 Appendix I);

- vii. Similarities with other aircraft types;
 - viii. Special tests and tools/equipment.
- (6) It is acceptable to follow an approach based on:
- i. Tasks or groups of tasks, or
 - ii. Systems or subsystems or components.
- (g) The TNA should:
- (1) Identify the learning objectives for each task, group of tasks, system, subsystem or component;
 - (2) Associate the identified tasks to be trained to the regulatory requirements (table in Paragraph 3.1 of Appendix III to MSTAR 66);
 - (3) Organise the training into modules in a logical sequence (adequate combination of chapters as defined in Appendix III of MSTAR 66);
 - (4) Determine the sequence of learning (within a lesson and for the whole syllabus);
 - (5) Identify the scope of information and level of detail concerning the minimum standard to which the topics of the TNA should be taught according to the set-up objectives.
 - (6) Address the following:
 - i. Description of each system/component including the structure (where applicable);
 - ii. System/component operation taking into account:
 - a. The complexity of the system (e.g., the need of further break down into subsystems, etc.);
 - b. Design specifics which may require more detailed presentation or may contribute to maintenance errors;
 - c. Normal and emergency functioning;
 - d. Troubleshooting;
 - e. Interpretation of indications and malfunctions;
 - f. Use of maintenance publications;
 - g. Identification of special tools and equipment required for servicing and maintaining the aircraft;
 - h. Maintenance Practices;

- i. Routine inspections, functional or operational tests, rigging/adjustment, etc.
- (7) Describe the following:
 - i. The instructional methods and equipment, teaching methods and blending of the teaching methods to ensure the effectiveness of the training;
 - ii. The maintenance training documentation/material to be delivered to the student;
 - iii. Facilitated discussions, questioning sessions, additional practised-oriented training, etc.;
 - iv. The homework, if developed;
 - v. The training provider's resources available to the learner.
- (h) It is acceptable to differentiate between issues that have to be led by an instructor and issues which may be delivered through interactive simulation training devices and/or covered by web-based elements. The overall time of the course will be allocated accordingly.
- (i) The maximum number of training hours per day for the theoretical element of type training should not be more than 7 hours. A training hour means 60 minutes of tuition excluding any breaks, examination, revision, preparation and aircraft visit. In exceptional cases, the DGTA may allow deviation from this standard when it is properly justified that the proposed number of hours follows pedagogical and human factors principles. These principles are especially important in those cases where:
 - (1) Theoretical and practical training is performed at the same time;
 - (2) Training and normal maintenance duty/apprenticeship are performed at the same time.
- (j) The minimum participation time for the trainee to meet the objectives of the course should not be less than 90 % of the tuition hours of the theoretical training course. Additional training may be provided by the training organisation to meet the minimum participation time. If the minimum participation defined for the course is not met, a certificate of recognition should not be issued.
- (k) The TNA is a living process and should be reviewed/updated based on operation feedback, maintenance occurrences, airworthiness directives, major service bulletins impacting maintenance activities or requiring new competencies for mechanics, alert service bulletins, feedback from trainees or customer satisfaction, the evolution of the maintenance documentation such as MRBs, MPDs, MMs, etc. The frequency at which the TNA should be reviewed/updated is left to the discretion of the organisation conducting the course.

NOTE: The examination is not part of TNA. However, it should be prepared under the learning objectives described in TNA.

AMC to Section 5 of Appendix III - On the Job Training (OJT)

1. 'A maintenance organisation appropriately approved for the maintenance of the particular aircraft type' means a MSTAR 145 approved maintenance organisation for such aircraft.
2. The OJT should include one to one supervision and should involve actual work task performance on aircraft/components, covering line and/or base maintenance tasks.
3. The use of simulators for OJT should not be allowed.
4. Appendix VII (Chapter 7 to Part 3 to MSTAR 66) contains a list of tasks, from which a representative sample appropriate to the type and licence (sub)category applied for, should be extracted for the OJT program and approved by the DGTA. Several tasks should be selected from each paragraph of the approved extracted list. Other tasks than those in Appendix II may be considered as a replacement when they are relevant. Usually, in addition to the diversity and complexity, OJT tasks should be chosen based on their frequency, safety, novelty, etc.
5. The organisation providing the on-the-job training should provide trainees with a schedule or plan indicating the list of tasks to be performed under supervision. A record of the tasks completed should be entered into a logbook which should be designed such that each task or group of tasks is countersigned by the corresponding supervisor. The logbook format and its use should be clearly defined.
6. While it is not feasible to establish a formula giving the required OJT training duration in all cases, the following may be used as guidelines:
 - (a) For a first type training course with no recent recorded maintenance experience, 4 months of OJT practical training on specific aircraft types is required. All computations of the number of minimum working days necessary to comply with the OJT requirement should be not less than 80 days. It shall cover at least one maintenance task in the relevant chapter system associated with the category/subcategory for the licence sought that represents the type of maintenance task involved in each system and on the operating aircraft.
 - (b) Some factors that may lead to a reduction in the maximum duration of 4 months of OJT practical training required are as follows:
 - (1) Experience on aircraft type of similar technology, construction and systems including engines;
 - (2) Recent on type;
 - (3) The quantity of the practical experience. For example, experience gained will depend upon the environment e.g., line maintenance environment with one aircraft per week would permit limited experience compared with the constant base maintenance check environment;
 - (4) The quality of the practical experience. The type of tasks carried out. These tasks should reflect, at a minimum, those tasks specified by the practical training needs matrix developed by the organisation approved under MSTAR 147.

7. After the first type rating course for Category B, the subsequent OJT at a minimum of 2 weeks is recommended to complete the different tasks contained in Appendix VII (Chapter 7 to Part 3 to MSTAR 66).
8. Regarding the day-to-day supervision of the OJT programme in the approved maintenance organisation and the role of the supervisor(s), the following should be considered:
 - (a) It is sufficient that the completion of individual OJT tasks is confirmed by the direct supervisor(s), without necessarily the direct evaluation of the assessor.
 - (b) During the day-to-day OJT performance, the supervision aims at overseeing the complete process, including task completion, use of manuals and procedures, observance of safety measures, warnings and recommendations and adequate behaviour in the maintenance environment.
 - (c) The supervisor(s) should personally observe the work being performed to ensure safe completeness and should be readily available for consultation if needed during the OJT performance.
 - (d) The supervisor(s) should countersign the tasks and release the maintenance tasks as the trainee is still not qualified to do so.
 - (e) The supervisor(s) should, therefore:
 - (1) Have maintenance supervisor or maintenance technician privileges relevant to the OJT tasks;
 - (2) Be competent for the selected tasks;
 - (3) Be safety-orientated;
 - (4) Be capable to coach (setting objectives, giving training, performing supervision, evaluating, handling trainee's reactions and cultural issues, managing objectively and positively debriefing sessions, determining the need for extra training or reorientation the training, reporting, etc.);
 - (5) Be designated by the approved maintenance organisation to carry out the supervision.
9. Regarding the assessor, the following should be considered:
 - (a) The function of the assessor, as described in Section 5 of Appendix III to MSTAR 66, is to conduct the final assessment of the completed OJT. This assessment should include confirmation of the completion of the required diversity and quantity of OJT and should be based on the supervisor(s) reports and feedback.
 - (b) In Section 5 of Appendix III to MSTAR 66, the term 'designated assessor appropriately qualified' means that the assessor should demonstrate training and experience on the assessment process being undertaken and should be authorised to do so by the organisation.
 - (c) Further guidance about the assessment and the designated assessors is provided in Appendix VIII (Chapter 8 to Part 3 to MSTAR 66).

10. The procedures for OJT should be included in the Training Instruction Manual (TIM).

AMC to Section 6 of Appendix III - Task Training

Specific task training on each aircraft type will be required reflecting the authorised task(s):

(a) Consider the following examples:

(1) **Passenger Seat Belt change** - given the simplicity of the task, theoretical training, in this case, would be straightforward and may be limited to the orientation of the belt and the reasons for it. The practical training would need to establish the competence of the individual to correctly perform the required task. This should include the ability to establish the belt to be fitted is the correct part number (and modification standard), that it is serviceable and shows that he or she can fit it and check its security and operation after fitment.

(2) **Brake Unit change** - This task is more complex and would require detailed theoretical knowledge to accomplish it. It should be noted however that it is not intended that the SAML Category A replace brake units other than where there is an obvious leak or the unit is worn to limits (as evidenced by a brake wear indicator). If a technical log or other entry states that the aircraft pulls to the left, although a brake change might rectify the problem the SAML Category A cannot diagnose this fault. A brake change is normally associated with other maintenance tasks. A wheel has to be removed and refitted. Brake fans may have to be disturbed. Anti-skid systems may have to be disturbed. Hydraulic systems have to be disconnected. There may also be a need to disassemble hydraulic pipelines and electrical cabling runs.

The theoretical training required therefore should cover the scope of the operational systems noted above (those shown are not necessarily exhaustive) to the depth to the point where the SAML Category A understands the systems and their operation and can check them after he or she has completed the task without further reference to a Licence Aviation Engineer or Supervisor. If there was a problem with the operational checks, it must be referred to Supervisor for counter check or advising. The practical training needs to reflect the practical ability and competence to do the job.

(b) Task training should cover tasks contained in Appendix VII (Chapter 7 to Part 3 to MSTAR 66). Tasks should be performed three times or more until competence is established. Where the individual wishes to progress onto a similar task on another aircraft the process must be repeated unless it can be demonstrated that the tasks are in all respects the same as that already held.

(c) Satisfactory completion of task training may be demonstrated by an examination and/or by performance assessment carried out by an appropriately approved AMO or AMTO. Further guidance about the assessment and the designated assessors is provided in Appendix VIII, MSTAR 66.

Appendix IV to 66. A.30

EXPERIENCE REQUIREMENTS FOR EXTENDING A MSTAR 66 STATE AIRCRAFT MAINTENANCE LICENCE

1. The table below shows the experience requirements for adding a new category or subcategory to an existing MSTAR 66 State Aircraft Maintenance Licence including military-specific modules.
2. The experience must be practical maintenance experience in operating aircraft in the category or subcategory relevant to the application.
3. The experience requirement will be reduced by 50% if the applicant has completed an approved MSTAR 147 course relevant to the category or subcategory.

| To From | A1 | A2 | A3 | A4 | B1.1 | B1.2 | B1.3 | B1.4 | B2 | B4 |
|---------|----------|----------|----------|----------|----------|----------|----------|----------|---------|----------|
| A1 | - | 6 months | 6 months | 6 months | 2 years | 6 months | 2 years | 1 year | 2 years | 1 year |
| A2 | 6 months | - | 6 months | 6 months | 2 years | 6 months | 2 years | 1 year | 2 years | 1 year |
| A3 | 6 months | 6 months | - | 6 months | 2 years | 1 year | 2 years | 6 months | 2 years | 1 year |
| A4 | 6 months | 6 months | 6 months | - | 2 years | 1 year | 2 years | 6 months | 2 years | 1 year |
| B1.1 | None | 6 months | 6 months | 6 months | - | 6 months | 6 months | 6 months | 1 year | 6 months |
| B1.2 | 6 months | None | 6 months | 6 months | 2 years | - | 2 years | 6 months | 2 years | 1 year |
| B1.3 | 6 months | 6 months | None | 6 months | 6 months | 6 months | - | 6 months | 1 year | 6 months |
| B1.4 | 6 months | 6 months | 6 months | None | 2 years | 6 months | 2 years | - | 2 years | 1 year |
| B2 | 6 months | 6 months | 6 months | 6 months | 1 year | 1 year | 1 year | 1 year | - | 6 months |
| B4 | 6 months | 6 months | 6 months | 6 months | 1 years | 1 year | 1 years | 1 year | 1 year | - |

Appendix V to 66. A.50

SAML LIMITATIONS**1. Limitation Number**

(a) On conversion to the MSTAR 66 State Aircraft Maintenance Licence, limitations will be applied where appropriate to the basic category and to aircraft type or group ratings reflecting the scope of the previous basic category held and the aircraft type authorisations issued prior to conversion.

(b) The table below shows the list of limitations description. The Limitation Number to be reflected in MSTAR 66 State Aircraft Maintenance Licences are listed in, but not limited to, the following table.

| Limitation Number | Limitation Descriptions |
|--------------------------|---|
| 1 | Excluding electrical power generation & distribution systems. |
| 2 | Excluding instrument systems, INS/IRS and Flight Directors systems. |
| 3 | Excluding autopilot systems on aeroplanes |
| 4 | Excluding autopilot systems on helicopter |
| 5 | Excluding automatic landing and auto throttle systems on aeroplanes. |
| 6 | Excluding radio communication/navigation and radar systems. |
| 7 | Excluding radio radar systems. |
| 8 | Excluding armament, weapon system and crew safety |
| 9 | Excluding avionic LRUs. |
| 10 | Excluding airframe. |
| 11 | Excluding engine. |
| 12 | Excluding all pressurised aeroplanes. |
| 13 | Excluding navigational and electronic instrument systems, FDR, GPWS and vibration monitoring systems. |
| 14 | Excluding all tasks with the exception of Compass Compensation and adjustment only. |
| 15 | Excluding propellers |
| 16 | Excluding maintenance tasks on wooden structures and fabric covering. |
| 17 | Excluding operational attack system, surveillance and electronic warfare, and military communication |
| 18 | Excluding certification privileges |
| 19 | Excluding supervisor privileges - airframe |
| 20 | Excluding supervisor privileges - engine |
| 21 | Excluding supervisor privileges - electrical |
| 22 | Excluding supervisor privileges - instrument |
| 23 | Excluding engineering design privileges |

2. Removal of Limitation

(a) The following table describes the additional modules to be examined before eligibility for removal of limitation annotates on MSTAR 66 SAML.

| Limitation Number | Modules Required |
|-------------------|--|
| 1 | Modules 3, 4, 7 and 11. |
| 2 | Modules 13 and 14. |
| 3 | Modules 13. |
| 4 | Modules 13. |
| 5 | Modules 13. |
| 6 | Modules 13. |
| 7 | Modules 13. |
| 8 | Module 50, 51 and 54. |
| 9 | Modules 5. |
| 10 | Module 7, 11, and 12. |
| 11 | Module 15, 16 and 17. |
| 12 | Modules 7 and 11. |
| 13 | Modules 5, 8, 13 and 14. |
| 14 | Modules 5, 8 and 14. |
| 15 | Module 17. |
| 16 | Module 6. |
| 17 | Module 52, 53 and 55. |
| 18 | Compliance with requirement 66.A.45 (g). |
| 19 | Module 7, 11, and 12 |
| 20 | Module 15, 16 and 17 |
| 21 | Modules 3, 4, 7 and 11. |
| 22 | Modules 13 and 14. |
| 23 | Compliance with requirement 66.A.45 (i). |

3. Maintenance Experience for Removal Limitation

(a) Demonstration of practical maintenance experience are typically 6 months relevant to the modules and ATA chapters on limitation to be lifted covering elements of maintenance, inspections and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the aircraft, for example, troubleshooting, repairs, servicing, adjustments, replacements, rigging and functional checks, unless otherwise agreed by the Authority.

Appendix VI to AMC 66.A. 30 (a)**AIRCRAFT TYPE PRACTICAL EXPERIENCE AND SCHEDULE OF EXPERIENCE**

1. This guidance will provide the information required to be included in the SOE which can be used to demonstrate practical maintenance experience as in the situations above or where there is a need to demonstrate practical maintenance experience for the MSTAR 66 State Aircraft Maintenance Licence:

(a) 66.A.30 requires applicants to demonstrate practical maintenance when applying for a state licence or inclusion of a category or subcategory.

(b) 66.A.45 requires applicants to demonstrate practical maintenance when applying for the endorsement of aircraft type ratings.

(c) 66.A.50(b)(3) requires applicants to demonstrate practical maintenance experience as required by the Authority when applying for the removal of limitations from a state licence.

2. Schedules of experience should be grouped under suitable ATA Chapters and reflect those tasks that the applicant has performed or actively participated in. It should cover all applicable systems related to the category/subcategory for the licence sought together with a representative cross-section of the types of maintenance tasks involved in each system and on operating aircraft.

3. Table 1 guides the suggested ATA Chapters applicable for each licence category/subcategory.

4. A typical format for the schedule of experience is given in Table 2. A complete submission of the schedule should include:

(a) **A summary of task.** A particular type of tasks carried out for each ATA Chapter system related to Inspection, Component Replacement, Testing, Troubleshooting & Rectification and Ground Handling. The cumulative number performed on a specific type of maintenance task should be shown for each ATA Chapter. Cumulative hours of work performed on specific maintenance tasks during the period of recent maintenance experience should be shown.

(b) **A schedule of experience duration checklist.** A cross "X" should be marked against each day that the work was performed.

(c) **Work Details.** Information provided for both paragraphs 4(a) and 4(b) above must be supported by details of work carried out. The work details should contain information necessary to demonstrate the experience necessary to meet the applicable MSTAR 66 requirements. The depth and amount of practical experience required will vary depending on the category/subcategory of the licence applied for.

5. Each entry in the work details should be countersigned by a person holding an aircraft maintenance licence directly responsible for the work being carried out. The Category C supervisor must ensure that the applicant has participated in or carried out the prescribed work activities and the following supervisory tasks must be recorded:

- a. **Supervised:** Performs supervision on maintenance tasks.
 - b. **Verifying:** Check that the appropriate level of maintenance tasks has been completed and are satisfactory.
 - c. **Certifying:** Ensures all maintenance tasks are properly recorded and signed.
6. The suggested ATA Chapters in Table 1 applicable for each licence category/subcategory must be performed at least one maintenance task. For the 'maintenance task', the following term applies:
- a. **Inspection:** Inspection, servicing, cleaning, visual check or any work done on a component or installation.
 - b. **Component Change:** Removal/replacement of components.
 - c. **Testing:** Functional/operational check, adjustment, calibration, compensation, circuit testing or rigging of a component or installation.
 - d. **Troubleshooting & Rectification:** Troubleshooting and/or rectification of component or system faults.
 - e. **Ground Handling:** Launching, towing, mooring, lifting, recharge, replenishment, refuel or role change etc.
7. For the 'Work Details', the following term apply:
- a. **Performed:** Carried out the task personally.
 - b. **Participated:** Actively involved in the task with supervision.
 - c. **Observed:** Not involved in the task directly.
8. The proposed maintenance task shall cover the cross-section of the tasks contained in Appendix VII, MSTAR 66, from which a representative sample appropriate to the type and licence (sub)category applied for, should be extracted and approved by the DGTA. In addition to the maintenance task requirements for practical maintenance experience, the practical elements prescribed in the approved type training curriculum are considered representative of the relevant maintenance tasks of the aircraft type.
9. The SOE Logbook must be able to demonstrate the completion of practical maintenance experience tasks that represent the applicable ATA Chapter proposed in Table 1 for the relevant license category/subcategory. Practical maintenance experience tasks should not be less than 50% selected from the list of maintenance task in Appendix VII, MSTAR 66 and approved by DGTA. Up to 50% of the required maintenance tasks may be performed before aircraft type training is completed, provided the relevant theoretical training sessions for those maintenance tasks have been conducted.
10. The collection of basic experiential training data from the Practical Logbook produced under the AMC to Appendix I to MSTAR 66 can be included in the SOE logbook if the practical experience training is on an actual unairworthy aircraft/components under the supervision, and approved by the DGTA as practical maintenance experience.

11. Maintenance tasks performed under on-the-job training for aircraft type training for which the task list is extracted from Appendix VII, MSTAR 66 and approved by the DGTA may be considered for inclusion in the SOE logbook.

12. The following data shall be addressed on the SOE logbook:

- a. Name of Applicant;
- b. NRIC;
- c. Approved Maintenance Organisation;
- d. Location;
- e. Name of supervisor(s) and assessor, (including licence number if applicable);
- f. Date of task completion;
- g. Description of task and job card/work order/tech log, etc.;
- h. Aircraft type and aircraft registration;
- i. SAML Basic Category Number and Aircraft rating applied for.

Table 1 - Relevant ATA Chapter for different licence categories

| Topic | ATA | Subcategory Applied For | | | | | |
|---|--------------|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Towing | 9 | x | x | x | x | x | x |
| Servicing | 12 | x | x | x | x | x | x |
| Air Conditioning & Pressurisation, Safety & Warning Devices | 21 | x | x | x | x | x | - |
| Avionics Systems: Auto flight, Communication, Radio and Navigation - replacement of LRUs where functional checks do not require the use of special equipment | 22/23/ 34 | x | x | x | x | - | - |
| Avionics Systems - Auto Flight: Yaw Damper, Stability Augmentation, Auto trim, Autopilot, FMS/FMGS, Auto throttle, Autoland. | 22 | - | - | - | - | x | - |
| Avionics Systems - Communications: VHF, HF Audio, CVR, SATCOM, GPS, ACARS. | 23 | - | - | - | - | x | - |
| Electrical Power: Battery, AC/DC Power Generation, Emergency Power Generation, Power distribution, Voltage regulation, Circuit protection, External /Ground Power Supply. | 24 | x | x | x | x | x | x |
| Equipment & Furnishing: Cabin Equipment and Layout, Galley, Cargo, Emergency Equipment, Entertainment Equipment. | 25 | x | x | x | x | x | - |
| Fire Protection Systems | 26 | x | x | x | x | x | - |

| Topic | ATA | Subcategory Applied For | | | | | |
|--|-----------------|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Flight Control Systems: Primary flying control (aileron, elevator, rudder, spoiler), Trim control, High lift devices, Electrical/ Fly-by-Wire. | 27 | x | x | x | x | - | - |
| Fuel Systems | 28 | x | x | x | x | x | - |
| Hydraulic Power | 29 | x | x | x | x | x | - |
| Ice & Rain Protection | 30 | x | x | x | x | - | - |
| Propeller Ice Protection | 30 | x | x | - | - | - | - |
| Instrument Systems: Pitot static, Gyroscopic, compass, AOA, other aircraft instrument systems - replacement of LRUs where functional checks do not require the use of special equipment | 31 | x | x | x | x | - | - |
| Instrument Systems: Pressure measuring, Pitot static, Altitude reporting / alerting, ADC, Temperature and quantity indication, Gyroscopic instrument, GPWS, Compass and compass compensation, FDR, EFIS, Instrument warning, stall warning, AOA, Wind shear, Vibration measurement and indication. | 31 | - | - | - | - | x | - |
| Landing Gear | 32 | x | x | x | x | x | - |
| Lights | 33 | x | x | x | x | x | - |
| Avionics Systems - Navigation: VOR, ADF, ILS/MLS, Flight Director, DME, Doppler navigation, Area navigation, RNAV, GPS, GNSS, INS/IRS, ATC, TCAS, Weather avoidance radar, Radio altimeter. | 34 | - | - | - | - | x | - |
| Oxygen | 35 | x | x | x | x | - | - |
| Pneumatics / Vacuum | 36 | x | x | x | x | - | - |
| Water / Waste | 38 | x | x | - | - | - | - |
| Operational Attack Function - Attack System: HUD, Map, MFD, weapon management | 39/40 | - | - | - | - | - | x |
| On-Board Maintenance System | 45 | x | | | | - | - |
| Auxiliary Power Units (APUs) | 49 | x | x | - | - | - | - |
| Airframe Structure | 51 | x | x | x | x | - | - |
| Fuselage: Doors, Fuselage, Windows | 52/53/ 56 | x | x | - | - | - | - |
| Nacelles / Pylons | 54 | x | x | - | - | - | - |
| Wings, Flight Control Surfaces, Stabilizers | 55/57 | x | x | - | - | - | - |
| Propeller: Construction, Pitch Control, Synchronizing, Maintenance | 61 | x | x | - | - | - | - |
| Blade tracking and vibration analysis, Transmissions, Airframe structure, Main Rotor, Tail rotor/rotor drive, Rotor flight control | 62/64/ 65/67 | - | - | x | x | - | - |
| Piston Engines: Engine Performance, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation | 71 | - | x | - | x | - | - |

| Topic | ATA | Subcategory Applied For | | | | | |
|--|-----|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Piston Engines: Engine Fuel Systems, Carburettors, Fuel injection systems | 73 | - | x | - | x | - | - |
| Piston Engines: Ignition Systems | 74 | - | x | - | x | - | - |
| Piston Engines: Engine Indication Systems | 77 | - | x | - | x | - | - |
| Piston Engines: Starting | 80 | - | x | - | x | - | - |
| Piston Engines: Supercharging /Turbocharging | 81 | - | x | - | x | - | - |
| Piston Engines: Engine Construction, Lubricants and Fuels, Lubricants Systems, Induction, Exhaust and Cooling (Reciprocating) | 85 | - | x | - | x | - | - |
| Turbine Engines: Constructional arrangement and operation, FADEC | 71 | x | - | x | - | - | - |
| Turbine Engines: Engine Performance, Inlet, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation. | 71 | x | - | x | - | - | - |
| Turbine Engines: Compressors, Combustion Section, Turbine Section | 72 | x | - | x | - | - | - |
| Turbine Engines: Turboprop Onboard Engines | 72 | x | - | - | - | - | - |
| Turbine Engines: Turbo-shaft Engines | 72 | - | - | x | - | - | - |
| Turbine Engines: Fuel Systems | 73 | x | - | x | - | - | - |
| Turbine Engines: Ignition Systems | 74 | x | - | x | - | - | - |
| Turbine Engines: Air System | 75 | x | - | x | - | - | - |
| Engine Control | 76 | x | - | x | - | - | - |
| Turbine Engines: Engine Indicating Systems | 77 | x | - | x | - | - | - |
| Turbine Engines: Exhaust | 78 | x | - | x | - | - | - |
| Turbine Engines: Bearing and Seals, Lubricants, Lubrication Systems | 79 | x | - | x | - | - | - |
| Turbine Engines: Starting Systems | 80 | x | - | x | - | - | - |
| Turbine Engines: Power Augmentation Systems | 82 | x | - | x | - | - | - |
| Accessory Gearboxes: Gearbox, drive shaft, chip detector | 83 | - | - | x | x | - | - |
| Maintenance check | | | | | | | |
| Zonal & Station Identification Systems | - | x | x | x | x | x | x |
| Defect Diagnosis and Rectification | - | x | x | x | x | x | x |

| Topic | ATA | Subcategory Applied For | | | | | |
|---------------------------------------|-----|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Mandatory Inspection and Modification | - | x | x | x | x | x | x |
| Military-Specific Systems | | | | | | | |
| Radar | 92 | - | - | - | - | - | x |
| Surveillance | 93 | - | - | - | - | - | x |
| Weapon System | 94 | - | - | - | - | - | x |
| Crew Escape and Safety | 95 | - | - | - | - | - | x |
| Image Recording | 97 | - | - | - | - | - | x |
| Electronic Warfare | 99 | - | - | - | - | - | x |

Table 2 - A typical format for the schedule of experience

| SUMMARY OF TASKS | | | | | | |
|--|------------------|------------|------------------|---------|---------------------------------|-----------------|
| I declare that the information given in this form is true in every respect. | | | | | | Page xx of xx |
| Name: _____ Signature: _____ | | | | | | |
| Practical Maintenance Experience: | | | | | | |
| Percentage : _____ | | | | | | |
| Aircraft Type : _____ | | | | | | |
| Basic Category Licence No : _____ | | | | | | |
| Category Licence : _____ | | | | | | |
| Inclusion of experience from: | | | | | | |
| <input type="checkbox"/> Practical Maintenance Experience gained under Basic Training. | | | | | | |
| <input type="checkbox"/> On Job Training under Type Training. | | | | | | |
| <input type="checkbox"/> Practical Maintenance Experience gained under supervision on Operating Aircraft. | | | | | | |
| Practical Maintenance Experience | | | | | | |
| ATA Chapter | | Inspection | Component Change | Testing | Troubleshooting & Rectification | Ground Handling |
| Towing | 9 | | | | | |
| Servicing | 12 | | | | | |
| Air Conditioning & Pressurisation, Safety & Warning Devices | 21 | 1 | | | | |
| Avionics Systems: Auto flight, Communication, Radio and Navigation - replacement of LRUs where functional checks do not require the use of special equipment | 22/ 23/ 34 | 1 | 1 | 1 | 1 | |
| Avionics Systems - Auto Flight: Yaw Damper, Stability Augmentation, Auto trim, Autopilot, FMS/FMGS, Auto throttle, Autoland. | 22 | | | | | |
| Avionics Systems - Communications: | 23 | | | | | |

| | | | | | | |
|---|----|--|--|--|--|--|
| VHF, HF Audio, CVR, SATCOM, GPS, ACARS. | | | | | | |
| Electrical Power: Battery, AC/DC Power Generation, Emergency Power Generation, Power distribution, Voltage regulation, Circuit protection, External /Ground Power Supply. | 24 | | | | | |
| Equipment & Furnishing: Cabin Equipment and Layout, Galley, Cargo, Emergency Equipment, Entertainment Equipment. | 25 | | | | | |
| Fire Protection Systems | 26 | | | | | |
| Flight Control Systems: Primary flying control (aileron, elevator, rudder, spoiler), Trim control, High lift devices, Electrical/ Fly-by-Wire. | 27 | | | | | |
| Fuel Systems | 28 | | | | | |
| Hydraulic Power | 29 | | | | | |
| Ice & Rain Protection | 30 | | | | | |
| Propeller Ice Protection | 30 | | | | | |
| Instrument Systems: Pitot static, Gyroscopic, compass, AOA, other aircraft instrument systems - replacement of LRUs where functional checks do not require the use of special equipment | 31 | | | | | |
| Instrument Systems: Pressure measuring, Pitot static, Altitude reporting / alerting, ADC, Temperature and quantity indication, | 31 | | | | | |

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| | | | | | | |
|---|------------------|--|--|--|--|--|
| Gyroscopic instrument, GPWS, Compass and compass compensation, FDR, EFIS, Instrument warning, stall warning, AOA, Wind shear, Vibration measurement and indication. | | | | | | |
| Landing Gear | 32 | | | | | |
| Lights | 33 | | | | | |
| Avionics Systems - Navigation: VOR, ADF, ILS/MLS, Flight Director, DME, Doppler navigation, Area navigation, RNAV, GPS, GNSS, INS/IRS, ATC, TCAS, Weather avoidance radar, Radio altimeter. | 34 | | | | | |
| Oxygen | 35 | | | | | |
| Pneumatics / Vacuum | 36 | | | | | |
| Water / Waste | 38 | | | | | |
| Operational Attack Function - Attack System: HUD, Map, MFD, weapon management | 39/ 40 | | | | | |
| On-Board Maintenance System | 45 | | | | | |
| Auxiliary Power Units (APUs) | 49 | | | | | |
| Airframe Structure | 51 | | | | | |
| Fuselage: Doors, Fuselage, Windows | 52/ 53/ 56 | | | | | |
| Nacelles / Pylons | 54 | | | | | |
| Wings, Flight Control Surfaces, Stabilizers | 55/ 57 | | | | | |
| Propeller: Construction, Pitch Control, Synchronizing, Maintenance | 61 | | | | | |
| Blade tracking and vibration | 62/ 64/ | | | | | |

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| | | | | | | |
|---|-----------|--|--|--|--|--|
| analysis, Transmissions, Airframe structure, Main Rotor, Tail rotor/rotor drive, Rotor flight control | 65/ 67 | | | | | |
| Piston Engines: Engine Performance, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation | 71 | | | | | |
| Piston Engines: Engine Fuel Systems, Carburetors, Fuel injection systems | 73 | | | | | |
| Piston Engines: Ignition Systems | 74 | | | | | |
| Piston Engines: Engine Indication Systems | 77 | | | | | |
| Piston Engines: Starting | 80 | | | | | |
| Piston Engines: Supercharging /Turbocharging | 81 | | | | | |
| Piston Engines: Engine Construction, Lubricants and Fuels, Lubricants Systems, Induction, Exhaust and Cooling (Reciprocating) | 85 | | | | | |
| Turbine Engines: Constructional arrangement and operation, FADEC | 71 | | | | | |
| Turbine Engines: Engine Performance, Inlet, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation. | 71 | | | | | |
| Turbine Engines: Compressors, Combustion Section, Turbine Section | 72 | | | | | |
| Turbine Engines: | 72 | | | | | |

| | | | | | | |
|---|--------------------|---------------------|---------|---------------------------------------|--------------------|--|
| Turboprop Onboard Engines | | | | | | |
| Turbine Engines: Turbo-shaft Engines | 72 | | | | | |
| Turbine Engines: Fuel Systems | 73 | | | | | |
| Turbine Engines: Ignition Systems | 74 | | | | | |
| Turbine Engines: Air System | 75 | | | | | |
| Engine Control | 76 | | | | | |
| Turbine Engines: Engine Indicating Systems | 77 | | | | | |
| Turbine Engines: Exhaust | 78 | | | | | |
| Turbine Engines: Bearing and Seals, Lubricants, Lubrication Systems | 79 | | | | | |
| Turbine Engines: Starting Systems | 80 | | | | | |
| Turbine Engines: Power Augmentation Systems | 82 | | | | | |
| Accessory Gearboxes: Gearbox, drive shaft, chip detector | 83 | | | | | |
| Maintenance check | | | | | | |
| Zonal & Station Identification Systems | - | | | | | |
| Defect Diagnosis and Rectification | - | | | | | |
| Mandatory Inspection and Modification | - | | | | | |
| Military-Specific Systems | | | | | | |
| Radar | 92 | | | | | |
| Surveillance | 93 | | | | | |
| Weapon System | 94 | | | | | |
| Crew Escape and Safety | 95 | | | | | |
| Image Recording | 97 | | | | | |
| Electronic Warfare | 99 | | | | | |
| Recent Maintenance Experience | | | | | | |
| Date and Year | Date Start: | | | Date End: | | |
| Maintenance Task | Inspection | Component Change | Testing | Troubleshooting & Rectification | Ground Handling | |
| Total Manhours | | | | | | |
| Total Days | | | | | | |

Recommendation and Verification**Recommendation**

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed above application is an employee under my office control and recommended for the SAML.

Signature of:

Date (dd/mm/yyyy):

Certified by Quality Manager

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR 66 SAML.

Signature:

Date (dd/mm/yyyy):

Table 2 - A typical format for the schedule of experience (continued)

| WORK SCHEDULE DURATION CHECKLIST | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-------------------|------|-----|-----|-----|-----|-----|-----|------------------|-----|-----|-----|-----|-----|
| I declare that the information given in this form is true in every respect. | | | | | | | | | | | | | | | | | | | | Page xx of xxx | | | | | |
| Name: _____ | | | | | | | | | | | | | | | | | | | | Signature: _____ | | | | | |
| <input type="checkbox"/> General Experience <input type="checkbox"/> Aircraft Type: _____ <input type="checkbox"/> SAML Basic Category Licence Number: - _____ | | | | | | | | | | | | | | | | | | | | | | | | | |
| Year: 2020 | | | | | | | | | | | | Year: 2021 | | | | | | | | | | | | | |
| Date | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Date | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| 1 | | | | | | | | | | | | | 1 | | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | 2 | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | 3 | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | 4 | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | 5 | | | | | | | | | | | | |
| 6 | | | | | | | | | | | | | 6 | | | | | | | | | | | | |
| 7 | | | | | | | | | | | | | 7 | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | 8 | | | | | | | | | | | | |
| 9 | | | | | | | | | | | | | 9 | | | | | | | | | | | | |
| 10 | | | | | | | | x | | | | | 10 | | | | | | | | | | | | |
| 11 | | | | | | | | | | | | | 11 | x | | | | | | | | | | | |
| 12 | | | | | | | | | | | | | 12 | | | | | | | | | | | | |
| 13 | | | | | | | | | | | | | 13 | | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | 14 | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | 15 | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | 16 | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | 17 | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | 18 | | | | | | | | | | | | |

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Table 2 - A typical format for the schedule of experience (continued)

| WORK DETAILS | | | | | | | | | | | |
|---|-----------------------|--------------------------------|--|---------------------------|------------|------------------|---------|---------------------------------|-----------------|----------------------|----------------------------|
| I declare that the information given in this form is true in every respect. | | | | | | | | | | | Page xx of xxx |
| Name: _____ | | | | | | Signature: _____ | | | | | |
| Aircraft Type | Aircraft Registration | Index No. | The description of Work Details performed | Date & Manhours Performed | Inspection | Component Change | Testing | Troubleshooting & Rectification | Ground Handling | Supervisor In-Charge | Inclusions experience from |
| ATA 21 - Air Conditioning & Pressurization | | | | | | | | | | | |
| F/A-18D | M45-06 | 21.13 | Participated in check operation of air conditioning recirculation fan as per AMM xx-xx-xx in Job Card/Sheet No. xx.xx.xx | 11 Aug 11 1.0 hrs | √ | | | | | Sign/ date | |
| ATA 22 - Auto Flight | | | | | | | | | | | |
| CN235 | M44-03 | 22.12 22.6 22.5 22.10 | Ref Job Card/Sheet No. xxxxx – Participated in troubleshooting of Auto Flight Control System to ascertain the cause of failure to engage all three autopilots. Inspection found Autopilot disengage switch on Captain's control column faulty. Performed disengage switch replacement as per MM xx-xx-xx. Observed on the ground adjustment and testing of AFCS as per MM xx-xx-xx. | 10 Jan 10 2.5 hrs | | | | √ | | Sign/ date | |

Appendix VII to 66. A.50, AMC 66.A. 30 (a), AMC 66.A.45 (c) & AMC 66.A.45 (e)

**AIRCRAFT TYPE PRACTICAL EXPERIENCE AND ON-THE-JOB TRAINING
- LIST OF TASK**

| ATA Chapter | | Index No. | Task |
|-------------|-------------------------------------|-----------|---|
| 05 | Time limits / Maintenance checks | 05.1 | 100 hour, "B" or "C" checks or other military equivalent inspection. |
| | | 05.2 | Assist carrying out a scheduled maintenance check i.a.w. Aircraft Maintenance Manual. |
| | | 05.3 | Review Aircraft maintenance log for correct completion. |
| | | 05.4 | Review records for compliance with Airworthiness Directives (or national equivalent). |
| | | 05.5 | Review records for compliance with component life limits. |
| | | 05.6 | Procedure for inspection following heavy / hard landing. |
| | | 05.7 | Procedure for inspection following excessive load factor. |
| | | 05.8 | Procedure for inspection following exceeding engine limits. |
| | | 05.9 | Procedure for inspection following lightning strike. |
| 06 | Dimensions/ Areas | 06.1 | Locate component(s) by zone/station number. |
| | | 06.2 | Perform symmetry check. |
| 07 | Lifting and Shoring | 07.1 | Assist in jack aircraft nose or tail wheel. |
| | | 07.2 | Assist in jack complete aircraft. |
| | | 07.3 | Assist in sling or trestle major component. |
| 08 | Levelling/Weighing | 08.1 | Assist in level aircraft. |
| | | 08.2 | Assist in weigh aircraft. |
| | | 08.3 | Assist in prepare weight and balance amendment. |
| | | 08.4 | Assist in check aircraft against equipment list. |
| 09 | Towing and Taxiing | 09.1 | Prepare for aircraft towing. |
| | | 09.2 | Towing aircraft. |
| | | 09.3 | Be part of aircraft towing team. |
| 10 | Parking and mooring | 10.1 | Tie down aircraft. |
| | | 10.2 | Park, secure and cover aircraft. |
| | | 10.3 | Position aircraft in maintenance dock. |
| | | 10.4 | Secure rotor blades. |
| 11 | Placards and Markings | 11.1 | Check aircraft for correct placards. |
| | | 11.2 | Check aircraft for correct markings. |
| 12 | Servicing | 12.1 | Refuel aircraft. |
| | | 12.2 | Defuel aircraft. |
| | | 12.3 | Carry out tank to tank fuel transfer. |
| | | 12.4 | Check/adjust tyre pressures. |
| | | 12.5 | Check/replenish oil level. |
| | | 12.6 | Check/replenish hydraulic fluid level. |
| | | 12.7 | Check/replenish accumulator pressure. |
| | | 12.8 | Charge pneumatic system. |

| ATA Chapter | Index No. | Task |
|-------------|--|---|
| | 12.9 12.10 12.11 12.12 | Grease aircraft. Connect ground power. Service toilet/water system. Perform pre-flight/daily check. |
| 18 | Vibration and Noise Analysis 18.1 18.2 18.3 | Analyse helicopter vibration problem. Analyse noise spectrum. Analysis engine vibration. |
| 21 | Air Conditioning 21.1 21.2 21.3 21.4 21.5 21.6 21.7 21.8 21.9 21.10 21.11 21.12 21.13 21.14 21.15 | Replace combustion heater. Replace flow control valve. Replace outflow valve. Replace safety valve. Replace vapour cycle unit. Replace air cycle unit. Replace cabin blower. Replace heat exchanger. Replace pressurisation controller. Clean outflow valves. Deactivate/reactivate cargo isolation valve. Deactivate/reactivate avionics ventilation components. Check operation of air conditioning/heating system. Check operation of pressurisation system. Troubleshoot faulty system. |
| 22 | Auto flight 22.1 22.2 22.3 22.4 22.5 22.6 22.7 22.8 22.9 22.10 22.11 22.12 22.13 22.14 22.15 | Install servos. Rig bridle cables. Replace controller. Replace amplifier. Replacement of the auto flight system LRUs. Check operation of auto-pilot. Check operation of auto-throttle/auto-thrust. Check operation of yaw damper. Check and adjust servo clutch. Perform autopilot gain adjustments. Perform Mach trim functional check. Troubleshoot faulty system. Check the Autoland system. Check flight management systems. Check stability augmentation system. |
| 23 | Communications 23.1 23.2 23.3 23.4 23.5 23.6 23.7 23.8 23.9 23.10 23.11 | Replace VHF com unit. Replace HF com unit. Replace existing antenna. Replace static discharge wicks. Check operation of radios. Perform antenna VSWR check. Perform SELCAL operational check. Perform operational check of passenger address system. Functionally check audio integrating system. Repair co-axial cable. Troubleshoot faulty system. |
| 24 | Electrical Power 24.1 | Charge lead/acid battery. |

| ATA Chapter | | Index No. | Task |
|-------------|---------------------------|-----------|--|
| | | 24.2 | Charge Ni-Cad battery. |
| | | 24.3 | Check battery capacity. |
| | | 24.4 | Deep-cycle Ni-Cad battery. |
| | | 24.5 | Replace integrated drive/generator/alternator. |
| | | 24.6 | Replace switches. |
| | | 24.7 | Replace circuit breakers. |
| | | 24.8 | Adjust voltage regulator. |
| | | 24.9 | Change voltage regulator. |
| | | 24.10 | Amend electrical load analysis report. |
| | | 24.11 | Repair/replace electrical feeder cable. |
| | | 24.12 | Troubleshoot faulty system. |
| | | 24.13 | Perform functional check of integrated drive/generator/alternator. |
| | | 24.14 | Perform functional check of voltage regulator. |
| | | 24.15 | Perform functional check of emergency generation system. |
| 25 | Equipment and Furnishings | 25.1 | Replace carpets. |
| | | 25.2 | Replace crew seats. |
| | | 25.3 | Replace passenger seats. |
| | | 25.4 | Check inertia reels. |
| | | 25.5 | Check seats/belts for security. |
| | | 25.6 | Check emergency equipment. |
| | | 25.7 | Check ELT for compliance with regulations. |
| | | 25.8 | Repair toilet waste container. |
| | | 25.9 | Repair upholstery. |
| | | 25.10 | Remove and install ceiling and sidewall panels. |
| | | 25.11 | Change cabin configuration. |
| | | 25.12 | Replace cargo loading system actuator. |
| | | 25.13 | Test cargo loading system. |
| | | 25.14 | Replace escape slides/ropes. |
| 26 | Fire protection | 26.1 | Check fire bottle contents. |
| | | 26.2 | Check/test operation of fire/smoke detection and warning system. |
| | | 26.3 | Check cabin fire extinguisher contents. |
| | | 26.4 | Check smoke detector system. |
| | | 26.5 | Check cargo panel sealing. |
| | | 26.6 | Install a new fire bottle. |
| | | 26.7 | Replace fire bottle squib. |
| | | 26.8 | Troubleshoot faulty system. |
| | | 26.9 | Inspect engine fire wire detection systems. |
| 27 | Flight Controls | 27.1 | Inspect primary flight controls and related components in accordance with AMM. |
| | | 27.2 | Extending/retracting flaps & slats. |
| | | 27.3 | Replace horizontal stabiliser. |
| | | 27.4 | Replace spoiler/lift damper. |
| | | 27.5 | Replace elevator. |
| | | 27.6 | Deactivation/reactivation of aileron servo control. |
| | | 27.7 | Replace aileron. |
| | | 27.8 | Replace rudder. |
| | | 27.9 | Replace trim tabs. |
| | | 27.10 | Install control cable and fittings. |

| ATA Chapter | | Index No. | Task |
|-------------|-------------------------|-----------|---|
| | | 27.11 | Replace slats. |
| | | 27.12 | Replace flaps. |
| | | 27.13 | Replace powered flying control unit. |
| | | 27.14 | Replace flat actuator. |
| | | 27.15 | Rig primary flight controls. |
| | | 27.16 | Adjust trim tab. |
| | | 27.17 | Adjust control cable tension. |
| | | 27.18 | Check control range and direction of movement. |
| | | 27.19 | Check for correct assembly and locking. |
| | | 27.20 | Troubleshoot faulty system. |
| | | 27.21 | Functional test of primary flight controls. |
| | | 27.22 | Functional test of flap system. |
| | | 27.23 | Operational test of the Trimmable Horizontal Stabiliser. |
| | | 27.24 | Trimmable Horizontal Stabiliser system wear check. |
| | | 27.25 | Operational test of the side stick assembly. |
| 28 | Fuel | 28.1 | Water drains system (operation). |
| | | 28.2 | Replace booster pump. |
| | | 28.3 | Replace fuel selector. |
| | | 28.4 | Replace fuel tank cells. |
| | | 28.5 | Replace/test fuel control valves. |
| | | 28.6 | Replace magnetic fuel level indicators. |
| | | 28.7 | Replace water drain valve. |
| | | 28.8 | Check/calculate fuel contents manually. |
| | | 28.9 | Check filters. |
| | | 28.10 | Flow check system. |
| | | 28.11 | Check calibration of fuel quantity gauges. |
| | | 28.12 | Check operation feed/selectors. |
| | | 28.13 | Check operation of fuel dump/jettison system. |
| | | 28.14 | Fuel transfer between tanks. |
| | | 28.15 | Pressure defuels. |
| | | 28.16 | Pressure refuels (manual control). |
| | | 28.17 | Deactivation/reactivation of the fuel valves (transfer defuel, X-feed, refuel). |
| | | 28.18 | Troubleshoot faulty system. |
| 29 | Hydraulics | 29.1 | Replace engine-driven pump. |
| | | 29.2 | Check/replace case drain filter. |
| | | 29.3 | Replace standby pump. |
| | | 29.4 | Replace hydraulic motor pump/generator. |
| | | 29.5 | Replace accumulator. |
| | | 29.6 | Check operation of shut off valve. |
| | | 29.7 | Check filters/clog indicators. |
| | | 29.8 | Check indicating systems. |
| | | 29.9 | Perform functional checks. |
| | | 29.10 | Pressurisation/depressurisation of the hydraulic system. |
| | | 29.11 | Power Transfer Unit (PTU) operation. |
| | | 29.12 | Replacement of PTU. |
| | | 29.13 | Troubleshoot faulty system. |
| 30 | Ice and rain protection | 30.1 | Replace pump. |

| ATA Chapter | | Index No. | Task |
|-------------|------------------------------|-----------|--|
| | | 30.2 | Replace timer. |
| | | 30.3 | Inspect repair propeller deice boot. |
| | | 30.4 | Test propeller de-icing system. |
| | | 30.5 | Inspect/test wing leading edge de-icer boot. |
| | | 30.6 | Replace anti-ice/deice valve. |
| | | 30.7 | Install wiper motor. |
| | | 30.8 | Check operation of systems. |
| | | 30.9 | Operational test of the pitot-probe ice protection. |
| | | 30.10 | Operational test of the wing ice protection system. |
| | | 30.11 | Operational test of the Total Air Temperature ice protection. |
| | | 30.12 | Assistance to the operational test of the engine air-intake ice protection (with engines operating). |
| | | 30.13 | Troubleshoot faulty system. |
| 31 | Indicating/recording systems | 31.1 | Replace Flight Data Recorder (FDR). |
| | | 31.2 | Replace cockpit voice recorder. |
| | | 31.3 | Replace clock. |
| | | 31.4 | Replace master caution unit. |
| | | 31.5 | Perform FDR data retrieval. |
| | | 31.6 | Troubleshoot faulty system. |
| | | 31.7 | Implement Electro-Static Discharge and Soldering procedures. |
| | | 31.8 | Inspect for High Intensity Radiated Field requirements. |
| | | 31.9 | Start/stop Engine Indication System procedure. |
| | | 31.10 | Bite test of the Centralized Fault Display Interface Unit. |
| | | 31.11 | Ground scanning of the central warning system. |
| | | 31.12 | |
| 32 | Landing Gear | 32.1 | Build up wheel. |
| | | 32.2 | Replace main wheel. |
| | | 32.3 | Replace nose wheel. |
| | | 32.4 | Replace steering actuator. |
| | | 32.5 | Replace truck tilt actuator. |
| | | 32.6 | Replace gear retraction actuator. |
| | | 32.7 | Replace uplock/down lock assembly. |
| | | 32.8 | Replace shimmy damper. |
| | | 32.9 | Rig nose wheel steering. |
| | | 32.10 | Functional test of the nose wheel steering system. |
| | | 32.11 | Replace shock strut seals. |
| | | 32.12 | Servicing of shock strut. |
| | | 32.13 | Replace brake unit. |
| | | 32.14 | Replace brake control valve. |
| | | 32.15 | Bleed brakes. |
| | | 32.16 | Replace brake fan. |
| | | 32.17 | Test anti-skid unit. |
| | | 32.18 | Test gear retraction. |
| | | 32.19 | Change bungees. |

| ATA Chapter | | Index No. | Task |
|-------------|------------|---|---|
| | | 32.20 32.21 32.22 32.23 32.24 32.25 32.26 32.27 32.28 32.29 | Adjust micro switches/sensors. Charge struts with oil and air. Troubleshoot faulty system. Test auto-brake system. Replace rotorcraft skids. Replace rotorcraft skid shoes. Pack and check floats. Flotation equipment. Check/test emergency landing gear extension. Operational test of the landing gear doors. |
| 33 | Lights | 33.1 33.2 33.3 33.4 33.5 33.6 33.7 33.8 33.9 | Repair/replace rotating beacon. Repair/replace landing lights. Repair/replace navigation lights. Repair/replace formation lights. Repair/replace interior lights. Replace ice inspection lights. Repair/replace emergency lighting system. Perform emergency lighting system checks. Troubleshoot faulty system. |
| 34 | Navigation | 34.1 34.2 34.3 34.4 34.5 34.6 34.7 34.8 34.9 34.10 34.11 34.12 34.13 34.14 34.15 34.16 34.17 34.18 34.19 34.20 34.21 34.22 34.23 34.24 34.25 34.26 | Calibrate magnetic direction indicator. Replace airspeed indicator. Replace altimeter. Replace air data computer. Replace VOR unit. Replace ADI. Replace HIS. Check pitot static system for leaks. Check operation of directional gyro. Functional check weather radar. Functional check Doppler. Functional check TCAS. Functional check DME. Functional check ATC Transponder. Functional check flight director system. Functional check inertial navigation system. Complete quadrantal error correction of ADF system. Update flight management system database. Check calibration of pressure altitude reporting system. Check calibration of pitot static instruments. Troubleshoot faulty system. Check marker systems. Compass replacement direct/indirect. Check Satcom. Check GPS. Test Airborne Vibration Monitoring (AVM). |
| 35 | Oxygen | 35.1 35.2 35.3 35.4 | Inspect on board oxygen equipment. Purge and recharge oxygen system. Replace regulator. Replace oxygen generator. |

| ATA Chapter | | Index No. | Task |
|-------------|----------------------------|-----------|--|
| | | 35.5 | Test crew oxygen system. |
| | | 35.6 | Perform auto oxygen system deployment check. |
| | | 35.7 | Troubleshoot faulty system. |
| 36 | Pneumatic systems | 36.1 | Replace filter. |
| | | 36.2 | Replace air shut off valve. |
| | | 36.3 | Replace pressure regulating valve. |
| | | 36.4 | Replace compressor. |
| | | 36.5 | Recharge desiccator. |
| | | 36.6 | Adjust regulator. |
| | | 36.7 | Check for leaks. |
| | | 36.8 | Troubleshoot faulty system. |
| 37 | Vacuum systems | 37.1 | Inspect the vacuum system in accordance with AMM. |
| | | 37.2 | Replace vacuum pump |
| | | 37.3 | Check/replace filters |
| | | 37.4 | Adjust regulator |
| | | 37.5 | Troubleshoot faulty system |
| 38 | Water/Waste | 38.1 | Replace water pump. |
| | | 38.2 | Replace tap. |
| | | 38.3 | Replace toilet pump. |
| | | 38.4 | Perform water heater functional check. |
| | | 38.5 | Inspect waste bin flap closure |
| | | 38.6 | Troubleshoot faulty system. |
| 40 | Attack Systems | 40.1 | Replace Head Up Display. |
| | | 40.2 | Replace Map / Tactical Situation Display. |
| | | 40.3 | Replace Multi-function Display. |
| | | 40.4 | Replace Weapons Management Display. |
| | | 40.5 | Removal/installation/functional check of laser designator systems. |
| 45 | Central Maintenance System | 45.1 | Replace CMU. |
| | | 45.2 | Perform BITE check. |
| | | 45.3 | Retrieve data from Central Maintenance Unit (CMU). |
| | | 45.4 | Troubleshoot faulty system. |
| 49 | Airborne Auxiliary power | 49.1 | Removal/Install of the APU. |
| | | 49.2 | Inspect hot section. |
| | | 49.3 | Removal/installation of the inlet guide-vane actuator. |
| | | 49.4 | Operational test of the APU emergency shut-down test. |
| | | 49.5 | Operational test of the APU. |
| | | 49.6 | Troubleshoot faulty system. |
| 51 | Structures | 51.1 | Sheet metal repair. |
| | | 51.2 | Fiberglass repair. |
| | | 51.3 | Wooden repair. |
| | | 51.4 | Fabric repair. |
| | | 51.5 | Recover fabric control surface. |
| | | 51.6 | Treat corrosion. |
| | | 51.7 | Apply protective treatment. |
| | | 51.8 | Replace static wicks. |
| | | 51.9 | Composite material repair. |

| ATA Chapter | | Index No. | Task |
|-------------|-------------|-----------|--|
| | | 51.10 | Assessment of damage. |
| 52 | Doors | 52.1 | Inspect passenger door in accordance with AMM. |
| | | 52.2 | Rig/adjust locking mechanism. |
| | | 52.3 | Adjust air stair system. |
| | | 52.4 | Check operation of emergency exits. |
| | | 52.5 | Test door warning system. |
| | | 52.6 | Troubleshoot faulty system. |
| | | 52.7 | Remove and install passenger / cargo / Para troops doors in accordance with AMM. |
| | | 52.8 | Remove and install emergency exit in accordance with AMM. |
| | | 52.9 | Inspect cargo door in accordance with AMM. |
| 56 | Windows | 56.1 | Replace windshield. |
| | | 56.2 | Replace window. |
| | | 56.3 | Repair transparency. |
| | | 56.4 | Replace direct vision window. |
| 57 | Wings | 57.1 | Skin repair. |
| | | 57.2 | Recover fabric wing. |
| | | 57.3 | Replace tip. |
| | | 57.4 | Replace rib. |
| | | 57.5 | Check incidence/rig. |
| | | 57.6 | Replace integral fuel tank panel. |
| 61 | Propeller | 61.1 | Assemble prop after transportation. |
| | | 61.2 | Replace propeller. |
| | | 61.3 | Replace governor. |
| | | 61.4 | Adjust governor. |
| | | 61.5 | Perform static functional checks. |
| | | 61.6 | Check operation during ground run. |
| | | 61.7 | Check track. |
| | | 61.8 | Check setting of micro switches. |
| | | 61.9 | Dress out blade damage. |
| | | 61.10 | Dynamically balanced prop. |
| | | 61.11 | Troubleshoot faulty system. |
| | | 61.12 | Assessment of blade damage in accordance with AMM. |
| 62 | Main Rotors | 62.1 | Install rotor assembly. |
| | | 62.2 | Replace blades. |
| | | 62.3 | Replace damper assembly. |
| | | 62.4 | Check track/tabs. |
| | | 62.5 | Check static balance. |
| | | 62.6 | Check dynamic balance. |
| | | 62.7 | Troubleshoot. |
| 63 | Rotor Drive | 63.1 | Replace mast. |
| | | 63.2 | Replace drive coupling. |
| | | 63.3 | Replace clutch/freewheel unit. |
| | | 63.4 | Replace drive belt. |
| | | 63.5 | Install the main gearbox. |
| | | 63.6 | Overhaul main gearbox. |
| | | 63.7 | Check gearbox chip detectors. |
| 64 | Tail Rotors | 64.1 | Install rotor assembly. |
| | | 64.2 | Replace blades. |

| ATA Chapter | | Index No. | Task |
|-------------|----------------------------|---|---|
| | | 64.3 64.4 64.5 | Troubleshoot. Install drive assembly. Check chip detectors. |
| 65 | Tail Rotor Drive | 65.1 65.2 65.3 65.4 65.5 65.6 65.7 65.8 65.9 | Replace bevel gearbox. Replace universal joints. Overhaul bevel gearbox. Install drive assembly. Check chip detectors. Check/install bearings and hangers. Check/service/assemble flexible couplings. Check alignment of drive shafts. Install and rig drive shafts. |
| 67 | Rotorcraft flight controls | 67.1 67.2 67.3 67.4 67.5 67.6 67.7 67.8 67.9 | Install a swash plate. Install mixing box. Adjust pitch links. Rig collective system. Rig cyclic system. Rig anti-torque system. Check controls for assembly and locking. Check controls for operation and sense. Troubleshoot faulty system. |
| 71 | Power Plant | 71.1 71.2 71.3 71.4 71.5 71.6 71.7 71.8 71.9 71.10 | Build up ECU. Replace engine. Repair cooling baffles. Repair cowling. Adjust cowl flaps. Repair faulty wiring. Troubleshoot. Assist in dry motoring check. Assist in wet motoring check. Assist in engine start (manual mode). |
| 70 | Piston Engines | 70.1 70.2 70.3 70.4 70.5 70.6 70.7 70.8 70.9 70.10 70.11 70.12 70.13 70.14 | Replace PRT. Replace turbo-blower. Replace heat shields. Replace wastegate. Adjust density controller Remove/install reduction gear. Check crankshaft run-out. Check tappet clearance. Check compression. Extract broken stud. Install Heli coil. Perform ground run. Establish/check reference RPM. Troubleshoot. |
| 70 | Turbine Engines | 70.1 70.2 70.3 70.4 70.5 70.6 70.7 | Replace Power Recovery Turbine. Replace turbo-blower. Replace heat shields. Replace wastegate. Adjust density controller Replace module. Replace fan blade. |

| ATA Chapter | | Index No. | Task |
|-------------|----------------------------|---|--|
| | | 70.8 70.9 70.10 70.11 70.12 70.13 70.14 | Hot section inspection/boroscope check. Carry out engine dry cycle. Carry out engine/compressor wash. Engine ground run. Establish reference power. Trend monitoring/gas path analysis. Troubleshoot. |
| 73 | Fuel and control (piston) | 73.1 73.2 73.3 73.4 73.5 73.6 73.7 73.8 73.9 73.10 | Replace engine driven pump. Adjust Automatic Mixture Control. Adjust ABC (Aluminium piston, Brass cylinder, Chrome plated). Install carburettor/injector. Adjust carburettor/injector. Clean injector nozzles. Replace primer line. Check carburettor float setting. Troubleshoot faulty system. |
| 73 | Fuel and control (turbine) | 73.1 73.2 73.3 73.4 73.5 73.6 73.7 73.8 73.9 73.10 | Replace FCU. Replace Engine Electronic Control Unit (FADEC). Replace Fuel Metering Unit (FADEC). Replace engine driven pump. Clean/test fuel nozzles. Clean/replace filters. Functional test of FADEC. Adjust FCU. Troubleshoot faulty system |
| 74 | Ignition systems (piston) | 74.1 74.2 74.3 74.4 74.5 74.6 74.7 74.8 74.9 | Change magneto. Change ignition vibrator. Change plugs. Test plugs. Check High Tension leads. Install new leads. Check timing. Check system bonding. Troubleshoot faulty system. |
| 74 | Ignition systems (turbine) | 74.1 74.2 74.3 74.4 74.5 74.6 | Check glow plugs/ignitors. Check High Tension leads. Check ignition unit. Perform functional test of the ignition system Replace ignition unit. Troubleshoot faulty system. |
| 76 | Engine Controls | 76.1 76.2 76.3 76.4 76.5 76.6 76.7 76.8 76.9 | Rig thrust lever. Rig RPM control. Rig mixture HP cock lever. Rig power lever. Check control sync (multi-engine). Check controls for correct assembly & locking. Check controls for range and sense of operation. Adjust pedestal micro-switches. Troubleshoot faulty system |

| ATA Chapter | | Index No. | Task |
|-------------|------------------------|--|--|
| 77 | Engine Indicating | 77.1 77.2 77.3 77.4 77.5 | Replace engine instruments(s). Replace oil temperature bulb. Replace thermocouples. Check calibration. Troubleshoot faulty system. |
| 70 A | Exhaust (Turbine) | 70A.1 70A.2 70A.3 70A.4 70A.5 70A.6 70A.7 70A.8 | Change jet pipe. Change shroud assembly. Install trimmers. Inspect/replace thrust reverser. Inspect/replace variable nozzle section Replace thrust reverser component. Deactivate/reactivate thrust reverser. Operational test of the thrust reverser system. |
| 70 A | Exhaust (piston) | 70A.1 70A.2 70A.3 70A.4 | Replace exhaust gasket. Inspect welded repair. Pressure checks cabin heater muff. Troubleshoot faulty system. |
| 79 | Oil | 79.1 79.2 79.3 79.4 79.5 79.6 79.7 79.8 79.9 | Change oil. Check filter(s). Adjust pressure relief valve. Replace oil tank. Replace oil pump. Replace oil cooler. Replace firewall shut off valve. Perform oil dilution. Troubleshoot faulty system. |
| 80 | Starting | 80.1 80.2 80.3 80.4 80.5 | Replace starter. Replace start relay. Replace start control valve. Check cranking speed. Troubleshoot faulty system. |
| 82 | Engine water injection | 82.1 82.2 82.3 82.4 82.5 | Flow checks water/methanol system Adjust water/methanol control unit. Check fluid for quality. Replace water/methanol pump. Troubleshoot faulty system. |
| 83 | Accessory gearboxes | 83.1 83.2 83.3 | Replace gearbox. Replace drive shaft. Check chip detector. |
| 92 | Radar | 92.1 92.2 92.3 | Functional check of air-to-air radar. Functional check of air to surface / terrain following / mapping radars. Functional check of weather radar. Removal/Installation. |
| 93 | Surveillance | 93.1 93.2 93.3 | Inspection/functional check. Removal/installation/functional check of FLIR. Removal/installation/functional check of Electro-Optical cameras. |
| 94 | Weapon System | 94.1 94.2 94.3 | Removal/installation of guns/cannons. Removal/installation of mission specific equipment. |

| ATA Chapter | | Index No. | Task |
|-------------|------------------------|-----------|--|
| | | 94.4 | Harmonisation/calibration of weapon aiming devices. |
| | | 94.5 | Removal/installation/functional check of interface between mission computer and missiles/ bombs/ rockets/ pods. Check for assembly and locking. |
| 95 | Crew Escape and Safety | 95.1 | Removal/installation of ejection seats. |
| | | 95.2 | Removal/installation of crew survival kits. |
| | | 95.3 | Inspection of canopy/window jettison devices. |
| 97 | Image Recording | 97.1 | Removal/installation/functional check of cameras / reconnaissance pods. |
| 99 | Electronic Warfare | 99.1 | Removal/installation of chaff/flares dispenser. |
| | | 99.2 | Removal/installation/functional check of Electronic Counter Measures systems. |
| | | 99.3 | Removal/installation/functional check of missile warning systems. |

Appendix VIII to AMC Appendix III**EVALUATION OF THE COMPETENCE: ASSESSMENT AND ASSESSORS**

This Appendix applies to the competence assessment performed by the designated assessors (and their qualifications).

1. What does 'competence' mean and areas of focus for the assessment?

The assessment should aim at measuring the competence by evaluating three major factors associated with the learning objectives:

- Knowledge;
- Skills;
- Attitude;

Generally, knowledge is evaluated by examination. The purpose of this document is not to describe the examination process: this material mainly addresses the evaluation of 'skill' and 'attitude' after training containing practical elements. Nevertheless, the trainee needs to demonstrate to have sufficient knowledge to perform the required tasks.

'Attitude' is indivisible from the 'skill' as this greatly contributes to the safe performance of the tasks.

The evaluation of the competence should be based on the learning objectives of the training, in particular:

- The (observable) desired performance. This covers what the trainee is expected to be able to do and how the trainee is expected to behave at the end of the training;
- The (measurable) performance standard that must be obtained to confirm the trainee's level of competence in the form of tolerances, constraints, limits, performance rates or qualitative statements; and
- The conditions under which the trainee will demonstrate competence. Conditions consist of the training methods, the environmental, situational and regulatory factors.

The assessment should focus on the competencies relevant to the aircraft type and its maintenance such as, but not limited to:

- Environment awareness (act safely, apply safety precautions and prevent dangerous situations);
- Systems integration (demonstrate understanding of aircraft systems interaction – identify, describe, explain, plan, execute);
- Knowledge and understanding of areas requiring special emphasis or novelty (areas peculiar to the aircraft type, domains not covered by Part-66 Appendix I, practical training elements that cannot be imparted through simulation devices, etc.);

- Using reports and indications (the ability to read and interpret);
- Aircraft documentation finding and handling (identify the appropriate aircraft documentation, navigate, execute and obey the prescribed maintenance procedures);
- Perform maintenance actions (demonstrate safe handling of aircraft, engines, components and tools);
- Aircraft final/close-up and report (apply to close up, initiate appropriate actions/follow-up/records of testing, establish and sign maintenance records/logbooks).

2. How to assess?

As far as feasible, the objectives of the assessment should be associated with the learning objectives and the passing level; it means that observable criteria should be set to measure the performance and should remain as objective as possible.

The general characteristics of effective assessment are objective, flexible, acceptable, comprehensive, constructive, organised and thoughtful. At the conclusion, the trainee should not doubt what he/she did well, what he/she did poorly and how he/she can improve.

The following is a non-exhaustive list of questions that may be posed to assist assessment:

- What are the success factors for the job?
- What are typical characteristics of correct behaviour for the task?
- What criteria should be observed?
- What level of expertise is expected?
- Is there any standard available?
- What is the pass mark? For example:
 - 'Go-no go' situation;
 - How to allocate points? Minimum amount to succeed;
 - 'Must know or execute' versus 'Good to know or execute' versus 'Don't expect the candidate to be an expert.
- Minimum or maximum time to achieve? Use time effectively and efficiently.
- What if the trainee fails? How many times is the trainee allowed to fail?
- When and how should the trainee be prepared for the assessment?

- What proportion of judgment by the instructor out of collaboration with the trainee is needed during the evaluation stage?

The assessment may be:

- Diagnostic (before a course), formative (re-orientate the course on areas where there is a need to reinforce) or summative (partial or final evaluation);
- Performed task-by-task, as a group of tasks or as a final assessment;

One method might be an initial assessment to be performed by the trainee himself, then discussing areas where the perceptions of the trainee's performance by the assessors differ too:

- Develop the self-assessment habits;
- Make the assessment more acceptable and understandable to both parties.

A 'box-ticking' exercise would be pointless. Experience has shown that assessment sheets have largely evolved into the assessment of groups of 'skills' because in practice such things eventually detracted from the training and assessment that it was intended to serve: evaluate at a point of time, encourage and orientate the training needs, improve safety and ultimately qualify people for their duties.

In addition, many other aspects should be appropriately considered during the assessment process such as stress and environmental conditions, the difficulty of the test, history of evaluation (such as tangible progress or sudden and unexpected poor performance made by the trainee), amount of time necessary to build competence, etc.

All these reasons place more emphasis on the assessor and highlight the function of the organisation's approval.

3. Who should assess?

To qualify, the assessor should:

- Be proficient and have sufficient experience or knowledge in:
 - Human performance and safety culture;
 - The aircraft type (necessary to have the certifying staff privileges in case of Certificate of Release to Service (CRS) issuances);
 - Training/coaching/testing skills;
 - Instructional tools to use;
 - Understand the objective and the content of the practical elements of the training that is being assessed;
- Have interpersonal skills to manage the assessment process (professionalism, sincerity, objectivity and neutrality, analysis skills, sense of judgement, flexibility, capability of evaluating the supervisor's or instructor's reports, handling of trainee's reactions to failing assessment with the cultural environment, being constructive, etc.);

- Be ultimately designated by the organisation to carry out the assessment.
- The roles may be combined for:

- The assessor and the instructor for the practical elements of the Type Rating Training; or
- The assessor and the supervisor for the On-the-Job Training.

Provided that the objectives associated with each role are clearly understood and that the competence and qualification criteria according to the company's procedures are met for both functions. Whenever possible (depending on the size of the organisation), it is recommended to split the roles (two different persons) to avoid any conflicts of interest.

When the functions are not combined, the role of each function should be clearly understood.

4. Consider the following examples of practical performance assessment

Type of Maintenance Task activities to be assess:

- Inspection
- Component Change
- Testing
- Troubleshooting & Rectification
- Ground Handling

Work details of involvement by individuals in group assessment:

- Performed
- Participated
- Observed

Assessment points definition:

- 0 - Very Poor (VP)
- 1 - Poor (P)
- 2 - Satisfactory (S)
- 3 - Good (G)
- 4 - Excellent (E)

Grading Code:

| Score Point Marks | Grade | Assessment Outcome |
|-------------------|-----------------|----------------------------|
| More than 90% | Distinction (D) | Qualified |
| 80 - 89 % | Credit (C) | Qualified |
| 75 - 79 % | Pass (P) | Qualified with supervision |
| Below 75 % | Fail (F) | Not Yet Qualified |

**PERFORMANCE ASSESSMENT CHECKLIST
(ASSESSOR ONLY)**

**Maintenance Task to be assess: Inspection / Component Change / Testing / Troubleshooting
& Rectification / Ground Handling**

Number of Assessment: _____

Assessor's Name: _____

NRIC & Name of Candidate: _____
(Use attachment if more than one student)

Course: _____

Index No: _____

Task/Competence: _____

Location: _____ Date: _____ Start Time: _____ End Time: _____

| IND | ASSESSMENT CRITERIA | ASSESSMENT POINT | | | | | REMARKS |
|---|---|------------------|---|---|---|---|---------|
| | | 0 | 1 | 2 | 3 | 4 | |
| ELEMENT 1: PRE-MAINTENANCE PREPARATION | | | | | | | |
| 1.1 | Ensure the technical manual available. | | | | | | |
| 1.2 | Ensure using the correct technical manual. | | | | | | |
| 1.3 | Ensure using the correct tool and equipment as required. | | | | | | |
| 1.4 | Ensure the Consumable items and non-consumable items sufficient | | | | | | |
| ELEMENT 2: KNOWLEDGE | | | | | | | |
| 2.1 | Organize Pre-Maintenance Process | | | | | | |
| 2.2 | Identify Manual/Publication/Check List | | | | | | |
| 2.3 | State on Main Component | | | | | | |
| 2.4 | Identify on Main Component Location | | | | | | |
| 2.5 | Describe on Main Component Function | | | | | | |
| 2.6 | Identify Tools and Equipment | | | | | | |
| 2.7 | Describe on type of maintenance / servicing / inspection / ground handling as stipulated in ICA | | | | | | |
| 2.8 | Describe inspection / servicing / cleaning / on the component as per Technical Manual | | | | | | |
| 2.9 | Describe functional check/test on the system | | | | | | |
| 2.10 | Describe safety precautions during maintenance | | | | | | |
| ELEMENT 3: SKILL | | | | | | | |
| 3.1 | Perform functional check/test on the system | | | | | | |
| 3.2 | Perform inspection/ servicing/ cleaning / ground handling | | | | | | |
| 3.3 | Identified on physical criteria and condition | | | | | | |
| 3.4 | Recognized abnormal condition | | | | | | |
| 3.5 | Accurate and correct references used | | | | | | |
| 3.6 | Accurate and correct in performing maintenance | | | | | | |
| 3.7 | Accurate and correct in engineering practice | | | | | | |

| | | | | | | | |
|---|---|-----------------|--|----------------------------|--|--|--|
| 3.8 | Correct of material or component used | | | | | | |
| 3.9 | Correct measurement and judgement on limitation | | | | | | |
| 3.10 | Correct maintenance documentation and records | | | | | | |
| 3.11 | Perform working sequence as per Technical Manual | | | | | | |
| 3.12 | Perform using the correct tool and equipment | | | | | | |
| ELEMENT 4: ATTITUDE | | | | | | | |
| 4.1 | Interested in applying knowledge, skills, and a positive attitude to work | | | | | | |
| 4.2 | Focusing on practical learning processes | | | | | | |
| 4.3 | A bilateral relationship with the team members | | | | | | |
| 4.4 | Show curiosity | | | | | | |
| 4.5 | Ability to work in a team and willing to help and collaborate with colleagues | | | | | | |
| 4.6 | The ability to guide and lead subordinates well | | | | | | |
| 4.7 | Diligent, dedicated, and committed | | | | | | |
| 4.8 | Is responsible for all personal and subordinate behaviour | | | | | | |
| 4.9 | Can be trusted and trusted to perform the tasks that have been assigned | | | | | | |
| 4.10 | Always obeys and enforces the law | | | | | | |
| 4.11 | Displayed a commitment to the Core Values | | | | | | |
| 4.12 | Displayed a positive approach toward Technician Duties | | | | | | |
| 4.13 | Choose to respect a person as individual | | | | | | |
| 4.14 | Active performed in work details | | | | | | |
| 4.15 | Good participated in work details | | | | | | |
| 4.16 | Carefully observed in the safety work detail | | | | | | |
| ELEMENT 5: SAFETY | | | | | | | |
| 5.1 | Choose to adhere to the Safety Precautions and Procedures | | | | | | |
| 5.2 | Positive attitude towards Safety Environment as per OSH policy | | | | | | |
| 5.3 | Ensuring in performing Loose Article Check/ Inspection | | | | | | |
| 5.4 | Confident level and precaution measure alert | | | | | | |
| Note: | | | | | | | |
| a. Please cross-out whichever is not applicable. | | | | | | | |
| b. Assessment points definition: | | | | | | | |
| 0 - Very Poor (VP) 1 - Poor (P) 2 - Satisfactory (S) 3 - Good (G) 4 - Excellent (E) | | | | | | | |
| GRADING CODE | | | | | | | |
| Score Point Marks | | Grade | | Assessment Outcome | | | |
| More than 90% | | Distinction (D) | | Qualified | | | |
| 80 - 89 % | | Credit (C) | | Qualified | | | |
| 75 - 79 % | | Pass (P) | | Qualified With Supervision | | | |
| Below 75 % | | Fail (F) | | Not Yet Qualified | | | |

| ASSESSMENT RESULT | | | |
|--|---------------------------|--------------------|--------|
| Total Marks: | Score Point Marks: | Grade Code: | |
| Comments by Practical Assessor: | | | |
| Assessment Outcome: | | | |
| Qualified | <input type="checkbox"/> | | |
| Qualified With Supervision | <input type="checkbox"/> | | |
| Not Yet Qualified | <input type="checkbox"/> | | |
| Sight and Sign: | | | |
| Student: | _____ | _____ | _____ |
| | (Name) | (Signature) | (Date) |
| Practical Assessor: | _____ | _____ | _____ |
| | (Name) | (Signature) | (Date) |
| Comments by Verification Officer: | | | |
| Verified by: | _____ | _____ | _____ |
| | (Name) | (Signature) | (Date) |

Appendix IX to AMC 66.A.45 (c)

AIRCRAFT TYPE TRAINING - ON THE JOB TRAINING LOGBOOK

CONTENTS

| Serial | Title | Page |
|--------|-------------------------------------|------|
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| 3. | OJT and Personnel Data | |
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SCOPE AND APPLICABILITY

1. *In order to endorse the first aircraft type training in the MSTAR 66 State Aircraft Maintenance licence, the applicant shall be able to demonstrate that he/she completed an appropriate On-the-Job Training (OJT) as detailed in Appendix VII (Chapter 7 to Part 3 to MSTAR 66).*
2. *This OJT logbook is intended to:*
 - a. *Be used by a MSTAR 145 AMO to deliver the OJT. That MSTAR 145 Organisation must be recognized as an approved maintenance organisation on the specific aircraft type in accordance with MSTAR 145;*
 - b. *Be completed by the MSTAR 145 AMO delivering the OJT to meet the objective and content of the OJT and the related assessment in accordance with Appendix VII (Chapter 7 to Part 3 to MSTAR 66).*
 - c. *Be customised for the specific aircraft type intended to be endorsed in the MSTAR 66 SAML.*
 - d. *Be used for recording the required information (tasks performed, personnel data, assessment, etc...)*

OJT AND PERSONNEL DATAa. **OJT Data**

| Trainee Data | |
|-----------------|--|
| Name | |
| NRIC/Service No | |
| Date of birth | |
| Place of birth | |
| Signature | |

| Supervisor (s) Data ¹ | | | |
|----------------------------------|------|-----------------------------|-----------|
| Name | NRIC | Certification Authorisation | Signature |
| | | | |
| | | | |
| | | | |
| | | | |

| Practical type training data | |
|--|--|
| Start date | |
| End date | |
| Maintenance Organisation* (Name and MSTAR 145 approval) | |
| Location | |

| Assessor (s) Data | | | |
|-------------------|------|-----------------------------|-----------|
| Name | NRIC | Certification Authorisation | Signature |
| | | | |
| | | | |
| | | | |

¹ the day-to-day supervision of the OJT programme in the MSTAR 145 AMO is done by supervisor(s), which is/are not necessarily the practical assessor. The supervisor is responsible to countersign the tasks and release the maintenance tasks as the trainee is still not qualified to do so. Therefore the supervisor shall have maintenance supervisor privileges relevant to the OJT tasks, be competent for the selected tasks, be safety-orientated, be capable to coach (setting objectives, giving training, performing supervision, evaluating, handling trainee's reactions and cultural issues, managing objectively and positively debriefing sessions, determining the need for extra training or reorientate the training, reporting, etc.), be designated by the approved maintenance organisation to carry out the supervision.

OJT PROGRAMME**a. Logbook Filling Instructions**

| ID | Option | Description/ Remarks |
|----------------------------|--------|--|
| 1. Index No. | - | The task index number contained in Appendix II to the AMC to Part 66, relates to a particular type of aircraft. This field is pre-filled. |
| 2. ATA | - | ATA Chapter identification. This field is pre-filled |
| 3. Task | - | Task identification as per Appendix II to AMCs of Part 66 (Aircraft type practical experience and On-the-Job Training List of Tasks). |
| 4. M/O | M | Mandatory tasks. This field is pre-filled The tasks contained in Appendix II to the AMC to Part 66, which relate to a particular type of aircraft, shall be identified/included as “mandatory tasks” or if the practical elements defined in the curriculum cannot be completed in a practical training session. |
| | O | Optional tasks. This field is pre-filled Additional optional tasks from Appendix II to the AMC to Part 66 are recommended to be completed based on the availability of the aircraft/related maintenance task activity. The decision to perform or not to perform this optional task is at the discretion of MSTAR 145 AMO delivering the OJT (i.e., Quality Manager, Supervisor). |
| 5. Reference | - | Maintenance data task description and identification number (i.e., AMM ATA-Sub-Task). This field is pre-filled |
| 6. ET (min) | - | Estimated time (in minutes) to accomplish the task. This field is pre-filled |
| 7. A/C Reg. | - | A/C registration marks. To be filled by the trainee The aircraft registration shall correspond to the same aircraft type for which the OJT is conducted. The engine difference shall be also considered when performing maintenance tasks applicable to the engine. |
| 8. Date | - | Date when the specific task is carried out. To be filled by the trainee |
| 9. Operation performed | - | This field is used to provide detailed reference to the task carried out. To be filled by the trainee. Precise reference to the aircraft logbook and/or work card / work package shall be entered in this block to retrieve the evidence of the task carried out. Simple task carried out is permitted without actual rectification. 'Maintenance task' and 'work detail' as per Appendix I to AMC to MSTAR 66 at paragraph 6 and paragraph 7. |
| 10. Trainee's signature | - | Self-explanatory. |
| 11. Supervisor's signature | - | Self-explanatory. |

b. Logbook Records

The AMTO is responsible for preparing the table below for the AMO to perform and record the OJT upon completion.

The tasks selected shall be from extracted tasks contained in *Appendix VII (Chapter 7 to Part 3 to MSTAR 66)*, approved by the DGTA for which a representative sample appropriate to the type and licence (sub)category applied for and 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 maintenance tasks shall also be incorporated and undertaken as appropriate to the aircraft type;
- Be selected among those applicable to the type of aircraft and licence (sub)category applied for. Other tasks than those in the Appendix II may be considered as a replacement when they are relevant;
- Be representative of the maintenance to be performed in terms of complexity, frequency, variety, safety, criticality, novelty etc....;
- Include components unique to the type, or type-specific maintenance practices;
- Be distributed in order that all ATA chapters and task categories (servicing, trouble shooting, component location, deactivation, removal/installation, etc.) Are covered;
- Take into account, when available, the feedback from in-service experience or customer specific additional training needs.

Grey blocks are intended to be prefilled by the organisation delivering the OJT ensuring pre-identification of specific tasks to be carried out. This includes whether the tasks are mandatory or not (column 4), the reference of the specific maintenance tasks selected (column 5) and the time to perform it (column 6).

MSTAR 66 STATE AIRCRAFT MAINTENANCE LICENCE ON-THE-JOB TRAINING LOGBOOK

| AMO Logo, Name, MSTAR 145 Approval Number | | | | Enter aircraft type Enter the intended SAML category | | | | | Mr/MRS/MS. name <u>SURNAME</u> Trainee Name | |
|---|-----------|------------|-----------|---|-------------------|------------------|------------|---------------------------|---|----------------------------------|
| 1. Index No. | 2. ATA | 3. Task | 4. M/O | 5. Reference | 6. ET (min) | 7. A/C Reg | 8. Date | 9. Operation performed | 10. Trainee' signature | 11. Supervisor's signature |

| | | | | | | | | | | |
|---------------------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| Time limits/Maintenance checks | | | | | | | | | | |
| | | | | | | | | | | |
| Dimensions/Areas | | | | | | | | | | |
| | | | | | | | | | | |
| Lifting and shoring | | | | | | | | | | |
| | | | | | | | | | | |
| Leveling/Weighing | | | | | | | | | | |
| | | | | | | | | | | |
| Towing and Taxiing | | | | | | | | | | |
| | | | | | | | | | | |
| Parking and Mooring | | | | | | | | | | |
| | | | | | | | | | | |

| Placards and Markings | | | | | | | | | | |
|-------------------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| | | | | | | | | | | |
| Servicing | | | | | | | | | | |
| | | | | | | | | | | |
| Vibration and Noise Analysis | | | | | | | | | | |
| | | | | | | | | | | |
| Air Conditioning | | | | | | | | | | |
| | | | | | | | | | | |
| Auto flight | | | | | | | | | | |
| | | | | | | | | | | |
| Communications | | | | | | | | | | |
| | | | | | | | | | | |
| Electrical Power | | | | | | | | | | |
| | | | | | | | | | | |
| Equipment/Furnishings | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | | | | | | |
|-------------------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| Fire protection | | | | | | | | | | |
| | | | | | | | | | | |
| Flight Controls | | | | | | | | | | |
| | | | | | | | | | | |
| Fuel | | | | | | | | | | |
| | | | | | | | | | | |
| Hydraulics | | | | | | | | | | |
| | | | | | | | | | | |
| Ice and rain protection | | | | | | | | | | |
| | | | | | | | | | | |
| Indicating/recording systems | | | | | | | | | | |
| | | | | | | | | | | |
| Landing Gear | | | | | | | | | | |
| | | | | | | | | | | |
| Lights | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | | | | | | |
|-----------------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| Navigation | | | | | | | | | | |
| | | | | | | | | | | |
| Oxygen | | | | | | | | | | |
| | | | | | | | | | | |
| Pneumatic systems | | | | | | | | | | |
| | | | | | | | | | | |
| Vacuum systems | | | | | | | | | | |
| | | | | | | | | | | |
| Water/Waste | | | | | | | | | | |
| | | | | | | | | | | |
| Central Maintenance System | | | | | | | | | | |
| | | | | | | | | | | |
| Airborne Auxiliary power | | | | | | | | | | |
| | | | | | | | | | | |
| Structures | | | | | | | | | | |
| | | | | | | | | | | |

| Doors | | | | | | | | | | |
|-------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| | | | | | | | | | | |
| Windows | | | | | | | | | | |
| | | | | | | | | | | |
| Wings | | | | | | | | | | |
| | | | | | | | | | | |
| Propeller | | | | | | | | | | |
| | | | | | | | | | | |
| Main Rotors | | | | | | | | | | |
| | | | | | | | | | | |
| Rotor Drive | | | | | | | | | | |
| | | | | | | | | | | |
| Tail Rotors | | | | | | | | | | |
| | | | | | | | | | | |
| Tail Rotor Drive | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | | | | | | |
|-----------------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| Rotorcraft flight controls | | | | | | | | | | |
| | | | | | | | | | | |
| Power Plant | | | | | | | | | | |
| | | | | | | | | | | |
| Piston Engines | | | | | | | | | | |
| | | | | | | | | | | |
| Turbine Engines | | | | | | | | | | |
| | | | | | | | | | | |
| Fuel and control, piston | | | | | | | | | | |
| | | | | | | | | | | |
| Fuel and control, turbine | | | | | | | | | | |
| | | | | | | | | | | |
| Ignition systems, piston | | | | | | | | | | |
| | | | | | | | | | | |
| Ignition systems, turbine | | | | | | | | | | |
| | | | | | | | | | | |

| | | | | | | | | | | |
|--------------------------|------|-------|------|-------|-------|--|--|--|--|--|
| Engine Controls | | | | | | | | | | |
| | | | | | | | | | | |
| Engine Indicating | | | | | | | | | | |
| | | | | | | | | | | |
| Exhaust, piston | | | | | | | | | | |
| | | | | | | | | | | |
| Exhaust, turbine | | | | | | | | | | |
| | | | | | | | | | | |
| Oil | | | | | | | | | | |
| | | | | | | | | | | |
| Starting | | | | | | | | | | |
| | | | | | | | | | | |

c. Logbook Additional Optional Records

The completion of this part is optional and intended to be used when the need exist to record additional data which was not possible to be entered in the previous pre-filled logbook. This need may be identified by the MSTAR 145 AMO delivering the training (i.e., Quality Manager, Supervisor, and assessor)

In particular, when a pre-filled task required in the logbook cannot be completed due to unavailability of the particular maintenance activity, this part may be used to record evidence of a different maintenance task performed to satisfy the same requirement. In this case a cross reference shall be made between the two tables to identify the task which is replaced under the responsibility of the supervisor countersigning the corresponding raw.

The table below is intended to be hand written (add rows as necessary).

RESTRICTED

PU 2103

| MSTAR 66 STATE AIRCRAFT MAINTENANCE LICENCE ON-THE-JOB TRAINING LOGBOOK | | | | | | | | | | |
|---|-----------|------------|-----------|---|-------------------|------------------|------------|------------------------------|------------------------------|----------------------------------|
| AMO Logo, Name, MSTAR 145 Approval Number | | | | Enter aircraft type Enter the intended SAML category | | | | | Mr/MRS/MS. name SURNAME | |
| | | | | | | | | | Trainee Name | |
| 1. Index No. | 2. ATA | 3. Task | 4. M/O | 5. Reference | 6. ET (min) | 7. A/C Reg | 8. Date | 9. Operation performed | 10. Trainee' signature | 11. Supervisor's signature |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

d. **Compliance Report**

The intent of this table is to provide a compliance report demonstrating that the OJT meets the standard required by Appendix III to MSTAR 66.

In particular, the schedule shall present at least 80 days of fully executed practical training tasks covering the selected tasks from Annex II to AMC to MSTAR 66 applicable to the type of aircraft.

For the 'maintenance task', the following term applies:

- f. **Inspection:** Inspection, servicing, cleaning, visual check or any work done on a component or installation.
- g. **Component Change:** Removal/replacement of components.

RESTRICTED

- h. **Testing:** Functional/operational check, adjustment, calibration, compensation, circuit testing or rigging of a component or installation.
- i. **Troubleshooting & Rectification:** Troubleshooting and/or rectification of component or system faults.
- j. **Ground Handling:** Launching, towing, mooring, lifting, recharge, replenishment, refuel or role change etc.

For the 'Work Details', the following term apply:

- d. **Performed:** Carried out the task personally.
- e. **Participated:** Actively involved in the task with supervision.
- f. **Observed:** Not involved in the task directly.

This table is to be completed by the Organisation delivering the OJT training.

| Day | Date | ATA | Index No. | Tasks | Maintenance Tasks/Work Detail |
|-----|--------|-----|-----------|---------------------------|--------------------------------|
| 1 | 1.1.22 | 12 | 12.5 | Check/replenish oil level | <i>Inspection/Participated</i> |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| . | | | | | |
| 79 | | | | | |
| 80 | | | | | |

.....
Place

.....
Date

.....
Name & Title
Approval signature (*)

(*) *this approval signature shall be entered by a responsible person of the Organisation providing the training (i.e., Quality manager). This person undertakes the responsibility on behalf of the Organisation that the OJT program meets the standard required by Appendix VIII to MSTAR 66. This report shall be signed before the final assessment.*

FINAL ASSESSMENT OF THE OJT

This is to certify that Mrs./Mr. (Trainee`s name SURNAME)

1. Has completed the (aircraft type and category) On-the-Job Training as evidenced in the enclosed logbook (compliance report signed by the Organisation providing the training);
2. Has been assessed on the following tasks and successfully passed the practical assessment demonstrating appropriate knowledge and skills:

| Index No. | ATA | Task | Reference | Aircraft Reg | Date | Operation performed | Trainee's signature | Practical Assessor's signature |
|-----------|-----|------|-----------|--------------|------|---------------------|---------------------|--------------------------------|
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

This table is intended to be hand written. The number, type and content of task used for the assessment is solely under the discretion of the practical assessor.

Remarks:

This remark field is intended to leave the practical assessor the possibility to enter additional comments regarding the trainee`s knowledge and skills. The completion of this field is optional

.....
Place

.....
Date

.....
Practical Assessor's signature
(Conducting the final assessment)

Appendix X to AMC 66. A.25 & AMC 66.A.45 (e)**RECOGNIZED HIGHER EDUCATION INSTITUTIONS**

Academic qualifications: Degree or Diploma in Engineering from any academic institution recognized by the Malaysian Qualifications Agency (MQA). The fields of academic qualifications accepted are as follows:

| SERIES | ENGINEERING DISCIPLINE | SAML |
|---------------|-------------------------------|----------------|
| 1. | Aviation | Aeromechanical |
| 2. | Aeronautics | Aeromechanical |
| 3. | Aircraft Maintenance | Aeromechanical |
| 4. | Aerospace | Aeromechanical |
| 5. | Mechatronic | Aeromechanical |
| 6. | Electro-Mechanical | Aeromechanical |
| 7. | Machinery | Aeromechanical |
| 8. | Automotive | Aeromechanical |
| 9. | Mechanical | Aeromechanical |
| 10. | Electrical | Avionics |
| 11. | Electronic | Avionics |
| 12. | Computer | Avionics |

Appendix XI to GM 66. A.45

TRAINING NEED BY FUNCTIONAL GROUPING

Aircraft Type Training Level Of Course Determine on The Knowledge Level

| Course Level | Knowledge Level Definition |
|--------------|---|
| 1 | <p>On completion of the Training Lesson associated with a specific system at this level: The student should have a general knowledge of that system from a global view point including the ability to recall the aircraft information, system descriptions, and locations of the principal components or assemblies and state their purpose in relation to other assemblies. This must include safety precautions, the ability to name and locate items within both specified system and those associated with that system within the specified aircraft.</p> |
| 2 | <p>On completion of the Training Lesson associated with a specific system at this level: The student should have the ability to perform Service and Ground Handling task activities and able to recall the locations of the components or assemblies for inspection. This must include safety, Instruction of Continuing Airworthiness, method inspection, servicing, limitation and system functional test.</p> |
| 3 | <p>On completion of the Training Lesson associated with a specific system at this level: The student should be able to demonstrate an understanding of the operational capabilities of the system together with the ability to recall the normal and abnormal functioning of each major component/assembly within the system, including the relevant terminology and nomenclature. Technicians should be able to recall procedures associated with the routine maintenance of the system and be able to predict effects caused by different factors, including malfunctions of individual assemblies Line Replaceable Units (LRU) within the system.</p> |
| 4 | <p>On completion of the Training Lesson associated with a specific system at this level: The student should have advance knowledge of aircraft system, maintenance work processes procedure, good engineering practices, technical investigation, defect assessment analysis, and asset management. This must include safety precautions, airworthiness limitation, instruction for continuing airworthiness and quality assurances. The senior technicians should be able to recall procedures associated with the routine maintenance inspector and supervision in releasing products.</p> |
| 5 | <p>On completion of the Training Lesson associated with a specific system at this level: The student should have knowledge of aeromechanical and avionics aviation configuration system, engineering design processes, engineering risk management, engineering investigation & analysis, and configuration item management. This must include safety & airworthiness requirements, essential airworthiness and quality management. The aviation engineer should be able to determine airworthiness requirements.</p> |

Maintenance Task Activities Performed by Functional Grouping

| No | Task Activities/ Work Proficiency | Functional Grouping | | | | | |
|----|--|---------------------|------------|---------------|------------|-----------|------------------|
| | | Mechanic | Technician | Support Staff | Supervisor | Inspector | Certifying Staff |
| 1 | Parking & mooring | x | x | x | x | x | x |
| 2 | Replenishment, Refuelling and Defueling | x | x | x | x | x | x |
| 3 | Lifting & Shoring | / | / | x | x | x | x |
| 4 | Fuel/Hydraulic/Oil Sampling | x | x | x | x | x | x |
| 5 | Aircraft Washing | x | x | x | x | x | x |
| 6 | Flight Inspection | x | x | x | x | x | x |
| 7 | Towing & Marshalling | x | x | x | x | x | x |
| 8 | Cabin Reconfiguration | / | / | x | x | x | x |
| 9 | Painting | / | / | x | x | x | x |
| 10 | Component Change | / | / | x | x | x | x |
| 11 | Testing | | / | x | x | x | x |
| 12 | Troubleshooting & Rectification | | / | x | x | x | x |
| 13 | Engine Compressor Wash | | / | x | x | x | x |
| 14 | Standard Repair | | / | x | x | x | x |
| 15 | Schedule Maintenance & Unscheduled Maintenance Servicing | | / | x | x | x | x |
| 16 | Torque, Adjustment and Rigging | | | / | x | x | x |
| 17 | Critical Maintenance Task | | | / | x | x | x |
| 18 | Service Bulletin (SB), Airworthiness Directive (AD) | | | / | x | x | x |
| 19 | System Upgrading, Modification and Nonstandard Repair | | | / | x | x | x |
| 20 | Supervise | | | / | x | x | x |
| 21 | Damage Assessment | | | | / | x | x |
| 22 | Independent Inspection | | | | / | x | x |
| 23 | Certificate of Maintenance Release | | | | / | x | x |
| 24 | Certification of Release to Service | | | | | / | x |

Note: '/' Job performed require supervise.

Course Level Need by Functional Grouping

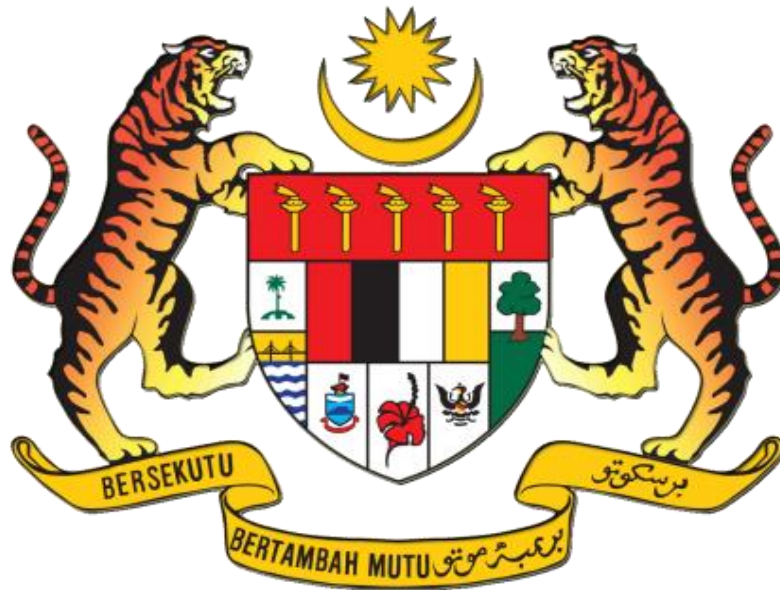
| Course Level | Functional Grouping/ Work Proficiency | | | | |
|--------------|---------------------------------------|------------|---------------|--|----------|
| | Mechanic | Technician | Support Staff | Supervisor / Inspector / Certifying Staff | Engineer |
| 1 | x | x | x | x | |
| 2 | x | x | x | x | |
| 3 | | x | x | x | |
| 4 | | | | x | |
| 5 | | | | | x |

Competency Level by Functional Grouping

| Functional Grouping/ Work Proficiency | SAML | Competency Level |
|---|-------------------------|---|
| Under Job Training | Without SAML | Assist with constant/regular/direct supervision |
| Mechanic | SAML Category A | Approved on limited minor maintenance task |
| Technician | SAML Category B Basic | Assist with limited/minimum/under supervision |
| Support Staff | SAML Category B On Type | Not require supervision |
| Supervisor / Inspector / Certifying Staff | SAML Category C | Ability to supervise, verify and certify |
| Engineer | SAML Category LAE | Ability to determine airworthiness requirements |

Appendix XII to GM 66. A.30

BASIC SKILL AND EXPERIENCE PRACTICAL LOGBOOK



Version 1.0
Owner DGTA
Department Technical Airworthiness Quality Standards
Review Date November 2022

Introduction

This MSTAR 66 Basic Skill and Experience Practical Logbook has been developed by the DGTA as the means of recording practical maintenance experience, to support an application to DGTA for the initial issue of, or addition of, a category or sub- category to a MSTAR 66 State Aircraft Maintenance Licence.

The logbook should be used by applicants who have utilised the MSTAR 66 self-study training pathway. The format and layout of the logbook is designed to enable a progressive recording of personal data and ongoing work experience by the logbook holder, allowing for an accurate assessment by DGTA.

The Basic Skill and Experience Practical Logbook, is divided into five parts:

- a. Part 1 - Personal Information.
- b. Part 2 - Compilation of Basic Practical Skills Tasks.
- c. Part 3 - Compilation of Basic Practical Experience Tasks.
- d. Part 4 - Compilation of Basic Practical Assessment.
- e. Part 5 - Compilation of Aircraft Type Practical Experience.

All parts of the logbook must be completed to demonstrate attainment of the practical maintenance experience requirements for the category or subcategory of licence being applied for, in accordance with section 66.A.30 of the MSTAR 66.

Practical maintenance experience must have been gained by the applicant during the 10-year period before the date of the application for the licence or the addition of the category, or subcategory, to the licence. For requirements of recent experience gained on aircraft, refer to section 66.A.30 of the MSTAR 66.

a. **Part 1 - Personal Information**

1. **Personal Data**

| Trainee Data | |
|------------------|--|
| Name | |
| NRIC | |
| Academic | |
| SAO / Industry | |
| Licence Category | |

| Practical Instructor(s) Data | | | |
|------------------------------|------|-------------------------------|-----------|
| Name | NRIC | Basic Skill / Experience Task | Signature |
| | | | |
| | | | |
| | | | |
| | | | |

| Practical Training Data | |
|--------------------------------------|--|
| Basic Training / Bridging | |
| Basic Skills Task (%) | |
| Experience Task (%) | |
| On Job Training (Days) | |
| Practical Maintenance Experience (%) | |
| Recent Experience (Hrs/Days) | |

| Practical Assessor (s) Data | | | |
|-----------------------------|------|-------------------------------|-----------|
| Name | NRIC | Basic Skill / Experience Task | Signature |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

2. Training Record

| | | | | | |
|--------------------------|----------|--------------|------------|------------------|--------------------|
| Training 1: | | | | | |
| Theory | : | From: | To: | Location: | Confirm By: |
| Basic Skill Task | : | From: | To: | Location: | Confirm By: |
| Experience Task | : | From: | To: | Location: | Confirm By: |
| On Job Training | : | From: | To: | Location: | Confirm By: |
| Recent Experience | : | From: | To: | Location: | Confirm By: |
| Aircraft | : | 1. | 2. | 3. | 4. |

| | | | | | |
|--------------------------|----------|--------------|------------|------------------|--------------------|
| Training 2: | | | | | |
| Theory | : | From: | To: | Location: | Confirm By: |
| Basic Skill Task | : | From: | To: | Location: | Confirm By: |
| Experience Task | : | From: | To: | Location: | Confirm By: |
| On Job Training | : | From: | To: | Location: | Confirm By: |
| Recent Experience | : | From: | To: | Location: | Confirm By: |
| Aircraft | : | 1. | 2. | 3. | 4. |

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| Training 3: | | | | | |
|--------------------------|----------|--------------|------------|------------------|--------------------|
| Theory | : | From: | To: | Location: | Confirm By: |
| Basic Skill Task | : | From: | To: | Location: | Confirm By: |
| Experience Task | : | From: | To: | Location: | Confirm By: |
| On Job Training | : | From: | To: | Location: | Confirm By: |
| Recent Experience | : | From: | To: | Location: | Confirm By: |
| Aircraft | : | 1. | 2. | 3. | 4. |

| Training 4: | | | | | |
|--------------------------|----------|--------------|------------|------------------|--------------------|
| Theory | : | From: | To: | Location: | Confirm By: |
| Basic Skill Task | : | From: | To: | Location: | Confirm By: |
| Experience Task | : | From: | To: | Location: | Confirm By: |
| On Job Training | : | From: | To: | Location: | Confirm By: |
| Recent Experience | : | From: | To: | Location: | Confirm By: |
| Aircraft | : | 1. | 2. | 3. | 4. |

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e. Part 5 - Compilation of Aircraft Type Practical Experience

Table 1 - Relevant ATA Chapter for different licence categories

| Topic | ATA | Subcategory Applied For | | | | | |
|---|----------|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Towing | 9 | x | x | x | x | x | x |
| Servicing | 12 | x | x | x | x | x | x |
| Air Conditioning & Pressurisation, Safety & Warning Devices | 21 | x | x | x | x | x | - |
| Avionics Systems: Auto flight, Communication, Radio and Navigation - replacement of LRUs where functional checks do not require the use of special equipment | 22/23/34 | x | x | x | x | - | - |
| Avionics Systems - Auto Flight: Yaw Damper, Stability Augmentation, Auto trim, Autopilot, FMS/FMGS, Auto throttle, Autoland. | 22 | - | - | - | - | x | - |
| Avionics Systems - Communications: VHF, HF Audio, CVR, SATCOM, GPS, ACARS. | 23 | - | - | - | - | x | - |
| Electrical Power: Battery, AC/DC Power Generation, Emergency Power Generation, Power distribution, Voltage regulation, Circuit protection, External /Ground Power Supply. | 24 | x | x | x | x | x | x |
| Equipment & Furnishing: Cabin Equipment and Layout, Galley, Cargo, Emergency Equipment, Entertainment Equipment. | 25 | x | x | x | x | x | - |
| Fire Protection Systems | 26 | x | x | x | x | x | - |
| Flight Control Systems: Primary flying control (aileron, elevator, rudder, spoiler), Trim control, High lift devices, Electrical/ Fly-by-Wire. | 27 | x | x | x | x | - | - |
| Fuel Systems | 28 | x | x | x | x | x | - |
| Hydraulic Power | 29 | x | x | x | x | x | - |
| Ice & Rain Protection | 30 | x | x | x | x | - | - |
| Propeller Ice Protection | 30 | x | x | - | - | - | - |
| Instrument Systems: | 31 | x | x | x | x | - | - |

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| Topic | ATA | Subcategory Applied For | | | | | |
|--|-------------|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Pitot static, Gyroscopic, compass, AOA, other aircraft instrument systems - replacement of LRUs where functional checks do not require the use of special equipment | | | | | | | |
| Instrument Systems: Pressure measuring, Pitot static, Altitude reporting / alerting, ADC, Temperature and quantity indication, Gyroscopic instrument, GPWS, Compass and compass compensation, FDR, EFIS, Instrument warning, stall warning, AOA, Wind shear, Vibration measurement and indication. | 31 | - | - | - | - | X | - |
| Landing Gear | 32 | X | X | X | X | X | - |
| Lights | 33 | X | X | X | X | X | - |
| Avionics Systems - Navigation: VOR, ADF, ILS/MLS, Flight Director, DME, Doppler navigation, Area navigation, RNAV, GPS, GNSS, INS/IRS, ATC, TCAS, Weather avoidance radar, Radio altimeter. | 34 | - | - | - | - | X | - |
| Oxygen | 35 | X | X | X | X | - | - |
| Pneumatics / Vacuum | 36 | X | X | X | X | - | - |
| Water / Waste | 38 | X | X | - | - | - | - |
| Operational Attack Function - Attack System: HUD, Map, MFD, weapon management | 39/40 | - | - | - | - | - | X |
| On-Board Maintenance System | 45 | X | | | | - | - |
| Auxiliary Power Units (APUs) | 49 | X | X | - | - | - | - |
| Airframe Structure | 51 | X | X | X | X | - | - |
| Fuselage: Doors, Fuselage, Windows | 52/53/56 | X | X | - | - | - | - |
| Nacelles / Pylons | 54 | X | X | - | - | - | - |
| Wings, Flight Control Surfaces, Stabilizers | 55/57 | X | X | - | - | - | - |
| Propeller: Construction, Pitch Control, Synchronizing, Maintenance | 61 | X | X | - | - | - | - |
| Blade tracking and vibration analysis, Transmissions, Airframe structure, Main Rotor, Tail rotor/rotor drive, Rotor flight control | 62/64/65/67 | - | - | X | X | - | - |
| Piston Engines: | 71 | - | X | - | X | - | - |

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| Topic | ATA | Subcategory Applied For | | | | | |
|--|-----|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Engine Performance, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation | | | | | | | |
| Piston Engines: Engine Fuel Systems, Carburettors, Fuel injection systems | 73 | - | x | - | x | - | - |
| Piston Engines: Ignition Systems | 74 | - | x | - | x | - | - |
| Piston Engines: Engine Indication Systems | 77 | - | x | - | x | - | - |
| Piston Engines: Starting | 80 | - | x | - | x | - | - |
| Piston Engines: Supercharging /Turbocharging | 81 | - | x | - | x | - | - |
| Piston Engines: Engine Construction, Lubricants and Fuels, Lubricants Systems, Induction, Exhaust and Cooling (Reciprocating) | 85 | - | x | - | x | - | - |
| Turbine Engines: Constructional arrangement and operation, FADEC | 71 | x | - | x | - | - | - |
| Turbine Engines: Engine Performance, Inlet, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation. | 71 | x | - | x | - | - | - |
| Turbine Engines: Compressors, Combustion Section, Turbine Section | 72 | x | - | x | - | - | - |
| Turbine Engines: Turboprop Onboard Engines | 72 | x | - | - | - | - | - |
| Turbine Engines: Turbo-shaft Engines | 72 | - | - | x | - | - | - |
| Turbine Engines: Fuel Systems | 73 | x | - | x | - | - | - |
| Turbine Engines: Ignition Systems | 74 | x | - | x | - | - | - |
| Turbine Engines: Air System | 75 | x | - | x | - | - | - |
| Engine Control | 76 | x | - | x | - | - | - |

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| Topic | ATA | Subcategory Applied For | | | | | |
|---|-----|-------------------------|-------------|-------------|-------------|----|----|
| | | A1/ B1.1 | A2/ B1.2 | A3/ B1.3 | A4/ B1.4 | B2 | B4 |
| Turbine Engines: Engine Indicating Systems | 77 | x | - | x | - | - | - |
| Turbine Engines: Exhaust | 78 | x | - | x | - | - | - |
| Turbine Engines: Bearing and Seals, Lubricants, Lubrication Systems | 79 | x | - | x | - | - | - |
| Turbine Engines: Starting Systems | 80 | x | - | x | - | - | - |
| Turbine Engines: Power Augmentation Systems | 82 | x | - | x | - | - | - |
| Accessory Gearboxes: Gearbox, drive shaft, chip detector | 83 | - | - | x | x | - | - |
| Maintenance check | | | | | | | |
| Zonal & Station Identification Systems | - | x | x | x | x | x | x |
| Defect Diagnosis and Rectification | - | x | x | x | x | x | x |
| Mandatory Inspection and Modification | - | x | x | x | x | x | x |
| Military-Specific Systems | | | | | | | |
| Radar | 92 | - | - | - | - | - | x |
| Surveillance | 93 | - | - | - | - | - | x |
| Weapon System | 94 | - | - | - | - | - | x |
| Crew Escape and Safety | 95 | - | - | - | - | - | x |
| Image Recording | 97 | - | - | - | - | - | x |
| Electronic Warfare | 99 | - | - | - | - | - | x |

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Table 2 - A typical format for the schedule of experience

| SUMMARY OF TASKS | | | | | | |
|--|------------------|------------|------------------|---------|---------------------------------|-----------------|
| I declare that the information given in this form is true in every respect. | | | | | | |
| Name: _____ Signature: _____ | | | | | | |
| Practical Maintenance Experience: | | | | | | |
| Percentage : _____ | | | | | | |
| Aircraft Type : _____ | | | | | | |
| Basic Category Licence No : _____ | | | | | | |
| Category Licence : _____ | | | | | | |
| Inclusion of experience from: | | | | | | |
| <input type="checkbox"/> Practical Maintenance Experience gained under Basic Training. | | | | | | |
| <input type="checkbox"/> On Job Training under Type Training. | | | | | | |
| <input type="checkbox"/> Practical Maintenance Experience gained under supervision on Operating Aircraft. | | | | | | |
| Practical Maintenance Experience | | | | | | |
| ATA Chapter | | Inspection | Component Change | Testing | Troubleshooting & Rectification | Ground Handling |
| Towing | 9 | | | | | |
| Servicing | 12 | | | | | |
| Air Conditioning & Pressurisation, Safety & Warning Devices | 21 | | | | | |
| Avionics Systems: Auto flight, Communication, Radio and Navigation - replacement of LRUs where functional checks do not require the use of special equipment | 22/ 23/ 34 | | | | | |

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| | | | | | | |
|--|----|--|--|--|--|--|
| Avionics Systems - Auto Flight: Yaw Damper, Stability Augmentation, Auto trim, Autopilot, FMS/FMGS, Auto throttle, Autoland. | 22 | | | | | |
| Avionics Systems - Communications: VHF, HF Audio, CVR, SATCOM, GPS, ACARS. | 23 | | | | | |
| Electrical Power: Battery, AC/DC Power Generation, Emergency Power Generation, Power distribution, Voltage regulation, Circuit protection, External /Ground Power Supply. | 24 | | | | | |
| Equipment & Furnishing: Cabin Equipment and Layout, Galley, Cargo, Emergency Equipment, Entertainment Equipment. | 25 | | | | | |
| Fire Protection Systems | 26 | | | | | |
| Flight Control Systems: Primary flying control (aileron, elevator, rudder, spoiler), Trim control, High lift devices, Electrical/ Fly-by-Wire. | 27 | | | | | |
| Fuel Systems | 28 | | | | | |
| Hydraulic Power | 29 | | | | | |
| Ice & Rain Protection | 30 | | | | | |
| Propeller Ice Protection | 30 | | | | | |
| Instrument Systems: Pitot static, Gyroscopic, compass, AOA, other aircraft instrument systems - replacement of LRUs where functional checks do not require the use of special equipment | 31 | | | | | |
| Instrument Systems: Pressure measuring, Pitot static, Altitude reporting / alerting, ADC, Temperature and quantity indication, Gyroscopic instrument, GPWS, Compass and compass compensation, FDR, EFIS, Instrument warning, stall warning, AOA, Wind shear, Vibration measurement and indication. | 31 | | | | | |
| Landing Gear | 32 | | | | | |
| Lights | 33 | | | | | |
| Avionics Systems - Navigation: | 34 | | | | | |

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| | | | | | | |
|--|-------------------------|--|--|--|--|--|
| VOR, ADF, ILS/MLS, Flight Director, DME, Doppler navigation, Area navigation, RNAV, GPS, GNSS, INS/IRS, ATC, TCAS, Weather avoidance radar, Radio altimeter. | | | | | | |
| Oxygen | 35 | | | | | |
| Pneumatics / Vacuum | 36 | | | | | |
| Water / Waste | 38 | | | | | |
| Operational Attack Function - Attack System: HUD, Map, MFD, weapon management | 39/ 40 | | | | | |
| On-Board Maintenance System | 45 | | | | | |
| Auxiliary Power Units (APUs) | 49 | | | | | |
| Airframe Structure | 51 | | | | | |
| Fuselage: Doors, Fuselage, Windows | 52/ 53/ 56 | | | | | |
| Nacelles / Pylons | 54 | | | | | |
| Wings, Flight Control Surfaces, Stabilizers | 55/ 57 | | | | | |
| Propeller: Construction, Pitch Control, Synchronizing, Maintenance | 61 | | | | | |
| Blade tracking and vibration analysis, Transmissions, Airframe structure, Main Rotor, Tail rotor/rotor drive, Rotor flight control | 62/ 64/ 65/ 67 | | | | | |
| Piston Engines: Engine Performance, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation | 71 | | | | | |
| Piston Engines: Engine Fuel Systems, Carburetors, Fuel injection systems | 73 | | | | | |
| Piston Engines: Ignition Systems | 74 | | | | | |
| Piston Engines: Engine Indication Systems | 77 | | | | | |
| Piston Engines: | 80 | | | | | |

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| | | | | | | |
|--|----|--|--|--|--|--|
| Starting | | | | | | |
| Piston Engines: Supercharging /Turbocharging | 81 | | | | | |
| Piston Engines: Engine Construction, Lubricants and Fuels, Lubricants Systems, Induction, Exhaust and Cooling (Reciprocating) | 85 | | | | | |
| Turbine Engines: Constructional arrangement and operation, FADEC | 71 | | | | | |
| Turbine Engines: Engine Performance, Inlet, Power plant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation. | 71 | | | | | |
| Turbine Engines: Compressors, Combustion Section, Turbine Section | 72 | | | | | |
| Turbine Engines: Turboprop Onboard Engines | 72 | | | | | |
| Turbine Engines: Turbo-shaft Engines | 72 | | | | | |
| Turbine Engines: Fuel Systems | 73 | | | | | |
| Turbine Engines: Ignition Systems | 74 | | | | | |
| Turbine Engines: Air System | 75 | | | | | |
| Engine Control | 76 | | | | | |
| Turbine Engines: Engine Indicating Systems | 77 | | | | | |
| Turbine Engines: Exhaust | 78 | | | | | |
| Turbine Engines: Bearing and Seals, Lubricants, Lubrication Systems | 79 | | | | | |
| Turbine Engines: Starting Systems | 80 | | | | | |
| Turbine Engines: Power Augmentation Systems | 82 | | | | | |

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| | | | | | | |
|--|----|--|--|--|--|--|
| Accessory Gearboxes: Gearbox, drive shaft, chip detector | 83 | | | | | |
| Maintenance check | | | | | | |
| Zonal & Station Identification Systems | - | | | | | |
| Defect Diagnosis and Rectification | - | | | | | |
| Mandatory Inspection and Modification | - | | | | | |
| Military-Specific Systems | | | | | | |
| Radar | 92 | | | | | |
| Surveillance | 93 | | | | | |
| Weapon System | 94 | | | | | |
| Crew Escape and Safety | 95 | | | | | |
| Image Recording | 97 | | | | | |
| Electronic Warfare | 99 | | | | | |

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| Recent Maintenance Experience | | | | | |
|-------------------------------|--------------------|------------------|---------|---------------------------------|-----------------|
| Date and Year | Date Start: | | | Date End: | |
| Maintenance Task | Inspection | Component Change | Testing | Troubleshooting & Rectification | Ground Handling |
| Total Man-hours | | | | | |
| Total Days | | | | | |

| Recommendation and Verification | |
|---|--------------------|
| Recommendation | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed above application is an employee under my office control and recommended for the SAML. | |
| Signature of: | Date (dd/mm/yyyy): |
| Certified by Quality Manager | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR 66 SAML. | |
| Signature: | Date (dd/mm/yyyy): |

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MSTAR 66 - STATE AIRCRAFT MAINTENANCE LICENCE

PART 4

CHAPTER 1

MSTAR Form 19A

**APPLICATION FOR MODULE EXAMINATIONS**

| APPLICANT DETAILS | | | |
|----------------------------|--|---|--|
| Name: | | | |
| Address: | | | |
| Nationality: | | NRIC / Passport No.: | |
| Date of Birth: | | Student / Employed at: | |
| Contact No.: | | Email Address: | |
| Category Applied: | | <input type="checkbox"/> Tick box if the first examination sitting for this category. | |
| EXAMINATION MODULES | | | |

Applicant Declaration

I wish to apply for the examination module(s) as indicated and confirm that the information contained in this form is correct at the time of application. Copies of Identification Card (NRIC) / Passport and documentary evidence of English language proficiency are attached.

Signature: _____ Date: _____

| Modules | Mark <input type="checkbox"/> where applicable | Date requested | Date confirms (For DGTA use only) |
|---------------------------------|--|----------------|--------------------------------------|
| Module 1 | <input type="checkbox"/> | | |
| Module 2 | <input type="checkbox"/> | | |
| Module 3 | <input type="checkbox"/> | | |
| Module 4 | <input type="checkbox"/> | | |
| Module 5 | <input type="checkbox"/> | | |
| Module 6 | <input type="checkbox"/> | | |
| Module 7 | <input type="checkbox"/> | | |
| Module 8 | <input type="checkbox"/> | | |
| Module 9 | <input type="checkbox"/> | | |
| Module 10 | <input type="checkbox"/> | | |
| Module 11A | <input type="checkbox"/> | | |
| Module 11B | <input type="checkbox"/> | | |
| Module 12 | <input type="checkbox"/> | | |
| Module 13 | <input type="checkbox"/> | | |
| Module 14 | <input type="checkbox"/> | | |
| Module 15 | <input type="checkbox"/> | | |
| Module 16 | <input type="checkbox"/> | | |
| Module 17 | <input type="checkbox"/> | | |
| Module 50 | <input type="checkbox"/> | | |
| Module 51 | <input type="checkbox"/> | | |
| Module 52 | <input type="checkbox"/> | | |
| Module 53 | <input type="checkbox"/> | | |
| Module 54 | <input type="checkbox"/> | | |
| Module 55 | <input type="checkbox"/> | | |
| Module 60 Category: | <input type="checkbox"/> | | |

| For Quality Department use only | |
|--|--|
| State Aircraft Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> MSTAR-145 <input type="checkbox"/> Approval Organisation Name and address: |

| | |
|---|--|
| Examination Centre: (Name and address) | |
| Signature: | |
| Date: | |
| Remarks: | |

| For DGTA use only | |
|------------------------|--|
| Total modules applied: | |
| Signature: | |
| Date: | |
| Reference No.: | |
| Remarks: | |

MSTAR Form 19B



APPLICATION FOR LICENSING

Instructions**General**

1. This application form will take approximately 20 minutes to complete. Incomplete applications will not be processed.
2. The completed form is to be submitted to:

Directorate General Technical Airworthiness
d/a Pangkalan Udara Subang
40000 SHAH ALAM
Selangor
3. Any application must be supported by a letter of sponsor from the Approval Organisation QM office at where the applicant is already employed or intended to employ.
4. An application must be recommended by SMM or equivalent and certified by QM of the Approval Organisation.

Collection

5. You will be notified by QM when the licence is ready for collection.

Supporting Documents

| | For Initial Issue (Basic Category Licence only) | For DGTA use |
|---|---|---------------------|
| 1 | Recent coloured passport photograph (white background) with your name written on the back (printed & digital copy). | |
| 2 | Copy of identity document (e.g., front & back of your NRIC). | |
| 3 | Copy of letter from MSTAR-145 organisation / Approval Organisation: a. Confirming your years of aircraft maintenance experience on the relevant category of aircraft. b. Containing a recommendation for the grant of the appropriate licence based on its own assessment of you. | |
| 4 | Copy of MSTAR-147 Certificate of Recognition for basic training programme or bridging training programme (if applicable). | |
| 5 | Copy of technical qualification considered by the Authority to be equivalent to the SAML knowledge standard. | |
| 6 | Copy of the basic or bridging examination result certificates. | |
| 7 | Copy of SOE - Basic on aircraft of relevant category (if applicable). | |
| 8 | Copy of aircraft type training and OJT result certificates (if applicable). | |

| | For Initial Issue (Licence with One Type Rating) | For DGTA use |
|----|---|---------------------|
| 1 | Recent coloured passport photograph (white background) with your name written on the back (printed & digital copy). | |
| 2 | Copy of identity document (e.g., front & back of your NRIC). | |
| 3 | Copy of completed Personnel Resume MSTAR Form 19C | |
| 4 | Copy of letter from MSTAR-145 organisation / Approval Organisation: a. Confirming your years of aircraft maintenance experience in the relevant category and specific type of aircraft. b. Containing a recommendation for the grant of the appropriate licence and type rating based on its assessment of you. | |
| 5 | Copy of MSTAR-147 Certificate of Recognition for the basic training programme (if applicable). | |
| 6 | Copy of MSTAR-147 Certificate of Recognition for bridging training programme (if applicable). | |
| 7 | Copy of the basic examination result certificates. | |
| 8 | Copy of the basic examination result certificates under the bridging training programme (if applicable). | |
| 9 | Copy of Schedule of Experience - Basic on aircraft of relevant category (if applicable). | |
| 10 | Copy of type training certificate / examination certificate. | |
| 11 | Copy of structured On-Job-Training certificates (if applicable). | |
| 12 | Copy of the Schedule of Experience (recent practical experience) (if applicable). | |
| | For Foreign / Civil / Armament Licence Conversion | For DGTA use |
| 1 | Recent coloured passport photograph (white background) with your name written on the back (printed & digital copy). | |
| 2 | Copy of identity document (e.g., front & back of your NRIC). | |
| 3 | Copy of completed Personnel Resume MSTAR Form 19C | |
| 4 | Copy of letter from MSTAR-145 organisation / Approval Organisation: a. Stating its intention to employ you or that you are already under its employment. b. Containing a recommendation for the grant of the appropriate licence and type rating based on its assessment of you. | |
| 5 | Copy of the foreign / civil / Armament licence. | |
| 6 | Copy of the licence validation authorisation letter (to foreign / civil licence issuing authority) (if applicable). | |
| 7 | Copy of the basic examination result certificates for SAML basic examinations in Module 9 (Human Factors) and 10 (Airworthiness Legislation) (if applicable). | |
| 8 | Copy of Basic Examination certificates. | |
| 9 | Copy of type course certificates. | |
| 10 | Copy of structured On-Job-Training certificates (if applicable). | |
| 11 | Copy of the Schedule of Experience (recent practical experience) (if applicable). | |
| | For Inclusion of Another Category | For DGTA use |
| 1 | Copy of MSTAR 147 Certificate of Recognition for bridging training programme (if applicable). | |
| 2 | Copy of the basic examination result certificates (if applicable). | |
| 3 | Copy of the Schedule of Experience (SOE - Basic) (if applicable). | |
| 4 | Copy of letter from the MSTAR 145 organisation / Approval Organisation for inclusion of Category C (if applicable). | |

| | | |
|---|---|---------------------|
| 5 | Copy of type training certificate / examination certificate for inclusion of Category C (if applicable) | |
| | For Inclusion of Type Rating | For DGTA use |
| 1 | Copy of type training certificate / examination certificate. | |
| 2 | Copy of structured On-Job-Training certificates (if applicable). | |
| 3 | Copy of the Schedule of Experience (SOE - Type) (if applicable). | |
| 4 | Copy of letter from the MSTAR 145 organisation / Approval Organisation to justify the need for (if applicable): a. Inclusion of Category C Rating; or b. Obtaining aircraft type rating is not in its MSTAR 145 approval capability list; or c. Obtaining aircraft type rating that is not in Malaysia Register. | |
| 5 | Copy of foreign licence (if applicable). | |
| 6 | Copy of licence validation authorisation letter (to foreign / civil licence issuing authority) (if applicable). | |
| | For Removal of Limitation (Basic Category Licence) | For DGTA use |
| 1 | Copy of Basic Conversion Course (BCC) Certificate (if applicable) | |
| 2 | Copy of basic examination result certificates (if applicable) | |
| 3 | Copy of Schedule of Experience (SOE - Basic) (if applicable) | |
| 4 | Copy of foreign licence (if applicable) | |
| 5 | Copy of licence validation authorisation letter (to foreign / civil licence issuing authority) (if applicable) | |
| | For Removal of Limitation (Type Rating) | For DGTA use |
| 1 | Copy of type training / exam certificate. | |
| 2 | Copy of structured On-Job-Training certificates (if applicable) | |
| 3 | Copy of Schedule of Experience (SOE - Basic) (if applicable) | |
| 4 | Copy of foreign licence (if applicable) | |
| 5 | Copy of licence validation authorisation letter (to foreign / civil licence issuing authority) (if applicable) | |
| | For Academic Route | For DGTA use |
| 1 | A copy of Degree in Engineering if applicable | |
| 2 | A copy of Diploma in Engineering if applicable | |
| | | |

| Part I - Application Type (Please tick the appropriate box) | | | | |
|---|---|-----------------------------|--|--------------------------|
| I am applying for: | Initial Issue (Licence with one type rating) | <input type="checkbox"/> | Initial Issue (Basic Category Licence only) | <input type="checkbox"/> |
| | Inclusion of Another Category | <input type="checkbox"/> | Inclusion of Type Rating | <input type="checkbox"/> |
| | Removal of Limitation (Basic Category Licence) | <input type="checkbox"/> | Removal of Limitation (Type rating) | <input type="checkbox"/> |
| | Foreign / Civil / Armament Licence Conversion | <input type="checkbox"/> | | |
| | Current SAML Licence Number (if applicable): | | | |
| | In Category: | A | B | C LAE |
| | Aeroplanes Turbine | A1 <input type="checkbox"/> | B1.1 <input type="checkbox"/> | |
| | Aeroplanes Piston | A2 <input type="checkbox"/> | B1.2 <input type="checkbox"/> | |
| | Helicopter Turbine | A3 <input type="checkbox"/> | B1.3 <input type="checkbox"/> | |
| | Helicopter Piston | A4 <input type="checkbox"/> | B1.4 <input type="checkbox"/> | |
| | Aeromechanical | | B1 <input type="checkbox"/> | |
| | Avionics | | B2 <input type="checkbox"/> | |
| | Armament | | B4 <input type="checkbox"/> | |
| | Supervisor Aeromechanical | | C1 <input type="checkbox"/> | |
| | Supervisor Avionics | | C2 <input type="checkbox"/> | |
| | Supervisor Armament | | C4 <input type="checkbox"/> | |
| | Aviation Engineer | | | <input type="checkbox"/> |

| Part II - Personal Particulars | |
|--------------------------------|--|
| Name as in NRIC/ Passport: | |
| Mailing Address: | |
| Date of Birth: (dd/mm/yyyy) | Rank & Service Number: (For servicemen) |
| Organisation: | Designation: |
| Mobile Number: | Email Address: |
| NRIC Number: | Nationality: |

| Part III - Initial Issue (Basic Category Licence) / Inclusion of Another Category | | | | | | | |
|--|----------|--------------------------|--|----------------------------|--|--------------------------|--|
| 1. SUMMARY OF EXPERIENCE - SOE (Basic) | | | | | | | |
| MSTAR-147 Student <input type="checkbox"/> | | | | Experience credit claimed: | | | |
| Other Experienced Applicant <input type="checkbox"/> | | | | | | | |
| (Please attached additional pages, if required) | | | | | | | |
| Dates | Aircraft | Engine(s) | Description of Work | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| 2. EXAM MODULES COMPLETED | | | | | | | |
| (Sub) Cat | Mod | <input type="checkbox"/> | Exam | (Sub) Cat | Mod | <input type="checkbox"/> | Exam |
| | 01 | <input type="checkbox"/> | Mathematics | | 13 | <input type="checkbox"/> | Aircraft Aerodynamics, Structures & Systems |
| | 02 | <input type="checkbox"/> | Physics | | 14 | <input type="checkbox"/> | Propulsion |
| | 03 | <input type="checkbox"/> | Electrical Fundamentals | | 15 | <input type="checkbox"/> | Gas Turbine Engine |
| | 04 | <input type="checkbox"/> | Electronics Fundamentals | | 16 | <input type="checkbox"/> | Piston Engine |
| | 05 | <input type="checkbox"/> | Digital Techniques/ Electronic Instrument systems | | 17 | <input type="checkbox"/> | Propeller |
| | 06 | <input type="checkbox"/> | Materials & Hardware | | 50 | <input type="checkbox"/> | Essential Principles of Armament |
| | 07 | <input type="checkbox"/> | Maintenance Practices | | 51 | <input type="checkbox"/> | Weapon Stores System |
| | 08 | <input type="checkbox"/> | Basic Aerodynamics | | 52 | <input type="checkbox"/> | Operational Attack Systems |
| | 09 | <input type="checkbox"/> | Human Factors | | 53 | <input type="checkbox"/> | Surveillance and Electronic Warfare |
| | 10 | <input type="checkbox"/> | Airworthiness Legislation | | 54 | <input type="checkbox"/> | Crew Safety |
| | 11A | <input type="checkbox"/> | Turbine Aeroplane Aerodynamics, Structures & Systems | | 55 | <input type="checkbox"/> | Military Communication Systems |
| | 11B | <input type="checkbox"/> | Piston Aeroplane Aerodynamics, Structures & Systems | | 60 | <input type="checkbox"/> | Bridging Programme: <input type="checkbox"/> Category LAE <input type="checkbox"/> Category B: |
| | 12 | <input type="checkbox"/> | Helicopter Aerodynamics, Structures & Systems | | | | |
| 3. ACADEMIC ROUTE | | | | | | | |
| Academic | | | (Sub) Cat | | Type Course Exam | | |
| <input type="checkbox"/> Diploma <input type="checkbox"/> Degree | | | <input type="checkbox"/> Category: | | <input type="checkbox"/> Course Level: | | |
| Examination credit claimed: | | | | | | | |
| | | | | | | | |
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| Part IV - Inclusion of Type Rating | | | | | | |
|------------------------------------|--------|-------------------------|----|-----------------------------|----|-----------------------------|
| Aircraft Type/Series | Engine | Type course certificate | | On Job Training certificate | | SOE (Type) (Number of days) |
| (Tick where applicable) | | | | | | |
| | | Yes | No | Yes | No | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

(Please attached additional pages, if required)

Part V - Removal of Limitation

1. From Basic Category Licence

| (Sub) Cat | Limitation(s) to be removed (State limitation number(s)) | Passed full complement of Basic Knowledge Course | | Passed Bridging Training Programme | | Have SOE (Basic) | |
|-----------|---|--|----|------------------------------------|----|------------------|----|
| | | (Tick where applicable) | | | | | |
| | | Yes | No | Yes | No | Yes | No |
| A1 | | | | | | | |
| A2 | | | | | | | |
| A3 | | | | | | | |
| A4 | | | | | | | |
| B1.1 | | | | | | | |
| B1.2 | | | | | | | |
| B1.3 | | | | | | | |
| B1.4 | | | | | | | |
| B2 | | | | | | | |
| B4 | | | | | | | |
| C1 | | | | | | | |
| C2 | | | | | | | |
| C4 | | | | | | | |
| LAE | | | | | | | |

2. From Type Rating Licence

| Aircraft Type/Series | Engine | Limitation(s) to be removed (State limitation number(s)) | Type course certificate / Exam results for simple aeroplanes | | Structured On-Job-Training certificate | | SOE (Type) (Number of days/Hours) | | |
|----------------------|--------|---|--|----|--|----|-----------------------------------|--|--|
| | | | (Tick where applicable) | | | | | | |
| | | | Yes | No | Yes | No | | | |
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(Please attached additional pages, if required)

Part VI - Declaration and Consent to Disclosure and Collection of Information

Please answer all the questions below. If the answer is "Yes", please provided details in the textbox below, otherwise check "No".

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Have you contravened any provision in the Airworthiness Act or any aviation safety subsidiary legislation that results in the imposition of conditions, suspension or revocation of your aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you currently or have been disqualified from holding any aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you currently being or have you been the subject of any investigation or suspension actions by any aviation authority(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you have any history of physical or mental health or serious behavioural problems? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are you convicted for any offence, whether or not the conviction was in a Malaysia court? | <input type="checkbox"/> | <input type="checkbox"/> |

If "Yes", please provide details:

- I wish to apply for grant / renewal / extension of MSTAR-66 SAML and confirm that the information contained in this form is correct at the time of application.
- I agree that DGTA may collect, use, and disclose my data to the Government of Malaysia and other public agencies, and aviation authorities, as provided in this application form, or obtained by DGTA as a result of processing my application to assess my application and the administration of any regulatory document that may be granted by DGTA, verification of regulatory documents issued by DGTA, or enforcing and ensuring my compliance with the relevant technical airworthiness regulatory requirements.
- I agree that DGTA may collect and use my data, which includes my contact information (e.g. email addresses, phone numbers and postal addresses) to receive information on aviation-related events and training.
- I agree to bear the administrative costs in the preparation and execution of this licence.
- I would like to apply for a SAML Card.

Signature of Applicant:

Date (dd/mm/yyyy):

Recommendation

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed the above application is recommended for the SAML.

Signature of:

Date (dd/mm/yyyy):

Certified by Quality Manager

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR-66 SAML.

Signature:

Date (dd/mm/yyyy):

For Official Use

| | | | |
|---|--------------|---------------------|---------------------------------------|
| Date application received (dd/mm/yyyy): | Received by: | Document Issued by: | Date applicant notified (dd/mm/yyyy): |
| Attach Receipt Issued by POS | Receipt No: | Remarks: | |

MSTAR Form 19C

**Instructions****General**

1. This application form will take approximately 10 minutes to complete. Incomplete applications will not be processed.
2. Certified true copies of all certificates listed in Part II through VI must be submitted in support of the licence application. The quality department of the Approval Organisation should be the certifying party.
3. The completed form is to be submitted to:

Directorate General Technical Airworthiness
 d/a Pangkalan Udara Subang
 40000 SHAH ALAM
 Selangor

| Part I - Personal Particulars | |
|--|---|
| Name as in NRIC/ Passport: | Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female |
| Date of Birth: (dd/mm/yyyy) | NRIC Number: |
| Country of Birth: | Email: |
| Address: | |
| Tel (Mobile): | Tel (Office): |
| State Aircraft Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No | Approval Organisation / MSTAR-145 employer name and address: |

| Part II - Academic Qualifications | |
|--|---------------------|
| Description of Qualification | Date of Certificate |
| | |
| | |
| | |
| | |
| | |

| Part III - Foreign / Civil Licence and Ratings Held | | | | | |
|--|--------|--------------------|------------------|---------------|----------------|
| AML Licence No.: | | Authority of Issue | Country of Issue | Date of Issue | Date of Expiry |
| Category | Rating | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

| Part IV - Company Certification Authorisation Held (Foreign Licence Holder Only) | | | | |
|---|---------|-------|------|----|
| Certification Authorisation Held | Company | Place | From | To |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Part V - Basic and Type Training Summary | | | | |
|---|---------|-------|----------------------|----|
| Brief Description of Training | Company | Place | Period of Experience | |
| | | | From | To |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

| Part VI - Experience Summary (State All Previous Appointments) | | | | |
|---|---------|-------|----------------------|----|
| Appointment | Company | Place | Period of Experience | |
| | | | From | To |
| | | | | |
| | | | | |
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Part VII - Declaration and Consent to Disclosure and Collection of Information

Please answer all the questions below. If the answer is "Yes", please providing details in the textbox below, otherwise check "No".

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Have you contravened any provision in the Airworthiness Act or any aviation safety subsidiary legislation that results in the imposition of conditions, suspension or revocation of your aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you currently or have been disqualified from holding any aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you currently being or have you been in the subject of any investigation or suspension actions by any aviation authority(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you have any history of physical or mental health or serious behavioural problem? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are you convicted for any offence, whether or not the conviction was in a Malaysia court? | <input type="checkbox"/> | <input type="checkbox"/> |

If "Yes", please provide details:

- I wish to apply for grant / renewal / extension of MSTAR-66 and confirm that the information contained in this form is correct at the time of application.
- I agree that DGTA may collect, use, and disclose my data to the Government of Malaysia and other public agencies, and aviation authorities, as provided in this application form, or obtained by DGTA as a result of processing my application to assess my application and the administration of any regulatory document that may be granted by DGTA, verification of regulatory documents issued by DGTA, or enforcing and ensuring my compliance with the relevant technical airworthiness regulatory requirements.
- I agree that DGTA may collect and use my data, which includes my contact information (e.g. email addresses, phone numbers and postal addresses) to receive information on aviation-related events and training.
- I agree to bear the administrative costs in the preparation and execution of this licence.
- I would like to apply for a SAML Card.

Signature of Applicant:

Date (dd/mm/yyyy):

Part III - Declaration and Consent to Disclosure and Collection of Information

Please answer all the questions below. If the answer is "Yes", please providing details in the textbox below, otherwise check "No".

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Have you contravened any provision in the Airworthiness Act or any aviation safety subsidiary legislation that results in the imposition of conditions, suspension or revocation of your aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you currently or have been disqualified from holding any aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you currently being or have you been in the subject of any investigation or suspension actions by any aviation authority(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you have any history of physical or mental health or serious behavioural problem? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are you convicted for any offence, whether or not the conviction was in a Malaysia court? | <input type="checkbox"/> | <input type="checkbox"/> |

If "Yes", please provide details:

- I wish to apply for grant / renewal / extension of MSTAR-66 SAML and confirm that the information contained in this form is correct at the time of application.
- I agree that DGTA may collect, use, and disclose my data to the Government of Malaysia and other public agencies, and aviation authorities, as provided in this application form, or obtained by DGTA as a result of processing my application to assess my application and the administration of any regulatory document that may be granted by DGTA, verification of regulatory documents issued by DGTA, or enforcing and ensuring my compliance with the relevant technical airworthiness regulatory requirements.
- I agree that DGTA may collect and use my data, which includes my contact information (e.g. email addresses, phone numbers and postal addresses) to receive information on aviation-related events and training.
- I agree to bear the administrative costs in the preparation and execution of this licence.
- I would like to apply for a SAML Card.

Signature of Applicant:

Date (dd/mm/yyyy):

| Part IV - Recommendation and Verification | |
|---|--------------------|
| Recommendation | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed above application is an employee under my office control and recommended for the SAML renewal. | |
| Signature of: | Date (dd/mm/yyyy): |
| Certified by Quality Manager | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR 66 SAML. | |
| Signature: | Date (dd/mm/yyyy): |

| For Official Use | | | |
|---|--------------|---------------------|---------------------------------------|
| Date application received (dd/mm/yyyy): | Received by: | Document Issued by: | Date applicant notified (dd/mm/yyyy): |
| Attach Receipt Issued by POS | Receipt No: | Remarks: | |



APPLICATION FOR REPLACEMENT OF LICENSING

Instructions

General

1. This application form will take approximately 3 minutes to complete. Incomplete applications will not be processed.
2. The completed form is to be submitted to:

Directorate General Technical Airworthiness
d/a Pangkalan Udara Subang
40000 SHAH ALAM
Selangor
3. Assessment of the application would take approximately 7 working days from the date of submission. You will be notified by QM when the licence is ready for collection.

Supporting Documents

| | Documents Required: | For DGTA use |
|---|---|--------------|
| 1 | Recent coloured passport photograph (white background) with your name written on the back (printed & digital copy). | |
| 2 | Copy of identity document (e.g., front & back of your NRIC). | |
| 3 | Copy of confirmation letter from MSTAR-145 organisation or Approval Organisation. | |
| 4 | Copy of police report. (If applicable) | |

Part I - Application Type (*Please tick the appropriate box*)

| | |
|---------------------------------------|---|
| I am applying for the replacement of: | <input type="checkbox"/> State Aircraft Maintenance Licence |
|---------------------------------------|---|

| Part II - Applicant Information | |
|--|--|
| Name as in NRIC/ Passport: | |
| Mailing Address: | |
| Date of Birth (dd/mm/yyyy): | Gender: <input type="checkbox"/> Male <input type="checkbox"/> Female |
| Country of Birth: | Nationality: |
| Mobile Number: | NRIC Number: |
| Email Address: | State Aircraft Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No |
| Approval Organisation / MSTAR-145 employer name and address: | |
| Licence Particulars | |
| Licence Number: | Licence Expiry Date: |

| Part III - Declaration and Consent to Disclosure and Collection of Information | | |
|---|--------------------------|--------------------------|
| Please answer all the questions below. If the answer is "Yes", please providing details in the textbox below, otherwise check "No". | | |
| | Yes | No |
| 1. Have you contravened any provision in the Airworthiness Act or any aviation safety subsidiary legislation that results in the imposition of conditions, suspension or revocation of your aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you currently or have been disqualified from holding any aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you currently being or have you been in the subject of any investigation or suspension actions by any aviation authority(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you have any history of physical or mental health or serious behavioural problem? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are you convicted for any offence, whether or not the conviction was in a Malaysia court? | <input type="checkbox"/> | <input type="checkbox"/> |
| If "Yes", please provide details: | | |
| | | |
| <input type="checkbox"/> I wish to apply for grant / renewal / extension / replacement of MSTAR-66 SAML and confirm that the information contained in this form is correct at the time of application. | | |

- I agree that DGTA may collect, use, and disclose my data to the Government of Malaysia and other public agencies, and aviation authorities, as provided in this application form, or obtained by DGTA as a result of processing my application to assess my application and the administration of any regulatory document that may be granted by DGTA, verification of regulatory documents issued by DGTA, or enforcing and ensuring my compliance with the relevant technical airworthiness regulatory requirements.
- I agree that DGTA may collect and use my data, which includes my contact information (e.g., email addresses, phone numbers and postal addresses) to receive information on aviation-related events and training.
- I agree to bear the administrative costs in the preparation and execution of this licence.
- I would like to apply for a SAML Card.

Signature of Applicant:

Date (dd/mm/yyyy):

Part IV - Recommendation and Verification

Recommendation

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed above application is an employee under my office control and recommended for the replacement of MSTAR 66 SAML.

Signature of:

Date (dd/mm/yyyy):

Certified by Quality Manager

I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR 66 SAML.

Signature:

Date (dd/mm/yyyy):

For Official Use

| | | | |
|---|--------------|---------------------|---------------------------------------|
| Date application received (dd/mm/yyyy): | Received by: | Document Issued by: | Date applicant notified (dd/mm/yyyy): |
| Attach Receipt Issued by POS | Receipt No: | Remarks: | |



APPLICATION FOR UPDATE OF PERSONAL PARTICULAR

Instructions

General

1. This application form will take approximately 3 minutes to complete. Incomplete applications will not be processed.
2. The completed form is to be submitted to:

Directorate General Technical Airworthiness
d/a Pangkalan Udara Subang
40000 SHAH ALAM
Selangor
3. Assessment of the application would take approximately 7 working days from the date of submission. You will be notified by QM when the licence is ready for collection.

| Part I - Type of Licence Requesting Updating (Please tick <input type="checkbox"/> the appropriate box) | |
|---|--------------|
| <input type="checkbox"/> State Aircraft Maintenance Licence | Licence No.: |

| Part II - Personal Particulars (Please fill in ALL the information. Where there are changes, please tick <input type="checkbox"/> the box and provide relevant supporting documents.) | | Provide Supporting Documents |
|--|--|--|
| <input type="checkbox"/> | Name as in NRIC/ Passport: | NRIC / Passport |
| <input type="checkbox"/> | Mailing Address: | NRIC/ Recent Billing Statement |
| <input type="checkbox"/> | Tel (Mobile): | - |
| <input type="checkbox"/> | Tel (Home): | |
| <input type="checkbox"/> | Email: | - |
| <input type="checkbox"/> | NRIC No.: | NRIC / Passport |
| <input type="checkbox"/> | Passport No.: | Passport |
| <input type="checkbox"/> | State Aircraft Operator: <input type="checkbox"/> Yes <input type="checkbox"/> No | Approval Organisation name & address: Confirmation letter from MSTAR-145 organisation |

Part III - Declaration and Consent to Disclosure and Collection of Information

Please answer all the questions below. If the answer is "Yes", please providing details in the textbox below, otherwise check "No".

- | | Yes | No |
|---|--------------------------|--------------------------|
| 1. Have you contravened any provision in the Airworthiness Act or any aviation safety subsidiary legislation that results in the imposition of conditions, suspension or revocation of your aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Are you currently or have been disqualified from holding any aviation safety instrument? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Are you currently being or have you been in the subject of any investigation or suspension actions by any aviation authority(s)? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you have any history of physical or mental health or serious behavioural problem? | <input type="checkbox"/> | <input type="checkbox"/> |
| 5. Are you convicted for any offence, whether or not the conviction was in a Malaysia court? | <input type="checkbox"/> | <input type="checkbox"/> |

If "Yes", please provide details:

- I wish to apply for grant / renewal / extension / replacement of MSTAR 66 SAML under and confirm that the information contained in this form is correct at the time of application.
- I agree that DGTA may collect, use, and disclose my data to the Government of Malaysia and other public agencies, and aviation authorities, as provided in this application form, or obtained by DGTA as a result of processing my application to assess my application and the administration of any regulatory document that may be granted by DGTA, verification of regulatory documents issued by DGTA, or enforcing and ensuring my compliance with the relevant technical airworthiness regulatory requirements.
- I agree that DGTA may collect and use my data, which includes my contact information (e.g. email addresses, phone numbers and postal addresses) to receive information on aviation-related events and training.
- I agree to bear the administrative costs in the preparation and execution of this licence.
- I would like to apply for a SAML Card.

Signature of Applicant:

Date (dd/mm/yyyy):

| Part IV - Recommendation and Verification | |
|--|--------------------|
| Recommendation | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and correct. I verified and confirmed above application is an employee under my office control. | |
| Signature of: | Date (dd/mm/yyyy): |
| Certified by Quality Manager | |
| I declared to the best of my knowledge and belief that the statement made and the information supplied in this form are complete and complied with MSTAR-66 SAML. | |
| Signature: | Date (dd/mm/yyyy): |

| For Official Use | | | |
|---|--------------|---------------------|---------------------------------------|
| Date application received (dd/mm/yyyy): | Received by: | Document Issued by: | Date applicant notified (dd/mm/yyyy): |
| Attach Receipt Issued by POS | Receipt No: | Remarks: | |

MSTAR FORM 26**State Aircraft Maintenance Licence**

1. An example of the State Aircraft Maintenance Licence referred to in MSTAR 66 can be found on the following pages.
2. The document shall be printed in the standardised form and ensure sufficient space is available in those places where official seals or stamps are required. Computer-generated documents shall be recognised as state aircraft maintenance licences issued under MSTAR 66.
3. The document shall be filled in English by the authorised staff from DGTA.
4. Each licence holder shall have a unique licence holder number containing an alpha-numeric designator, established based on of years of issued licence, series of board approved and applicant serial number;

Licence Number: 21101


| | |
|-------------------------|------------------------------|
| Year | : 21 |
| Series of Board | : 1 (Maximum 9 series) |
| Applicant Serial Number | : 01 (Maximum 99 applicants) |

5. The document shall in an appropriate manner that each page layout can be identified with the format of the example of the state aircraft maintenance licence contained herein.
6. The document shall be prepared by the authorised staff from DGTA, and DGTA shall issue the document.
7. The preparation of any change to an existing state aircraft maintenance licence shall be carried out by the authorised staff from DGTA, and DGTA shall change the document.
8. The holder of the State Aircraft Maintenance Licence shall keep it in good condition and shall ensure that no unauthorised entries are made. Failure to comply with this rule may invalidate the licence or lead to the holder not being permitted to hold any certification privilege.
9. The Annex to MSTAR Form 26 privileges is covered by the scope of MSTAR 66 only.
10. Concerning the aircraft type rating page of the State Aircraft Maintenance Licence, the DGTA may decide not to issue this page until the first aircraft type rating needs to be endorsed and may need to issue more than one aircraft type rating page depending on the number of type ratings to be listed.
11. Notwithstanding point 10, each page issued shall be in the format of this example and contain the specified information for that page.
12. The State Aircraft Maintenance Licence shall indicate that the limitations are exclusions from the certification privileges. If there are no limitations applicable, the LIMITATIONS page shall state 'No Limitation'.

13. Where a pre-printer format is used for issuing the aircraft maintenance licence, any category, subcategory or type rating box which does not contain a rating entry shall be marked to show that the rating is not held.

14. Approval of certification for any application of MSTAR 66 SAML categories either module examination, first issue, renewal, conversion, extension or suspension must be approved by Licensing Authority before award. Sample of MSTAR 66 State Aircraft Maintenance Licence as per MSTAR Form 26. The blocks that follow are sample pages of a MSTAR 66 State Aircraft Maintenance Licence booklet.

MSTAR FORM 26 - STATE AIRCRAFT MAINTENANCE LICENCE

| <div style="text-align: right; margin-bottom: 10px;">MSTAR FORM 26</div> <div style="text-align: center;">  <p>Malaysian State Airworthiness Authority Directorate General Technical Airworthiness</p> </div> <div style="text-align: center; margin: 10px 0;"> <div style="border: 1px solid black; width: 60px; height: 40px; display: flex; align-items: center; justify-content: center; margin: 0 auto;">Photo</div> </div> <p>I MSTAR 66 State Aircraft Maintenance Licence</p> <p>II Licence Number: 21202</p> <p>III Name: SAH BIN MAT</p> <p>IV Address: Lot 1047, Any Road Malaysia 12345</p> <p>V Nationality: MALAYSIAN</p> <p>VI NRIC/Passport No.: 670111-01-2134</p> <p>VII Date of Birth: 11 JAN 1967</p> | <p>IX Conditions</p> <p>X Endorsement of aircraft types on the page(s) entitled MSTAR 66 (Sub) Categories, MSTAR 66 Aircraft Type Ratings means the holder is qualified to sign off maintenance records or release maintenance records or issue certificates of release to service for such aircraft in the specified categories or sub-categories from the date of endorsement.</p> <ul style="list-style-type: none"> - This licence when endorsed with a valid aircraft type and MSTAR 145 certification authorisation. - It is the responsibility of the holder to ensure that Certificates of Release to Service are only issued within the limitations of this licence and under the applicable requirements of MSTAR 66 and MSTAR 145. - This licence remains current until the specified expiry date whilst in compliance with MSTAR 66 unless suspended or revoked by the DGTA. - This licence is not valid unless it bears the signature of the holder. <p>XI Issued under the Regulation 35 of the STAR for the time being in force.</p> <p>XII For the State Airworthiness Authority:</p> <div style="text-align: center; margin: 10px 0;"> <hr style="width: 20%; margin: 0 auto;"/> (Signature of Issuing Officer) </div> <p style="text-align: center;">Date of issue: 13 Dec 2021</p> <p>XIII Stamp of the Issuing Authority:</p> | | | | | | | | | | | | | | | | | |
|---|---|------------|---------------------------|-----------|---------------------|-----------|---------------|-----------|---|------------------|------|------|-------|------|-----------|-------|------|------------|
| <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">XIV Categories</th> <th style="text-align: left;">Date</th> </tr> </thead> <tbody> <tr> <td>Aeromechanical B1.1 Basic</td> <td>12 Jan 16</td> </tr> <tr> <td>Aeromechanical B1.1</td> <td>13 Apr 18</td> </tr> <tr> <td>Supervisor C1</td> <td>13 Dec 21</td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 20px;">(Refer Section XVI for limitations, if any) (No further entries)</p> | XIV Categories | Date | Aeromechanical B1.1 Basic | 12 Jan 16 | Aeromechanical B1.1 | 13 Apr 18 | Supervisor C1 | 13 Dec 21 | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">XV Aircraft Type</th> <th style="text-align: left;">Cat.</th> <th style="text-align: left;">Date</th> </tr> </thead> <tbody> <tr> <td>DHC-4</td> <td>B1.1</td> <td>13 Apr 18</td> </tr> <tr> <td>CN235</td> <td>B1.1</td> <td>13 July 19</td> </tr> </tbody> </table> <p style="text-align: center; margin-top: 20px;">(Refer Section XVI for limitations, if any) (No further entries)</p> | XV Aircraft Type | Cat. | Date | DHC-4 | B1.1 | 13 Apr 18 | CN235 | B1.1 | 13 July 19 |
| XIV Categories | Date | | | | | | | | | | | | | | | | | |
| Aeromechanical B1.1 Basic | 12 Jan 16 | | | | | | | | | | | | | | | | | |
| Aeromechanical B1.1 | 13 Apr 18 | | | | | | | | | | | | | | | | | |
| Supervisor C1 | 13 Dec 21 | | | | | | | | | | | | | | | | | |
| XV Aircraft Type | Cat. | Date | | | | | | | | | | | | | | | | |
| DHC-4 | B1.1 | 13 Apr 18 | | | | | | | | | | | | | | | | |
| CN235 | B1.1 | 13 July 19 | | | | | | | | | | | | | | | | |

| XVI MSTAR 66 Limitations | | | XVII MSTAR 66 Limitations Index | |
|--|-------------|------------|--|---|
| Aircraft Type | Cat. | No. | No. | Description of Limitation |
| CN235 | B1.1 | 1, 2, 3 | 1 | Excluding electrical power generation & distribution systems. |
| | | | 2 | Excluding instrument systems, INS/IRS and Flight Directors system |
| | | | 3 | Excluding autopilot systems on aeroplanes |
| (Refer to Section XVII for description of limitations) (No further entries) | | | (No further entries) | |

| XVIII Initial issued based on | | XIX Validity | |
|--------------------------------------|--|--|------------------------|
| Technical Requirement | Description | Initial Issue Date: | Expiry Date: |
| 66.A.25(d)(2) | Full examination credits for basic knowledge | 12 Jan 2016 | 12 Dec 2023 |
| 66.A.25(e) | Credits expire 10 years from initial issue date of licence | | |
| 66.A.25(g) | Bridging Program Category B | | |
| (No further entries) | | Invalid Date: | 14 Jan 2026 |
| | | XX Remarks | |
| | | Has complied with 66.A.25(a) on 10 Nov 2021. | |
| | | Invalid Date referring to Section XIX has been repealed. | |
| | | (No further entries) | |