Acceptable Means of Compliance and Guidance Material to Annex III (Part-66) to Commission Regulation (EU) No 1321/2014 — Issue 2, Amendment 8

Annex II to ED Decision 2023/019/R

'AMC and GM to Part-66 — Issue 2, Amendment 8'

The text of the amendment is arranged to show deleted, new or amended text as follows:

— deleted text is ~~struck through~~;

— new or amended text is highlighted;

— an ellipsis '[…]' indicates that the rest of the text is unchanged.

Note to the reader

In amended, and in particular in existing (that is, unchanged) text, 'Agency' is used interchangeably with 'EASA'. The interchangeable use of these two terms is more apparent in the consolidated versions. Therefore, please note that both terms refer to the 'European Union Aviation Safety Agency (EASA)'.

Annex III to Decision 2015/029/R of 17 December 2015 of the Executive Director of the Agency is amended as follows:

ANNEX III (PART-66)

GENERAL

[…]

AMC1 66.1(a) Competent Authority

[…]

The purpose of 66.1(a)2 is to allow the possibility for a person who already holds a Part-66 licence issued by one Member State (i.e. Member State X) to replace it by a Part-66 licence issued by another Member State (i.e. Member State Y). ~~This may be useful, for example, in cases where a person holding a licence from 'Member State X' is developing his/her career in a maintenance organisation located in 'Member State Y'. In this case, this person may need to endorse new type ratings based on courses directly approved by the competent authority of 'Member State Y' or may need to endorse new licence (sub)categories based on basic examinations performed by the competent authority of 'Member State Y'.~~

[…]

SECTION A — TECHNICAL REQUIREMENTS

SUBPART A — AIRCRAFT MAINTENANCE LICENCE

GM1 66.A.5 Aircraft groups

The following table summarises the applicability of categories/subcategories of Part-66 licences versus the groups/subgroups of aircraft:

Category/subcategory Groups	A, B1 and C	B2	B2L	B3	L				
					L1C and L1	L2C and L2	L3H and L3G	L4H and L4G	L5
1 — Complex motor-powered aircraft — Multi-engine helicopters — other than piston-engine ~~A~~aeroplanes above FL290 — Aircraft with fly-by-wire systems — Any other aircraft when defined by the Agency	X	X							

Category/subcategory Groups	A, B1 and C	B2	B2L	B3	L				
					L1C and L1	L2C and L2	L3H and L3G	L4H and L4G	L5
1 — Gas airships other than ELA2		X							X
2 2a: Single-turboprop aeroplanes 2b: Single-turbine helicopters 2c: Single-piston-engine helicopters	X	X	X						
3 — Piston-engine aeroplanes	X	X	X						
3 ~~Piston-engine aeroplanes (non-pressurised of 2 000 kg MTOM and below)~~ — Non-pressurised ELA2 piston-engine aeroplanes	X	X	X	X					
3 — ELA1 piston-engine aeroplanes	X	X	X	X		X			
4 — Sailplanes — Powered sailplanes — Balloons — Airships not in Group 1		X X X X	X X X X		X	X X	X	X	X

[…]

GM1 66.A.20(a) Privileges

[…]

5. The category C licence permits certification of ~~scheduled~~ base maintenance by the issue of a single certificate of release to service for the complete aircraft after the completion of all such maintenance. The basis for this certification is that the maintenance has been carried out by competent mechanics, and category B1, B2, B2L, B3 and L support staff, as appropriate, have signed for the maintenance tasks under their respective specialisation. The principal function of ~~the~~ category C certifying staff is to ensure that all required maintenance has been called up and signed off by ~~the~~ category B1, B2, B2L, B3 and L support staff, as appropriate, before issue of the certificate of release to service. Only category C personnel who also hold category B1, B2, B2L, B3 or L qualifications may perform both roles in base maintenance.

[…]

AMC1 66.A.30(a) Basic experience requirements

~~1. For a category C applicant holding an academic degree the representative selection of tasks should include the observation of hangar maintenance, maintenance planning, quality assurance, record-keeping, approved spare parts control and engineering development.~~

~~2. While an applicant to a category C licence may be qualified by having 3 years experience as category B1 or B2 certifying staff only in line maintenance, it is however recommended that any applicant to a category C holding a B1 or B2 licence demonstrate at least 12 months experience as a B1 or B2 support staff.~~

~~4~~1. Maintenance experience on operating aircraft:

— means the experience of being involved in maintenance tasks on aircraft which are being operated by airlines, air taxi organisations, aero clubs, owners, etc., as relevant to the licence category/subcategory;

— should cover a wide range of tasks in terms of length, complexity and variety;

— aims at gaining sufficient experience in the real environment of maintenance as opposed to only the training school environment;

— 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;

— ~~M~~may be combined with Part-147 approved training (or other training approved by the competent authority) so that periods of training can be intermixed with periods of experience, similar to an apprenticeship;

— may be full-time or part-time, either as a professional or on a voluntary basis;

— in the case of the L licence, it is acceptable that the 1 or 2 years of experience required by 66.A.30(a)(2b) covers maintenance performed only during the weekends (or equivalent periods) as long as the applicant has achieved a sufficient level of competency related to the applicable licence subcategory as attested by the corresponding statement(s) issued by the maintenance organisation(s) or independent certifying staff that supervised the applicant.

~~3~~2. A skilled worker is a person who has successfully completed a training, acceptable to the competent 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.

~~5~~3. 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 ~~a~~ sufficient experience for each category/subcategory during the required period. Examples: include the following.

— Application for a B1.1 (turbine aeroplanes) + B1.3 (turbine helicopters): ~~T~~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~~:~~.

  — 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.

  — 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).

— Application for a B1.1 (turbine aeroplanes) + B2 (avionics): ~~T~~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.

  — 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.

— 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 tasks in the morning, B2 tasks in the afternoon, or a few days every week for B1.1 tasks and a few days every week for B2 tasks).

— Application for a B1.1, B1.2, B1.3, B1.4 and B2: ~~T~~the Regulation requires 5 years of experience for B1.1, B1.3 and B2, and 3 years of experience for B1.2 and B1.4 for an applicant with no relevant previous technical training.

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

4. For a category C applicant that holds an academic degree, the participation in the performance of maintenance tasks on operating aircraft may include maintenance, maintenance planning, quality assurance, record-keeping, spare parts management and engineering development.

'Experience in working in a civil aircraft maintenance environment on a representative selection of tasks directly associated with aircraft maintenance' means experience gained at an organisation that is approved in accordance with Part-145, Part-CAO, Part-CAMO or similar, or experience in performing comparable work that is directly related to the continuing airworthiness of aircraft within a competent authority. Similar work performed on 'Annex I aircraft' or state aircraft may be acceptable as well.

'Including 6 months of participation in the performance of base maintenance tasks' on operating aircraft means experience gained through the active participation in base maintenance checks at maintenance organisations.

If the applicant has acquired experience on operating CMPA, the corresponding category C licence should be issued. If the experience acquired has been limited to other than CMPA, then only the corresponding category C licence with respect to other than CMPA should be issued.

While it is strongly recommended that the participation in the performance of maintenance on aircraft should be at the level required for the issue of a B1 or B2 licence, the objective of the required experience is to gain insight into the performance of base maintenance. The applicant for an academic category C licence should be aware of the type of maintenance carried out before the signature of support staff and understand their roles in the release-to-service process of base maintenance. It is encouraged that the future category C licence holder participates in both simple and complex tasks during their experience in base maintenance and gains insight in some aircraft critical systems.

In the case presented in point 66.A.30(e), for the required experience gained outside the European civil regulatory framework, at least 1 year should be in a Part-145 or Part-CAO environment, including participation in the performance of base maintenance tasks for 6 months.

GM1 66.A.30(a) Basic experience requirements

The table below summarises the basic experience requirements for the category C licence.

To: From:	Category C for CMPA	Category C for other than CMPA
Holder of a licence with **B1.1, B1.3, B2**, B3*B2L*, or L*	3 years of experience as support staff, or both support staff and certifying staff, in operating CMPA, including 12 months as support staff in base maintenance.	3 years of experience as certifying staff or support staff, in operating other than CMPA, including 6 months as support staff in base maintenance.
Holder of a licence with **B1.2, B1.4** or **L5****	5 years of experience as support staff, or both support staff and certifying staff, in operating CMPA, including 12months as support staff in base maintenance.	
Holder of an academic degree, in a relevant technical discipline, issued by a university or any other higher educational institution recognised by the competent authority	3 years of experience in working in an aircraft maintenance environment, on a representative selection of tasks that are directly associated with aircraft maintenance of operating CMPA, including 6 months of participation in the performance of base maintenance tasks on operating CMPA.	3 years of experience in working in an aircraft maintenance environment, on a representative selection of tasks that are directly associated with aircraft maintenance of operating other than CMPA, including 6 months of participation in the performance of base maintenance tasks on operating other than CMPA.
Holder of a licence with category C for other than CMPA	2 years of experience as B1, B2 or L5 support staff, or both support staff and certifying staff, including 6 months as support staff in base maintenance. Holding an academic degree: 2 years of experience in working in an aircraft maintenance environment, on a representative selection of tasks that are directly associated with aircraft maintenance of operating CMPA, including 3 months of participation in the performance of base maintenance tasks on operating CMPA.	
Holder of a licence with category C for CMPA		Category C for CMPA includes category C for other than CMPA.

* Only applicable to category C for other than CMPA.

** Only applicable to category C for CMPA.

AMC1 66.A.30(e) Basic experience requirements

~~1.~~(a) ~~For categories A and L, the additional experience should be a minimum of 6 months in a civil maintenance environment. For categories B1, B2, B2L or B3, the additional experience should be a minimum of 12 months in a civil aircraft maintenance environment.~~

If the licensing authority has established that the experience gained outside an aircraft maintenance organisation approved in accordance with Part-145 or Part-CAO is equivalent to that required by Part-66, the minimum additional experience in aircraft maintenance organisation(s) that is (are) approved in accordance with Part-145 or Part-CAO should be:

(1) for categories A and L: 6 months;

(2) for categories B1, B2, B2L, B3 and C: 12 months.

~~2.~~(b) ~~Aircraft maintenance experience gained outside a civil aircraft maintenance environment may include aircraft maintenance experience gained in armed forces, coast guards, police etc. or in aircraft manufacturing~~.

Experience in aircraft maintenance gained outside an aircraft maintenance organisation(s) that is (are) approved in accordance with Part-145 or Part-CAO may include experience in aircraft maintenance gained in the armed forces, coast guard, police, nationally approved organisations, organisations approved by non-EASA Member States, etc., or in aircraft manufacturing.

GM1 66.A.45 Endorsement with aircraft ratings

[…]

Aircraft rating requirements			
Aircraft	B1/B3/L licence	B2/B2L licence	C licence
Group 1 aircraft, except airships — Complex motor-powered aircraft. — Multiple-engine helicopters. — Other than piston-engine ~~A~~aeroplanes certified above FL290. — Aircraft equipped with fly-by-wire. — Other aircraft when defined by the Agency.	(For B1) **Individual TYPE RATING** Type training: — Theory + examination — Practical + assessment **PLUS** OJT (for first aircraft in licence subcategory)	(For B2) **Individual TYPE RATING** Type training: — Theory + examination — Practical + assessment **PLUS** OJT (for first aircraft in licence subcategory)	**Individual TYPE RATING** Type training: — Theory + examination
[…]	[…]	[…]	[…]

Aircraft rating requirements			
Group 2 aircraft Subgroups: 2a: single turboprop aeroplanes (*) 2b: single turbine engine helicopters (*) 2c: single piston engine helicopters (*) (*) Except those classified in Group 1.	(For B1.1, B1.3, B1.4) **Individual TYPE RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) **Full SUBGROUP RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) on at least 3 aircraft representative of that subgroup **Manufacturer SUBGROUP RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) on at least 2 aircraft representative of that manufacturer subgroup	(For B2) **Individual TYPE RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) (For B2 and B2L) **Full SUBGROUP RATING** based on demonstration of practical experience **Manufacturer SUBGROUP RATING** based on demonstration of practical experience	**Individual TYPE RATING** type training **or** type evaluation ~~examination~~ **Full SUBGROUP RATING** type training **or** type evaluation ~~examination~~ on at least 3 aircraft representative of that subgroup **Manufacturer SUBGROUP RATING** type training **or** type evaluation ~~examination~~ on at least 2 aircraft representative of that manufacturer subgroup
Group 3 aircraft Piston engine aeroplanes (except those classified in Group 1)	(For B1.2) **Individual TYPE RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) **Full GROUP 3 RATING** based on demonstration of practical experience **Limitations:** — Pressuris~~z~~ed aeroplanes — Metal aeroplanes — Composite aeroplanes — Wooden aeroplanes — Metal tubing ~~&~~ and fabric ~~A~~aeroplanes	(For B2) **Individual TYPE RATING** (type training + OJT) **or** (type evaluation ~~examination~~ + practical experience) (For B2 and B2L) **Full GROUP 3 RATING** based on demonstration of appropriate experience	**Individual TYPE RATING** type training **or** type evaluation ~~examination~~ **Full GROUP 3 RATING** based on demonstration of practical experience
[…]	[…]	[…]	[…]

GM1 66.A.45(h)(ii)~~2~~ Endorsement with aircraft ratings

[…]

However, ~~no~~ the limitations referred to in 66.A.45(h)(ii) ~~are possible for~~ do not apply for ~~the~~ subcategories L1C, L2C, L3H, L4H and L4G. The ratings on these licences can only be obtained after demonstration of the appropriate experience representative of the full scope of the licence subcategory.

[…]

SECTION B — PROCEDURES FOR COMPETENT AUTHORITIES

SUBPART B — ISSUE OF AN AIRCRAFT MAINTENANCE LICENCE

[…]

GM1 66.B.2 Means of compliance

ALTERNATIVE MEANS OF COMPLIANCE — GENERAL

(a) A competent authority may establish means to comply with the Regulation different from the AMC established by EASA.

In that case, the competent authority is responsible for demonstrating how this (these) alternative means of compliance (AltMoC) establish compliance with the Regulation.

(b) AltMoC used by a competent authority may also be used by other competent authorities only if processed again in accordance with point 66.B.2.

(c) AltMoC issued by the competent authority may cover the following cases:

— AltMoC to be used by persons under the oversight of the competent authority and made available to these persons;

— AltMoC to be used by the authority itself to discharge its responsibilities.

AMC1 66.B.2(b);(c) Means of compliance

PROCESSING THE ALTERNATIVE MEANS OF COMPLIANCE

To meet the objective of points (b) and (c) of point 66.B.2:

(a) the competent authority should establish the means to consistently evaluate over time that all the AltMoC used by itself or by the persons under its oversight allow for the establishment of compliance with the Regulation;

(b) if the competent authority issues AltMoC for itself or for the persons under its oversight, it should:

(1) make them available to all relevant persons;

(2) notify the Agency as soon as the AltMoC is issued, including the information described in point (c) below;

(c) the competent authority should provide the Agency with the following information:

(1) a summary of the AltMoC;

(2) the content of the AltMoC;

(3) a statement that compliance with the Regulation is achieved; and

(4) in support of that statement, an assessment demonstrating that the AltMoC reaches an acceptable level of safety, taking into account the level of safety provided by the corresponding EASA AMC.

All these elements describing the AltMoC form an integral part of the records to be kept in accordance with point 66.B.20.

GM1 66.B.2(b);(c) Means of compliance

CASE WHERE THE REGULATION HAS NO CORRESPONDING EASA AMC

When there is no EASA AMC for a certain requirement in the Regulation, the competent authority may choose to develop national guides or other types of documents to help the persons under its oversight in complying with the Regulation. The competent authority may inform the Agency, so that such guides or other documents may later be considered for transposition into an AMC published by the Agency through the Agency rulemaking process.

AMC1 66.B.115 Procedure for the change of an aircraft maintenance licence to include an aircraft rating or to remove limitations

[…]

(c) ~~For the acceptance of the OJT programme described in Section 6 of Appendix III to Part-66, the licensing competent authority should develop adequate procedures which may be similar to the procedure described in AMC 66.B.130 for the 'direct approval of aircraft type training'.~~

For the acceptance of the OJT tasks and programme, the licensing competent authority should develop procedures compliant with Section 6 of Appendix III to Part-66.

[…]

GM1 66.B.400(d) General

In the case of a person applying for the issue or change of an AML, by use of examination credits, to a competent authority of a Member State (hereafter referred to as licensing authority) other than the competent authority that has granted the examination credits (hereafter referred to as competent authority), the licensing authority is expected to contact the competent authority and request the examination credit assessment or the credit report or any other information and documentation it considers necessary in order to ascertain the equivalence of the syllabus of the technical qualification obtained by the applicant to the syllabus of the basic knowledge modules.

The competent authority is expected to provide the licensing authority with all the requested information regarding its examination crediting system and the applicant concerned.

Should the licensing authority observe any inconsistency in the provided documentation or have doubts regarding the equivalence of the technical qualification of the applicant to the syllabus of the basic knowledge modules, it is expected to address the competent authority and arrive at a mutual understanding.

The licensing authority is also expected to assess the application against its own credit report and equivalence criteria in order to ensure a standardised approach to the process of examination crediting, and fair treatment to all its applicants.

Unless proven that the examination credits granted by the competent authority were not in compliance with the provisions of the Regulation, or that a positive assessment of the applicant's documentation would hinder its own examination crediting system, the licensing authority is expected to consider the applicant's documentation as compliant.

The final decision regarding the consideration of the provided documents as valid supporting documentation in respect of point 66.B.100 or 66.B.110 rests with the licensing authority.

[…]

Appendix I — Basic Knowledge Requirements (except for category L licence)

[…]

AMC1 Appendix I — Basic Knowledge Requirements (except for category L licence) Section 2

MODULARISATION

MODULE 1 — MATHEMATICS

MODULE 1 — MATHEMATICS	LEVEL	
	A1 A2 A3 A4	B1 B2 B2L B3
1.1 *Arithmetic* Arithmetical terms and signs, methods of multiplication and division, fractions and decimals, factors and multiples, weights, measures and conversion factors, ratio and proportion, averages and percentages, areas and volumes, squares, cubes, square and cube roots.	1	2
1.2 *Algebra* (a) Evaluating simple algebraic expressions, addition, subtraction, multiplication and division, use of brackets, simple algebraic fractions;	1	2
(b) Linear equations and their solutions; Indices and powers, negative and fractional indices;	—	1

MODULE 1 — MATHEMATICS	LEVEL	
	A1 A2 A3 A4	B1 B2 B2L B3
Binary and other applicable numbering systems; Simultaneous equations and second-degree equations with one unknown; Logarithms.		
1.3 *Geometry*		
(a) Simple geometrical constructions;	—	1
(b) Graphical representation: nature and uses of graphs, graphs of equations/functions;	2	2
(c) Simple trigonometry: trigonometrical relationships, use of tables and rectangular and polar coordinates.	—	2

MODULE 2 — PHYSICS

MODULE 2 — PHYSICS	LEVEL	
	A1 A2 A3 A4 B3	B1 B2 B2L
2.1 *Matter* Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds; States: solid, liquid, and gaseous; Changes between states.	1	2
2.2 *Mechanics* 2.2.1 *Statics* Forces, moments and couples, representation as vectors; Centre of gravity; Elements of theory of stress, strain, and elasticity: tension, compression, shear, and torsion; Nature and properties of solid, fluid, and gas matter; Pressure and buoyancy in liquids (barometers).	1	2
2.2.2 *Kinetics* 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
2.2.3 *Dynamics* (a) Mass; Force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency;	1	2

MODULE 2 — PHYSICS	LEVEL A1 A2 A3 A4 B3	LEVEL B1 B2 B2L
(b) Momentum, conservation of momentum; Impulse; Gyroscopic principles; Friction: nature and effects, coefficient of friction (rolling resistance).	1	2
2.2.4 *Fluid dynamics*		
(a) Specific gravity and density;	2	2
(b) Viscosity, fluid resistance, effects of streamlining; Effects of compressibility on fluids; Static, dynamic, and total pressure: Bernoulli's Theorem, venturi.	1	2
2.3 *Thermodynamics*		
(a) Temperature: thermometers and temperature scales (Celsius, Fahrenheit and Kelvin); definition of heat;	2	2
(b) Heat capacity, specific heat; Heat transfer: convection, radiation and conduction; Volumetric expansion; First and second law of thermodynamics; Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigerators and heat pumps; Latent heats of fusion and evaporation, thermal energy, heat of combustion.	1	2
2.4 *Optics (Light)* Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces, reflection by spherical mirrors, refraction, lenses; Fibre optics.	–	2
2.5 *Wave motion and sound* Wave motion: mechanical waves, sinusoidal wave motion, interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity, pitch and quality, Doppler effect.	–	2

MODULE 3 — ELECTRICS FUNDAMENTALS

MODULE 3 — ELECTRICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B2 B2L	B3
3.1 *Electron theory* Structure and distribution of electrical charges within atoms, molecules, ions, and compounds; Molecular structure of conductors, semiconductors, and insulators.	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 in vacuum.	1	2	1
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	1
3.4 *Generation of electricity* Production of electricity by the following methods: light, heat, friction, pressure, chemical reaction, magnetism, and motion.	1	1	1
3.5 *Sources of DC electricity* Construction and basic chemical reaction of primary cells, secondary cells, lead acid cells, nickel cadmium cells, lithium cells, nickel cells and other alkaline cells; Cells connected in series and in parallel; Internal resistance and its effect on a battery; Construction, materials, and operation of thermocouples; Operation of photocells.	1	2	2
3.6 *DC circuits* Ohm's 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.	1	2	1
3.7 *Resistance/Resistor* (a) Resistance Specific resistance; Calculation of total resistance using series, parallel and series–parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.	—	2	1

MODULE 3 — ELECTRICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B2 B2L	B3
(b) Resistor Positive and negative temperature coefficient conductance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and in parallel; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage-dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge.	—	1	—
3.8 *Power* Power, work, and energy (kinetic and potential); Dissipation of power by a resistor; Power formula; Calculations involving power, work, and energy.	—	2	1
3.9 *Capacitance/Capacitor* Operation and function of a capacitor; Factors that affect the capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, construction, and function; Capacitor colour-coding; Calculations of capacitance and voltage in series and in parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.	—	2	1
3.10 *Magnetism* (a) Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnet construction and principles of operation; Handclasp rules to determine magnetic field around current-carrying conductor.	—	2	1
(b) Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.	—	2	1
3.11 *Inductance/Inductor*	—	2	1

MODULE 3 — ELECTRICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B2 B2L	B3
Faraday's law; Action of inducing a voltage in a conductor that moves in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductor turns; Mutual induction; The effect that the rates of change of primary current and mutual inductance have on induced voltage; Factors that affect mutual inductance: number of turns in the coil, physical size of the coil, permeability of the coil, position of coils with respect to each other; Lenz's law and polarity determining rules; Back EMF, self-induction; Saturation point; Principal uses of inductors.			
3.12 *DC motor/generator theory* Basic motor and generator theory; Construction and purpose of components in a DC generator;	–	2	1
Operation of and factors that affect the output and direction of the current in DC generators; Operation of and factors that affect the output power, torque, speed, and direction of rotation of DC motors; Series-wound, shunt-wound and compound motors; Starter generator construction.			
3.13 *AC theory* Sinusoidal waveform: phase, period, frequency, cycle; Instantaneous, average, root mean square, peak, peak-to-peak current values and calculations of these values in relation to voltage, current and power; Triangular/Square waves; Single-phase/Three-phase principles.	1	2	1
3.14 *Resistive (R), capacitive (C) and inductive (L) circuits* Phase the relationship of voltage and current in L, C and R circuits, parallel, series and series–parallel; Power dissipation in L, C and R circuits; Impedance, phase angle, power factor and current calculations; True power, apparent power, and reactive power calculations.	—	2	1
3.15 *Transformers*	—	2	1

MODULE 3 — ELECTRICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B2 B2L	B3
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; Line and phase voltages and currents; Power in a three-phase system; Primary and secondary current, voltage, turn ratio, power, efficiency; Auto-transformers.			
3.16 *Filters* Operation, application, and uses of the following filters: low pass, high pass, band pass, band stop.	—	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 connection advantages, and uses; Permanent magnet generators.	—	2	1
3.18 *AC motors* Construction, principles of operation and characteristics of: AC synchronous and induction motors both single-phase and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, shaded or split pole.	—	2	1

MODULE 4 — ELECTRONICS FUNDAMENTALS

MODULE 4 — ELECTRONICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
4.1 *Semiconductors* 4.1.1 *Diodes* (a) Description and characteristics Diode symbols; Diode characteristics and properties; Diodes in series and in parallel; Materials, electron configuration, electrical properties;	—	2	2

MODULE 4 — ELECTRONICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
P and N type materials: effects of impurities on conduction, majority and minority characters; P–N junction in a semiconductor, development of a potential across a P–N junction in unbiased, forward-biased and reverse-biased conditions; Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation; Main characteristics and use of silicon-controlled rectifiers (thyristors), light-emitting diodes (LEDs), photo-conductive diodes, rectifier diodes.			
(b) Operation and function Operation and function of diodes in the following circuits: clippers, clampers, full- and half-wave rectifiers, bridge rectifiers, voltage doublers and triplers; Detailed operation and characteristics of the following devices: silicon-controlled rectifier (thyristor), light-emitting diode (LED), Schottky diode, photo-conductive diode, varactor diode, varistor, rectifier diodes, Zener diode. Functional testing of diodes.	—	—	2
4.1.2 *Transistors* (a) Description and characteristics Transistor symbols; Component description and orientation; Transistor characteristics and properties.	—	1	2
(b) Construction and operation Construction and operation of PNP and NPN transistors; Base, collector and emitter configurations; Testing of transistors; Basic appreciation of other transistor types, including types of FET and their uses; Application of transistors: amplifier classes (A, B, C); Simple circuits including bias, decoupling, feedback and stabilisation; Multistage circuit principles: cascades, push–pull, oscillators, multivibrators, flip-flop circuits; Operation and amplifier stages connecting methods: resistive, capacitive, direct, inverting, non-inverting and adding.	—	—	2
4.1.3 *Integrated circuits* (a) Description and operation of logic circuits and linear circuits/operational amplifiers;	—	1	2
(b) Introduction to the operation and function of an operational amplifier used as: an integrator, a differentiator, a voltage follower, a comparator; Advantages and disadvantages of positive and negative feedback.	—	—	2

MODULE 4 — ELECTRONICS FUNDAMENTALS	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
4.2 *Printed circuit boards* Description and use of printed circuit boards.	—	1	2
4.3 *Servomechanisms* (a) Principles Understanding of the following principles: open- and closed-loop systems, servomechanism, feedback, follow-up, null, overshoot, damping, deadband, hunting, proximity switches, analogue transducers, synchro systems and components, digital tachometers and encoders, inductance, and capacitance transmitters;	—	1	2
(b) 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; Construction, operation and use of servomechanism and PID controller; Fault-finding of servo defects, reversal of synchro leads, hunting.	—	—	2

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS	LEVEL			
	A1 A2 A3 A4	B3	B1	B2 B2L
5.1 *Electronic instrument systems* Typical arrangements of systems and cockpit layout of electronic instrument systems.	1	1	1	1
5.2 *Numbering systems* Numbering systems: binary, octal, and hexadecimal; Demonstration of conversions between the decimal and binary systems, octal and hexadecimal systems and vice versa.	—	—	1	2
5.3 *Data conversion* Analogue data, Digital data; Operation and application of analogue-to-digital and digital-to-analogue converters, inputs and outputs, limitations of various types.	—	—	1	2
5.4 *Data buses* Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. Aircraft network/Ethernet.	—	—	2	2

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS	LEVEL			
	A1 A2 A3 A4	B3	B1	B2 B2L
5.5 *Logic circuits*				
(a) Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.	—	—	2	2
(b) Interpretation of logic diagrams.	—	—	—	2
5.6 *Basic computer structure*				
(a) Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems).	1	1	2	2
(b) Computer operation, layout, and interface of the major components in a microcomputer, including their associated bus systems; Information contained in single- and multi-address instruction words; Memory-associated terms; Operation of typical memory devices; Operation, advantages, and disadvantages of the various data storage systems.	—	—	—	2
5.7 *Microprocessors*	—	—	—	2
Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.				
5.8 *Integrated circuits*	—	—	—	2
Operation and use of encoders and decoders; Function of encoder types.				
5.9 *Multiplexing*	—	—	—	2
Operation, application and identification in logic diagrams of multiplexers and demultiplexers.				
5.10 *Fibre optics*	—	—	1	2
Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre-optic-related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.				
5.11 *Electronic displays*	1	1	2	2
Principles of operation of common types of displays used in modern aircraft, including cathode-ray tubes (CRTs), light-emitting diodes (LEDs) and liquid crystal displays (LCDs).				

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS	LEVEL			
	A1 A2 A3 A4	B3	B1	B2 B2L
5.12 *Electrostatic-sensitive devices*	1	1	2	2
Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component, and personnel antistatic protection devices.				
5.13 *Software management control*	—	1	2	2
Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programs.				
5.14 *Electromagnetic environment*	—	1	2	2
Influence of the following phenomena on maintenance practices for electronic systems: EMC — Electromagnetic Compatibility, EMI — Electromagnetic Interference, HIRF — High-Intensity Radiated Field, Lightning / lightning protection.				
5.15 *Typical electronic/digital aircraft systems*	1	1	1	1
General arrangement of typical electronic/digital aircraft systems and associated BITE (Built-In Test Equipment), such as: (a) ACARS — ARINC Communication and Addressing and Reporting System, FBW — Fly-by-Wire, FMS — flight management system, IRS — inertial reference system; (b) ECAM — electronic centralised aircraft monitoring, EICAS — engine indication and crew alerting system, EFIS — electronic flight instrument system, GNSS — global navigation satellite system, TCAS — traffic alert collision avoidance system, Integrated Modular Avionics, Cabin Systems, Information Systems.				

MODULE 6 — MATERIALS AND HARDWARE

MODULE 6 — MATERIALS AND HARDWARE	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
6.1 *Aircraft materials — ferrous*			
(a) Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels.	1	2	1
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	—	1	1
(c) Repair and inspection procedures for ferrous materials, structures, and airframes.	—	2	1
6.2 *Aircraft materials — non-ferrous*			
(a) Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials.	1	2	1
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	—	1	1
(c) Repair and inspection procedures for non-ferrous materials, structures, and airframes.	—	2	1
6.3 *Aircraft materials — composite and non-metallic*			
6.3.1 *Composite and non-metallic materials other than wood and fabric*			
(a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.	1	2	2
(b) Detection of defects/deterioration in composite and non-metallic materials.	1	2	—
(c) Repair of and inspection procedures for composite and non-metallic materials, structures, and airframes.	—	2	1
6.3.2 *Wooden structures* Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes; Preservation and maintenance of wooden structures; Types of defects in wood material and wooden structures; Detection of defects in wooden structures; Repair of wooden structures.	1	1	—
6.3.3 *Fabric covering* Characteristics, properties and types of fabrics used in aeroplanes; Inspection methods for fabrics; Types of defects in fabrics; Repair of fabric covering.	—	1	—

MODULE 6 — MATERIALS AND HARDWARE	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
6.4 *Corrosion*			
(a) Chemical fundamentals; Formation by galvanic action process, microbiological contamination, mechanical stress.	1	1	1
(b) Types of corrosion and their identification; Causes of corrosion; Material types, and their susceptibility to corrosion.	2	3	2
6.5 *Fasteners*			
6.5.1 *Screw threads* Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads.	2	2	2
6.5.2 *Bolts, studs, and screws* Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self-locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion, and removal; Self-tapping screws, dowels.	2	2	2
6.5.3 *Locking devices* Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick-release fasteners, keys, circlips, cotter pins.	2	2	2
6.5.4 *Aircraft rivets* Types of solid and blind rivets: specifications and identification, heat treatment.	1	2	1
6.6 *Pipes and unions*			
(a) Identification and types of rigid and flexible pipes and their connectors used in aircraft;	2	2	2
(b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2	2	1
6.7 *Springs* Types of springs, materials, characteristics, and applications.	—	2	1
6.8 *Bearings* Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2
6.9 *Transmissions*	1	2	2

MODULE 6 — MATERIALS AND HARDWARE	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.			
6.10 *Control cables* Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1
6.11 *Electrical cables and connectors* Cable types, construction and characteristics; High-tension and coaxial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	1	2	2

MODULE 7 — MAINTENANCE PRACTICES

MODULE 7 — MAINTENANCE PRACTICES	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
7.1 *Safety precautions — aircraft and workshop* Aspects of safe working practices including precautions to be taken when working with electricity, gases (especially oxygen), oils, and chemicals. Fuel tank safety and fuel tank entry procedures and precautions. Awareness and precautions regarding aircraft equipped with ballistic recovery systems. Also, instructions for the remedial action to be taken in the event of a fire or another accident with one or more of these hazards, including information on fire-extinguishing agents.	3	3	3
7.2 *Workshop practices* Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, workmanship standards; Calibration of tools and equipment, calibration standards.	3	3	3
7.3 *Tools* Common hand-tool types; Common power-tool types; Operation and use of precision-measuring tools; Lubrication equipment and methods; Operation, function, and use of electrical general test equipment.	3	3	3
7.4 *(Reserved)*			
7.5 *Engineering drawings, diagrams, and standards* Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identification of title block information; Microfilm, microfiche, and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.	1	2	2
7.6 *Fits and clearances* Drill sizes for bolt holes, classes of fits; Common system for fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings, and other parts.	1	2	1
7.7 *Electrical wiring interconnection system (EWIS)* Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated;	1	3	3

MODULE 7 — MAINTENANCE PRACTICES	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
Testing of crimp joints; Connector pin removal and insertion; Coaxial cables: testing and installation precautions; Identification of wire types, their inspection criteria and damage tolerance; Wiring protection techniques: cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding; High-Intensity Radiated Fields (HIRF) and protection principles; Soldering of electrical wires, EWIS installations, inspection, repair, maintenance, and cleanliness standards.			
7.8 *Riveting* Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	1	2	–
7.9 *Pipes and hoses* Bending and belling/flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	1	2	–
7.10 *Springs* Inspection and testing of springs.	1	2	–
7.11 *Bearings* Testing, cleaning and inspection of bearings; Lubrication requirements for bearings; Defects in bearings and their causes.	1	2	–
7.12 *Transmissions* Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push–pull rod systems.	1	2	–
7.13 *Control cables* Swaging of end fittings; Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.	1	2	–
7.14 *Material handling* 7.14.1 *Sheet metal* Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	–	2	–
7.14.2 *Composite and non-metallic*	–	2	–

MODULE 7 — MAINTENANCE PRACTICES	LEVEL A1 A2 A3 A4	LEVEL B1 B3	LEVEL B2 B2L
Bonding practices; Environmental conditions; Inspection methods.			
7.14.3 *Additive manufacturing* Common additive manufacturing techniques and their influence on the mechanical properties of the finished part; Inspection of additive manufactured parts and common production failures.	1	1	1
7.15 *(Reserved)*			
7.16 *Aircraft weight and balance*			
(a) Calculation of centre-of-gravity / balance limits: use of relevant documents.	–	2	2
(b) Preparation of aircraft for weighing; Aircraft weighing.	–	2	–
7.17 *Aircraft handling and storage* Aircraft taxiing/towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling/defuelling procedures; De-icing/anti-icing procedures; Electrical, hydraulic, and pneumatic ground supplies; Effects of environmental conditions on aircraft handling and operation.	2	2	2
7.18 *Disassembly, inspection, repair, and assembly techniques*			
(a) Types of defects and visual inspection techniques; Corrosion removal, assessment and reprotection;	2	3	3
(b) General repair methods, structural repair manual; Ageing, fatigue, and corrosion control programmes;	–	2	–
(c) Non-destructive inspection techniques including penetrant, radiographic, eddy current, magnetic particle, ultrasonic and borescope inspections; including practical training in colour contrast penetrant inspection;	–	2	1
(d) Disassembly and reassembly techniques;	2	2	2
(e) Troubleshooting techniques.	–	2	2
7.19 *Abnormal events*			
(a) Inspections following lightning strikes and HIRF penetration;	2	2	2
(b) Inspections following abnormal events such as heavy landings and flight through turbulence.	2	2	–
7.20 *Maintenance procedures*	1	2	2

MODULE 7 — MAINTENANCE PRACTICES	LEVEL		
	A1 A2 A3 A4	B1 B3	B2 B2L
Maintenance planning; Modification procedures; Stores procedures; Certification/release procedures; Interface with aircraft operation; Maintenance Inspection / Quality Control / Quality Assurance; Additional maintenance procedures; Control of life-limited components.			
7.21 *Documentation and communication* Documentation: elements and criteria for writing work reports, troubleshooting reports, and shift handover instructions. Communication: clear, comprehensive, and concise.	1	2	2

MODULE 8 — BASIC AERODYNAMICS

MODULE 8 — BASIC AERODYNAMICS	LEVEL	
	A1 A2 A3 A4 B3	B1 B2 B2L
8.1 *Physics of the atmosphere* International Standard Atmosphere (ISA), and its application to aerodynamics.	1	2
8.2 *Aerodynamics* Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash-in and wash-out, fineness ratio, wing shape and aspect ratio; Thrust, weight, aerodynamic resultant; Generation of lift and drag angle of attack, lift coefficient, drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, and frost.	1	2
8.3 *Theory of flight*	1	2

MODULE 8 — BASIC AERODYNAMICS	LEVEL	
	A1 A2 A3 A4 B3	B1 B2 B2L
Relationship between lift, weight, thrust and drag; Glide ratio; Steady-state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope, and structural limitations; Lift augmentation.		
8.4 *High-speed airflow*	1	2
Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number, compressibility buffet, shock wave, aerodynamic heating, area rule; Factors that affect airflow in engine intakes of high-speed aircraft; Effects of sweepback on critical Mach number.		
8.5 *Flight stability and dynamics*	1	2
Longitudinal, lateral, and directional stability (active and passive).		

MODULE 9 — HUMAN FACTORS

MODULE 9 — HUMAN FACTORS	LEVEL
	ALL
9.1 *General* The need to take human factors into account when performing maintenance; Incidents attributable to human factors/human error; Murphy's law.	2
9.2 *Human performance and limitations* Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	2
9.3 *Social psychology* Accountability and responsibility: individual and group; Motivation and demotivation; Peer pressure; Cultural issues; Teamwork; Management, supervision, and leadership.	1
9.4 *Factors that affect performance*	2

MODULE 9 — HUMAN FACTORS	LEVEL ALL
Fitness/health; Stress: domestic and work related; Time pressure and deadlines; Workload: overload, underload, and workload management; Sleep and fatigue, shift work; Alcohol, medication, drug abuse; Lack of manpower.	
9.5 *Physical environment* Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment; Situational awareness.	1
9.6 *Tasks* Physical work; Repetitive tasks, complacency; Visual inspection; Complex systems; Critical maintenance tasks and error-capturing methods; Technical documentation: access, use, and quality.	1
9.7 *Communication* Within and between teams; Work logging and recording; Shift handover; Keeping up to date, currency; Dissemination of information.	2
9.8 *Human error* Error models and theories; Types of error in maintenance tasks; Implications of errors (e.g. accidents); Organisational errors; Avoiding and managing errors.	2
9.9 *Safety management* Risk management; Occurrence reporting; Safety culture Just culture; Identifying, avoiding, and reporting hazards; Organisational human-factors programme: professionalism and integrity, error-provoking behaviour, reporting errors, disciplinary policy, error investigation, action to address problems, feedback, assertiveness; Dealing with emergencies.	2
9.10 *The 'Dirty Dozen' and risk-mitigation* The 'Dirty Dozen': the twelve most common human-factors errors in maintenance:	2

MODULE 9 — HUMAN FACTORS	LEVEL ALL
Lack of communication, Lack of teamwork, Lack of assertiveness, Complacency, Fatigue, Stress, Lack of knowledge, Lack of resources, Lack of awareness, Distraction, Pressure, Norms. Risk-mitigation methods.	

MODULE 10 — AVIATION LEGISLATION

MODULE 10 — AVIATION LEGISLATION	LEVEL A1 A2 A3 A4	 B1 B2 B2L B3
10.1 *Regulatory framework* Role of: — the International Civil Aviation Organization (ICAO); — the European Commission (EC); — the European Union Aviation Safety Agency (EASA); — the European Union Member States and national aviation authorities; — the bilateral agreements concluded by the European Commission; — Regulation (EU) 2018/1139 (the Basic Regulation) and its implementing acts: Regulations (EU) No 748/2012 (Initial Airworthiness) and (EU) No 1321/2014 (Continuing Airworthiness); — the relationship between regulations (hard law) and AMC, GM and CSs (soft law); — occurrence reporting according to Regulation (EU) No 376/2014; — the relationship between the various annexes (parts) relating to Initial and Continuing Airworthiness (such as Part 21, Part-M, Part-145, Part-66, Part-147, Part-T, Part-ML, Part-CAMO, and Part-CAO) and Regulations (EU) No 965/2012 (the Air Operations Regulation) and (EU) No 1178/2011 (the Air Crew Regulation).	1	1
10.2 *Certifying staff — maintenance* Deep understanding of Part-66 maintenance licences with the associated privileges and authorisations, and how to exercise them properly for the different aircraft categories.	2	2
10.3 *Approved maintenance organisations* General understanding of Part-145 and Part-CAO.	2	2
10.4 *Independent certifying staff*	—	3

MODULE 10 — AVIATION LEGISLATION	LEVEL A1 A2 A3 A4	LEVEL B1 B2 B2L B3
Privileges, responsibilities, record-keeping, limitations, and oversight according to Part-M, Part-66 and Part-ML.		
10.5 *Air operations* General understanding of Regulation (EU) No 965/2012 (the Air Operations Regulation); Differences between commercial and non-commercial air operations, and their influence on aircraft maintenance; Air Operator Certificates (AOCs) and self-declaration authorisations; Air operator responsibilities, in particular regarding continuing airworthiness and maintenance; Specialised operations / specific approvals: ETOPS, CAT I/II/III, and BRNAV. Minimum Equipment List (MEL) and Configuration Deviation List (CDL); Aircraft placarding and markings; Documents to be carried on board: — Certificate of Airworthiness / Restricted Certificate of Airworthiness; — Airworthiness Review Certificate; — Permit to Fly; — Certificate of Registration; — Noise Certificate; — Weight and Balance report; — Radio Station Licence.	1	1
10.6 *Certification of aircraft, parts, and appliances* Basic understanding of Part 21 and of the following EASA certification specifications: CS-22, CS-23, CS-25, CS-27, CS-29, and CS-STAN.	2	2
10.7 *Continuing airworthiness* General understanding of the Part 21 requirements on continuing airworthiness; General understanding of Part-M, Part-ML and Part-CAMO; Aircraft Maintenance Programme.	2	2
10.8 *Oversight principles in continuing airworthiness*	1	1
10.9 *Maintenance and certification beyond current EU regulations (if not superseded by EU requirements)* Maintenance of European Union aircraft that are not within the scope of Regulation (EU) 2018/1139 (Annex I aircraft); European military airworthiness requirement (EMAR) 66 licence; Applicable national and international requirements for component maintenance, welding, painting, NDT, etc. (if not superseded by EU requirements).	–	1
10.10 *Cybersecurity in aviation maintenance* Regulation on the introduction of organisation requirements for the management of information security risks related to aeronautical information systems used in civil aviation.	1	1

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
11.1 *Theory of flight*					
(a) Aeroplane aerodynamics and flight controls Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; — yaw control, rudder limiters; — elevons, ruddervators; — high-lift devices, slots, slats, flaps, flaperons; — drag-inducing devices, spoilers, lift dumpers, speed brakes; — trim tabs, servo tabs, control surface bias.	1	1	2	2	1
(b) Aeroplane: other aerodynamic devices Operation and effect of: — balance and antibalance (leading) tabs; — spring tabs, mass balance, aerodynamic balance panels; — mass balance, aerodynamic balance panels; — effects of wing fences, saw tooth leading edges; — boundary layer control using vortex generators, stall wedges or leading-edge devices.	1	1	2	2	1
11.2 *Airframe structures* ***(ATA 51)***					
(a) General concepts: — Zonal and station identification systems; — Electrical bonding; — Lightning strike protection provisions.	2	2	2	2	2
(b) Airworthiness requirements for structural strength: — Structural classification: primary, secondary, and tertiary; — Fail-safe, safe-life, damage-tolerance concepts; — Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue; — Drains and ventilation provisions; — System installation provisions.	2	2	2	2	2
(c) Construction methods — Stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, skinning, anticorrosive protection, wing, empennage and engine attachments; — Structure assembly techniques: riveting, bolting, bonding;	1	1	2	2	2

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
— Methods of surface protection, such as chromating, anodising, painting; — Surface cleaning; — Airframe symmetry: methods of alignment and symmetry checks.					
11.3 *Airframe structures — aeroplanes*					
11.3.1 *Fuselage, doors, windows* ***(ATA 52/53/56)***	1	1	2	2	1
(a) Construction principles — Construction and pressurisation sealing; — Wing, stabiliser, pylon, and undercarriage attachments; — Seat installation and cargo loading system; — Doors and emergency exits: construction, mechanisms, operation and safety devices; — Windows and windscreen construction and mechanisms.					
(b) Airborne towing devices (glider, banner, target).	1	1	1	1	1
(c) Doors — Doors and emergency exits: safety devices; — Cargo loading system.	1	1	2	1	—
11.3.2 *Wings* ***(ATA 57)*** Construction; Fuel storage; Landing gear, pylon, control surface and high lift/drag attachments.	1	1	2	2	1
11.3.3 *Stabilisers* ***(ATA 55)*** Construction; Control surface attachment.	1	1	2	2	1
11.3.4 *Flight control surfaces* ***(ATA 55/57)*** Construction and attachments; Balancing — mass and aerodynamics.	1	1	2	2	1
11.3.5 *Nacelles/pylons* ***(ATA 54)*** Nacelles/Pylons: — Construction, — Firewalls, — Engine mounts.	1	1	2	2	1
11.4 *Air conditioning and cabin pressurisation* ***(ATA 21)***					
(a) Pressurisation Pressurisation systems; Cabin pressure controllers, control, and safety valves; Control and indication.	1	1	3	3	—
(b) Air supply	1	-	3	-	—

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
Sources of air supply including engine bleed, APU and ground cart; Distribution systems.					
(c) Air conditioning Air-conditioning systems; Air cycle and vapour cycle machines; Flow, temperature and humidity control system; Control and indication control valves.	1	—	3	-	—
(d) Safety and warning devices Protection and warning devices.	1	1	3	3	—
(e) Heating and ventilation systems.	—	1	-	3	1
11.5 *Instruments / avionics systems*					
11.5.1 *Instrument systems* ***(ATA 31)***	1	1	2	2	2
Pitot-static: Airspeed indicators, Vertical speed indicators, Altimeters; Gyroscopic: Gyroscopic principles, Artificial horizons, Attitude directors, Direction indicators, Horizontal situation indicators (HSI), Slip indicators, Turn indicators, Turn coordinators; Compass systems: systems, direct reading, remote reading, Stall-warning systems and angle-of-attack indicating systems, Glass cockpit, Indications of other aircraft systems.					
11.5.2 *Avionics systems*	1	1	1	1	1
Fundamentals of system layouts and operation of: Autoflight **(ATA 22)**; Communication systems **(ATA 23)**: — Very High Frequency (VHF) communications, — High Frequency (HF) communications, — Satellite Communications (SATCOM), — Controller–pilot data link communications (CPDLC), — Audio systems, — Emergency Locator Transmitters (ELTs), — Cockpit Voice Recorder (CVR); Navigation systems **(ATA 34)**: — Very high frequency omnidirectional range (VOR), — Automatic direction finder (ADF),					

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
— Instrument landing system (ILS), — Microwave landing system (MLS), — Flight director systems (FDSs), distance-measuring equipment (DME), — Area navigation (RNAV) systems, — Flight management systems (FMSs), — Satellite navigation systems, — Air traffic control transponder, secondary surveillance radar, — Traffic alert and collision avoidance system (TCAS), — Weather avoidance radar, — Radio altimeter, — Inertial navigation system (INS), — ARINC (Aeronautical Radio Incorporated) communication and reporting. Types and uses of avionics general test equipment.					
11.6 *Electrical power* ***(ATA 24)*** — Installation and operation of batteries; — DC power generation; — AC power generation; — Emergency power generation; — Voltage regulation; — Power distribution; — Inverters, transformers, rectifiers; — Circuit protection; — External/ground power.	1	1	3	3	3
11.7 *Equipment and furnishings* ***(ATA 25)*** (a) Emergency equipment: Emergency equipment requirements.	2	2	2	2	2
(b) Cabin and cargo layout: — Seats, harnesses, and belts; — Cabin layout; — Equipment layout; — Cabin furnishing installation; — Galley installation; — Cargo handling and retention equipment; — Airstairs.	1	1	1	1	—
11.8 *Fire protection* ***(ATA 26)*** (a) Fire and smoke detection system, and fire-extinguishing systems: — Fire and smoke detection and warning systems; — Fire-extinguishing systems;	1	1	1	1	—

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
— System tests.					
(b) Portable fire extinguisher.	1	1	1	1	1
11.9 *Flight controls* ***(ATA 27)***					
(a) Primary and secondary flight controls: — Primary controls: aileron, elevator, rudder, spoiler; — Trim control, trim tabs; — High-lift devices; — System operation: manual; — Gust locks and gust lock systems; — Artificial feel, yaw damper, Mach trim, rudder limiter; — Stall-warning systems.	1	1	3	3	2
(b) Actuation and protection: — Active load control; — Lift dump, speed brakes; — Hydraulic, pneumatic systems; — Stall-protection systems.	1	—	3	—	—
(c) System operation: Electrical systems, fly-by-wire systems.	1	—	3	—	—
(d) Balancing and rigging.	1	1	3	3	2
11.10 *Fuel systems* ***(ATA 28, ATA 47)***					
(a) Systems: — System layout; — Fuel tanks; — Supply systems.	1	1	3	3	1
(b) Fuel handling: — Cross-feed and transfer; — Refuelling and defuelling.	1	1	3	3	1
(c) Indication and warnings.	1	1	3	3	1
(d) Special systems: — Dumping, venting, and draining; — Inert gas systems.	1	—	3	—	—
(e) Balancing: Longitudinal balance fuel systems.	1	—	3	—	—
11.11 *Hydraulic power* ***(ATA 29)***					
(a) System description: System layout; Hydraulic fluids; Hydraulic reservoirs and accumulators; Filters;	1	1	3	3	2

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
Power distribution.					
(b) System operation (1): Pressure generation: electric and mechanical; Pressure control; Indication and warning systems; Servicing.	1	1	3	3	2
(c) System operation (2): Pressure generation: pneumatic; Emergency pressure generation; Interface with other systems.	1	—	3	—	—
11.12 *Ice and rain protection* ***(ATA 30)***					
(a) Principles: Ice formation, classification, and detection.	1	1	3	3	1
(b) De-icing: De-icing systems: electrical, hot-air, pneumatic, chemical; Probe and drain heating.	1	1	3	3	1
(c) Anti-icing: Anti-icing systems: electrical, hot-air, chemical.	1	—	3	—	—
(d) Wipers: Wiper systems.	1	1	3	3	1
(e) Rain-repellent systems.	1	—	3	—	—
11.13 *Landing gear* ***(ATA 32)***					
(a) Description: Construction, shock absorbing; Tyres.	2	2	3	3	2
(b) Systems: Extension and retraction systems: normal and emergency; Indications and warnings; Wheels, brakes, antiskid, and autobraking; Steering.	2	2	3	3	2
(c) Air–ground sensing.	2	—	3	—	—
(d) Tail protection: Skids.	2	2	3	3	2
11.14 *Lights* ***(ATA 33)*** External: navigation, anticollision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	2	2	3	3	2
11.15 *Oxygen* ***(ATA 35)***	1	1	3	3	2

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
System layout: cockpit, cabin; Sources, storage, charging and distribution; Supply regulation; Indications and warnings.					
11.16 *Pneumatic / vacuum* ***(ATA 36)***					
(a) Systems: System layout; Sources: engine / APU (Auxiliary Power Unit), compressors, reservoirs, ground supply; Pressure control; Distribution; Indications and warnings; Interface with other systems.	1	1	3	3	2
(b) Pumps: Pressure and vacuum pumps.	1	1	3	3	2
11.17 *Water / waste* ***(ATA 38)***					
(a) Systems: Water system layout, supply, distribution, servicing and draining; Toilet system layout, flushing and servicing.	2	2	3	3	2
(b) Corrosion: Corrosion aspects.	2	2	3	3	2
11.18 *Onboard maintenance systems* ***(ATA 45)*** Central maintenance computers; Data-loading system; Electronic library system; Printing systems; Structure monitoring (damage-tolerance monitoring).	1	—	2	—	—
11.19 *Integrated modular avionics (IMA)* ***(ATA 42)***	1	—	2	—	—
(a) Overall system description and theory: Core system; network components; Functions that may be typically integrated in the integrated modular avionics (IMA) modules are, among others: Bleed management, air pressure control, air ventilation and control, avionics and cockpit ventilation control, temperature control, air traffic communication, avionics communication router, electrical load management, circuit breaker monitoring, electrical system BITE, fuel management, braking control, steering control, landing gear extension and retraction, tyre pressure indication, oleo pressure indication, brake temperature monitoring, etc.					
(b) Typical system layout.	1	—	2	—	—

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
11.20 *Cabin systems* ***(ATA 44)***	1	—	2	—	—
System architecture, operation, and control of systems for:					
— passenger in-flight entertainment;					
— communication within the aircraft (Cabin intercommunication data system (CIDS);					
— communication between the aircraft cabin and ground stations;					
— including voice, data, music, and video transmission.					
CIDS interface between cockpit/cabin crew and cabin systems.					
Data exchange between the different related line replaceable units (LRUs).					
Flight attendant panels (FAPs).					
Cabin network server (CNS) and interfaces with the following systems:					
— Data/radio communication;					
— Cabin core system (CCS);					
— In-flight entertainment system (IFES);					
— External communication system (ECS);					
— Cabin mass memory system (CMMS);					
— Cabin monitoring system (CMS);					
— Miscellaneous cabin systems (MCSs); and					
— Other systems.					
Cabin network server (CNS) hosting functions:					
— Access to predeparture/departure reports;					
— Email/intranet/internet access; passenger database;					
— In-flight entertainment system;					
— External communication system;					
— Cabin mass memory system;					
— Cabin monitoring system;					
— Miscellaneous cabin system.					
11.21 *Information systems* ***(ATA 46)***	1	—	2	—	—
System architecture, operation, and control of:					
— Storage and electronic library;					
— Updating;					
— Retrieving of digital information;					
— Air traffic and information management systems (ATIMS) and network server systems;					
— Aircraft general information system;					
— Flight deck information system;					
— Maintenance information system;					

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
— Passenger cabin information system; — Miscellaneous information systems; — Other linked systems.					

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL	
	A3 A4	B1.3 B1.4
12.1 *Theory of flight — rotary wing aerodynamics* Terminology; Effects of gyroscopic precession; Torque reaction and directional control; Dissymmetry of lift, blade tip stall; Translating tendency and its correction; Coriolis effect and compensation; Vortex ring state, power setting, overpitching; Auto-rotation; Ground effect.	1	2
12.2 *Flight control systems* ***(ATA 67)*** Cyclic control; Collective control; Swashplate; Yaw control: antitorque control, tail rotor, bleed air; Main-rotor head: design and operation features; Blade dampers: function and construction; Rotor blades: main- and tail-rotor blade construction and attachment; Trim control, fixed and adjustable stabilisers; System operation: manual, hydraulic, electrical, fly-by-wire; Artificial feel; Balancing and rigging.	2	3
12.3 *Blade tracking and vibration analysis* ***(ATA 18)*** Rotor alignment; Main-rotor and tail-rotor tracking; Static and dynamic balancing; Vibration types, and vibration reduction methods; Ground resonance.	1	3
12.4 *Transmission* Gear boxes, main and tail rotors; Clutches, free wheel units and rotor brake; Tail-rotor drive shafts, flexible couplings, bearings, vibration dampers and bearing hangers.	1	3
12.5 *Airframe structures* (a) General concept Airworthiness requirements for structural strength;	2	2

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL A3 A4	LEVEL B1.3 B1.4
Structural classification: primary, secondary, 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 provisions.		
(b) Construction methods for the principal elements Stressed skin fuselage, formers, stringers, longerons, bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement, skinning and anticorrosive protection; Pylon, stabiliser and undercarriage attachments; Seat installation; Doors: construction, mechanisms, operation, and safety devices; Windows and windscreen construction; Fuel storage; Firewalls; Engine mounts; Structure assembly techniques: riveting, bolting, bonding; Methods for surface protection, such as chromating, anodising, painting; Surface cleaning; Airframe symmetry: methods for alignment and symmetry checks.	1	2
12.6 *Air conditioning* ***(ATA 21)*** 12.6.1 *Air supply* Sources of air supply, including engine bleed and ground cart.	1	2
12.6.2 *Air conditioning* Air-conditioning systems; Distribution systems; Flow and temperature control systems; Protection and warning devices.	1	3
12.7 *Instruments / avionics systems* 12.7.1 *Instrument systems* ***(ATA 31)*** Pitot-static: altimeter, airspeed 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 / health and usage monitoring systems (HUMSs); Glass cockpit; Indications of other aircraft systems.	1	2

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL	
	A3 A4	B1.3 B1.4
12.7.2 *Avionics systems* Fundamentals of system layouts and operation of: Autoflight **(ATA 22)**; Communications **(ATA 23)**: — Very high frequency (VHF) communications, — High-frequency (HF) communications, — Satellite communications (SATCOM), — Controller–pilot data link communications (CPDLC), — Audio systems, — Emergency locator transmitters (ELTs), — Cockpit voice recorder (CVR); Navigation systems **(ATA 34)**: — Very high frequency omnidirectional range (VOR), — Automatic direction finding (ADF), — Instrument landing system (ILS), — Microwave landing system (MLS), — Flight director systems (FDSs), distance-measuring equipment (DME), — Area navigation (RNAV) systems, — Flight management systems (FMSs), — Satellite navigation systems, — Inertial navigation system (INS), — Air traffic control transponder, secondary surveillance radar, — Traffic alert and collision avoidance system (TCAS), — Weather avoidance radar, — Radio altimeter, — ARINC communication and reporting. Types and uses of general test equipment for avionics.	1	1
12.8 *Electric power **(ATA 24)*** Installation and operation of batteries; DC power generation, AC power generation; Emergency power generation; Voltage regulation, circuit protection; Power distribution; Inverters, transformers, rectifiers; External/Ground power.	1	3
12.9 *Equipment and furnishings **(ATA 25)*** (a) Emergency equipment requirements; Seats, harnesses, and belts;	2	2

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL	
	A3 A4	B1.3 B1.4
Lifting systems.		
(b) Emergency flotation systems; Cabin layout, cargo retention; Equipment layout; Cabin furnishing installation.	1	1
12.10 *Fire protection* ***(ATA 26)*** (a) Fire and smoke detection and warning systems; Fire-extinguishing systems; System tests.	1	3
(b) Portable fire extinguishers.	1	1
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 defuelling.	1	3
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; Servicing.	1	3
12.13 *Ice and rain protection* ***(ATA 30)*** Ice formation, classification, and detection; Anti-icing and de-icing systems: electrical, hot-air, and chemical; Rain repellent and removal; Probe and drain heating; Wiper system.	1	3
12.14 *Landing gear* ***(ATA 32)***		

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL	
	A3 A4	B1.3 B1.4
(a) System description and operation: Construction, shock absorbing; Extension and retraction systems: normal and emergency; Wheels, tyres, brakes; Steering; Skids, floats.	2	3
(b) Sensors: Indications and warning; Air–ground sensing.	2	3
12.15 *Lights* ***(ATA 33)*** External: navigation, landing, taxiing; Internal: cabin, cockpit, cargo; Emergency.	2	3
12.16 *(Reserved)*		
12.17 *Integrated modular avionics (IMA)* ***(ATA 42)*** (a) Overall system description and theory Functions that may be typically integrated in the integrated modular avionics (IMA) modules: 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, steering control, landing gear extension and retraction, tyre pressure indication, oleo pressure indication, brake temperature monitoring, etc.; Core System; Network Components.	1	2
(b) Typical system layouts.	1	2
12.18 *Onboard maintenance systems* ***(ATA 45)*** Central maintenance computers; Data-loading system; Electronic library system.	1	2
12.19 *Information systems* ***(ATA 46)***	1	2

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL	
	A3 A4	B1.3 B1.4
The units and components which furnish a means of storing, updating, and retrieving digital information traditionally provided on paper, microfilm or microfiche. They include units that are dedicated to the information storage and retrieval function, such as the electronic library mass storage and controller. They do not include units or components installed for other uses and shared with other systems, such as flight deck printer or general-use display. Typical examples include air traffic and information management systems and network server systems. Aircraft general information system. Flight deck information system. Maintenance information system. Miscellaneous information system.		

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

C/N: Communication and Navigation; **Ins.**: Instruments; **A/F**: Autoflight; **Sur.**: Surveillance; **A/S**: Airframe and Systems

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
13.1 *Theory of flight*							
(a) Aeroplane aerodynamics and flight controls Operation and effect of: — roll control: ailerons and spoilers; — pitch control: elevators, stabilators, variable incidence stabilisers and canards; and — yaw control: rudder limiters; — control using elevons, ruddervators; — high-lift devices: slots, slats, flaps; — drag-inducing devices: spoilers, lift dumpers, speed brakes; — trim tabs, servo tabs, and control surface bias.	1	1	—	—	—	—	—
(b) Rotary wing aerodynamics Terminology; Operation and effect of cyclic, collective, and antitorque controls.	1	1	—	—	—	—	—
13.2 *Structures — general concepts*							
(a) General concepts; Zonal and station identification systems; Electrical bonding; Lightning strike protection provisions.	2	2	—	—	—	—	—
(b) Fundamentals of structural systems.	1	1	—	—	—	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
13.3 *Autoflight (**ATA 22**)*							
(a) Fundamentals of automatic flight control: — Working principles and current terminology; — Command signal processing; — Modes of operation: roll, pitch, and yaw channels; — Yaw dampers; — Stability augmentation system in helicopters; — Automatic trim control; — Autopilot navigation aids interface.	3	—	—	—	3	—	—
— (b) Autothrottle systems and automatic landing systems: — Principles and categories; — Modes of operation; — Approach; — Glideslope; — Land, go-around; — System monitors and failure conditions.	3	—	—	—	3	—	—
13.4 *Communication/navigation (**ATA 23/34**)*							
(a) Fundamentals of communication and navigation systems: — Radio wave propagation, antennas, transmission lines, communication, receiver, and transmitter; Working principles of the following systems: — Very high frequency (VHF) communications; — High-frequency (HF) communications; — Satellite communications (SATCOM); — Controller–pilot data link communications (CPDLC); — Audio systems; — Emergency locator transmitters (ELTs); — Cockpit voice recorder (CVR); — Very high frequency omnidirectional range (VOR); — Automatic direction finding (ADF); — Instrument landing system (ILS); — Flight director systems (FDSs), distance-measuring equipment (DME); — Area navigation (RNAV) systems; — Flight management systems (FMSs);	3	—	3	—	—	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
— Global navigation satellite systems (GNSSs), Global Positioning System (GPS), ground-based augmentation system (GBAS), satellite-based augmentation system (SBAS) such as the European geostationary navigation overlay service (EGNOS) and the wide area augmentation system (WAAS); — Data link and two-way data link.							
(b) Fundamentals of aircraft surveillance systems: — Air traffic control transponder, secondary surveillance radar; — Traffic alert and collision avoidance system (TCAS); — Weather avoidance radar; — Radio altimeter; — Automatic dependent surveillance — broadcast (ADS-B) and its other associated services such as FIS-B, TIS-B and multilink; — Inertial navigation system (INS); — ARINC (Aeronautical Radio Incorporated) communication and reporting.	3	—	—	—	—	3	—
13.5 *Electric power (**ATA 24**)*							
— Installation and operation of batteries; — DC power generation; — AC power generation; — Emergency power generation; — Voltage regulation; — Power distribution; — Inverters, transformers, rectifiers; — Circuit protection; — External/ground power.	3	3	—	—	—	—	—
13.6 *Equipment and furnishings **(ATA 25)***							
Electronic emergency equipment requirements.	3	—	—	—	—	—	—
13.7 *Flight controls*							
(a) Primary and secondary flight controls **(ATA 27)**: — Primary controls: aileron, elevator, rudder, spoiler; — Trim control: trim tabs; — High-lift devices; — System operation: manual; — Gust locks and gust lock systems;	2	—	—	—	2	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
— Artificial feel, yaw damper, Mach trim, rudder limiter; — Stall-warning systems.							
(b) Actuation and protection: — Active load control; — Lift dump, speed brakes; — Hydraulic, pneumatic systems; — Stall-protection systems.	2	—	—	—	2	—	—
(c) System operation: — System operation: electrical, fly-by-wire.	3	—	—	—	3	—	—
(d) Rotorcraft flight controls **(ATA 67)**: Rotorcraft controls: cyclic control, collective control, swashplate, yaw control.	2	—	—	—	2	—	—
13.8 *Instruments* ***(ATA 31)*** — Classification; — Atmosphere; — Terminology; — Pressure-measuring devices and systems; — Pitot-static systems; — Altimeters; — Vertical speed indicators; — Airspeed indicators; — Machmeters; — Altitude-reporting/-alerting systems; — Air-data computers; — Instrument pneumatic systems; — Direct-reading pressure and temperature gauges; — Temperature-indicating systems; — Gyroscopic principles; — Artificial horizons; — Slip indicators; — Directional gyros; — Ground proximity warning systems (GPWSs); — Compass systems; — Flight data recording systems (FDRSs); — Electronic flight instrument systems (EFISs) — typical system arrangements and cockpit layout; — Instrument warning systems, including master warning systems and centralised warning panels;	3	—	—	3	—	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
— Stall-warning systems and angle-of-attack indicating systems; — Vibration measurement and indication; — Glass cockpit; — Types and uses of general test equipment for avionics.							
13.9 *Lights* ***(ATA 33)***							
External: navigation, anticollision, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.	3	3	—	—	—	—	—
13.10 *Onboard maintenance systems* ***(ATA 45)***							
Central maintenance computers; Data-loading system; Electronic library system; Printing system; Structure monitoring system (damage-tolerance monitoring).	3	—	—	—	—	—	—
13.11 *Air conditioning and cabin pressurisation* ***(ATA 21)***							
(a) Pressurisation: — Pressurisation systems; — Cabin pressure controllers, control and safety valves; — Control and indication.	3	—	—	—	—	—	3
(b) Air supply: Sources of air supply including engine bleed, APU and ground cart; Distribution systems.	1	—	—	—	—	—	1
(c) Air conditioning.	3	—	—	—	—	—	3
(d) Safety and warning devices.	3	—	—	—	—	—	3
13.12 *Fire protection* ***(ATA 26)***							
(a) Fire and smoke detection system and fire-extinguishing systems; — Fire and smoke detection and warning systems; — Fire-extinguishing systems; — System tests.	3	—	—	—	—	—	3
(b) Portable fire extinguisher.	1	—	—	—	—	—	1
13.13 *Fuel systems* ***(ATA 28, ATA 47)***							
(a) System layout: System layout;	1	—	—	—	—	—	1

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
Fuel tanks; Supply systems.							
(b) Fuel handling; Cross-feed and transfer; Refuelling and defuelling.	2	—	—	—	—	—	2
(c) Indications and warnings.	3	—	—	—	—	—	3
(d) Special systems: Dumping, venting and draining; Inert gas systems.	1	—	—	—	—	—	1
(e) Balancing: Longitudinal balance fuel systems.	3	—	—	—	—	—	3
13.14 *Hydraulic power* ***(ATA 29)***							
(a) System layout: System layout; Hydraulic fluids; Hydraulic reservoirs and accumulators; Filters; Power distribution.	1	—	—	—	—	—	1
(b) System operation (1): Pressure generation: electric and mechanical; Pressure control; Indication and warning systems; Servicing.	3	—	—	—	—	—	3
(c) System operation (2): Pressure generation: pneumatic; Emergency pressure generation; Interface with other systems.	3	—	—	—	—	—	3
13.15 Ice and rain protection ***(ATA 30)***							
(a) Principles: Ice formation, classification, and detection.	2	—	—	—	—	—	2
(b) De-icing: De-icing systems: electrical, hot-air, pneumatic, and chemical; Probe and drain heating.	3	—	—	—	—	—	3
(c) Anti-icing: Anti-icing systems: electrical, hot-air, and chemical.	2	—	—	—	—	—	2
(d) Wiper systems.	1	—	—	—	—	—	1
(e) Rain repellent.	1	—	—	—	—	—	1

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
13.16 *Landing gear* ***(ATA 32)***							
(a) Description: Construction, shock absorbing; Tyres.	1	—	—	—	—	—	1
(b) Systems: Extension and retraction systems: normal and emergency; Indications and warnings; Wheels, brakes, antiskid, and autobraking; Steering.	3	—	—	—	—	—	3
(c) Air–ground sensing.	3	—	—	—	—	—	3
13.17 *Oxygen* ***(ATA 35)***							
System layout: cockpit, cabin; Sources, storage, charging, and distribution; Supply regulation; Indications and warnings.	3	—	—	—	—	—	3
13.18 *Pneumatic/vacuum* ***(ATA 36)***							
— System layout; — Sources: engine/APU, compressors, reservoirs, ground supply; — Pressure control; — Distribution; — Indications and warnings; — Interfaces with other systems.	2	—	—	—	—	—	2
13.19 *Water/waste* ***(ATA 38)***							
— Water system layout, supply, distribution, servicing, and draining; — Toilet system layout, flushing and servicing.	2	—	—	—	—	—	2
13.20 *Integrated modular avionics (IMA)* ***(ATA 42)***	3	—	—	—	—	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
(a) Overall system description and theory: Core system; Network components. *Note:* Functions that may be typically integrated into the integrated modular avionics (IMA) modules are, among others: — Bleed management; — Air pressure control; — Air ventilation and control; — Avionics and cockpit ventilation control, temperature control; — Air traffic communication; — Avionics communication router; — Electrical load management; — Circuit breaker monitoring; — Electrical system built-in test equipment (BITE); — Fuel management; — Braking control; — Steering control; — Landing gear extension and retraction; — Tyre pressure indication; — Oleo pressure indication; — Brake temperature monitoring.							
(b) Typical system layouts.	3	—	—	—	—	—	—
13.21 *Cabin systems* ***(ATA 44)***							
System architecture, operation and control of systems for: — passenger in-flight entertainment; — communication within the aircraft (cabin intercommunication data system (CIDS); — communication between the aircraft cabin and ground stations, including voice, data, music and video transmission. CIDS interface between cockpit/cabin crew and cabin systems; Data exchange between the different related line replaceable units (LRUs); Flight attendant panels (FAPs). CNS server and interfaces with the following systems: — Data/radio communication system;	3	—	—	—	—	—	—

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
— Cabin core system (CCS); — In-flight entertainment system (IFES); — External communication system (ECS); — Cabin mass memory system (CMMS); — Cabin monitoring system (CMS); — Miscellaneous cabin systems (MCSs). The CNS may host functions such as: — access to predeparture/departure reports; — email/intranet/internet access; — passenger database.							
13.22 *Information systems* ***(ATA 46)*** The units and components which furnish a means of storing, updating, and retrieving digital information traditionally provided on paper, microfilm or microfiche. They include units that are dedicated to the information storage and retrieval function, such as the electronic library mass storage and controller, but they do not include units or components installed for other uses and shared with other systems, such as flight deck printer or general-use display. Typical examples include: — air traffic and information management systems and network server systems; — aircraft general information system; — flight deck information system; — maintenance information system; — passenger cabin information system; — miscellaneous information systems; — other linked systems.	3	—	—	—	—	—	—

MODULE 14 — PROPULSION

MODULE 14 — PROPULSION	LEVEL B2 B2L Instruments B2L Airframe & Systems
14.1 *Engines*	
(a) Constructional arrangement and operation of turbojet, turbofan, turboshaft, and turboprop engines.	1
(b) Constructional arrangement and operation of auxiliary power units (APUs).	1
(c) Constructional arrangement and operation of piston engines.	1

MODULE 14 — PROPULSION	LEVEL B2 B2L Instruments B2L Airframe & Systems
(d) Constructional arrangement and operation of electric and hybrid engines, their electric energy storage and control systems.	2
(e) Electronic engine control and fuel-metering systems (full authority digital engine control (FADEC)).	2
14.2 *Electric/electronic engine indication systems* — Exhaust gas temperature / interstage turbine temperature systems; — Cylinder head temperature, engine coolant temperature, engine speed; — Engine thrust indication: engine pressure ratio, engine turbine discharge pressure or jet pipe pressure systems; — Vibration measurement systems; — Oil pressure and temperature; — Fuel pressure, temperature, and flow; — Manifold pressure; — Engine torque.	2
14.3 *Propeller systems* — Propeller speed indication; — Speed control and pitch change methods — electrical/electronic; — Synchronising and synchrophasing equipment; — Electrical anti-icing/de-icing equipment.	2
14.4 *Starting and ignition systems* — Operation of engine start systems and components; — Ignition systems and components; — Maintenance safety requirements.	2

MODULE 15 — GAS-TURBINE ENGINE

MODULE 15 — GAS-TURBINE ENGINE	LEVEL	
	A1 A3	B1.1 B1.3
15.1 *Fundamentals* — Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; — The relationship between force, work, power, energy, velocity, and acceleration; — Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop, and geared turbofan engines.	1	2
15.2 *Engine performance* — Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption; — Engine efficiencies;	–	2

MODULE 15 — GAS-TURBINE ENGINE	LEVEL A1 A3	LEVEL B1.1 B1.3
— By-pass ratio and engine pressure ratio; — Pressure, temperature, and velocity of the gas flow; — Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations.		
15.3 *Inlet* — Compressor inlet ducts; — Effects of various inlet configurations; — Ice protection.	2	2
15.4 *Compressors* — Axial and centrifugal types; — Constructional features, operating principles, and applications; — Fan balancing; — Operation: o Causes and effects of compressor stall and surge; o Methods of air-flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades; o Compressor ratio.	1	2
15.5 *Combustion section* Constructional features and principles of operation.	1	2
15.6 *Turbine section* — Operation and characteristics of different turbine blade types; — Blade-to-disk attachment; — Nozzle guide vanes; — Causes and effects of turbine blade stress and creep.	2	2
15.7 *Exhaust* — Constructional features and principles of operation; — Convergent, divergent, and variable area nozzles; — Engine noise reduction; — Thrust reversers.	1	2
15.8 *Bearings and seals* Constructional features and principles of operation.	—	2
15.9 *Lubricants and fuels* — Properties and specifications of standard, alternate, and drop-in fuel; — Properties and specifications of lubricants; — Fuel additives; — Safety precautions.	1	2
15.10 *Lubrication systems*	1	2

MODULE 15 — GAS-TURBINE ENGINE	LEVEL	
	A1 A3	B1.1 B1.3
System operation/layout and components.		
15.11 *Fuel systems* — Operation of engine control and fuel-metering systems, including electronic engine control (full authority digital engine control (FADEC)) and electronic power augmentation; — System layout and components.	1	2
15.12 *Air systems* Operation of engine air distribution and anti-icing control systems, including internal cooling and sealing, and external air services.	1	2
15.13 *Starting and ignition systems* — Operation of engine start systems and components; — Ignition systems and components; — Maintenance safety requirements.	1	2
15.14 *Engine indication systems* — Exhaust gas temperature / interstage turbine temperature; — Engine thrust indication: engine pressure ratio, engine turbine discharge pressure or jet pipe pressure systems; — Oil pressure and temperature; — Fuel pressure and flow; — Engine speed; — Vibration measurement and indication; — Torque; — Power.	1	2
15.15 *Alternate turbine constructions* — Geared turbofan (GTF); — Variable fan blades; — Open rotor/propfan; — Hybrid turbine-electric concepts and electric power augmentation; — Future trends and developments.	—	1
15.16 *Turboprop engines* — Gas-coupled/free-turbine and gear-coupled turbines; — Reduction gears; — Integrated engine and propeller controls; — Overspeed safety devices.	1	2
15.17 *Turboshaft engines* Arrangements, drive systems, reduction gearing, couplings, control systems.	1	2
15.18 *Auxiliary power units (APUs)*	1	2

MODULE 15 — GAS-TURBINE ENGINE	LEVEL A1 A3	LEVEL B1.1 B1.3
Purpose, operation, protective systems.		
15.19 *Power plant installation* Configuration of firewalls, cowlings, acoustic panels, engine mounts, antivibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2
15.20 *Fire protection systems* Operation of fire-detection and fire-extinguishing systems.	1	2
15.21 *Engine monitoring and ground operation* — Procedures for starting and ground run-up; — Interpretation of engine power output and parameters; — Trend (including oil analysis, vibration and borescope) monitoring; — Inspection of engine and components to criteria, tolerances and data specified by the engine manufacturer; — Compressor washing/cleaning; — Foreign object damage (FOD).	1	3
15.22 *Engine storage and preservation* Preservation and depreservation for the engine and its accessories/systems.	—	2

MODULE 16 — PISTON ENGINE

MODULE 16 — PISTON ENGINE	LEVEL A2 A4	LEVEL B1.2 B1.4 B3
16.1 *Fundamentals* — Mechanical, thermal, and volumetric efficiencies; — Operating principles: 2-stroke, 4-stroke, Otto, diesel, and rotary (Wankel); — Piston displacement and compression ratio; — Engine configuration and firing order.	1	2
16.2 *Engine performance* — Power calculation and measurement; — Factors that affect engine power; — Mixtures/leaning, pre-ignition.	1	2
16.3 *Engine construction* — Crank case, crank shaft, cam shafts, sumps; — Accessory gearbox; — Cylinder and piston assemblies; — Connecting rods, inlet and exhaust manifolds; — Valve mechanisms;	1	2

MODULE 16 — PISTON ENGINE	LEVEL A2 A4	LEVEL B1.2 B1.4 B3
— Propeller reduction gearboxes.		
16.4 *Engine fuel systems* 16.4.1 *Carburettors* — Types, construction, and principles of operation; — Icing and heating.	1	2
16.4.2 *Fuel injection systems* Types, construction, and principles of operation.	1	2
16.4.3 *Electronic engine control* — Operation of engine control and fuel-metering systems including electronic engine control (full authority digital engine control (FADEC)); — System layout and components.	1	2
16.5 *Starting and ignition systems* — Starting systems, preheat systems; — Magneto types, construction, and principles of operation; — Ignition harnesses, spark plugs; — Low- and high-tension systems.	1	2
16.6 *Induction, exhaust, and cooling systems* — Construction and operation of induction systems, including alternate air systems; — Exhaust systems, engine cooling systems — air and liquid.	1	2
16.7 *Supercharging/turbocharging* — Principles and purpose of supercharging and its effects on engine parameters; — Construction and operation of supercharging/turbocharging systems; — System terminology; — Control systems; — System protection.	1	2
16.8 *Lubricants and fuels* — Properties and specifications of standard, alternate, and drop-in fuel; — Properties and specifications of lubricants; — Fuel additives; — Safety precautions.	1	2
16.9 *Lubrication systems* System operation/layout and components.	1	2
16.10 *Engine indication systems*	1	2

MODULE 16 — PISTON ENGINE	LEVEL A2 A4	LEVEL B1.2 B1.4 B3
— Engine speed; — Cylinder head temperature; — Coolant temperature; — Oil pressure and temperature; — Exhaust gas temperature; — Fuel pressure and flow; — Manifold pressure.		
16.11 *Power plant installation* Configuration of firewalls, cowlings, acoustic panels, engine mounts, antivibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	1	2
16.12 *Engine monitoring and ground operation* — Procedures for starting and ground run-up; — Interpretation of engine power output and parameters; — Inspection of engine and components: criteria, tolerances, and data specified by the engine manufacturer.	1	3
16.13 *Engine storage and preservation* Preservation and depreservation for the engine and its accessories/systems.	—	2
16.14 *Alternate piston-engine constructions* Hybrid piston–electric concepts and electric power augmentation.	1	1

MODULE 17 — PROPELLER

MODULE 17 — PROPELLER	LEVEL A1 A2	LEVEL B1.1 B1.2 B3
17.1 *Fundamentals* — Blade element theory; — High/low blade angle, reverse angle, angle of attack, rotational speed; — Propeller slip; — Aerodynamic, centrifugal, and thrust forces; — Torque; — Relative airflow on blade angle of attack; — Vibration and resonance.	1	2
17.2 *Propeller construction*	1	2

MODULE 17 — PROPELLER	LEVEL	
	A1 A2	B1.1 B1.2 B3
— Construction methods and materials used in wooden, composite and metal propellers; — Blade station, blade face, blade shank, blade back / thrust face and hub assembly; — Fixed pitch, controllable pitch, constant speeding propeller; — Propeller/spinner installation.		
17.3 *Propeller pitch control* — Speed control and pitch change methods — mechanical and electrical/electronic; — Feathering and reverse pitch; — Overspeed protection.	1	2
17.4 *Propeller synchronising* Synchronising and synchrophasing equipment.	—	2
17.5 *Propeller ice protection* Fluid and electrical de-icing equipment.	1	2
17.6 *Propeller maintenance* — Static and dynamic balancing; — Blade tracking; — Assessment of blade damage, erosion, corrosion, impact damage, delamination; — Propeller treatment/repair schemes; — Propeller engine running.	1	3
17.7 *Propeller storage and preservation* Propeller preservation and depreservation.	1	2

[…]

AMC1 Appendix I — Basic Knowledge Requirements (except for category L licence) Section 3

Basic training methods

Training methods are categorised as follows: ‘instructor-centred training’, ‘student-centred training’, and ‘blended training’.

The actual training method and training tools should be adapted to suit the training subject and be chosen considering their intrinsic characteristics, such as but not limited to their efficiency and the pedagogical benefits of the training method/tool.

Basic training modules 7, 9, 11, 12, 13, 14, 15, 16 and 17 should not normally be taught solely through a student-centred method unless provisions are in place to verify the actual and progressive acquisition of knowledge, skills and attitude by the student.

[…]

AMC1 Appendix II — Basic examination standard (except for category L licence)

The tables below show the acceptable number of questions for the submodules. Justified deviations from these values are also acceptable, provided the sum of the questions complies with the total number of questions for a given module.

MODULE 1 — MATHEMATICS

MODULE 1 — MATHEMATICS	Nr of questions	
	A	B1 B2 B2L B3
Total number for the module:	16	32
1.1 Arithmetic	6	6
1.2 Algebra:		
(a) Simple algebraic expressions;	5	4
(b) Equations.	—	12
1.3 Geometry:		
(a) Simple geometrical constructions;	—	3
(b) Graphical representation;	5	4
(c) Trigonometry.	—	3

MODULE 2 — PHYSICS

MODULE 2 — PHYSICS	Nr of questions	
	A B3	B1 B2 B2L
Total number for the module:	32	52
2.1 Matter	4	5
2.2 Mechanics		
2.2.1 Statics	6	7
2.2.2 Kinetics	6	7
2.2.3 Dynamics:		
(a) Mass, force, and energy;	4	5
(b) Momentum and conservation of momentum.	4	4
2.2.4 Fluid dynamics:		
(a) Gravity and density;	2	2
(b) Viscosity; compressibility on fluids; static, dynamic, and total pressure.	2	3
2.3 Thermodynamics:		
(a) Temperature;	2	2

MODULE 2 — PHYSICS	Nr of questions	
	A B3	B1 B2 B2L
(b) Heat.	2	8
2.4 Optics (light)	—	5
2.5 Wave motion and sound	—	4

MODULE 3 — ELECTRICS FUNDAMENTALS

MODULE 3 — ELECTRICAL FUNDAMENTALS	Nr of questions		
	A	B1 B2 B2L	B3
Total number for the module:	20	24	52
3.1 Electron theory	2	2	2
3.2 Static electricity and conduction	3	2	3
3.3 Electrical terminology	3	2	2
3.4 Generation of electricity	3	2	2
3.5 Sources of DC electricity	3	3	3
3.6 DC circuits	1	1	2
3.7 Resistance/resistor:			
(a) Resistance;	—	1	3
(b) Resistors.	—	—	2
3.8 Power	—	1	3
3.9 Capacitance/capacitor	—	1	4
3.10 Magnetism:			
(a) Theory of magnetism;	—	1	3
(b) Magnetomotive force.	—	1	1
3.11 Inductance/inductor	—	1	4
3.12 DC motor/generator theory	—	1	3
3.13 AC theory	5	1	3
3.14 Resistive (R), capacitive (C) and inductive (L) circuits	—	1	3
3.15 Transformers	—	1	3
3.16 Filters	—	—	1
3.17 AC generators	—	1	3
3.18 AC motors	—	1	2

MODULE 4 — ELECTRONICS FUNDAMENTALS

MODULE 4 — ELECTRONICS FUNDAMENTALS	Nr of questions		
	A	B1 B3	B2 B2L
Total number for the module:	—	20	40
4.1 Semiconductors			
4.1.1 Diodes:			
(a) Description and characteristics;	—	8	8
(b) Operation and function.	—	—	7
4.1.2 Transistors:			
(a) Description and characteristics;	—	4	4
(b) Construction and operation.	—	—	7
4.1.3 Integrated circuits:			
(a) Basic description and operation;	—	3	2
(b) Description and operation.	—	—	4
4.2 Printed circuit boards	—	2	3
4.3 Servomechanisms:			
(a) Principles;	—	3	2
(b) Construction, operation, and use.	—	—	3

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS	Nr of questions			
	A	B3	B1	B2 B2L
Total number for the module:	20	20	40	72
5.1 Electronic instrument systems	4	4	4	4
5.2 Numbering systems	—	—	3	5
5.3 Data conversion	—	—	3	4
5.4 Data buses	—	—	3	5
5.5 Logic circuits:				
(a) Identification and applications;	—	—	3	4
(b) Interpretation of logic diagrams.	—	—	—	4
5.6 Basic computer structure:				
(a) Computer terminology and technology;	6	2	4	2
(b) Computer operation.	—	—	—	6
5.7 Microprocessors	—	—	—	4
5.8 Integrated circuits	—	—	—	5
5.9 Multiplexing	—	—	—	4
5.10 Fibre optics	—	—	3	3
5.11 Electronic displays	2	2	2	4
5.12 Electrostatic sensitive devices	6	6	4	5

MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS	Nr of questions			
	A	B3	B1	B2 B2L
5.13 Software management control	—	1	3	3
5.14 Electromagnetic environment	—	1	3	4
5.15 Typical electronic/digital aircraft systems	2	4	5	6

MODULE 6 — MATERIALS AND HARDWARE

MODULE 6 — MATERIALS AND HARDWARE	Nr of questions		
	A	B1 B3	B2 B2L
Total number for the module:	52	80	60
6.1 Aircraft materials — ferrous:			
(a) Alloy steels used in aircraft;	3	3	3
(b) Testing of ferrous materials;	—	2	1
(c) Repair and inspection procedures.	—	2	1
6.2 Aircraft materials — non-ferrous:			
(a) Characteristics;	3	4	3
(b) Testing of non-ferrous materials;	—	3	2
(c) Repair and inspection procedures.	—	2	1
6.3 Aircraft materials — composite and non-metallic			
6.3.1 Composite and non-metallic other than wood and fabric:			
(a) Characteristics;	2	4	3
(b) Detection of defects;	2	4	—
(c) Repairs and inspection procedures.	—	2	2
6.3.2 Wooden structures	3	4	—
6.3.3 Fabric covering	—	4	—
6.4 Corrosion:			
(a) Chemical fundamentals;	3	3	3
(b) Types of corrosion.	4	5	3
6.5 Fasteners			
6.5.1 Screw threads	4	4	3
6.5.2 Bolts, studs, and screws	6	6	5
6.5.3 Locking devices	2	2	2
6.5.4 Aircraft rivets	2	3	2
6.6 Pipes and unions:			
(a) Identification;	1	1	1
(b) Standard unions.	2	2	2
6.7 Springs	—	1	1
6.8 Bearings	2	4	3
6.9 Transmissions	3	4	4
6.10 Control cables	5	5	4
6.11 Electrical cables and connectors	5	6	11

MODULE 7 — MAINTENANCE PRACTICES

MODULE 7 — MAINTENANCE PRACTICES	Nr of questions		
	A	B1 B3	B2 B2L
Total number for the module:	76	80	60
7.1 Safety precautions — aircraft and workshop	4	4	4
7.2 Workshop practices	4	4	4
7.3 Tools	6	6	6
7.4 (Reserved)	—	—	—
7.5 Engineering drawings, diagrams, and standards	6	6	6
7.6 Fits and clearances	5	5	5
7.7 Electrical wiring interconnection system (EWIS)	4	4	8
7.8 Riveting	4	3	—
7.9 Pipes and hoses	4	3	—
7.10 Springs	1	1	—
7.11 Bearings	4	3	—
7.12 Transmissions	3	3	—
7.13 Control cables	4	3	—
7.14 Material handling			
7.14.1 Sheet metal	—	2	—
7.14.2 Composite and non-metallic	—	2	—
7.14.3 Additive manufacturing	2	4	2
7.15 (Reserved)	—	—	—
7.16 Aircraft weight and balance:			
(a) Centre-of-gravity calculation;	—	2	2
(b) Aircraft weighing.	—	1	—
7.17 Aircraft handling and storage	7	5	6
7.18 Disassembly, inspection, repair, and assembly techniques:			
(a) Types of defects and visual inspection techniques;	2	2	2
(b) General repair methods — structural repair manual;	—	2	—
(c) Non-destructive inspection techniques;	—	1	1
(d) Disassembly and reassembly techniques;	2	1	1
(e) Troubleshooting techniques.	—	1	1
7.19 Abnormal events:			
(a) Inspections following lightning strikes and HIRF penetration;	2	1	2
(b) Inspections following abnormal events such as heavy landing and flight through turbulence.	2	1	—
7.20 Maintenance procedures	6	6	6
7.21 Documentation and communication	4	4	4

MODULE 8 — BASIC AERODYNAMICS

MODULE 8 — BASIC AERODYNAMICS	Nr of questions	
	A B3	B1 B2 B2L
Total number for the module:	24	24
8.1 Physics of the atmosphere International Standard Atmosphere (ISA), application to aerodynamics.	2	2
8.2 Aerodynamics	9	9
8.3 Theory of flight	7	7
8.4 High-speed airflow	4	4
8.5 Flight stability and dynamics	2	2

MODULE 9 — HUMAN FACTORS

MODULE 9 — HUMAN FACTORS	Nr of questions
	ALL
Total number for the module:	28
9.1 General	3
9.2 Human performance and limitations	3
9.3 Social psychology	2
9.4 Factors that affect human performance	3
9.5 Physical environment	2
9.6 Tasks	2
9.7 Communication	3
9.8 Human error	4
9.9 Safety management	2
9.10 The 'Dirty Dozen' and risk-mitigation	4

MODULE 10 — AVIATION LEGISLATION

MODULE 10 — AVIATION LEGISLATION	Nr of questions	
	A	B1 B2 B2L B3
Total number for the module:	32	44
10.1 Regulatory framework	5	5
10.2 Certifying staff — maintenance	7	7
10.3 Approved maintenance organisations	6	6
10.4 Independent certifying staff	-	4
10.5 Air operations	4	4
10.6 Certification of aircraft, parts, and appliances	1	4
10.7 Continuing airworthiness	6	7
10.8 Oversight principles in continuing airworthiness	2	3
10.9 Maintenance and certification beyond the current EU regulations (if not superseded by EU requirements)	—	3
10.10 Cybersecurity in aviation maintenance	1	1

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions				
	A1	A2	B1.1	B1.2	B3
Total number for the module:	108	72	140	100	60
11.1 Theory of flight:					
(a) Aeroplane aerodynamics and flight controls;	2	2	2	2	1
(b) Aeroplane, other aerodynamic devices.	2	2	2	2	1
*11.2 Airframe structures **(ATA 51)**:*					
(a) General concepts;	3	3	4	3	2
(b) Airworthiness requirements for structural strength;	3	3	3	3	1
(c) Construction methods.	1	1	3	2	1
11.3 Airframe structures — aeroplanes					
*11.3.1 Fuselage, doors, windows **(ATA 52/53/56):***					
(a) Construction principles;	1	1	2	2	2
(b) Airborne towing devices;	1	1	1	1	1
(c) Doors.	1	1	1	1	-
*11.3.2 Wings **(ATA 57)***	2	2	3	3	2
*11.3.3 Stabilisers **(ATA 55)***	1	1	2	1	1
*11.3.4 Flight control surfaces **(ATA 55/57)***	1	1	2	2	1
*11.3.5 Nacelles/pylons **(ATA 54)***	1	1	2	1	1
*11.4 Air conditioning and cabin pressurisation **(ATA 21):***					
(a) Pressurisation;	2	2	3	1	—

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions				
	A1	A2	B1.1	B1.2	B3
(b) Air supply;	3	—	3	—	—
(c) Air conditioning;	3	—	3	—	—
(d) Safety and warning devices;	2	1	2	2	—
(e) Heating and ventilation system.	—	1	—	2	1
11.5 Instruments / avionics systems					
*11.5.1 Instrument systems **(ATA 31)***	2	2	4	3	3
11.5.2 Avionics systems Fundamentals of system layouts and operation of: — Autoflight **(ATA 22)**; — Communications **(ATA 23)**; — Navigation systems **(ATA 34)**.	3	2	5	4	4
*11.6 Electrical power **(ATA 24)***	4	3	5	5	4
*11.7 Equipment and furnishings **(ATA 25)***					
(a) Emergency equipment;	4	2	4	3	2
(b) Cabin and cargo layout.	3	3	3	3	-
*11.8 Fire protection **(ATA 26)***					
(a) Fire and smoke detection system and fire-extinguishing systems;	3	2	4	3	—
(b) Portable fire extinguisher.	1	1	1	1	1
*11.9 Flight controls **(ATA 27)***	3	2	4	4	2
(a) Primary and secondary flight controls;					
(b) Actuation and protection;	3	—	3	3	2
(c) System operation;	3	—	3	2	1
(d) Balancing and rigging.	1	1	3	2	2
*11.10 Fuel systems **(ATA 28/47)***	2	2	3	3	2
(a) Systems layout;					
(b) Fuel handling;	2	2	2	2	1
(c) Indications and warnings;	1	1	2	2	1
(d) Special systems;	1	—	1	—	—
(e) Balancing.	2	—	2	—	—
*11.11 Hydraulic power **(ATA 29)***	1	1	3	3	2
(a) System description;					
(b) System operation (1);	1	1	3	1	1
(c) System operation (2).	2	—	2	—	—
*11.12 Ice and rain protection **(ATA 30)***	1	1	2	2	1
(a) Principles;					
(b) De-icing;	1	1	2	2	1

MODULE 11 — AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions				
	A1	A2	B1.1	B1.2	B3
(c) Anti-icing;	1	—	2	—	—
(d) Wipers;	1	1	2	2	1
(e) Rain-repellent systems.	2	—	2	—	—
11.13 Landing gear ***(ATA 32)*** (a) Description;	3	3	4	3	1
(b) System operation;	3	3	4	2	1
(c) Air–ground sensing;	1	—	1	—	—
(d) Tail protection.	1	1	1	1	1
11.14 Lights ***(ATA 33)***	2	2	3	3	2
11.15 Oxygen ***(ATA 35)***	3	3	4	4	3
11.16 Pneumatic/vacuum ***(ATA 36)***					
(a) *Systems;*	3	3	3	3	2
(b) *Pumps.*	3	3	3	3	2
11.17 Water/waste ***(ATA 38)***					
(a) *Systems;*	2	2	2	2	1
(b) *Corrosion.*	1	1	1	1	1
11.18 Onboard maintenance systems ***(ATA 45)***	3	—	3	—	—
11.19 Integrated modular avionics (IMA) ***(ATA 42)***					
(a) Overall system description and theory;	1	—	1	—	—
(b) Typical system layouts.	1	—	1	—	—
11.20 Cabin systems ***(ATA 44)***	2	—	2	—	—
11.21 Information systems ***(ATA 46)***	2	—	2	—	—

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions	
	A3 A4	B1.3 B1.4
Total number for the module:	100	128
12.1 Theory of flight — rotary wing aerodynamics	6	9
12.2 Flight control systems ***(ATA 67)***	9	9
12.3 Blade tracking and vibration analysis ***(ATA 18)***	6	9
12.4 Transmission	3	6
12.5 Airframe structures ***(ATA 51)*** (a) General concept;	5	6
(b) Construction methods of the principal elements.	5	7
12.6 Air conditioning ***(ATA 21)***	—	—

MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions	
	A3 A4	B1.3 B1.4
12.6.1 Air supply	1	2
12.6.2 Air conditioning	3	5
12.7 Instruments / avionics systems *12.7.1 Instrument systems **(ATA 31)***	6	9
12.7.2 Avionics systems Fundamentals of system layouts and operation of: — Autoflight **(ATA 22)**; — Communications **(ATA 23)**; — Navigation systems **(ATA 34)**.	5	7
*12.8 Electrical power **(ATA 24)***	8	10
*12.9 Equipment and furnishings **(ATA 25)*** (a) Emergency equipment: Seats, harnesses, and belts; Lifting systems.	2	3
(b) Emergency flotation systems: Cabin layout, cargo retention; Equipment layout; Cabin furnishing installation.	3	3
*12.10 Fire protection **(ATA 26)***	3	4
(a) Fire and smoke detection systems and fire-extinguishing systems;		
(b) Portable fire extinguishers.	1	1
*12.11 Fuel systems **(ATA 28)***	7	8
*12.12 Hydraulic power **(ATA 29)***	8	8
*12.13 Ice and rain protection **(ATA 30)***	4	4
*12.14 Landing gear **(ATA 32)*** (a) System description and operation;	3	4
(b) Sensors.	3	3
*12.15 Lights **(ATA 33)***	3	4
12.16 (Reserved)		
*12.17 Integrated modular avionics (IMA) **(ATA 42)***		
(a) Overall system description and theory;	1	1
(b) Typical system layouts.	1	1
*12.18 Onboard maintenance systems **(ATA 45)*** Central maintenance computers; Data-loading system; Electronic library system.	2	3
*12.19 Information systems **(ATA 46)***	2	2

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

C/N: Communication and Navigation; **Ins.**: instruments; **A/F**: Autoflight; **Sur.**: Surveillance; **A/S**: Airframe and Systems

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
Total number for the module:	188	32	24	20	28	20	50
13.1 Theory of flight							
(a) Aeroplane aerodynamics and flight controls;	3	3	—	—	—	—	—
(b) Rotary wing aerodynamics.	1	1	—	—	—	—	—
13.2 Structures — general concepts ***(ATA 51)***							
(a) General concepts;	4	4	—	—	—	—	—
(b) Fundamentals of structural systems.	4	4	—	—	—	—	—
13.3 Autoflight ***(ATA 22)***							
(a) *Fundamentals of automatic flight control;*	12	—	—	—	8	—	—
(b) *Autothrottle systems and automatic landing systems.*	8	—	—	—	8	—	—
13.4 Communication/navigation ***(ATA 23/34)***							
(a) *Fundamentals of communication and navigation systems;*	24	—	24	—	—	—	—
(b) *Fundamentals of aircraft surveillance systems.*	3	—	—	—	—	20	—
13.5 Electrical power ***(ATA 24)***	13	13	—	—	—	—	—
13.6 Equipment and furnishings ***(ATA 25)***	5	—	—	—	—	—	—
13.7 Flight controls							
(a) Primary and secondary flight controls **(ATA 27)**;	4	—	—	—	3	—	—
(b) Actuation and protection;	4	—	—	—	3	—	—
(c) System operation;	2	—	—	—	3	—	—
(d) Rotorcraft flight controls **(ATA 67)**.	2	—	—	—	3	—	—
13.8 Instruments ***(ATA 31)***	20	—	—	20	—	—	—
13.9 Lights ***(ATA 33)***	7	7	—	—	—	—	—
13.10 Onboard maintenance systems ***(ATA 45)***	5	–	–	–	–	–	–
13.11 Air conditioning and cabin pressurisation ***(ATA 21)***							
(a) Pressurisation;	2	—	—	—	—	—	2
(b) Air supply;	2	—	—	—	—	—	2
(c) Air conditioning;	2	—	—	—	—	—	2
(d) Safety and warning devices.	2	—	—	—	—	—	2
13.12 Fire protection ***(ATA 26)***							
(a) Fire and smoke detection system and fire-extinguishing systems;	2	—	—	—	—	—	2
(b) Portable fire extinguisher.	1	—	—	—	—	—	1
13.13 Fuel systems ***(ATA 28, ATA 47)***							
(a) System layout;	2	—	—	—	—	—	2
(b) Fuel handling;	2	—	—	—	—	—	2

MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	Nr of questions						
	B2	B2L Basic	B2L C/N	B2L Ins.	B2L A/F	B2L Sur.	B2L A/S
(c) Indications and warnings;	2	—	—	—	—	—	2
(d) Special systems;	2	—	—	—	—	—	2
(e) Balancing.	1	—	—	—	—	—	1
13.14 Hydraulic power ***(ATA 29)***							
(a) System layout;	1	—	—	—	—	—	1
(b) System operation (1);	5	—	—	—	—	—	4
(c) System operation (2).	5	—	—	—	—	—	4
13.15 Ice and rain protection ***(ATA 30)***							
(a) Principles;	1	—	—	—	—	—	1
(b) De-icing;	2	—	—	—	—	—	2
(c) Anti-icing;	1	—	—	—	—	—	1
(d) Wiper systems;	1	—	—	—	—	—	1
(e) Rain repellent.	1	—	—	—	—	—	1
13.16 Landing gear ***(ATA 32)***							
(a) Description;	1	—	—	—	—	—	1
(b) System;	3	—	—	—	—	—	3
(c) Air–ground sensing.	3	—	—	—	—	—	3
13.17 Oxygen ***(ATA 35)***	2	–	—	—	—	—	—
13.18 Pneumatic/vacuum ***(ATA 36)***	6	–	—	—	—	—	6
13.19 Water/waste ***(ATA 38)***	2	–	—	—	—	—	2
13.20 Integrated modular avionics (IMA) ***(ATA 42)***							
(a) Overall system description and theory;	2	—	—	—	—	—	—
(b) Typical system layouts.	1	—	—	—	—	—	—
13.21 Cabin systems ***(ATA 44)***	3	—	—	—	—	—	—
13.22 Information systems ***(ATA 46)***	3	—	—	—	—	—	—

MODULE 14 — PROPULSION

MODULE 14 — PROPULSION	Nr of questions B2 B2L Instruments B2L Airframe and Systems
Total number for the module:	**32**
14.1 Engines	
(a) Turbine engines;	3
(b) Auxiliary power units (APUs);	4
(c) Piston engines;	2
(d) Electric and hybrid engines;	4
(e) Engine control.	3
14.2 Electric/electronic engine indication systems	10
14.3 Propeller systems	2

MODULE 14 — PROPULSION	Nr of questions B2 B2L Instruments B2L Airframe and Systems
14.4 Starting and ignition systems	4

MODULE 15 — GAS-TURBINE ENGINE

MODULE 15 — GAS-TURBINE ENGINE	Nr of questions	
	A1 A3	B1.1 B1.3
Total number for the module:	60	92
15.1 Fundamentals	4	4
15.2 Engine performance	—	6
15.3 Inlet	3	4
15.4 Compressors	5	7
15.5 Combustion section	3	3
15.6 Turbine section	5	5
15.7 Exhaust	4	4
15.8 Bearings and seals	—	3
15.9 Lubricants and fuels	3	4
15.10 Lubrication systems	3	4
15.11 Fuel systems	4	5
15.12 Air systems	3	3
15.13 Starting and ignition systems	3	4
15.14 Engine indication systems	5	7
15.15 Alternate turbine constructions	—	2
15.16 Turboprop engines	3	5
15.17 Turboshaft engines	2	3
15.18 Auxiliary power units (APUs)	2	3
15.19 Power plant installation	2	3
15.20 Fire protection systems	2	3
15.21 Engine monitoring and ground operation	4	7
15.22 Engine storage and preservation	—	3

MODULE 16 — PISTON ENGINE

MODULE 16 — PISTON ENGINE	Nr of questions	
	A2 A4	B1.2 B1.4 B3
Total number for the module:	52	76
16.1 Fundamentals of piston engines	5	5
16.2 Engine performance	3	5
16.3 Engine construction	7	8
16.4 Engine fuel systems	—	—
16.4.1 Carburettors	3	4
16.4.2 Fuel injection systems	2	4
16.4.3 Electronic engine control	2	4
16.5 Starting and ignition systems	5	5
16.6 Induction, exhaust, and cooling systems	3	4
16.7 Supercharging/turbocharging	4	6
16.8 Lubricants and fuels	2	5
16.9 Lubrication systems	3	4
16.10 Engine indication systems	6	7
16.11 Power plant installation	3	3
16.12 Engine monitoring and ground operation	3	5
16.13 Engine storage and preservation	—	3
16.14 Alternative piston-engine constructions	1	4

MODULE 17 — PROPELLER

MODULE 17 — PROPELLER	Nr of questions	
	A1 A2	B1.1 B1.2 B3
Total number for the module:	20	32
17.1 Fundamentals of propellers	5	8
17.2 Propeller construction	4	5
17.3 Propeller pitch control	4	6
17.4 Propeller synchronising	—	2
17.5 Propeller ice protection	2	3
17.6 Propeller maintenance	3	6
17.7 Propeller storage and preservation	2	2

AMC1 ~~to Section 1 of~~ Appendix III ~~to Part-66 '~~Aircraft ~~T~~type ~~T~~training and ~~Examination~~ type evaluation ~~S~~standard~~.~~ — ~~O~~on-the-~~J~~job ~~T~~training~~'~~ (OJT) Section 1

Aircraft Type Training

[…]

6. The theoretical and practical training should be complementary and may be:

– ~~I~~integrated or split;

– ~~S~~supported by the use of training aids, such as trainers, virtual aircraft, aircraft components, maintenance simulation training devices (MSTDs) and maintenance training devices (MTDs).~~synthetic training devices (STD), computer based training devices (CBT), etc.~~

7. The integration and usage of MSTDs and MTDs, as defined in AMC 147.A.30(a), in maintenance type training (theoretical and/or practical) should consider the following:

— The use of actual aircraft components should be allowed for any MSTD or MTD, even if the components are in a non-airworthy condition.

— The complexity and degree of simulation for an MSTD may vary and should support type training elements that address a component, a system or the entire aircraft. Based on its characteristics and capabilities, the MSTD may be:

— a training device capable of providing, for the respective component or system, the representation of aircraft location, access and layout, and for servicing with an acceptable level of accuracy and limited simulation; or

— a training device capable of providing, for the respective component or system, the representation of aircraft location, access and layout with sufficient accuracy and with interactive simulation for servicing, and the applicable maintenance data for operational (O) and functional (F) test elements including built-in test (BIT) initiation and monitoring from outside the cockpit; such representation should have the capability to accommodate some troubleshooting scenarios; or

— a training device capable of providing, for the respective component or system, the representation of onboard (flight deck/cockpit or cabin) indication and controls with an acceptable level of accuracy and limited interactive simulation; or

— a training device capable of providing, for the respective component or system, the representation of onboard (flight deck/cockpit or cabin) indication and controls with sufficient accuracy and with interactive simulation for servicing, and the applicable maintenance data for operational (O) and functional (F) test elements including built-in test (BIT) initiation and monitoring; such representation should have the capability to accommodate some troubleshooting scenarios; or

— any combination of the above.

— Flight simulation training devices (FSTDs) may be used as MSTDs whenever their characteristics and capabilities are considered appropriate for, and supportive of, the delivery of the respective maintenance training element(s).

— An MTD is any training device other than an MSTD used for maintenance training and/or examination and/or assessment.

GM1 Appendix III Aircraft type training and type evaluation standard — on-the-job training (OJT) Section 1(c)

DIFFERENCES TRAINING

If the holder of a B1 and B2 licence, without any type rating, successfully completes a combined type training course (B1 + B2) followed by an OJT tailored only to B1 tasks, they can obtain only the type-rating endorsement that is applicable to the B1 subcategory.

Within the next 3 years from the completion of the combined training course, endorsement of the aircraft type for the B2 category is possible after carrying out an OJT programme limited to the tasks relevant to the B2 category only.

When instead, the aircraft type endorsement would be requested after more than 3 years, the applicant would be required to also pass a differences type training course (from B1 to B2) plus the OJT programme limited to the tasks relevant to the B2 category only. All common theoretical and practical elements, and OJT tasks, already demonstrated as B1, shall be considered fulfilled.

AMC1 Appendix III Aircraft type training and type evaluation standard — on-the-job training (OJT) Section 3

AIRCRAFT TYPE TRAINING STANDARD

Training methods are categorised as ‘instructor-centred’, ‘student-centred’ and ‘blended training’.

The actual training method and the training tools should be adapted to suit the training subject and be chosen considering their intrinsic characteristics, such as but not limited to their efficiency and the pedagogical benefits of the method/tool.

A complex or critical subject should not normally be taught solely through a student-centred method unless provisions are in place to verify the actual and progressive acquisition of knowledge of the student.

Complex and critical areas should be identified by the training needs analysis (TNA). The complexity and criticality of the areas could differ on a case-by-case basis (that is, areas proven to be critical by organisations’ ‘in-service events’, occurrence reporting, human factors, safety, etc.), but should in any case cover the maintenance areas with special emphasis (MASE) identified by the type-certificate holder (TCH) in its operational suitability data (OSD).

AMC1 ~~to point 3.1(d) of~~ Appendix III ~~to Part-66 '~~Aircraft ~~T~~type ~~T~~training and ~~Examination~~ type evaluation ~~S~~standard~~.~~ – ~~O~~on-the-~~J~~job ~~T~~training~~'~~ (OJT) Section 3.1(d)

Training ~~N~~needs ~~A~~analysis (TNA) for the ~~T~~theoretical ~~E~~element of the ~~A~~aircraft ~~T~~type ~~T~~training

[…]

4. ~~In order to approve a reduction of such minimum duration, the evaluation done by the competent authority should be performed on a case by case basis appropriate to the aircraft type. For example, while it would be exceptional for a theoretical course for a transport category complex motor-powered aircraft such as an A330 or B757 to be below the minimum duration shown, it would not necessarily be exceptional in the case of a General Aviation (GA) business aircraft such as a Learjet 45 or similar. Typically the TNA for a GA aircraft course would demonstrate that a course of a shorter duration satisfies the requirement.~~

   In order to approve the reduction of such minimum duration, the competent authority should perform an assessment on a case-by-case basis, and the assessment should be appropriate to the aircraft type and to the training methods and tools proposed.

   For example:

   (a) While it would be exceptional for a theoretical course for a large transport category aircraft, such as an A330 or a B777, to be below the minimum duration shown, it would not necessarily be exceptional in the case of a business aircraft, such as a Learjet 45 or similar. The TNA for a business aircraft course could demonstrate that a course of a shorter duration satisfies the applicable requirements.

   (b) The use of an MSTD (i.e. flat panel trainer) comprising aircraft-type-specific software may result in the duration of the training being reduced due to a more effective transfer of knowledge.

   (c) The use of multimedia-based training (MBT), or blending the training methods, may improve the efficiency of the training and, consequently, contribute to the reduction of the overall time needed to achieve the learning objectives.

5. When developing the TNA, the following should be considered:

   […]

   (g) The TNA should:

   […]

   - Describe the following:
     - The instructional methods and ~~equipment~~ training tools and their blended application, ~~teaching methods and blending of the teaching methods~~ in order to ensure the effectiveness of the training~~;~~.
     - The maintenance training documentation/material to be delivered to the student~~;~~.
     - Facilitated discussions, questioning session, additional practice~~d~~-oriented training, etc.~~;~~

- The homework, if developed, i.e. to support the achievement of the learning objectives while using asynchronous distance-learning or self-learning methods.
- The training provider's resources available to the learner.

(h) It is acceptable to differentiate between subjects ~~issues~~ which have to be led by an instructor and subjects ~~issues~~ which may be delivered through interactive simulation training devices and/or covered by ~~web based~~ self-paced elements. The ~~O~~overall time of the course will be allocated accordingly.

(i) […]

(j) The minimum participation time ~~for the trainee~~ in order for the trainee to meet the objectives of the course should not be less than 90 % of the tuition hours, or 95 % completion of the content in case of student-centred methods in a~~of the~~ theoretical training course. Additional training may be provided by the training organisation in order 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) […]

[…]

AMC1 Appendix III Aircraft type training and type evaluation standard — on-the-job training (OJT) Section 4.1

Type training examination and assessment standard

4.1 Theoretical element examination standard

Examinations may be computer or paper based, or a combination of both. Refer to point 147.A.135.

AMC1 ~~to Section 6 of~~ Appendix III ~~to Part-66 '~~Aircraft ~~T~~type ~~T~~training and ~~Examination~~ type evaluation Sstandard~~.~~ — ~~O~~on-the-~~J~~job ~~T~~training (OJT) Section 6

~~**On the Job Training (OJT)**~~

~~1. 'A maintenance organisation appropriately approved for the maintenance of the particular aircraft type' means a Part-145, M.A. Subpart F or Part-CAO approved maintenance organisation holding an A rating 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. The OJT should cover at least 50 % of the tasks contained in Appendix II to AMC to Part-66. Some tasks should be selected from each paragraph of the Appendix II list. Tasks should 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. Typically, in addition to the variety and the complexity, the OJT tasks should be selected because of their frequency, safety, novelty, etc.

5. Up to 50 % of the required OJT may be undertaken before the aircraft theoretical type training starts.

6. The organisation providing the on-the-job training should provide trainees 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.

7. 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:

— It is sufficient that the completion of individual OJT tasks is confirmed by the direct supervisor(s), without being necessary the direct evaluation of the assessor.

— 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.

— The supervisor(s) should personally observe the work being performed to ensure the safe completeness and should be readily available for consultation, if needed during the OJT performance.

— The supervisor(s) should countersign the tasks and release the maintenance tasks as the trainee is still not qualified to do so.

— The supervisor(s) should therefore:

– have certifying staff or support staff 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.

8. Regarding the assessor, the following should be considered:

— The function of the assessor, as described in Section 6 of Appendix III to Part-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.

— In Section 6 of Appendix III to Part-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. Further guidance about the assessment and the designated assessors is provided in Appendix III to AMC to Part-66.

~~9. The procedures for OJT of a part-145 Organisation should be included into the approved maintenance organisation exposition (Chapter 3.20 as indicated in AMC 145.A.70(a)).~~

~~However, since these procedures are approved by the competent authority of the maintenance organisation, and providing training is not one of the privileges of a maintenance organisation, they can only be used when the licensing authority is the same as the competent authority of the maintenance organisation. In other cases, it is up to the licensing authority to decide whether it accepts such procedures for the purpose of approving the OJT (refer to AMC 66.B.115).~~

On-the-job training (OJT)

General

'Maintenance organisations appropriately approved according to this Regulation for the maintenance of that aircraft type' means Part-145 or Part-CAO approved maintenance organisations (AMO) that hold an 'A' rating for such aircraft.

The OJT may be split in several parts and carried out at different AMOs, also combining line and base facilities from the same or different organisations. The organisation at which the final assessment is carried out, should control and coordinate the OJT activities and have the responsibility for the entire OJT programme.

The procedures for the OJT should be included in the Exposition Manual of the approved maintenance organisation.

'Skills and responsibilities of a typical certifying staff' include but are not limited to:

— understanding the importance of professional integrity, behaviour and having an appropriate attitude towards safety;

— understanding the conditions for ensuring the continuing airworthiness of aircraft and components;

— the ability to identify and rectify existing and potential unsafe conditions;

— the ability to prioritise tasks, coordinate with a team, and report discrepancies;

— the ability to determine the required qualifications for the performance of maintenance tasks;

— the ability to confirm the proper accomplishment of maintenance tasks;

— the ability to compile and control completed work cards;

— knowledge of safety risks linked to a particular working environment;

— understanding of human performance and limitations;

— understanding of the AMO's (where the OJT is performed) privileges and limitations;

— understanding of the AMO's personnel authorisations and limitations;

— being familiar with the AMO's documents/forms (work packages, work orders, work cards, etc.);

— being familiar with AMO's release-to-service procedures: use of the aircraft technical logbook (ATLB), deferral of items and dispatch under MEL/CDL;

— access, use and control of the required tools and equipment;

— access, use and control of the required ICAs (AMM, TSM, SRM, etc.).

OJT content and OJT logbook

If the aircraft manufacturer has defined the OJT tasks during the type certification of a particular aircraft type (e.g. the operational suitability data (OSD) has been approved for a particular aircraft type), those tasks should be selected. In particular, the analysis performed for the maintenance areas of specific emphasis (MASE), as defined in point 430 of CS-MCSD, helps the organisation identify the more appropriate tasks.

Where no such data exists, the task list in Appendix II to the AMC to Annex III (Part-66) serves as the basis to develop an OJT programme including the applicable tasks for a particular aircraft type, based typically on the AMM. The tasks may be selected from the table in Appendix II in order to cover a broader representative sample of both simple and complex tasks on the particular aircraft type in order to reach a balanced distribution of the tasks between line and base maintenance. The tasks should be selected among those that are applicable to the aircraft type and the licence (sub)category applied for; for example, the selection could exclude location tasks (LOC) and tasks that can be considered under the category A licence privileges (seat covers, boilers, wheels, etc.).

A minimum number of tasks, as described in point 2 'List of tasks for OJT' of Appendix II, of each of the following categories should be performed: INS/inspections, FOT/functional or operational, SGH/servicing, R/I removal and installation, MEL, and T/S troubleshooting. The licensing authority may accept that a limited number of tasks is not performed as long as the relevant cross section of the tasks as regards quality, quantity and complexity is still assured.

A task may be performed on the analogous system installed on a different aircraft type when the systems are similar in terms of design architecture, technology, and functionality. This can be the case, for example, for tasks performed on engines or landing gear of aircraft of the same manufacturer. Such task should be clearly identified and recorded.

Certain maintenance tasks could be performed on non-airworthy aircraft that still maintain functionality of systems to the extent that the maintenance tasks can be completely performed without any deviation from the maintenance instructions. Tasks circumscribed to system components may be performed at the workshop. This can be the case, for example, for avionics functional tests. Such scenarios should be limited to specific tasks that may not occur often in the maintenance of operational aircraft.

The use of MSTDs and MTDs for OJT should be restricted to a minimum.

When an existing licence is changed to include an additional category with a type rating, a different OJT from the category held to the new one may be permissible. In those cases, only tasks corresponding to the differences between the two categories should be performed.

The OJT may be partly performed on aircraft whose maintenance is not subject to Regulation (EU) 2018/1139 (for example, aircraft subject to the FAA regulatory framework or training helicopters used by the military) provided that the maintenance is subject to the same procedures and manuals. A minimum of maintenance activity on aircraft that are subject to Regulation (EU) 2018/1139 is, however, required in order to gain sufficient insight into the European civil aviation regulatory

framework and into release-to-service procedures. The acceptance of the OJT is up to the licensing authority.

The organisation that has control over the OJT should provide candidates with a schedule or plan which indicates the list of tasks to be performed under supervision. A record of the completed tasks is to be entered into a logbook whose design and format should be such that each task or group of tasks is countersigned by the corresponding mentor(s).

Regarding day-to-day supervision of the OJT programme in the approved maintenance organisation and the role of the mentor(s), the following should be considered:

— It is sufficient for the completion of the individual OJT tasks to be confirmed by the direct mentor(s), without the direct evaluation of the assessor being necessary.

— During the day-to-day OJT performance, the aim of the supervision is for mentors to oversee the whole process, including task completion, use of manuals, adherence to procedures, observance of safety measures, warnings, cautions and recommendations, and demonstration of appropriate behaviour in the maintenance environment.

— The mentor(s) should personally observe the work being performed to ensure its safe completion, and should be readily available for consultation if needed during the OJT.

— The mentor(s) should sign the tasks and release the maintenance tasks as the candidate is still not qualified to do so.

— The mentor(s) should be designated by the approved maintenance organisation to supervise.

For training in release-to-service procedures, following the completion of the performance of a specific task chosen by the mentor, the candidate should prepare a document with simulated release to service which has to be marked as ‘for training purposes only’ (e.g. ATL page, maintenance task card, CRS). If both the task and the simulated release to service have been performed to the satisfaction of the mentor, the task may be countersigned in the OJT task list by the mentor. A physical or electronic copy of the document with simulated release should be added to the syllabus.

Tasks which are usually performed with more than one person may be performed by more than one candidate under the supervision of one mentor. During the performance of the tasks, the mentor is limited to overseeing three candidates at the same time, given that the candidates can be properly seen ‘at a glance’ from the mentor’s position. Those tasks should be marked as ‘group tasks’ when applying for the approval. All other tasks should be a one-to-one mentorship. In such cases, all the candidates involved should be noted on the work order.

At the end of the performance of the OJT, a compliance report shall be made which verifies and documents the correct and complete performance and the recommendation of the mentor(s) for the following assessment. The mentor(s) may deny a recommendation if the candidate has not demonstrated the knowledge, skills, behaviour and/or ethics required from certifying staff.

Final assessment of the applicant

The OJT assessment should consist of a theoretical part and a practical part.

The theoretical part comprises the regulatory framework, safety procedures, knowledge of aircraft and its systems, maintenance procedures, and other typical certifying staff activities such as:

— the review and acceptance of work orders;

— shift-handover procedures and team coordination;

— communication and interaction with the flight crew;

— dispatch with unserviceable items;

— clear aircraft logbook entries and reporting notes;

— checks before release to service.

The practical part should include maintenance tasks on the aircraft (e.g. rem./inst., TS, R/I, FOT, MEL dispatch). The assessor may decide to simulate some aspects of the maintenance tasks.

The aircraft type on which the OJT is performed needs to be available for the assessment together with access to the required maintenance data, equipment, and tools. A training aircraft may be acceptable. It is good practice to assess the practical skills on the aircraft in question while the assessment of knowledge may be performed either on the aircraft or in theory.

Further guidance about the designated assessors is provided in the AMC to Appendix III to Part-66.

If an independent observer is required for the OJT, they shall be selected by the maintenance organisation among the maintenance personnel that have not taken part in the OJT performance but do have an adequate understanding of the OJT procedures.

[…]

AMC1 Appendix VII Basic knowledge requirements for category L aircraft maintenance licence

MODULE 1L — BASIC KNOWLEDGE

MODULE 1L — BASIC KNOWLEDGE	Level
1L.1 Mathematics Arithmetic: — Arithmetical terms and signs; — Methods of multiplication and division; — Fractions and decimals; — Factors and multiples; — Weights, measures, and conversion factors; — Ratio and proportion; — Averages and percentages; — Areas and volumes, squares, cubes. Algebra: — Evaluating simple algebraic expressions: addition, subtraction, multiplication, and division; — Use of brackets; — Simple algebraic fractions.	1

MODULE 1L — BASIC KNOWLEDGE	Level
Geometry: — Simple geometrical constructions; — Graphical representation: nature and uses of graphs.	
1L.2 Physics Matter: — Nature of matter: the chemical elements; — Chemical compounds; — States: solid, liquid, gaseous; — Changes between states. Mechanics: — Forces, moments and couples, and representation as vectors; — Centre of gravity; — Tension, compression, shear, and torsion; — Nature and properties of solids, fluids, and gases. Temperature: — Thermometers and temperature scales: Celsius, Fahrenheit, and Kelvin; — Definition.	1
1L.3 Electrics AC and DC circuits: — Ohm's law, Kirchhoff's voltage, and current laws; — Significance of the internal resistance of a supply; — Resistance/resistor; — Resistor colour code, values and tolerances, preferred values, wattage ratings; — Resistors in series and in parallel.	1
1L.4 Aerodynamics/aerostatics International Standard Atmosphere (ISA), application to aerodynamics and aerostatics.	1
1L.5 Workplace safety and environmental protection — Safe working practices and precautions when working with electricity, gases (especially oxygen), oils, and chemicals; — Labelling, storage and disposal of hazardous (to workplace safety and environment) materials; — Remedial action in the event of a fire or another accident with one or more hazards, including knowledge of fire-extinguishing agents.	2

MODULE 2L — HUMAN FACTORS

MODULE 2L — HUMAN FACTORS	Level
2L.1 General — The need to take human factors into account in the maintenance domain; — Incidents attributable to human factors/human error; — Murphy's law.	1
2L.2 Human performance and limitations Vision, hearing, information processing, attention and perception, memory.	1
2L.3 Social psychology Responsibility, motivation, peer pressure, teamwork.	1
2L.4 Factors that affect performance Fitness, physical and mental health, stress, sleep, fatigue, alcohol, medication, drug abuse.	1
2L.5 Physical environment	1

MODULE 2L — HUMAN FACTORS	Level
Working environment (climate, noise, illumination).	
2L.6 The 'Dirty Dozen' and risk-mitigation The 'Dirty Dozen': — lack of communication — lack of teamwork — lack of assertiveness — complacency — fatigue — stress — lack of knowledge — lack of resources — lack of awareness — distraction — pressure — norms. Risk-mitigation methods.	2

MODULE 3L — AVIATION LEGISLATION

MODULE 3L — AVIATION LEGISLATION	Level
3L.1 Regulatory framework — Role of the European Commission (EC), the European Union Aviation Safety Agency (EASA) and national aviation authorities (NAAs); — Scope and limitations of the regulatory framework.	1
3L.2 Continuing airworthiness regulations — General understanding of the applicable parts of Part-66; — General understanding of the applicable parts of Part-ML; — General understanding of the applicable parts of Part-CAO; — General understanding of Part-M, Part-CAMO and Part-145.	1
3L.3 Repairs and modifications (Part-ML) — Approval of changes (repairs and modifications); — Standard changes and standard repairs.	2
3L.4 Maintenance data (Part-ML) — Airworthiness directives (ADs), safety information bulletins (SIBs); — Service bulletins (SBs), instructions for Continuing Airworthiness (ICAs) (AMM, IPC, etc.), aircraft flight manual (AFM), maintenance records, maintenance programmes.	2
3L.5 Licence privileges and how to exercise them properly (Part-66, Part-ML) Conditions for release to service: — in a maintenance organisation; — as independent certifying staff; — release-to-service procedures.	2

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC	Level
4L.1 Airframe wooden/combination of metal tube and fabric — General construction principles for wooden structures covered with fabric, metal-tube structures covered with fabric, and combination of wooden and metal-tube structures; — Wood as a technical material (heartwood, sapwood, grain, etc.); — Wood defects (types, acceptable/ not acceptable); — Different woodcuts (tangential cuts, radial cuts, etc.) and their properties (tangential cuts, radial cuts, etc.); — Metal tubing (mechanical and stress properties of metal tubes); — Types of welding and welding joints; — General characteristics of aircraft coverings; — General characteristics of paint; — Transmission of loads in and between structures.	2
4L.2 Materials — Types of wood (solid wood, laminated wood, plywood, wood composites), suitable wood materials and their properties (spruce, firs, etc.), wood defects (acceptable / not acceptable), stability, deterioration (temperature, humidity, ageing, etc.); — Types of covering and technologies (natural and synthetic polymers), deterioration; — Types of glues, adhesives, paints and other associated materials; — Types of metal-tubing material (steel, light alloy tubes, etc.); — Welding seams, fittings, screws and bolts (material and properties);	2

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC	Level
— Proper storage of those materials; — Plastics (overview and understanding of their properties).	
4L.3 Identifying damages and defects — Inspection procedures; — Damage identification in wooden structures (heavy landing, rot, glue failure, fungi, shrinkage, stress damage, cracks, fatigue, etc.); — Damage identification in metal-tube structures (hard landing, stress, corrosion, fatigue, dents, cracks, fatigue, etc.); — Damage identification in welded seams; — Damage identification in fabric coverings (tears, strains, UV damage, hard landing, etc.).	3
4L.4 Standard repair and maintenance procedures — Repair and conservation of wooden aircraft structures: wing rib, wing spar, bolt and brushing holes, patches (fabric, splayed, surface, plug, scarf); — Repair and reapplication of fabric on aircraft (fabric, tape, lacing, threads, seams, fabric protection, stitching, knots, fasteners, finishing tape, rings and grommets, dope); — Repair and corrosion protection/prevention methods for metal-tube aircraft structures (welding, patch plates, reinforcement tubes, sleeves, etc.); — Repair, removal and application of paint and dope on airframes in wooden / combination of metal tube and fabric (surface preparation, application and finish).	3

MODULE 5L — COMPOSITE STRUCTURE

MODULE 5L — COMPOSITE STRUCTURE	Level
5L.1 Airframe fibre-reinforced plastic (FRP) — General construction principles of airframes in FRP and its properties; — Characteristics of laminated structures (matrix and fibres); — Fibre (fibre orientation, strength characteristics, isotropic, anisotropic, filament, strands, tows, yarns, rovings, impreg and prepreg); — Fabric weave styles (plain weave, twill weave, atlas weave, unidirectional) and non-woven material (stitched and knotted) and their characteristics; — Matrix (thermosetting, thermoplastic, curing stages); — Characteristics of sandwich structures and their supporting cores (honeycombs, foams, wooden cores, pseudo-cores); — General characteristics of accelerators and additives/modifiers; — Transmission of loads in and between structures.	2
5L.2 Materials — Types of fibres (fibreglass, E-glass, aramid, carbon/graphite, boron, ceramic, lightning protection fibre); — Types of matrices (different types, properties and application); — Types of resin filler materials (fumed silica, glass powder, hollow glass, phenolic and plastic microballoons, cotton, flox, colour pigments, fire retardants); — Types of sandwich structure core materials (honeycombs: aramid paper, kraft paper, thermoplastic, aluminium, fibreglass, carbon; foams: polystyrene, phenolic, polyurethane, polypropylene, PVC, polymethacylimide; balsa wood); — Behaviour, interaction, and technological aspects of composites made of those materials;	2

MODULE 5L — COMPOSITE STRUCTURE	Level
— Storage and handling of those materials.	
5L.3 Identifying damages and defects — Inspection procedures (visual inspection, tapping, NDT testing, etc.); — Types of manufacturing defects and damages and their causes (fibre breakage, matrix imperfections, delamination, debonding, improper drilling, environmental degradation, impact damage, fatigue, erosion, corrosion, UV damage, hard landing, stress, etc.).	3
5L.4 Standard repair and maintenance procedures — Repairs of aircraft structures: wing, rib, wing spar, aerofoil, bolt and brushing holes, patches, sandwich core and faceplate repairs, bolted and bonded repairs; — Proper construction and repair fittings, and load-bearing points for composites and composite sandwich structures; — Creation and use of repair moulds from the airframe or intact parts (types, procedures, coatings, etc.); — Proper procedure for the mixing of resins, fibre layering and curing of composites; — Bonding metals and other materials; — Composite painting and finish.	3

MODULE 6L — METALLIC STRUCTURE

MODULE 6L — METALLIC STRUCTURE	Level
6L.1 Metallic airframe — General construction principles for metal-structure airframes; — General knowledge of the properties of metal as a technical material (classification; physical, mechanical and electrical properties; manufacturing properties; chemical properties); — General knowledge of the properties of pure metals and alloys; — Metal grain structure of pure metals and alloys and its impact on behaviour (grain boundaries; corrosion; hardening; annealing; differences between forged, machined and cast metals); — Stresses in structural members (tension, compression, torsion, shearing, bearing, bending); — Types of corrosion and corrosion protection (electrochemical oxidation, galvanic corrosion, stress-corrosion cracking, corrosion in passivated materials, high-temperature corrosion); — Types of rivets and fasteners (solid shank rivet, blind rivets, self-plugging rivets (mechanical and friction lock), pull-thru rivets, pin rivets, head styles, taper-lok, rivet nut, lockbolt, high shear fastener, identification, measuring); — Types of welding and welding joints; — Transmission of loads in and between structures.	2
6L.2 Materials — Types of iron and steel, and their alloys in aviation (cast, forged, tempering, corrosion, strength properties); — Types of aluminium and aluminium alloys in aviation in airframes, rivets, and fasteners (strength properties, corrosion); — Common alloying elements for steel and aluminium (influence on the mechanical and physical properties of the alloy); — Common paint and surface protection materials;	2

MODULE 6L — METALLIC STRUCTURE	Level
— Common adhesives for use with metals.	
6L.3 Identifying damages and defects — Inspection procedures (sheet metal, structure, bonded joints, soldered joints, welded and brazed joints, riveted joints, corrosion); — Identification and classification of cracks, fatigue, and corrosion in metallic structures.	3
6L.4 Standard repair and maintenance procedures — Metal and sheet metal (marking out and calculation of bend allowance, cutting, drilling, bending and forming, inspection of metal work); — Welding, brazing, soldering and bonding (soldering methods, welding and brazing methods, bonding methods); — Riveting (riveted joints, rivet spacing and pitch; tools used for riveting and dimpling; inspection of riveted joints); — Repairing by patching, insertion, and replacement of parts; — Corrosion treatment; — Problems in multiple-material systems.	3

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Level
7L.1 Theory of flight — gliders and aeroplanes Aerodynamics and flight controls: — Airflow around a body; — Boundary layer, laminar and turbulent flow; — Thrust, weight, aerodynamic resultant; — Generation of lift and drag angle of attack, polar curve, stall. Operation and effect of roll control, pitch control, yaw control and rudder limiters: — Control using dual-purpose controls; — High-lift devices, slots, slats, flaps, flaperons; — Drag-inducing devices, lift dumpers, speed brakes, dive brakes; — Effects of wing fences, saw tooth leading edges; — Boundary layer control using vortex generators, stall wedges or leading-edge devices; — Operation and effect of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels.	1
7L.2 Airframe structure — gliders and aeroplanes — Fuselage: construction (truss type, monocoque, semimonocoque), attach points (wing, tail plane, undercarriage); — Wings: construction (monospar, multispar, box beam), configurations (cantilever, semicantilever, strut/wire braced), fairing; — Stabilisers: construction, control surface attachments; — Flight control surfaces: construction and attachment, balancing (mass and aerodynamics); — Tow hooks (Schweizer and Tost hook); — Aircraft assembly, storage, jacking, chocking, securing and associated safety precautions; — Effects of environmental conditions on aircraft handling and operation.	1
*7L.3 Air conditioning **(ATA 21)***	1

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Level
Heating and ventilation for small aircraft.	
7L.4 Electrical power, cables, and connectors ***(ATA 24)*** — Installation and operation of batteries; — Power generation / power sources (AC/DC) on small aircraft, voltage regulation, power distribution and circuit protection; — Cable types, construction and characteristics, high-tension and coaxial cables, testing and installation precautions; — Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes, pin insertion and removal; — Crimping (crimping, tools, testing of crimp joints); — Continuity, insulation and bonding techniques and testing; — Wiring protection techniques (cable looming and loom support, cable clamps, protective sleeving techniques (including heat shrink wrapping), shielding).	2
7L.5 Equipment and furnishing ***(ATA 25)*** — Emergency equipment requirements; — Seats, harnesses, and belts.	2
7L.6 Fire protection and other safety systems ***(ATA 26)*** — Portable fire extinguisher; — Rescue systems (safety parachute, recovery parachute, launching systems, including safety measures for pyrotechnics).	2
7L.7 Flight controls ***(ATA 27)*** — Primary controls: aileron, elevator/stabilator, rudder, dual-purpose controls (stabilator, ruddervator, flaperons); — Secondary controls: elevator trim systems, wing flaps, slats and spoilers / dive breaks; — System operation: manual; — Gust locks, balancing and rigging of flight controls; — Simple stall-warning systems.	3
7L.8 Fuel system ***(ATA 28)*** — System layout; — Fuel tanks; — Supply systems; — Indications and warnings; — Refuelling and defuelling.	2
7L.9 Hydraulic power ***(ATA 29)*** — System layout; — Hydraulic fluids; — Hydraulic reservoirs and accumulators, pressure generation (electric, mechanical), filters, pressure control, power distribution, indication and warning systems.	2
7L.10 Ice and rain protection ***(ATA 30)*** — Hydrophobic coatings; — Pitot probe heating.	1
7L.11 Landing gear ***(ATA 32)*** — Construction (tricycle, tailwheel, outrigger wheels, skids), shock absorbing;	2

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Level
— Extension and retraction systems: normal and emergency operation; — Indications and warnings; — Wheels, brakes, tyres, and steering; — Standard repair and maintenance procedures for the landing gear.	
*7L.12 Lights **(ATA 33)*** — External lights: navigation, anticollision, landing, taxiing; — Internal lights: cockpit.	2
*7L.13 Oxygen **(ATA 35)*** — System layout: storage system (containers), delivery system (continuous flow, diluter demand and pressure demand) and masks/nasal cannula; — System operation, including charging and discharging; — The 'PRICE' check.	2
*7L.14 Pneumatic/vacuum **(ATA 36)*** — System layout; — Sources, pumps, control and distribution; — Indication and warnings.	2
*7L.15 Water ballast **(ATA 41)*** Water tanks (main tank, fin tank), drain valves, vents.	2
7L.16 Fasteners — Screw threads: nomenclature, forms, dimensions and tolerances, and measuring; — Bolts, studs and screws: types (specifications, identification, markings, international standards), nuts (self-locking, anchor, standard types), machine screws (aircraft specifications), studs (types and uses, insertion and removal), self-tapping screws, dowels; — Locking devices: tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick-release fasteners, keys, circlips, cotter pins; — Aircraft rivets: types of solid and blind rivets: specifications and identification, heat treatment.	2
7L.17 Pipes, hoses, and connectors — Types and connectors of pipes and hoses for hydraulic, fuel, oil, pneumatic and air; — Bending, belling/flaring, inspection, testing and installation of pipes and hoses.	2
7L.18 Springs Types of springs, materials, characteristics, applications, inspection, and testing.	2
7L.19 Bearings — Purpose of bearings, loads, material, construction; — Types of bearings, their application, testing, cleaning, inspection, lubrication requirements, and common defects in bearings and their causes.	2
7L.20 Transmission — Gear types, their application, gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns, inspection of gears, backlash/play; — Types, application and inspection of belts and pulleys, chains and sprockets; — Inspection of screw jacks, lever devices, push–pull rod systems.	2
7L.21 Control cables	2

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Level
— Types of cables, end fittings, turnbuckles, compensation devices, pulleys, cable system components, Bowden cables and aircraft flexible control systems; — Swaging of end fittings; — Inspection and testing of control cables, Bowden cables, and aircraft flexible control systems.	
7L.22 Fits and clearances Common system of fits, clearances and tolerances, drill sizes for bolt holes, classes of fits, schedule of fits and clearances for aircraft and engines, limits for bow, twist and wear, standard methods for checking shafts, bearings and other parts.	2
7L.23 Aircraft weight and balance Calculation of centre-of-gravity / balance limits: use of relevant documents, preparation of aircraft for weighing, aircraft weighing.	2
7L.24 Workshop practices and tools — Common hand-tool types, power-tool types, precision tool types and equipment, their operation, care, control, calibration, and standards; — Operation, function and use of electrical general test equipment; — Proper handling of engineering drawings, diagrams and standards, and comprehension of the information presented thereupon (symbols, schematics and diagrams); — Use of workshop materials; — Dimensions, allowances and tolerances, standards of workmanship; — Lubrication equipment and methods.	2
7L.25 Disassembly, inspection, repair, and assembly techniques — Types of defects and visual inspection techniques; corrosion removal, assessment and reprotection; — General repair methods, structural repair manual; ageing, fatigue and corrosion control programmes; — Non-destructive inspection techniques, including penetrant, radiographic, eddy current, ultrasonic and borescope methods; — Disassembly and reassembly techniques; — Troubleshooting techniques.	2
7L.26 Abnormal events Inspection following lightning strike, HIRF penetration, heavy landing, and flight through turbulence.	2
7L.27 Maintenance procedures Maintenance planning, modification procedures, stores procedures, maintenance inspection / quality control / quality assurance, additional maintenance procedures, control of life-limited components.	2

MODULE 8L — POWER PLANT

MODULE 8L — POWER PLANT	Level
8L.1 Engine fundamentals — general — Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle; — The relationship between force, work, power, energy, velocity, and acceleration; — Mechanical, thermal, and volumetric efficiencies.	2
8L.2 Piston-engine fundamentals and performance — Operating principles: 2-stroke, 4-stroke, Otto, Diesel, and Rotary (Wankel); — Piston displacement and compression ratio; — Engine configuration and firing order; — Power calculation and measurement; — Factors that affect engine power; — Mixtures/leaning, pre-ignition.	2
8L.3 Piston-engine construction — Crank case, crank shaft, cam shafts, sumps; — Accessory gearbox; — Cylinder and piston assemblies; — Connecting rods, inlet and exhaust manifolds; — Valve mechanisms; — Propeller reduction gearboxes.	2
8L.4 Piston-engine fuel system (non-electronic) — Carburettors (types, construction and principles of operation, icing and heating); — Fuel injection systems (types, construction, and principles of operation).	2
8L.5 Starting and ignition systems — Starting systems, preheat systems; — Magneto types, construction, and principles of operation; — Ignition harnesses, spark plugs; — Low- and high-tension systems.	2
8L.6 Air-intake, exhaust, and cooling systems — Construction and operation of induction systems, including alternate air systems; — Exhaust systems, engine cooling systems — air and liquid.	2
8L.7 Supercharging/turbocharging — Principles and purpose of supercharging and its effects on engine parameters; — Construction and operation of supercharging/turbocharging systems; — System-associated terminology; — Control systems; — System protection.	2
8L.8 Lubrication systems of piston engines System operation/layout and components.	2

MODULE 8L — POWER PLANT	Level
8L.9 Engine indication systems — Indication systems specific to general combustion engines (coolant temperature, oil pressure and temperature, exhaust gas temperature, fuel pressure and flow); — Indication systems specific to piston engines (cylinder head temperature, manifold pressure, engine speed); — Indication systems specific to turbine engines (exhaust gas temperature, engine thrust indication, engine speed); — Indication systems specific to electric engines (voltage).	2
8L.10 Electric aircraft engines — Types and construction of electric motors (AC and DC motors, rotor, stator, bearings, windings, commutator, self-commutated, externally commutated, outrunner and inrunner, motor cooling, etc.); — Power electronics; — Transformer, transducer, and inverter; — Engine control systems; — Power storage systems (common high-density batteries, chemistry batteries, load cycles, degradation, effects of charging and overcharging, thermal runaway); — Battery management systems (general functions, battery balancing, monitoring); — Wiring of electric power storage, power electronics, and electric motor; — High-energy safety procedures.	2
8L.11 Turbine-engine fundamentals and performance — Constructional arrangement and operation of turbojet and turboprop engines; — Thrust: thrust horsepower, shaft horsepower, specific fuel consumption; — Engine pressure ratio; — Pressure, temperature, and velocity of gas flow; — Engine ratings, static thrust, limitations.	2
8L.12 Inlet and compressor — Compressor inlet; — Axial and centrifugal compressor types, constructional features, operating principles and applications; — Compressor (stator, rotor, blisk, disk, blades, compressor stall and surge); — Compressor ratio.	2
8L.13 Combustion chamber, starting and ignition system — Constructional features and principles of operation; — Operation of engine start systems and components; — Ignition systems and components (exciter, ignition plugs and glow plugs).	2
8L.14 Turbine section and exhaust — Operation and characteristics of different turbine blade types, nozzle guide vanes; — Gas producer turbine and power turbine, blade-to-disk attachment; — Causes and effects of turbine blade stress and creep; — Engine exhaust nozzle and noise reduction.	2

MODULE 8L — POWER PLANT	Level
8L.15 Other turbine-engine components and systems — General knowledge of the type features and principles of bearings and seals in turbine engines; — System operation, layout and components of lubrication systems in small turbine engines (separate lubrication, as part of the fuel system); — System operation, layout and components of air and fuel systems in small turbine engines; — Turboprop reduction gears.	2
8L.16 Turbine-engine inspection and ground operation — Standard procedures for starting and ground run-up and interpretation of engine power output and parameters; — Inspection of engine and components to criteria, tolerances and data specified by the engine manufacturer; — Foreign object damage (FOD).	2
8L.17 Propeller — Propeller fundamentals (blade element theory, blade angles, angle of attack, rotational speed, propeller slip, aerodynamic/centrifugal/thrust forces, torque, relative airflow, vibration and resonance); — Propeller construction (methods of construction and materials used in wooden/composite/metal propellers, blade station, blade face, blade shank, blade back/thrust face and hub assembly, fixed pitch, controllable pitch, constant speed propeller, propeller/spinner installation); — Propeller pitch control (speed control and mechanical/electrical pitch change methods, feathering, propeller accumulators, overspeed protection); — Environmental protection (de-icing and metal tipping); — Propeller balancing (static and dynamic) and blade tracking; — Damage assessment, erosion, corrosion, impact damage, delamination and decay; — Standard treatment and repair methods for propellers.	2
8L.18 Full authority digital engine control (FADEC) — Operation of engine control and fuel-metering systems in piston and turbine engines, including electronic engine control (FADEC); — System layout and components.	2
8L.19 Lubricants and fuels — Properties and specifications of standard, alternate and drop-in fuels, fuel additives, and lubricants.	2
8L.20 Engine and propeller installation — Construction of nacelles; — Configuration of firewalls, cowlings, acoustic panels, engine mounts, antivibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains; — Extension and retraction systems, including propeller position control; — Propeller installation.	2

MODULE 8L — POWER PLANT	Level
8L.21 Engine monitoring and ground operation — Procedures for starting and ground run-up; — Interpretation of engine power output and parameters; — Inspection of engine and components to criteria, tolerances and data specified by the engine manufacturer; — Foreign object damage (FOD).	2
8L.22 Engine/propeller storage and preservation — Preservation and depreservation of the engine, the propeller, and accessories/systems.	2

MODULE 9L — BALLOONS: HOT-AIR BALLOONS

MODULE 9L — BALLOONS: HOT-AIR BALLOONS	Level
9L.1 Theory of flight — hot-air balloons — Aerostatics and controls; — Principles; — Effect on envelopes, wind effect, altitude, and temperature effects.	1
9L.2 General airframe of hot-air balloons Components and assembly of a hot-air balloon: — Identification plate; — Envelope; — Heater system / burner; — Suspension cables; — Basket; — Lines and ropes (crown line, actuationline).	2
9L.3 Envelope — Shape and assembly of envelope (poles, equator, panels, gores, special shapes); — Fabrics, seams, and materials; — Crown ring; — Deflation port/parachute and ripping panel; — Load tapes (horizontal and vertical) and rip stoppers; — Turning vent; — Mouth; — Skirt/scoop; — Diaphragms/catenaries (special shapes).	3
9L.4 Heater system / burner — System layout (burner, fuel tanks, fuel lines); — Types of burners (whisper-/cow-burner, main/take-off burner); — Functionality, materials, use, inspection, and care of: — fuel tanks (propane cylinders, material, valves, fittings, fuel quantity gauge), — fuel lines / gas hoses, — burner (piezo igniter, pilot light and valve, blast valve, heat exchanger / burner coils, nozzle, etc.).	3

MODULE 9L — BALLOONS: HOT-AIR BALLOONS	Level
9L.5 Basket and basket suspension (including alternative devices) — Common assembly of and materials for hot-air balloon baskets; — Rigging points, burner frame, burner support rods, metal frame, basket padding and leather trim; — Basket weave, grab handles, cylinder attachment, take-off aid and rope; — Basket wire and basket wire routing; — Basket floor, basket frame / load-bearing frame, sliders, rawhide protective covering.	3
9L.6 Instruments Basic operation, maintenance, and testing of: — altimeter (mechanical and electronic); — variometer (mechanical and electronic); — pyrometer / temperature sensors; — Mode S transponder; — VHF radio; — Emergency locator transmitter (ELT) and personal locator beacon (PLB).	2
9L.7 Equipment — Required equipment for free-ballooning operation and its care.	2
9L.8 Hot-air balloon handling and storage — Ground procedures for hot-air balloons, rigging and launch preparation; — Safe handling of propane; — Effects of environmental conditions on hot-air balloon handling.	2
9L.9 Disassembly, inspection, repair, and assembly techniques — Types of defects and visual inspection techniques; — Allowable damage to and tolerance of envelope, basket, lines, ropes, etc.; — Common test procedures (grab test); — General repair methods for envelopes, load ring, ropes and lines, basket; — Inspection methods for envelopes, ropes and lines, basket; — Ageing, fatigue; — Disassembly and reassembly techniques; — Troubleshooting techniques.	3

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS	Level
10L.1 Theory of flight — gas balloons Aerostatics and controls: — Principles; — Effect on envelopes, wind effect, altitude, and temperature effects.	**1**
10L.2 General airframe of gas balloons Components and assembly of a gas balloon: — Identification plate; — Envelope;	2

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS	Level
— Valve; — Netting; — Load ring (hoop); — Basket; — Lines and ropes (drag rope, mooring line, valve line, emergency opening rope, ripping line, neckline).	
10L.3 Envelope — Shape and assembly of envelope (poles, equator, panels); — Fabrics, seams, and materials; — Deflation opening and parachute; — Load belt; — Ripping panel; — Appendix; — Emergency opening; — Holding-down patches; — Ballonets; — Electrostatic properties.	3
10L.4 Netting — Netting assembly (net ring, net, mesh); — Mesh dimensions (knots, sizes, angles); — Materials for netting and accessories; — Electrostatic properties.	3
10L.5 Valves, parachutes, and other related systems — Construction, operation, maintenance and testing of manoeuvring/helium valves, pressure relief valves, gas-tight parachutes, and ballonet fans; — Construction, operation, maintenance and testing of parachute-centring belt and pull-down belts.	3
10L.6 Load ring — Function, material, and common problems (steel pipe, strops, toggles).	3
10L.7 Basket (including alternative devices) Common assembly of and materials for hot-air/gas balloon baskets: — Metal frame, basket padding and leather trim; — Basket weave, grab handles, basket strops and toggles, ballast system (bags, support and sand dumpers); — Basket wire and basket wire routing; — Basket floor, basket frame / load-bearing frame, sliders, rawhide protective covering.	3
10L.8 Ropes and lines Functionality, materials, use, inspection, and care of: — Shroud lines / envelope ropes / bridles; — Trail rope /drag rope and trail-rope bag; — Holding ropes; — Valve line/ valve cord and parachute rope; — Emergency opening rope;	3

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS	Level
— Appendix pull-close rope; — Appendix anchor line; — Inflation aid.	
10L.9 Instruments Basic operation, maintenance, and testing of: — Altimeter (mechanical and electronic); — Variometer (mechanical and electronic); — Mode-S transponder; — VHF radio; — Emergency locator transmitter (ELT) and personal locator beacon (PLB).	2
10L.10 Tethered gas balloon (TGB) systems Functionality, operation, materials, use, inspection, and care of: — Launch platform; — Winch system: winch (electric, hydraulic, emergency operation), tether cable (cable, sheaves, swivel, clamps), and control panel; — Gondola (metal-tubing construction); — Night lighting.	3
10L.11 Equipment — Required equipment for free-ballooning and for tethered operations, and its care.	2
10L.12 Gas-balloon handling and storage — Ground procedures and mooring for gas balloons and tethered gas balloons, ballasting, rigging and launch preparation; — Safe handling of hydrogen, helium, illuminating gas, and other lifting gases; — Lifting gas (charging, purifying and leak testing, pressure monitoring); — Effects of environmental conditions on gas-balloon handling.	2
10L.13 Disassembly, inspection, repair, and assembly techniques — Types of defects and visual inspection techniques; — Allowable damage to and tolerance of envelope, basket, lines, ropes, etc.; — Common test procedures (grab test, tensile strength, tear growth, porosity, electric resistivity, etc.); — General repair methods for envelopes, load ring, ropes and lines, basket/gondola; — Inspection methods for envelopes, load ring, ropes and lines, basket/gondola (especially for steel frames and welds on TGB gondolas); — Ageing, fatigue and corrosion control programmes; — Disassembly and reassembly techniques; — Troubleshooting techniques.	3

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS	Level
11L.1 Theory of flight and control of airships — Control using fins, rudders and elevators; — Aerodynamic lift and aerodynamic balance;	2

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS	Level
— Stability and control; — Free ballooning; — Operation of trim tabs, balance and antibalance (leading) tabs, servo tabs, spring tabs, mass balance, control surface bias, aerodynamic balance panels; — Vectored thrust; — Fire and lightning protection.	
11L.2 Airship airframe structure — general concepts — Classification of airships (rigid airship, semi-rigid airship, non-rigid airship); — Construction of semi-rigid airships (envelope, ballonet, membranes, nose cone, internal structures, keel, trusses, longerons, suspension lines); — Construction of non-rigid airships (envelope, ballonet, catenary curtains, suspension lines, air scoops); — Attachment of stabilisers and control surfaces to the airframe.	2
11L.3 Airship envelope — Nose cone battens / bow strips; — Catenary systems (catenary curtain, support/suspension cables); — Ballonets and their positioning (forward, aft); — Air systems (air scoops, ballonet fans, empennage air system, dampers and transfer fans).	2
11L.4 Gondola — General knowledge of gondola construction (metal-tubing gondolas, metal-structure gondolas, composite gondolas); — Doors, windows, and hatches; — Attachment of the gondola to the airframe/envelope; — Gondola layout, equipment and furnishing (emergency equipment requirements, seats, harnesses and belts); — Simple water/waste systems in airships; — Gondola heating and ventilation (ventilations and heating systems, heat exchanger, blower); — Landing gear (construction, shock absorbing, tyres, weight-on-wheels).	3
*11L.5 Airship flight controls **(ATA 27/55)*** — Primary controls (rudder, elevator, asymmetric thrust, thrust vectoring); — Trim control; — System operation: manual, hydraulic, pneumatic, electrical, fly-by-wire; — Balancing and rigging.	3
*11L.6 Electrical power **(ATA 24)*** — Installation and operation of batteries; — DC power generation; — AC power generation; — Voltage regulation; — Power distribution; — Wiring, electrical connections; — Inverters, transformers, rectifiers; — Circuit protection; — External/ground power.	3

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS	Level
*11L.7 Lights **(ATA 33)*** — External: navigation, anticollision, landing, taxiing, ground approach light, aft landing light; — Internal: flight compartment (cockpit) and passenger compartment (cabin); — Emergency.	2
11L.8 Ice and rain protection — Windscreen wipers and windscreen de-misting systems; — Surface de-icing systems.	3
*11L.9 Fuel systems **(ATA 28)*** — System layout; — Fuel tanks: venting, draining; — Supply systems; — Cross-feed and transfer; — Indications and warnings; — Refuelling and defuelling.	2
11L.10 Engine and propellers in airships — General understanding of engine layout, thrust vectoring, swivel systems, ducted propellers and control system.	2
11L.11 Airship handling and storage — Ground procedures and mooring with and without mooring mast, ballasting, hangaring, rigging and launch preparation; — Lifting gas (charging, purifying and leak testing, pressure monitoring); — Effects of environmental conditions on airship handling.	2
11L.12 Disassembly, inspection, repair, and assembly techniques — Types of defects and visual inspection techniques; — Corrosion removal, assessment and reprotection; — General repair methods, structural repair manual; — Ageing, fatigue and corrosion control programmes; — Non-destructive inspection techniques; — Disassembly and reassembly techniques; — Troubleshooting techniques.	2

MODULE 12L — RADIO COM / ELTs / TRANSPONDERS / INSTRUMENTS

MODULE 12L — RADIO COM / ELTs / TRANSPONDERS / INSTRUMENTS	Level
12L.1 Radio COM / ELTs Fundamentals of radio-wave propagation, antennas, transmission lines, communication, receiver, and transmitter. Working principle of: — Emergency locator transmitters (ELTs); — Very-high-frequency (VHF) communications; — installation and testing of ELTs and VHF radio and antennas.	2
12L.2 Transponder and FLARM	2

MODULE 12L — RADIO COM / ELTs / TRANSPONDERS / INSTRUMENTS	Level
— Air traffic control transponder, secondary surveillance radar (basic operation, configuration, modes); — FLARM; — Installation and testing.	
12L.3 Instruments — Pitot-static: altimeter, airspeed indicator, vertical speed indicator, total energy probes; — Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal situation indicator, turn and slip indicator, turn coordinator; — Compasses: direct reading, remote reading; — Angle-of-attack indication, stall-warning systems; — Glass and analogue cockpit; — Indications of other aircraft systems; — Installation and testing of instruments.	2
12L.4 Avionics general test equipment — Operation, function, and use of general test equipment for avionics.	1

AMC1 Appendix VIII — Basic examination standard for category L aircraft maintenance licence

NUMBER OF QUESTIONS PER SUBMODULE

The tables below show the number of questions recommended for each submodule. Justified deviations from these values are also acceptable, provided that the sum of the questions for the submodules equals the total number for a given module.

MODULE 1L — BASIC KNOWLEDGE

MODULE 1L — BASIC KNOWLEDGE		Nr of questions
		20
1L.1	Mathematics	4
1L.2	Physics	5
1L.3	Electrics	4
1L.4	Aerodynamics/aerostatics	2
1L.5	Workplace safety and environmental protection	5

MODULE 2L — HUMAN FACTORS

MODULE 2L — HUMAN FACTORS		Nr of questions
		20
2L.1	General	3
2L.2	Human performance and limitations	2
2L.3	Social psychology	2
2L.4	Factors that affect performance	4
2L.5	Physical environment	4
2L.6	The ‘Dirty Dozen’ and risk-mitigation	5

MODULE 3L — AVIATION LEGISLATION

MODULE 3L — AVIATION LEGISLATION		Nr of questions
		28
3L.1	Regulatory framework	4
3L.2	Continuing airworthiness regulations	6
3L.3	Repairs and modifications (Part-ML)	5
3L.4	Maintenance data (Part-ML)	5
3L.5	Licence privileges and how to exercise them properly (Part-66, Part-ML)	8

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC		Nr of questions
		40
4L.1	Combined structures made of wood, metal tube and fabric	8
4L.2	Materials	8

MODULE 4L — WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC	Nr of questions
	40
4L.3 Identifying damages and defects	12
4L.4 Standard repair and maintenance procedures	12

MODULE 5L — COMPOSITE STRUCTURE

MODULE 5L — COMPOSITE STRUCTURE	Nr of questions
	32
5L.1 Fibre-reinforced plastic (FRP) airframe	6
5L.2 Materials	6
5L.3 Identifying damages and defects	10
5L.4 Standard repair and maintenance procedures	10

MODULE 6L — METALLIC STRUCTURE

MODULE 6L — METALLIC STRUCTURE	Nr of questions
	32
6L.1 Metallic airframe	6
6L.2 Materials	6
6L.3 Identifying damages and defects	10
6L.4 Standard repair and maintenance procedures	10

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Nr of questions
	60
7L.1 Theory of Flight — gliders and aeroplanes	4
7L.2 Airframe Structure — gliders and aeroplanes	4
7L.3 Air conditioning (ATA 21)	1
7L.4 Electrical power, cables, and connectors (ATA 24)	3
7L.5 Equipment and furnishing (ATA 25)	2
7L.6 Fire protection and other safety systems (ATA 26)	2
7L.7 Flight controls (ATA 27)	3
7L.8 Fuel system (ATA 28)	2
7L.9 Hydraulic power (ATA 29)	2
7L.10 Ice and rain protection (ATA 30)	1
7L.11 Landing gear (ATA 32)	3
7L.12 Lights (ATA 33)	1
7L.13 Oxygen (ATA 35)	1
7L.14 Pneumatic/vacuum (ATA 36)	1
7L.15 Water ballast (ATA 41)	1
7L.16 Fasteners	2
7L.17 Pipes, hoses, and connectors	2
7L.18 Springs	1
7L.19 Bearings	1

MODULE 7L — AIRFRAME: GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Nr of questions
	60
7L.20 Transmissions	2
7L.21 Control cables	3
7L.22 Fits and clearances	1
7L.23 Aircraft weight and balance	2
7L.24 Workshop practices and tools	4
7L.25 Disassembly, inspection, repair, and assembly techniques	4
7L.26 Abnormal events	3
7L.27 Maintenance procedures	4

MODULE 8L — POWER PLANT

MODULE 8L — POWER PLANT	Nr of questions
	64
8L.1 Engine fundamentals — general	2
8L.2 Piston-engine fundamentals and performance	2
8L.3 Piston-engine construction	3
8L.4 Piston-engine fuel system (non-electronic)	2
8L.5 Starting and ignition systems	3
8L.6 Air intake, exhaust, and cooling systems	2
8L.7 Supercharging/turbocharging	2
8L.8 Lubrication systems of piston engines	2
8L.9 Engine indication systems	3
8L.10 Electric and hybrid aircraft engines	9
8L.11 Turbine-engine fundamentals and performance	2
8L.12 Inlet and compressor	2
8L.13 Combustion chamber, starting and ignition system	2
8L.14 Turbine section and exhaust	2
8L.15 Other turbine-engine components and systems	2
8L.16 Turbine-engine inspections and ground operation	3
8L.17 Propeller	7
8L.18 Full authority digital engine control (FADEC)	2
8L.19 Lubricants and fuels	3
8L.20 Engine and propeller installation	4
8L.21 Engine monitoring and ground operation	3
8L.22 Engine/propeller storage and preservation	2

Note: In accordance with Appendix VII '1. Modularisation' to Annex III, Module 8L training subjects for L5 category AML and, therefore, the number of questions, should be limited to the relevant propulsion

system. As such, in the above table, certain submodules may not be applicable and should not be taken into account, and the total number of questions should also be adapted accordingly.

MODULE 9L — BALLOONS: HOT-AIR BALLOONS

MODULE 9L — BALLOONS: HOT-AIR BALLOONS	Nr of questions
	36
9L.1 Theory of flight — hot-air balloons	2
9L.2 Airframe of hot-air balloons	3
9L.3 Envelope	4
9L.4 Heater system / burner	4
9L.5 Basket and basket suspension (including alternative devices)	4
9L.6 Instruments	5
9L.7 Equipment	2
9L.8 Hot-air balloon handling and storage	4
9L.9 Disassembly, inspection, repair, and assembly techniques	8

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS

MODULE 10L — BALLOONS: GAS (FREE/TETHERED) BALLOONS	Nr of questions
	44
10L.1 Theory of flight of gas balloons	2
10L.2 Airframe of gas balloons	3
10L.3 Envelope	3
10L.4 Netting	1
10L.5 Valves, parachutes, and other related systems	1
10L.6 Load ring	1
10L.7 Basket (including alternative devices)	4
10L.8 Ropes and lines	2
10L.9 Instruments	5
10L.10 Tethered gas balloon (TGB) systems	8
10L.11 Equipment	2
10L.12 Gas-balloon handling and storage	4
10L.13 Disassembly, inspection, repair, and assembly techniques	8

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS

MODULE 11L — AIRSHIPS: HOT-AIR/GAS AIRSHIPS	Nr of questions
	40
11L.1 Theory of flight and control of airships	3
11L.2 Airship airframe structure — general concepts	3
11L.3 Airship envelope	3
11L.4 Gondola	6
11L.5 Airship flight controls (ATA 27/55)	2
11L.6 Electrical power (ATA 24)	3
11L.7 Lights (ATA 33)	1
11L.8 Ice and rain protection	2
11L.9 Fuel systems (ATA 28)	3
11L.10 Engines and propellers in airships	2
11L.11 Airship handling and storage	4
11L.12 Disassembly, inspection, repair, and assembly techniques	8

MODULE 12L — RADIO COM / ELTs / TRANSPONDERS / INSTRUMENTS

MODULE 12L — RADIO COM / ELTs / TRANSPONDER / INSTRUMENTS	Nr of questions
	20
12L.1 Radio COM / ELTs	6
12L.2 Transponder and FLARM	5
12L.3 Instruments	8
12L.4 Avionics general test equipment	1

[…]

APPENDICES TO AMC TO ANNEX III (PART-66)

Appendix I to AMC to Annex III — Aircraft type ratings for Part-66 aircraft maintenance licences

[…]

GROUP 1 AEROPLANES

GROUP 1 AEROPLANES				
TC Holder	Model	Com. des.	Part-66 type rating endorsement	Note
[…]	[…]	[…]	[…]	[…]
AIRBUS	A319-152N	*A319 NEO*	**Airbus A319/A320/A321 (CFM LEAP-1A)**	~~TC not yet released~~
AIRBUS	A319-171N	*A319 NEO*	**Airbus A319/A320/A321 (IAE PW1100G)**	~~TC not yet released~~

GROUP 1 AEROPLANES				
AIRBUS	A330-743L	*Beluga XL*	**Airbus A330 (RR Trent 700)**	~~TC not yet released~~
AIRBUS	A330-841	*A330 NEO*	**Airbus A330 (RR Trent 7000)**	~~TC not yet released~~
BOEING COMPANY (THE)	737-8200	*B737 MAX*	**Boeing 737-7/8/9 (CFM LEAP-1B)**	~~TC not yet released~~
BOMBARDIER	CL-215-6B11 (CL-215T Variant)		**Canadair CL-215 (PWC ~~PW120~~ PW123)**	
DASSAULT AVIATION	Falcon 6X	*Falcon 6X*	**Falcon 6X (PW812D)**	OSD mandatory.
GULFSTREAM AEROSPACE Corporation	GVII-G500	*G500*	**Gulfstream GVII (PWC PW800GA)**	OSD mandatory.
GULFSTREAM AEROSPACE Corporation	GVII-G600	*G600*	**Gulfstream GVII (PWC PW800GA)**	~~Not yet certified.~~ OSD mandatory.
GULFSTREAM AEROSPACE Corporation	GVIII-2		**Gulfstream GVIII-2 (RR BR700)**	Not yet certified. OSD mandatory.
TEXTRON AVIATION Inc.	700	*Citation Longitude*	**Cessna 700 (Honeywell HTF7000)**	
~~TEXTRON AVIATION Inc.~~	~~402C~~	~~Businessliner Utiliner~~	~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~414A~~	~~Chancellor~~	~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~421B~~	~~Golden Eagle~~	~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~421C~~	~~Golden Eagle~~	~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~404~~	~~Titan~~	~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~401~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~402~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~411~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~414~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~421~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~401A~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~401B~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~402A~~		~~Cessna 400 Series (Continental)~~	

GROUP 1 AEROPLANES				
~~TEXTRON AVIATION Inc.~~	~~402B~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~411A~~		~~Cessna 400 Series (Continental)~~	
~~TEXTRON AVIATION Inc.~~	~~421A~~		~~Cessna 400 Series (Continental)~~	
[…]	[…]	[…]	[…]	[…]

GROUP 1 HELICOPTERS

GROUP 1 HELICOPTERS				
TC Holder	Model	Com. des.	Part-66 type rating endorsement	Note
[…]	[…]	[…]	[…]	[…]
AIRBUS HELICOPTERS	H160-B		**AIRBUS HELICOPTERS H160 (SAFRAN ARRANO 1)**	
AIRBUS HELICOPTERS DEUTSCHLAND GmbH	MBB-BK117 D-3	H145	**Eurocopter MBB-BK 117 D3 (Safran Arriel 2)**	
AIRBUS HELICOPTERS DEUTSCHLAND GmbH	MBB-BK117 D-3m	H145	**Eurocopter MBB-BK 117 D3 (Safran Arriel 2)**	
ERICKSON AIR-CRANE	S-64E		**Erickson S-64 (Erickson JFTD 12)**	
LEONARDO S.p.A.	AW189	AW189K	**AW189 (Safran ANETO-1K)**	
[…]	[…]	[…]	[…]	[…]

[…]

GROUP 3: PISTON-ENGINE AEROPLANES (other than those in Group 1)

GROUP 3: PISTON-ENGINE AEROPLANES (other than those in Group 1)						
TC Holder	Model	Type of structure	Part-66 type rating endorsement	Note	MTOM	
					≤2T	>2T
[…]	[…]	[…]	[…]	[…]	[…]	[…]
AQUILA Aviation by Excellence AG	AQUILA AT01-200	*Composite*	**Aquila AT01 (Rotax)**	ELA1	X	
BLACKSHAPE S.p.A.	BS 115	*Composite*	**Blackshape BS 115/BK 160 (~~Rotax~~ Lycoming)**	ELA1	X	
BLACKSHAPE S.p.A.	BK 160	*Composite*	**Blackshape BS 115/BK 160 (Lycoming)**	ELA1	X	
BLACKSHAPE S.p.A.	BK 160-200	*Composite*	**Blackshape BS 115/BK 160 (Lycoming)**	ELA1	X	
BLACKSHAPE S.p.A.	BK 160TR	*Composite*	**Blackshape BS 115/BK 160 (Lycoming)**	ELA1	X	
BRM Aero s.r.o.	Bristell B23	*Metal*	**Bristell B23 (Rotax)**	ELA1	X	

GROUP 3: PISTON-ENGINE AEROPLANES (other than those in Group 1)						
BRM Aero s.r.o.	Bristell B23-915	*Metal*	**Bristell B23 (Rotax)**	ELA1	X	
Czech Sport Aircraft a.s.	PS-28 N Cruiser	*Composite + Metal*	**Czech Sport PS-28 (Rotax)**	ELA1	X	
DIAMOND AIRCRAFT Industries	DA 40	*Composite*	**Diamond DA40 (Lycoming)**	ELA1 ~~ELA2~~	X	
DIAMOND AIRCRAFT Industries	DA 40 F	*Composite*	**Diamond DA40 (Lycoming)**	ELA1 ~~ELA2~~	X	
DIAMOND AIRCRAFT Industries	DA 40 D	*Composite*	**Diamond DA40 D (Technify)**	ELA1 ~~ELA2~~	X	
DIAMOND AIRCRAFT Industries	DA 50 C	*Composite*	**Diamond DA50 (Continental)**	ELA2	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/200	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/L	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/LC	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/LT	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/S	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	

GROUP 3: PISTON-ENGINE AEROPLANES (other than those in Group 1)						
~~EXTRA Flugzeugproduktions- und Vertriebs-GmbH~~ Extra Aerobatic Aircraft GmbH	EA 300/SC	*Composite*	**Extra EA-300 Series (Lycoming)**	ELA1	X	
Extra Aerobatic Aircraft GmbH	EXTRA NG	*Composite*	**Extra NG (Lycomimg)**	ELA1	X	
Flight Design general aviation GmbH	F2-CS23	*Composite*	**F2-CS23 (Rotax)**	ELA1	X	
~~Flight Design GmbH~~ Flight Design general aviation GmbH	CTLS-ELA	*Composite*	**CTLS-ELA (Rotax)**	ELA1	X	
ISSOIRE AVIATION	APM41	*Composite*	**Issoire APM 40 (Rotax)**	ELA1	X	
LAVIA ARGENTINA S.A. (LAVIASA)	PA-25	~~*Metal*~~*Metal tubing Fabric*	**Piper PA-25 Series (Lycoming)**	ELA2	X	
LAVIA ARGENTINA S.A. (LAVIASA)	PA-25-235	~~*Metal*~~*Metal tubing Fabric*	**Piper PA-25 Series (Lycoming)**	ELA2	X	
LAVIA ARGENTINA S.A. (LAVIASA)	PA-25-260	~~*Metal*~~*Metal tubing Fabric*	**Piper PA-25 Series (Lycoming)**	ELA2	X	
Magnaghi Aeronautica S.p.A.	Sky Arrow 600 Sport	*Composite*	**III Sky Arrow 600 (Rotax)**	ELA1	X	
Pipistrel Vertical Solutions d.o.o.	Virus SW 121	*Composite*	**Pipistrel Virus (Rotax)**	ELA1*	X	
Pipistrel Vertical Solutions d.o.o.	Virus SW 128	*Composite*	**Pipistrel Virus Electro (Pipistrel E-811)**	ELA1**	X	
TECNAM Costruzioni Aeronautiche	P-Mentor	*Metal*	**Tecnam P2002 (Rotax)**	ELA1	X	
TECNAM Costruzioni Aeronautiche	P2010 TDI	*Composite + Metal*	**Tecnam P2010 (Continental)**	ELA1	X	
TOMARK, s.r.o.	Viper SD-4 RTC	*Metal*	**Tomark Viper SD-4 (Rotax)**	ELA1~~- Restricted TC.~~	X	
TEXTRON AVIATION Inc.	402C	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	414A	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	421B	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	421C	*Composite*	**Cessna 400 Series (Continental)**		X	

GROUP 3: PISTON-ENGINE AEROPLANES (other than those in Group 1)						
TEXTRON AVIATION Inc.	404	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	401	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	402	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	411	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	414	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	421	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	401A	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	401B	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	402A	*Composite*	**Cessna 400 Series (Continental)**		X	
TEXTRON AVIATION Inc.	402B	*Composite*	**Cessna 400 Series (Continental)**		X	
[…]	[…]	[…]	[…]	[…]	[…]	[…]

*Electrical Virus variants certified (within the L2 licence privilege)

**Classified as Group 3 per 66.A.5(1) par. 2, within L2 the licence privilege

GROUP 4 SAILPLANES

GROUP 4 SAILPLANES			
TC Holder	Model	Type of structure	Note
[…]	[…]	[…]	[…]
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-100	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-100 ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-100 G	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-100 G ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-1000S	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-200	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-200/17	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-200/17 C	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-300	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-300 CLUB ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-300 CLUB ELAN ACRO	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-300 ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-300 ELAN ACRO	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500 ELAN ORION	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500 ELAN TRAINER	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500/20 ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500/22 ELAN	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-600	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-600/18	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-800 S	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-808 S	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-0	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 10-a	*Composite*	

GROUP 4 SAILPLANES			
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-a	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-b	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-c	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-d	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-e	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-f	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 1-f (45)	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 3	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 3-17	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 3-a	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 4	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 4-a	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 4-b	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6-18w	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6-a	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6-b	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6-c	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 6-c18	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 7	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS 7-WL	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS10-s	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-18	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-a	*Composite*	

GROUP 4 SAILPLANES			
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-b	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-s	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-sb	*Composite*	
M&D Flugzeugbau GmbH & Co. KG	JS-MD 3	*Composite*	The model has also powered variants.
M&D Flugzeugbau GmbH & Co. KG	JS-MD 3 RES	*Composite*	
SPORTINE AVIACIJA IR KO	LAK-17A mini	*Composite*	
[…]	[…]	[…]	[…]

GROUP 4 POWERED SAILPLANES

GROUP 4 POWERED SAILPLANES			
TC Holder	Model	Type of structure	Note
[…]	[…]	[…]	[…]
ALEXANDER SCHLEICHER	AS 33 Es	*Composite*	
ALEXANDER SCHLEICHER	AS 33 Me	*Composite*	(electrical)
ALEXANDER SCHLEICHER	AS 34 Me	*Composite*	(electrical)
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-1000M	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-1000T	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-1001E	*Composite*	(electrical)
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-400	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500 M	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-500 MB	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-600/18 M	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-600M	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-800 A	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-800 B	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-800 LA	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	DG-808 C	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS10-st	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-e	*Composite*	

GROUP 4 POWERED SAILPLANES			
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS8-t	*Composite*	
~~DG FLUGZEUGBAU GMBH~~ DG AVIATION GmbH	LS9	*Composite*	
GANTENBRINK, BRUNO	EtaN4	*Composite*	
HPH SPOL SRO	Glasflügel 304 S Jet	*composite*	
LANGE AVIATION GMBH	Antares 18T	*composite*	
SCHEMPP HIRTH FLUGZEUGBAU	Ventus-3M	*Composite*	
SCHEMPP HIRTH FLUGZEUGBAU	Ventus-3F	*Composite*	
SPORTINE AVIACIJA IR KO	LAK-17B FES mini	*Composite*	
[…]	[…]	[…]	[…]

GROUP 4 GAS BALLOONS

GROUP 4 GAS BALLOONS		
TC Holder	Model	Note
[…]	[…]	[…]
CAMERON BALLOONS LIMITED	TGB-1150	Tethered gas balloon
LINDSTRAND TECHNOLOGIES LTD	197-T (PTB)	Tethered gas balloon
[…]	[…]	[…]

GROUP 4 HOT-AIR BALLOONS

GROUP 4 HOT-AIR BALLOONS		
TC Holder	**Model**	**Note**
[…]	[…]	[…]
BALLONS CHAIZE	SSHAB-Model	ELA1
BALLONS CHAIZE	SW-Model	
[…]	[…]	[…]

[…]

Appendix II to AMC to Annex III — Aircraft Type Practical Experience and On-the-Job Training — List of Tasks

~~**Tasks are divided in categories of aircraft:**~~

1) Aircraft type practical experience

The tasks are divided in categories of aircraft:

A) aeroplanes and helicopters

B) sailplanes and powered sailplanes

C) balloons and airships

A. SPECIFIC TASKS FOR AEROPLANES AND HELICOPTERS

[…]

B. SPECIFIC TASKS FOR SAILPLANES AND POWERED SAILPLANES

[…]

C. SPECIFIC TASKS FOR BALLOONS AND AIRSHIPS

Tasks	Balloon		Airship	
	Hot-air	Gas (free/tethered)	Hot-air	Gas
General activities:				
Functionality test of aircraft (*)	x	x	x	x
Placards check or replacement	x	x	x	x
Documentation annual inspection, repair, ADs, equipment (*)	x	x	x	x
Classification repair (*)	x	x	x	x
Weighing:				
Weighing and weighing report (*)	x	x	x	x
Servicing:				
Lubrication of controls when applicable		x	x	x
Cleaning of envelope, basket, burner	x	x	x	x
Inspections:				
Eight annual inspections (covering at least ~~3~~ three different types) (*)	x			
Five annual inspections (covering at least ~~2~~ two different types) (*)		x (free)		
Three annual inspections (covering at least ~~2~~ two different types) (*)		x (tethered)	x	
Two annual inspections (*)				x
Strength test of envelope fabric (*)	x	x	x	x
Flight control systems: Removal — Inspection — Reinstallation				
Control surface cable				x
Trim system				x

Tasks	Balloon		Airship	
	Hot-air	Gas (free/tethered)	Hot-air	Gas
Safeguarding of pins, screws, castellated nuts (*)		x (tethered)	x	x
Stick and pedals				x
Hydromechanical control systems		x (tethered)		x
Ballonet control systems (*)		x (tethered)	x	x
Electrical control systems		x (tethered)		x
Valves (gas valve, turning vent, parachute or rip panel) (*)	x	x	x	x
Control and shroud lines and pulleys	x	x	x	x
Elevator — stabiliser (including balancing if applicable)				x
Rudder (including balancing if applicable)				x
Drag rope		x (free)		
Electrical system:				
Removal — installation of electrical wires		x (tethered)	x	x
Removal — installation of electrical components		x (tethered)	x	x
Servicing of batteries	x	x	x	x
Communication system — transponder:				
Removal — installation of COM	x	x	x	x
Removal — installation of NAV				x
Removal — installation of XPDR	x	x	x	x
Installation of antenna	x	x	x	x
Replacement of antenna cable	x	x	x	x
Cabin — equipment:				
Pitot-static systems — tubes removal — installation — replacement				x
Flight instruments: removal — installation — replacement	x	x	x	x
Installation of an approved system	x	x	x	x
Magnetic compass installation — compensation				x
Fire extinguisher	x		x	x
Ballast — replacement of:				
Water ballast (when applicable)				x
Sand/shot ballast (when applicable)		x		x
Valves — inspection and rigging of valves				x
Envelope:				
Inspection and repair of envelope panels/gores/seams	x	x	x	x
Inspection and repair of load tapes and attachment points	x	x	x	x
Inspection and repair of deflation system	x	x	x	
Inspection and repair of net		x		
Inspection and repair of mooring system		x (tethered)		

Tasks	Balloon		Airship	
	Hot-air	Gas (free/tethered)	Hot-air	Gas
Electrostatic conductivity test (if type is approved for hydrogen) (*)		x		x
Ballonet inspection and repair		x		x
Inspection and fabrication of a suspension cable or rope	x	x	x	x
Inspection and fabrication of a catena			x	x
Load ring/frame:				
Crack detection (welded and machined parts) (*)	x	x	x	
Heater system:				
Removal, inspection and reinstallation	x		x	
Inspection and cleaning of vaporiser and filter (*)	x		x	
Inspection and replacement of hoses (*)	x		x	
Inspection and replacement of pilot flame ignition unit (*)	x		x	
Sealing of fittings (*)	x		x	
Pressure and leak test (*)	x		x	
Disassembly and assembly of fuel cell (*)	x		x	
10-year inspection of fuel cell	x		x	
Basket/gondola:				
Removal, inspection and reinstallation (as applicable)	x	x	x	x
Inspection and fabrication of a suspension cable or rope (*)	x	x		
Removal — installation of padding	x	x		
Removal — installation of belts — safety harness			x	x
Removal — installation of essential elements of the cabin	x	x	x	x
Inspection and fabrication of a basket wire	x	x		
Inspection of operational equipment and its fixation points	x	x	x	x
Crack detection and repair (welded parts and frames)	x	x	x	x
Landing gear:				
Removal, inspection and reinstallation of wheels		x (tethered)	x	x
Removal, inspection and reinstallation of brakes				x
Removal, inspection and reinstallation of shock absorbers				x
Fuel — Engine — Propeller — Engine instrument~~s~~ systems:				
Refer to tasks in blocks for aeroplanes			x	x
Wood structure:				
Structure repair	x	x		
Protective coating				

Tasks	Balloon		Airship	
	Hot-air	Gas (free/tethered)	Hot-air	Gas
Composite structure:				
Laminate repair		x (tethered)		x
Sandwich structure repair		x (tethered)		x
Metallic structures:				
Crack detection (welded and machined parts)	x	x	x	x
Riveting jobs			x	x
Bonding of structures		x	x	x
Anticorrosion treatment		x (tethered)	x	x
Repair of fairings		x (tethered)		x
Engine:				
Tasks for aeroplanes of comparable certification level			x	x
Exhaust system:				
Tasks for aeroplanes of comparable certification level			x	x
Propeller:				
Tasks for aeroplanes of comparable certification level			x	x
Fuel system:				
Tasks for aeroplanes of comparable certification level			x	x
Hydraulic system:				
Tasks for aeroplanes of comparable certification level			x	x
Pneumatic system:				
Tasks for aeroplanes of comparable certification level			x	x
Winch system:				
Witness winch inspection		x (tethered)		

2) List of tasks for OJT

The minimum list of tasks should be selected from the table below according to the following procedures and criteria:

(i) Filter the ATA chapters (or sub-chapters, when required) applicable to the specific aircraft type (add others if they are missing).

(ii) Identify relevant and significant tasks for each required category of INS, FOT, SGH, R/I, MEL and TS.

(iii) Retain the required percentage for each task category, and throughout ATA chapters, as much as relevant to the particular aircraft type.

The selection of tasks should give precedence to tasks which are critical and complex in terms of:

— difficulty to execute;

— interpretation of the maintenance procedures / work instructions;

— specific tools and equipment;

— coordination among maintenance staff (teamwork);

— human factors (accessibility, human–machine interface (HMI), etc.);

— safety impact on the aircraft and the crew.

Removal and installation tasks include the final confirmation test, if required.

Credit may be given for similar tasks between ATA systems (e.g. pneumatic valves in ATA 21, 30 and 36), but this should be kept to a minimum.

Some tasks may be performed on another aircraft type as long as both the system and the task are similar.

The following table provides an acceptable method of selection of OJT tasks for B1 and B2 AML categories, per ATA chapter or sub-chapters, as required by point 6.2(e) of Appendix III to Annex III.

OJT TASK SELECTION												
ATA Chapters	**B1**						**B2**					
	INS	**FOT**	**SGH**	**R/I**	**MEL**	**TS**	**INS**	**FOT**	**SGH**	**R/I**	**MEL**	**TS**
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
Introduction subjects:												
05 Time limits / maintenance checks (see *Note* below)	X	—	—	—	—	—	X	—	—	—	—	—
06 Dimensions/ areas	X	—	—	—	—	—	X	—	—	—	—	—
07 Lifting and shoring	X	—	—	—	—	—	X	—	—	—	—	—
08 Levelling and weighing	—	—	X	—	—	—	X	—	X	—	—	—
09 Towing and taxiing	—	—	X	—	—	—	—	—	X	—	—	—
10 Parking/mooring, storing and return to service	—	—	X	—	—	—	—	—	X	—	—	—
11 Placards and markings	X	—	—	—	—	—	X	—	—	—	—	—
12 Servicing	—	—	X	—	—	—	—	—	X	—	—	—
20 Standard practices — only type particular (ATA 50 or 60)	X	—	X	—	—	—	X	—	X	—	—	—
Rotorcraft (only):												
18 Vibration and noise analysis (blade tracking)	—	—	—	—	—	X	—	—	—	—	—	—
62 Rotors												
62-10 Rotor blades	X	—	—	X	—	—	—	—	—	—	—	—
62-20 Rotor head(s)	X	—	—	X	—	—	—	—	—	—	—	—
62-30 Rotor shaft(s) / swashplate assy(s)	X	—	—	X	—	—	—	—	—	—	—	—
62-40 Indicating	—	X	X	—	X	X	—	—	—	—	—	X
63 Rotor drives												
63-10 Engine/gearbox couplings	X	—	X	X	—	—	—	—	—	—	—	—
63-20 Gearbox(es)	X	—	X	X	—	—	—	—	—	—	—	—
63-30 Mounts, attachments	X	—	X	—	—	—	—	—	—	—	—	—
63-40 Indicating	—	X	—	—	X	X	—	—	—	—	—	X
63-50 Rotor brake	X	—	—	X	—	—	—	—	—	—	—	—
63-60 Drain lines	X	—	—	—	—	—	—	—	—	—	—	—
64 Tail rotor												

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
64-10 Rotor blades	X	—	X	X	—	—	—	—	—	—	—	—
64-20 Rotor head	X	—	—	X	—	—	—	—	—	—	—	—
64-40 Indicating	—	X	—	X	X	X	—	—	—	—	—	X
65 Tail-rotor drive												
65-10 Shafts	X	—	X	X	—	—	—	—	—	—	—	—
65-20 Gearboxes	X	—	X	X	—	—	—	—	—	—	—	—
65-40 Indicating	—	X	—	—	X	X	—	—	—	—	—	X
66 Folding blades / pylon												
66-10 Rotor blades	X	—	—	X	—	—	—	—	—	—	—	—
66-20 Tail pylon	X	—	—	—	—	—	—	—	—	—	—	—
66-30 Controls and indicating	—	X	—	—	—	X	—	—	—	—	—	X
67 Rotors flight control												
67-10 Rotor	X	—	—	—	—	—	—	—	—	—	—	—
67-20 Antitorque rotor control (yaw control)	X	—	—	—	—	X	—	—	—	—	—	—
67-30 Servocontrol system	X	—	—	—	—	X	—	—	—	—	—	—
Airframe systems:												
21 Air conditioning												
21-10 Compression	—	—	X	X	—	X	—	—	—	—	—	—
21-20 Distribution	—	X	—	X	—	—	—	—	—	—	—	—
21-30 Pressurisation control	—	X	—	X	—	X	—	—	—	—	—	—
21-40 Heating	—	—	—	X	—	—	—	—	—	—	—	—
21-50 Cooling	—	—	—	X	—	—	—	—	—	—	—	—
21-60 Temperature control	—	X	—	X	—	X	—	—	—	—	—	—
22 Autoflight												
22-10 Autopilot	—	—	—	—	—	—	—	X	X	X	X	X
22-20 Speed attitude correction	—	—	—	—	—	—	—	X	—	—	—	X
22-30 Autothrottle	—	X	—	—	—	—	X	X	—	X	—	X
22-40 System monitor	—	—	—	—	—	—	—	X	—	—	—	X
22-50 Aerodynamic load alleviating	—	—	—	—	—	—	—	X	—	—	—	X
23 Communications												
23-10 Speech communications	—	X	—	—	—	—	—	X	—	X	—	X
23-15 SATCOM	—	X	—	—	—	—	X	X	—	X	—	X

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
23-20 Data transmission and automatic calling	—	X	—	—	—	—	—	X	—	X	—	X
23-30 Passenger address, entertainment and comfort	—	X	—	—	—	—	X	—	—	X	—	X
23-40 Interphone	—	X	—	—	—	—	X	—	—	X	—	X
23-50 Audio integrating	—	X	—	—	—	—	—	X	—	X	—	X
23-60 Static discharging	X	—	—	—	X	—	X	—	—	X	X	X
23-70 Audio and video monitoring	—	X	—	—	—	—	X	X	—	X	—	X
23-80 Integrated automatic tuning	—	—	—	—	—	—	—	X	—	X	—	X
24 Electrical power												
24-10 Generator drive	X	X	X	X	X	X	X	X	—	—	X	X
24-20 AC Generation	—	X	—	—	—	X	X	X	—	—	X	X
24-30 DC generation	—	X	—	X	—	X	X	X	—	X	X	X
24-40 External power	X	—	X	—	—	—	X	X	X	—	X	X
24-50 AC electrical load distribution	—	X	—	—	—	X	X	X	—	—	—	X
24-60 DC Electrical load distribution	—	X	—	—	—	X	X	X	—	—	—	X
25 Equipment and furnishings												
25-10 Flight compartment	X	X	X	X	X	—	X	X	—	—	—	—
25-20 Passenger compartment	X	—	—	X	—	—	—	—	—	—	—	—
25-30 Galley	X	X	—	X	—	—	X	X	—	—	—	—
25-40 Lavatories	X	X	—	—	—	—	X	—	—	—	—	—
25-50 Additional compartments	X	X	—	—	—	—	—	—	—	—	—	—
50-00 Cargo accessory compartment	X	—	—	—	—	—	—	—	—	—	—	—
50-10 Cargo compartments	X	—	—	—	—	—	—	—	—	—	—	—
50-20 Cargo loading systems	X	X	—	—	—	X	—	X	—	—	—	X
50-30 Cargo-related systems	X	—	—	—	—	—	—	—	—	—	—	—
50-50 Accessory	X	—	—	—	—	—	—	—	—	—	—	—
50-60 Insulation	X	—	—	—	—	—	—	—	—	—	—	—

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
25-60 Emergency	X	X	X	X	—	—	X	X	—	—	—	—
26 Fire protection												
26-10 Detection	—	X	-	X	—	X	—	X	—	—	—	X
26-20 Extinguishing	—	X	X	X	—	—	—	—	—	—	—	—
26-30 Explosion suppression	X	—	—	—	—	—	—	—	—	—	—	—
27 Flight controls												
27-10 Aileron and tab	X	X	—	X	—	X	—	X	—	—	—	—
27-20 Rudder and tab	X	X	—	X	—	X	—	X	—	—	—	—
27-30 Elevator and tab	X	X	—	X	—	X	—	X	—	—	—	—
27-40 Horizontal stabiliser	X	X	—	X	—	X	—	X	—	—	—	—
27-50 Flaps	X	X	—	X	—	X	—	X	—	—	—	—
27-60 Spoiler, drag devices and variable aerodynamic fairings	X	X	—	X	—	X	—	X	—	—	—	—
27-70 Gust lock and dampener	X	X	X	X	—	X	—	X	—	—	—	—
27-80 Lift augmenting	—	X	X	X	—	X	—	X	—	—	—	—
28 Fuel systems												
28-10 Storage	X	—	X	X	X	—	—	—	X	—	—	—
28-20 Distribution	—	—	—	X	—	—	—	X	—	—	—	—
28-30 Dump	X	—	—	—	—	—	—	-		—	—	—
28-40 Indicating	—	X	—	—	—	X	X	X	—	—	—	X
47-00 Nitrogen generation system	X	X	X	X	X	X	—	X	—	—	—	—
29 Hydraulic power												
29-10 Main	X	X	X	X	—	—	—	X	—	—	—	—
29-20 Auxiliary	—	X	X	X	—	—	—	X	—	—	—	—
29-30 Indicating	—	X	—	X	—	X	—	X	—	—	—	X
30 Ice and rain protection												
30-10 Aerofoil	X	X	—	X	—	—	—	—	—	—	—	—
30-20 Air intakes	X	X	—	—	—	—	—	—	—	—	—	—
30-30 Pitot and static	X	—	—	X	—	—	X	X	—	—	—	X
30-40 Windows, windshields and doors	—	X	—	X	—	—	—	X	—	—	—	X
30-50 Antennas and radomes	X	—	—	X	—	—	X	X	—	—	—	X

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
30-60 Propellers/rotors	X	—	—	—	—	—	—	—	—	—	—	—
30-70 Water lines	X	—	—	—	—	—	X	—	—	—	—	—
30-80 Detection	—	X	—	X	—	X	—	X	—	—	—	X
31 Indicating/recording systems												
31-10 Instrument and control panels	—	X	—	X	—	—	—	X	—	X	X	X
31-20 Independent instruments	—	X	—	—	—	—	—	X	—	X	—	X
31-30 Recorders	—	X	—	—	—	—	—	X	X	X	—	—
31-40 Central computers	—	—	—	—	—	—	—	X	—	X	—	X
31-50 Central warning systems	—	X	—	—	—	—	—	X	—	X	X	X
31-60 Central display systems	—	X	—	—	—	—	—	X	—	X	—	X
31-70 Automatic data reporting systems	—	—	—	—	—	—	—	X	X	X	—	X
32 Landing gear												
32-10 Main gear and doors	X	X	X	X	—	—	—	—	—	—	—	—
32-20 Nose gear and doors	X	X	X	X	—	—	—	—	—	—	—	—
32-30 Extension and retraction	X	X	—	X	—	X	—	—	—	—	—	—
32-40 Wheels and brakes	X	—	X	X	—	—	—	—	—	—	—	—
32-50 Steering	X	X	X	X	—	X	—	—	—	—	—	—
32-60 Position indication and warning	—	X	—	X	—	X	X	X	—	X	—	X
32-70 Supplementary gear	X	X	X	X	—	—	—	—	—	—	—	—
33 Lights												
33-10 Flight compartment	X	X	—	X	—	—	X	X	—	X	—	X
33-20 Passenger compartment	X	X	—	X	—	—	X	X	—	X	—	X
33-30 Cargo and service compartments	X	X	—	—	—	—	X	X	—	—	—	X
33-40 Exterior	X	X	—	X	—	—	X	X	—	—	—	X
33-50 Emergency lighting	X	—	—	X	—	—	X	X	—	X	—	X
34 Navigation												

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
34-10 Flight environment data	—	X	—	—	—	—	—	X	—	—	—	X
34-20 Attitude and direction	—	X	—	—	—	—	—	X	—	X	X	X
34-30 Landing and taxiing aids	—	—	—	—	—	—	—	X	—	X	X	X
34-40 Independent position determining	—	X	—	—	—	—	—	X	—	X	X	X
34-50 Dependent position determining	—	—	—	—	—	—	—	X	—	X	X	X
34-60 Flight management computing	—	X	—	—	—	—	—	X	X	X	X	X
35 Oxygen												
35-10 Crew	X	X	X	X	—	X	—	—	—	—	—	—
35-20 Passengers	X	X	—	X	—	—	—	—	—	—	—	—
35-30 Portable	X	—	—	—	—	—	—	—	—	—	—	—
36 Pneumatic												
36-10 Distribution	X	X	—	X	—	X	—	X	—	—	—	—
36-20 Indicating	—	X	—	X	—	X	X	X	—	—	—	X
37 Vacuum												
37-10 Distribution	—	X	—	X	—	X	—	—	—	—	—	—
37-20 Indicating	—	X	—	X	—	X	—	X	—	—	—	X
38 Water/waste												
38-10 Potable	—	X	X	X	—	—	—	X	—	—	—	—
38-20 Wash	—	—	—	—	—	—	—	—	—	—	—	—
38-30 Waste disposal	—	X	X	X	—	—	—	X	—	—	—	—
38-40 Air supply	X	X	—	—	—	—	—	—	—	—	—	—
41 Water ballast												
41-10 Storage	X	—	—	—	—	—	—	—	—	—	—	—
41-20 Dump	X	—	—	—	—	—	—	—	—	—	—	—
41-30 Indication	X	—	—	—	—	—	—	—	—	—	—	X
42 Integrated modular avionics	—	X	—	—	—	—	X	X	X	X	X	X
44 Cabin systems												
44-20 In-flight entertainment system	—	X	—	—	—	—	—	X	—	X	X	X
44-30 External communication system	—	X	—	—	—	—	—	X	—	X	X	X
44-40 Cabin mass memory system	—	—	—	—	—	—	—	X	—	X	X	X

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
44-50 Cabin monitoring system	—	—	—	—	—	—	—	X	—	X	X	X
44-60 Miscellaneous cabin system	—	—	—	—	—	—	—	X	—	X	X	X
45 Onboard maintenance system	—	X	—	—	—	—	—	X	—	X	X	X
46 Information Systems												
46-10 Aeroplane general information systems	—	—	—	—	—	—	—	X	—	X	X	X
46-20 Flight deck information systems	—	X	—	—	—	—	—	X	—	X	X	X
46-30 Maintenance information systems	—	X	—	—	—	—	—	X	—	X	X	X
46-40 Passenger cabin information systems	—	X	—	—	—	—	—	X	—	X	X	X
46-50 Miscellaneous information systems	—	—	—	—	—	—	—	X	—	X	X	X
Airframe structures:												
52 Doors												
52-10 Passenger/crew	X	—	X	X	X	—	—	—	—	—	—	—
52-20 Emergency exits	X	—	X	X	X	—	—	—	—	—	—	—
52-30 Cargo	X	—	—	—	—	—	—	—	—	—	—	—
52-40 Service and miscellaneous	X	—	—	—	—	—	—	—	—	—	—	—
52-50 Fixed interior	X	—	—	—	—	—	—	—	—	—	—	—
52-60 Entrance stairs	X	—	—	—	—	—	—	—	—	—	—	—
52-70 Monitoring and operation	—	X	—	—	—	—	X	X	—	—	—	X
52-80 Landing gear	X	—	X	—	—	—	—	—	—	—	—	—
53 Fuselage	X	—	—	—	—	X	—	—	—	—	—	—
54 Nacelles/pylons	X	—	—	—	—	—	—	—	—	—	—	—
55 Stabilisers	X	—	—	—	—	—	—	—	—	—	—	—
56 Windows	X	—	—	—	—	X	—	—	—	—	—	—
57 Wings	X	—	—	—	—	—	—	—	—	—	—	—
Auxiliary power units (APUs):												
49 Auxiliar power unit												
49-10 Power plant	X	X	—	X	X	X	—	X	—	—	—	—
49-20 Engine	X	X	—	X	—	—	—	—	—	—	—	—

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
49-30 Engine fuel and control	—	X	—	X	—	—	—	—	—	—	—	—
49-40 Ignition/starting	—	X	—	—	—	—	X	—	—	—	—	X
49-50 Air	X	—	—	—	—	—	—	—	—	—	—	—
49-60 Engine controls	—	—	—	X	—	—	—	—	—	—	—	—
49-70 Indicating	—	X	—	—	—	—	—	—	—	—	—	—
49-80 Exhaust	X	—	—	—	—	—	—	—	—	—	—	—
49-90 Oil	—	—	X	—	—	—	—	—	—	—	—	—
Turbine engines:												
70 Standard practices and engine performance	X	—	—	—	—	X	—	—	—	—	—	—
71 Power plant	X	—	X	—	—	—	—	—	—	—	—	—
71-10 Cowling	X	—	X	X			—	—	—	—	—	—
71-20 Mounts	X	—	—	—	—	—	—	—	—	—	—	—
71-30 Fire seals	X	—	—	—	—	—	—	—	—	—	—	—
71-40 Attach fittings	X	—	—	—	—	—	—	—	—	—	—	—
71-50 Electrical harness	X	X	—	X	—	—	X	—	—	—	—	X
71-60 Air intakes	X	—	—		—	—	—	—	—	—	—	—
72T Engine turbine / turboprop / ducted fan / unducted fan	X	—	X	X	—	—	—	—	—	—	—	—
73 Engine fuel and control												
73-10 Distribution	X	—	—	—	—	—	—	—	—	—	—	—
73-20 Controlling (FADEC)	X	X	—	X	X	X	—	X	—	—	—	X
73-30 Indicating	X	X	—	—	X	—	—	X	—	—	—	X
74 Ignition												
74-10 Electrical power	X	X	—	X	—	—	X	X	—	—	—	X
74-20 Distribution	X	X	—	—	—	—	X	X	—	—	—	X
74-30 Switching	X	X	—	X	—	—	X	X	—	—	—	X
75 Air												
75-10 Engine anti-icing	X	X	—	X	X	X	—	—	—	—	—	—
75-20 Cooling	X	—	—	—	—	—	—	—	—	—	—	—
75-30 Compressor control	—	X	—	—	—	—	—	—	—	—	—	—
75-40 Indicating	—	X	—	—	—	—	—	X	—	—	—	X
76 Engine controls												

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
76-10 Power control (FADEC)	—	X	—	—	X	—	—	X	—	—	—	X
76-20 Emergency shutdown	—	—	—	—	X	—	—	—	—	—	—	—
77 Engine indicating	—	X	—	—	X	X	X	X	—	—	X	X
78 Exhaust												
78-30 Thrust reverser	X	—	—	X	X	X	—	X	—	—	—	X
79 Oil	X	—	X	X	—	—	—	—	—	—	—	—
80 Starting	X	X	—	X	X	X	—	—	—	—	—	—
83 Accessory gearboxes	X	—	X	X	—	—	—	—	—	—	—	—
Piston engines:												
70 Standard practices and engine performance	X	—	—	—	—	X	—	—	—	—	—	—
71 Power plant	X	—	X	—	—	—	—	—	—	—	—	—
71-10 Cowling	X	—	X	X	—	—	—	—	—	—	—	—
71-20 Mounts	X	—	—	—	—	—	—	—	—	—	—	—
71-30 Fire seals	X	—	—	—	—	—	—	—	—	—	—	—
71-40 Attach fittings	X	—	—	—	—	—	—	—	—	—	—	—
71-50 Electrical harness	X	X	—	X	—	—	X	—	—	—	—	X
71-60 Air intakes	X	—	—	—	—	—	—	—	—	—	—	—
72R Engine — reciprocating	X	—	X	X	—	—	—	—	—	—	—	—
73 Engine fuel and control	X	X	—	X	X	X	—	—	—	—	—	—
73-10 Distribution	X	—	—	—	—	—	—	—	—	—	—	—
73-20 Controlling (FADEC)	X	X	—	X	X	X	—	X	—	—	—	X
73-30 Indicating	X	X	—	—	X	—	X	X	—	—	—	X
74 Ignition												
74-10 Electrical power	X	X	—	X	—	X	X	X	—	—	—	X
74-20 Distribution	X	X	—	—	—	—	X	X	—	—	—	X
74-30 Switching	X	X	—	X	—	—	X	X	—	—	—	X
76 Engine controls	X	X	—	X	—	X	-	X	—	—	—	X
77 Engine indicating	—	X	—	—	X	X	X	X	—	—	X	X
78 Exhaust	X	—	—	—	—	—	—	—	—	—	—	—
79 Oil	X	—	X	X	—	—	—	—	—	—	—	—
80 Starting	X	X	—	X	X	X	—	—	—	—	—	—

OJT TASK SELECTION												
ATA Chapters	B1						B2					
	INS	FOT	SGH	R/I	MEL	TS	INS	FOT	SGH	R/I	MEL	TS
Requirements: % of task categories	75 %	50 %	50 %	50 %	25 %	25 %	75 %	50 %	50 %	50 %	25 %	25 %
81 Turbines (reciprocating engine)	X	X	X	X	—	—	—	—	—	—	—	—
83 Accessory gearboxes	X	—	X	X	—	—	—	—	—	—	—	—
Propellers:												
61 Propellers/ propulsion												
61-10 Propeller assembly	X	—	X	X	—	—	—	—	—	—	—	—
61-20 Controlling	—	—	—	X	X	—	—	—	—	—	—	—
61-30 Braking	X	—	—	—	—	—	—	—	—	—	—	—
61-40 Indicating	—	X	—	—	X	X	—	X	—	—	—	X
61-50 Propulsor duct	X	—	—	—	—	—	—	—	—	—	—	—
61B Propeller pitch control	—	X	—	X	X	X	—	—	—	—	—	—
61C Propeller synchronising	—	X	—	—	—	X	—	X	—	—	—	X
61D Propeller electronic control	—	X	X	X	X	X	—	X	—	—	—	X
61E Propeller ice protection	X	X	—	—	X	X	—	—	—	—	—	—

Note: For ATA Chapter 5, select at least one task from category (a), two tasks from category (b), and three tasks from category (c):

(a) Perform and/or assist in performing a scheduled maintenance check:

— accomplishment of 100-hour check (general aviation (GA) aircraft);

— accomplishment of a 'daily' or 'weekly', 'service', 'transit' or equivalent check;

— active participation in a scheduled check, e.g.: 'A-Check', 'B-Check', 'C-Check' or the equivalent of a base maintenance check.

(b) Review the aircraft maintenance log for correct completion:

— closure of MEL/CDL items;

— dent and buckle chart review, including inspections on fuselage and skin damages assessment in accordance with the SRM;

— fuel or oil leakage tests.

(c) Perform unscheduled inspection following:

— hard landing;

— overweight taxiing;

— bird/hail strike;

— aborted take-off;

— high-energy stop;

— wheel-bearing failure;

— exceedance of max NLG steering angle;

— landing gear shimmy/vibrations;

— lightning strike / HIRF;

— tail strike;

— winglet strike;

— severe turbulence / extreme high winds;

— airframe vibrations;

— ice/snow conditions;

— flight control overspeed down;

— hot-air duct rupture;

— relief pressure panels open;

— mercury spillage;

— galley spill;

— hydraulic fluid reaction with titanium;

— cabin overpressure;

— exceedance of fuel imbalance;

— smoke/fumes in the cabin;

— abnormal doors operations;

— ferry flight maintenance;

— others.

GM1 Appendix II to AMC to Annex III — Aircraft Type Practical Experience and On-the-Job Training — List of Tasks

The following list represents an example of OJT tasks for B1.1 and B2 (Aeroplanes Turbine) AML categories. The list is not exhaustive, nor tailored to a specific aircraft type, and should be reviewed and adjusted as necessary.

Task No	ATA chapter	Task description	B1.1	B2
1	05 Time limits / maintenance checks	Perform (assist) in A-Check	X	X
2	05 Time limits / maintenance checks	Close MEL/CDL item	X	X
3	05 Time limits / maintenance checks	Review Dent & Buckle chart	X	—
4	05 Time limits / maintenance checks	Perform bird strike inspection	X	—
5	05 Time limits / maintenance checks	Perform lightning strike inspection	X	X
6	05 Time limits / maintenance checks	Perform tail strike inspection	X	—
7	05 Time limits / maintenance checks	Review AD compliance	X	X
8	06 Dimensions/areas	Locate component by station number	X	X
9	07 Lifting and shoring	Jack aircraft wheel	X	—
10	07 Lifting and shoring	Jack the aircraft	X	—
11	08 Levelling and weighing	Level the aircraft	X	—
12	08 Levelling and weighing	Weigh the aircraft (including W&B amendment)	X	—
13	08 Levelling and weighing	Check the aircraft against equipment list	X	X
14	09 Towing and taxiing	Tow the aircraft (including preparation)	X	—
15	10 Parking/mooring, storing and return to service	Park aircraft (including applying applicable protections to parking duration)	X	—
16	10 Parking/mooring, storing and return to service	Position aircraft in dock	X	—
17	11 Placards and markings	Perform placards and markings inspection	X	X
18	12 Servicing	Perform aircraft refuelling (automatic and manual)	X	—
19	12 Servicing	Check and adjust tyre pressure	X	—
20	12 Servicing	Check and replenish hydraulic fluid	X	—
21	12 Servicing	Check and adjust accumulator pressure	X	—
22	12 Servicing	Check and replenish engine oil	X	—
23	12 Servicing	Perform landing gear servicing	X	—
24	12 Servicing	Perform waste / potable water servicing	X	—
25	12 Servicing	Connect ground power	X	X
26	12 Servicing	Lubricate flight control elements	X	—
27	20 Standard practices	Perform aircraft grounding	X	X
28	20 Standard practices	Perform ESDS device inspection	X	X
	21 Air conditioning		...	...

29	21-20 Distribution	Replace recirculation filter	X	—
30	21-40 Heating	Replace combustion heater	X	—
31	21-20 Distribution	Clean outflow valve	X	—
32	21-20 Distribution	Replace outflow valve	X	—
33	21-50 Cooling	Replace ACM / Air cycle unit	X	—
34	21-50 Cooling	Replace heat exchanger	X	—
35	21-30 Pressurisation control	Replace pressurisation controller	X	X
36	21-30 Pressurisation control	Perform pressurisation system functional test	X	X
37	21-20 Distribution	Perform equipment cooling system functional test	X	X
38	21-20 Distribution	Check configuration of AVX compartment ventilation system	X	X
39	21-30 Pressurisation control	Perform air-conditioning system functional test	X	X
40	21-60 Temperature control	Perform temperature control system functional test	X	X
41	21 Air conditioning	Troubleshoot faulty system	X	X
42	22 Autoflight	Replacement of autothrottle servomechanisms components	X	—
43	22 Autoflight	Replace actuator	X	—
44	22 Autoflight	Replace controller	X	X
45	22 Autoflight	Replace amplifier	X	X
46	22 Autoflight	Replace autoflight system LRU	X	X
47	22 Autoflight	Perform yam damper operational test	X	X
48	22 Autoflight	Perform autopilot functional test	X	X
49	22 Autoflight	Perform autopilot gain adjustment	—	X
50	22 Autoflight	Check augmentation system	X	X
51	22 Autoflight	Check operation of autothrottle	X	X
52	22 Autoflight	Perform autoland functional test	X	X
53	22 Autoflight	Check flight management systems	X	X
54	22 Autoflight	Perform Mach trim functional test	—	X
55	22 Autoflight	Upload FM data	X	X
56	22 Autoflight	Troubleshoot faulty system	—	X
57	23 Communications	Perform interphone system operational test	X	X
58	23 Communications	Service interphone components	X	X
59	23 Communications	Replace HF unit	X	X
60	23 Communications	Replace VHF unit	X	X
61	23 Communications	Replace antenna	X	X
62	23 Communications	Perform voice recorder operational test	X	X
63	23 Communications	Replace voice recorder	X	X
64	23 Communications	Perform static discharge components inspection	X	X
65	23 Communications	Perform radio functional test	—	X
66	23 Communications	Perform SELCAL operational test	X	X
67	23 Communications	Perform co-axial cable repair	—	X
68	23 Communications	Perform ELT operational test	X	X
69	23 Communications	Troubleshoot faulty system	—	X

70	24 Electrical power	Supply/remove APU power	X	X
71	24 Electrical power	Remove/install battery	X	X
72	24 Electrical power	Charge battery	X	X
73	24 Electrical power	Perform battery charger operational test	X	X
74	24 Electrical power	Perform standby power system functional test	X	X
75	24 Electrical power	Replace IDG oil filter	X	X
76	24 Electrical power	Remove/install IDG	X	X
77	24 Electrical power	Perform IDG functional test	X	X
78	24 Electrical power	Replace switch	X	X
79	24 Electrical power	Replace CB	X	X
80	24 Electrical power	Replace voltage regulator	—	X
81	24 Electrical power	Perform voltage regulator functional test	X	X
82	24 Electrical power	Perform electrical feeder cable repair	—	X
83	25 Equipment and furnishings	Perform emergency equipment inspection	X	X
84	25 Equipment and furnishings	Replace carpets	X	—
85	25 Equipment and furnishings	Perform crew seats operational test	X	—
86	25 Equipment and furnishings	Replace crew seats	X	—
87	25 Equipment and furnishings	Replace passenger seats	X	—
88	25 Equipment and furnishings	Perform seats and seat belts inspection	X	—
89	25 Equipment and furnishings	Check ELT for compliance with applicable regulations	X	X
90	25 Equipment and furnishings	Perform escape slide inspection	X	—
91	25 Equipment and furnishings	Remove/install escape slide	X	—
92	25 Equipment and furnishings	Perform upholstery repair	X	—
93	25 Equipment and furnishings	Remove/install interior panels	X	—
94	25 Equipment and furnishings	Remove/install cargo compartment panels	X	—
95	25 Equipment and furnishings	Perform cargo loading system inspection	X	—
96	25 Equipment and furnishings	Perform cargo loading system functional test	X	X
97	25 Equipment and furnishings	Replace cargo loading system actuator	X	—
98	26 Fire protection	Check fire bottle content	X	—
99	26 Fire protection	Remove/install fire bottle	X	—
100	26 Fire protection	Replace fire bottle squib	X	—
101	26 Fire protection	Check portable fire-extinguisher content	X	—
102	26 Fire protection	Perform smoke detection system functional test	X	X
103	26 Fire protection	Perform smoke detectors inspection	X	X
104	26 Fire protection	Remove/install smoke detectors	X	X
105	26 Fire protection	Perform fire protection system inspection	X	X
106	26 Fire protection	Perform fire protection system functional test	X	X
107	26 Fire protection	Perform engine fire detection system inspection	X	X
108	26 Fire protection	Troubleshoot faulty system	X	X
109	27 Flight controls	Perform horizontal stabiliser components inspection	X	—
110	27 Flight controls	Perform horizontal stabiliser operational test	X	X

111	27 Flight controls	Remove/install horizontal stabiliser	X	—
112	27 Flight controls	Perform elevator components inspection	X	—
113	27 Flight controls	Perform elevator operational test	X	X
114	27 Flight controls	Remove/install elevator	X	—
115	27 Flight controls	Perform aileron components inspection	X	—
116	27 Flight controls	Perform aileron operational test	X	X
117	27 Flight controls	Remove/install aileron	X	—
118	27 Flight controls	Perform rudder components inspection	X	—
119	27 Flight controls	Perform rudder operational test	X	X
120	27 Flight controls	Remove/install rudder	X	—
121	27 Flight controls	Remove/install trim tab	X	—
122	27 Flight controls	Perform LE flap components inspection	X	—
123	27 Flight controls	Perform LE flap operational test	X	X
124	27 Flight controls	Perform LE devices alternate operation	X	X
125	27 Flight controls	Remove/install LE flap	X	—
126	27 Flight controls	Perform TE flap components inspection	X	—
127	27 Flight controls	Perform TE flap operational test	X	X
128	27 Flight controls	Perform TE devices alternate operation	X	X
129	27 Flight controls	Remove/install TE flap	X	—
130	27 Flight controls	Perform spoiler components inspection	X	—
131	27 Flight controls	Perform spoiler operational test	X	X
132	27 Flight controls	Remove/install spoiler	X	—
133	27 Flight controls	Perform slat component inspection	X	—
134	27 Flight controls	Perform slat operational test	X	X
135	27 Flight controls	Remove/install slat	X	—
136	27 Flight controls	Replace control cable and fittings	X	—
137	27 Flight controls	Perform control cable tension adjustment	X	—
138	27 Flight controls	Remove/install actuator	X	—
139	27 Flight controls	Remove/install powered control unit	X	—
140	27 Flight controls	Perform flight controls functional test	X	X
141	27 Flight controls	Perform stall warning system functional test	X	X
142	27 Flight controls	Perform control column operational test	X	X
143	27 Flight controls	Deactivate/reactivate servo control	X	-
144	27 Flight controls	Check / adjust gearbox oil level	X	-
145	27 Flight controls	Troubleshoot faulty system	X	X
146	28 Fuel systems	Perform fuel/defuel system components inspection	X	—
147	28 Fuel systems	Fuel quantity indicating system functional test	X	X
148	28 Fuel systems	Perform fuel transfer between tanks	X	—
149	28 Fuel systems	Perform booster pump inspection	X	—
150	28 Fuel systems	Remove/install booster pump	X	—
151	28 Fuel systems	Remove/install fuel selector	X	—
152	28 Fuel systems	Perform fuel tank inspection	X	—
153	28 Fuel systems	Remove/install fuel control valve	X	—

154	28 Fuel systems	Remove/install fuel level indicator	X	—
155	28 Fuel systems	Remove/install fuel line	X	—
156	28 Fuel systems	Remove/install flame arrestor	X	—
157	28 Fuel systems	Remove/install water drain valve	X	—
158	28 Fuel systems	Perform fuel content calculation	X	—
159	28 Fuel systems	Check fuel quantity gauge calibration	X	—
160	28 Fuel systems	Perform fuel feed/selectors functional test	X	X
161	28 Fuel systems	Perform fuel dump system functional test	X	X
162	28 Fuel systems	Troubleshoot faulty system	X	X
163	29 Hydraulic power	Perform hydraulic system components inspection	X	—
164	29 Hydraulic power	Check hydraulic system indication	X	x
165	29 Hydraulic power	Perform hydraulic system functional test	X	X
166	29 Hydraulic power	Check auxiliary system indication	X	x
167	29 Hydraulic power	Perform auxiliary system functional test	X	X
168	29 Hydraulic power	Depressurise/pressurise hydraulic reservoirs	X	—
169	29 Hydraulic power	Perform pressurisation module leak check	X	—
170	29 Hydraulic power	Perform shut-off valve operational test	X	X
171	29 Hydraulic power	Replace hydraulic filter	X	—
172	29 Hydraulic power	Replace engine-driven pump	X	—
173	29 Hydraulic power	Replace hydraulic system valve	X	—
174	29 Hydraulic power	Replace hydraulic system line	X	—
175	29 Hydraulic power	Perform power transfer unit operational test	X	X
176	29 Hydraulic power	Remove/install power transfer unit	X	—
177	29 Hydraulic power	Troubleshoot faulty system	X	X
178	30 Ice and rain protection	Perform windshield wiper system components inspection	X	—
179	30 Ice and rain protection	Replace windshield wiper	X	—
180	30 Ice and rain protection	Replace windshield wiper motor	X	—
181	30 Ice and rain protection	Adjust windshield wiper tension	X	—
182	30 Ice and rain protection	Perform ice detection components inspection	X	—
183	30 Ice and rain protection	Check ice detection indication	X	X
184	30 Ice and rain protection	Perform de-icing/anti-icing system components inspection	X	—
185	30 Ice and rain protection	Perform de-icing/anti-icing system functional test	X	X
186	30 Ice and rain protection	Replace de-icing/anti-icing valve	X	—
187	30 Ice and rain protection	Replace solenoid valve	X	X
188	30 Ice and rain protection	Perform probe heating system components inspection	X	—
189	30 Ice and rain protection	Perform probe heating system functional test	X	X
190	30 Ice and rain protection	Perform window heating system component inspection	X	—
191	30 Ice and rain protection	Perform window heating system functional test	X	X
192	30 Ice and rain protection	Troubleshoot faulty system	X	X

193	31 Indicating/recording systems	Perform flight data recorder system components inspection	X	X
194	31 Indicating/recording systems	Perform flight data recorder system operational test	X	X
195	31 Indicating/recording systems	Remove/install flight data recorder	X	X
196	31 Indicating/recording systems	Remove/install clock	X	X
197	31 Indicating/recording systems	Remove/install master caution unit	X	X
198	31 Indicating/recording systems	Perform flight data recorder data retrieval	X	X
199	31 Indicating/recording systems	Perform data acquisition unit functional test	X	X
200	31 Indicating/recording systems	Remove/install data acquisition unit	X	X
201	31 Indicating/recording systems	Perform warning system functional test	X	X
202	31 Indicating/recording systems	Perform EIS operational test	X	X
203	31 Indicating/recording systems	Troubleshoot faulty system	—	X
204	32 Landing gear	Perform tyres and brakes inspection	X	—
205	32 Landing gear	Replace brake unit	X	—
206	32 Landing gear	Perform wheels assembly	X	—
207	32 Landing gear	Perform wheels inspection	X	—
208	32 Landing gear	Replace wheels	X	—
209	32 Landing gear	Replace steering actuator	X	—
210	32 Landing gear	Perform NLG steering rigging	X	—
211	32 Landing gear	Perform autobrake system components inspection	X	—
212	32 Landing gear	Perform autobrake system functional test	X	X
213	32 Landing gear	Perform landing gear alternate brake control components inspection	X	—
214	32 Landing gear	Perform landing gear alternate brake control functional test	X	X
215	32 Landing gear	Perform parking brake components inspection	X	—
216	32 Landing gear	Perform parking brake functional test	X	X
217	32 Landing gear	Perform antiskid operational test	X	X
218	32 Landing gear	Perform landing gear extension/retraction system components inspection	X	—
219	32 Landing gear	Replace landing gear retraction actuator	X	—
220	32 Landing gear	Perform landing gear extension/retraction system functional test	X	X
221	32 Landing gear	Replace uplock/downlock assembly	X	—
222	32 Landing gear	Perform sensor adjustment	X	X
223	32 Landing gear	Perform landing gear operational test	X	X
224	32 Landing gear	Perform landing gear abnormal operational test	X	X
225	32 Landing gear	Replace landing gear door	X	—

226	32 Landing gear	Replace landing gear control cable	X	—
227	32 Landing gear	Replace landing gear safety sensor	X	—
228	32 Landing gear	Replace landing gear shock strut	X	—
229	32 Landing gear	Replace shimmy damper	X	—
230	32 Landing gear	Perform air–ground system functional test	X	X
231	32 Landing gear	Troubleshoot faulty system	X	X
232	33 Lights	Perform interior lights inspection	X	X
233	33 Lights	Perform interior lights operational test	X	X
234	33 Lights	Replace interior lights	X	X
235	33 Lights	Replace push-button switch	X	X
236	33 Lights	Perform cargo lights	X	X
237	33 Lights	Perform cargo lights operational test	X	X
238	33 Lights	Replace cargo lights	X	X
239	33 Lights	Perform exterior lights inspection	X	X
240	33 Lights	Perform exterior lights operational test	X	X
241	33 Lights	Replace exterior lights	X	X
242	33 Lights	Perform emergency lights inspection	X	X
243	33 Lights	Perform emergency lights operational test	X	X
244	33 Lights	Replace emergency lights	X	X
245	33 Lights	Perform landing lights inspection	X	X
246	33 Lights	Perform landing lights operational test	X	X
247	33 Lights	Replace landing lights	X	X
248	33 Lights	Perform navigation lights inspection	X	X
249	33 Lights	Perform navigation lights operational test	X	X
250	33 Lights	Replace navigation lights	X	X
251	33 Lights	Perform logo lights inspection	X	X
252	33 Lights	Perform logo lights operational test	X	X
253	33 Lights	Replace logo lights	X	X
254	33 Lights	Troubleshoot faulty system	X	X
255	34 Navigation	Perform Pitot-static system components inspection	X	X
256	34 Navigation	Replace Pitot-static probe	—	X
257	34 Navigation	Perform static and total air pressure drain fitting	—	X
258	34 Navigation	Perform static pressure port inspection	—	X
259	34 Navigation	Replace static pressure port	—	X
260	34 Navigation	Replace VOR/ILS	—	X
261	34 Navigation	Perform VOR/ILS functional test	—	X
262	34 Navigation	Replace DME	—	X
263	34 Navigation	Perform DME functional test	—	X
264	34 Navigation	Perform inertial reference system functional test	—	X
265	34 Navigation	Replace inertial reference unit	—	X
266	34 Navigation	Perform altimeter functional test	—	X
267	34 Navigation	Replace altimeter	—	X

268	34 Navigation	Perform air data computer functional test	—	X
269	34 Navigation	Replace air data computer	—	X
270	34 Navigation	Perform air speed indicator functional test	—	X
271	34 Navigation	Replace air speed indicator	—	X
272	34 Navigation	Perform weather radar functional test	—	X
273	34 Navigation	Replace weather radar	—	X
274	34 Navigation	Perform TCAS functional test	—	X
275	34 Navigation	Replace TCAS	—	X
276	34 Navigation	Perform ATC transponder functional test	—	X
277	34 Navigation	Replace ATC transponder	—	X
278	34 Navigation	Perform EGPWS functional test	—	X
279	34 Navigation	Replace EGPWS	—	X
280	34 Navigation	Perform ADF functional test	—	X
281	34 Navigation	Replace ADF	—	X
282	34 Navigation	Perform satellite communications system functional test	—	X
283	34 Navigation	Update FM system database	—	X
284	34 Navigation	Perform magnetic compass calibration	X	X
285	34 Navigation	Troubleshoot faulty system	—	X
286	35 Oxygen	Perform crew oxygen system components inspection	X	—
287	35 Oxygen	Service crew oxygen system	X	—
288	35 Oxygen	Perform crew oxygen system functional test	X	X
289	35 Oxygen	Perform passenger oxygen system inspection	X	—
290	35 Oxygen	Service passenger oxygen system	X	—
291	35 Oxygen	Perform passenger oxygen system functional test	X	X
292	35 Oxygen	Replace regulator	X	—
293	35 Oxygen	Replace valve	X	—
294	35 Oxygen	Replace oxygen generator	X	—
295	35 Oxygen	Replace discharge disk	X	—
296	35 Oxygen	Replace protective breathing equipment	X	—
297	35 Oxygen	Perform auto-deployment test	X	X
298	35 Oxygen	Troubleshoot faulty system	X	X
299	36 Pneumatic	Perform pneumatic system components inspection	X	—
300	36 Pneumatic	Perform pneumatic system functional test	X	X
301	36 Pneumatic	Perform pneumatic system leakage test	X	—
302	36 Pneumatic	Replace filter	X	—
303	36 Pneumatic	Replace duct	X	—
304	36 Pneumatic	Remove/install shut-off valve	X	—
305	36 Pneumatic	Remove/install regulating valve	X	—
306	36 Pneumatic	Remove/install regulator	X	—
307	36 Pneumatic	Troubleshoot faulty system	X	X
308	37 Vacuum	Perform vacuum system components inspection	X	—

309	37 Vacuum	Perform vacuum system functional test	X	X
310	37 Vacuum	Replace vacuum pump	X	—
311	37 Vacuum	Remove/install regulator	X	—
312	37 Vacuum	Replace filter	X	—
313	37 Vacuum	Troubleshoot faulty system	X	X
314	38 Water/waste	Perform water system components inspection	X	—
315	38 Water/waste	Perform water system functional test	X	X
316	38 Water/waste	Depressurise/pressurise water tank	X	—
317	38 Water/waste	Replace water pump	X	—
318	38 Water/waste	Replace water faucet	X	—
319	38 Water/waste	Perform water heater operational check	X	—
320	38 Water/waste	Perform waste system components inspection	X	—
321	38 Water/waste	Perform waste system functional test	X	X
322	38 Water/waste	Replace waste pump	X	—
323	38 Water/waste	Replace valve	X	—
324	38 Water/waste	Replace tank	X	—
325	38 Water/waste	Perform lavatory drain valve operational test	X	—
326	38 Water/waste	Troubleshoot faulty system	X	X
327	45 Onboard maintenance system	Perform communications management unit functional test	X	X
328	45 Onboard maintenance system	Replace communications management unit	X	X
329	45 Onboard maintenance system	Perform communications management unit data retrieval	X	X
330	45 Onboard maintenance system	Troubleshoot faulty system	—	X
331	49 Auxiliary Power Unit	Perform APU components inspection	X	—
332	49 Auxiliary Power Unit	Perform APU functional test	X	X
333	49 Auxiliary Power Unit	Record APU data	X	—
334	49 Auxiliary Power Unit	Perform APU start/shutdown	X	X
335	49 Auxiliary Power Unit	Replace APU air inlet door actuator	X	—
336	49 Auxiliary Power Unit	Replace APU air inlet switch	X	—
337	49 Auxiliary Power Unit	Replace APU fuel nozzle	X	—
338	49 Auxiliary Power Unit	Replace APU igniter plug	X	—
339	49 Auxiliary Power Unit	Perform chip detector inspection	X	—
340	49 Auxiliary Power Unit	Perform APU emergency shutdown system functional test	X	X
341	49 Auxiliary Power Unit	Troubleshoot faulty system	X	X
342	51 Structures	Apply protective treatment	X	—
343	52 Doors	Perform entry door components inspection	X	—
344	52 Doors	Perform entry door operational test	X	—
345	52 Doors	Remove/install entry door	X	—
346	52 Doors	Perform crew door components inspection	X	—
347	52 Doors	Perform crew door operational test	X	—

348	52 Doors	Perform emergency exit door components inspection	X	—
349	52 Doors	Perform emergency exit door operational test	X	—
350	52 Doors	Remove/install emergency exit door	X	—
351	52 Doors	Perform cargo door components inspection	X	—
352	52 Doors	Perform cargo door operational test	X	—
353	52 Doors	Perform compartments doors components inspection	X	—
354	52 Doors	Perform compartments doors operational test	X	—
355	52 Doors	Perform snubber replacement	X	—
356	52 Doors	Perform locking mechanism rigging/adjustment	X	—
357	52 Doors	Perform air stair functional test	X	X
358	52 Doors	Perform door warning system functional test	X	X
359	52 Doors	Troubleshoot faulty system	X	X
360	53 Fuselage	Perform radome inspection	X	—
361	53 Fuselage	Perform damage assessment	X	—
362	53 Fuselage	Perform structural repair	X	—
363	54 Nacelles/pylons	Perform nacelle/pylon components inspection	X	—
364	54 Nacelles/pylons	Remove/install nacelle strut	X	—
365	55 Stabilisers	Perform vertical stabiliser inspection	X	—
366	55 Stabilisers	Perform horizontal stabiliser inspection	X	—
367	55 Stabilisers	Perform horizontal stabiliser conductive strip repair	X	—
368	56 Windows	Perform passenger cabin windows inspection	X	—
369	56 Windows	Remove/install passenger window	X	—
370	56 Windows	Perform flight compartment windows inspection	X	—
371	56 Windows	Remove/install flight compartment window	X	—
372	56 Windows	Perform flight compartment windows operational test	X	—
373	57 Wings	Perform wing structure inspection	X	—
374	57 Wings	Replace wing tip	X	—
375	57 Wings	Replace wing rib	X	—
376	57 Wings	Perform wing structural repair	X	—
377	70 Standard practices and engine performance	Perform fluorescent penetrant inspection	X	—
378	70 Standard practices and engine performance	Perform engine wiring harness repair	X	X
379	71 Power plant	Perform power plant components inspection	X	—
380	71 Power plant	Perform powerplant removal/installation	X	—
381	71 Power plant	Replace engine mounts	X	—
382	71 Power plant	Perform FOD inspection	X	—
383	71 Power plant	Remove/install engine harness	X	—
384	71 Power plant	Perform power plant adjustment/test	X	—
385	71 Power plant	Perform (assist) in engine dry motoring	X	—

386	71 Power plant	Perform (assist) in engine run	X	—
387	71 Power plant	Troubleshoot faulty system	X	X
388	72 Engine	Perform fan assembly inspection	X	—
389	72 Engine	Remove/install fan blade	X	—
390	72 Engine	Replace acoustical panel	X	—
391	72 Engine	Perform engine compressor inspection	X	—
392	72 Engine	Perform engine combustion case inspection	X	—
393	72 Engine	Perform engine turbine inspection	X	—
394	72 Engine	Perform gearbox assembly inspection	X	—
395	72 Engine	Perform compressor wash	X	—
396	72 Engine	Perform HPC borescope inspection	X	—
397	72 Engine	Perform hot section borescope inspection	X	—
398	72 Engine	Perform HPT borescope inspection	X	—
399	72 Engine	Remove/install igniter	X	—
400	72 Engine	Remove/install fuel nozzle	X	—
401	72 Engine	Troubleshoot faulty system	X	X
402	73 Engine fuel and control	Perform engine fuel system components inspection	X	—
403	73 Engine fuel and control	Replace engine fuel filters	X	—
404	73 Engine fuel and control	Replace engine-driven pump	X	—
405	73 Engine fuel and control	Perform FADEC functional test	X	—
406	73 Engine fuel and control	Remove/install engine electronic control module/unit	X	—
407	73 Engine fuel and control	Troubleshoot faulty system	X	X
408	74 Ignition	Perform ignition system components visual inspection	X	—
409	74 Ignition	Perform ignition system functional test	X	X
410	74 Ignition	Remove/install igniter plug	X	—
411	74 Ignition	Remove/install ignition exciter	X	—
412	74 Ignition	Troubleshoot faulty system	X	X
413	75 Air	Perform engine air system components inspection	X	—
414	75 Air	Remove/install VSV actuator	X	—
415	75 Air	Remove/install VBV actuator	X	—
416	75 Air	Perform engine air system functional test	X	X
417	76 Engine controls	Perform engine controls components inspection	X	—
418	76 Engine controls	Perform engine controls	X	—
419	76 Engine controls	Perform engine controls functional test	X	X
420	76 Engine controls	Perform thrust lever rigging	X	—
421	76 Engine controls	Remove/install thrust lever	X	—
422	76 Engine controls	Troubleshoot faulty system	X	X
423	77 Engine indicating	Perform engine indicating components inspection	X	—
424	77 Engine indicating	Perform engine indicating functional test	X	X
425	77 Engine indicating	Replace engine instrument	X	X
426	77 Engine indicating	Replace engine thermocouples	X	X

427	77 Engine indicating	Replace oil temperature bulb	X	X
428	77 Engine indicating	Troubleshoot faulty system	X	X
429	78 Exhaust	Perform exhaust components inspection	X	—
430	78 Exhaust	Perform thrust reverser operational test	X	X
431	78 Exhaust	Deactivate/reactivate thrust reverser for maintenance	X	—
432	78 Exhaust	Remove/install thrust reverser	X	—
433	78 Exhaust	Remove/install blocker door	X	—
434	78 Exhaust	Replace shroud assembly	X	—
435	79 Oil	Perform oil system components inspection	X	—
436	79 Oil	Perform oil system functional test	X	X
437	79 Oil	Replace oil filter	X	—
438	79 Oil	Replace oil pump	X	—
439	79 Oil	Replace oil cooler	X	—
440	79 Oil	Remove/install oil pressure sensor	X	X
441	79 Oil	Remove/install oil tank	X	—
442	79 Oil	Troubleshoot faulty system	X	X
443	80 Starting	Perform engine starting system components inspection	X	—
444	80 Starting	Perform engine starting system functional test	X	X
445	80 Starting	Replace engine start valve	X	—
446	80 Starting	Remove/install engine starter	X	—
447	80 Starting	Remove/install starter relay	X	X
448	80 Starting	Troubleshoot faulty system	X	X