Draft annexes to draft Commission Implementing Regulation (EU) …/… amending Regulation (EU) No 1321/2014 as regards aircraft maintenance licences and maintenance training organisations

ANNEX I

ANNEX III (Part-66) to Commission Regulation (EU) No 1321/2014 is amended as follows:

1. in point 66.A.5, the first paragraph of point (1) is replaced by the following:

   '(1) Group 1: complex motor-powered aircraft; multi-engine helicopters; other than piston-engine aeroplanes, with maximum certified operating altitude exceeding FL290; aircraft equipped with fly-by-wire systems; gas airships other than ELA2.';

2. in point 66.A.5, point (2)(i), the second bullet point is replaced by the following:

   '— those turbine-engine aeroplanes classified by the Agency in this subgroup because of their lower complexity.';

3. in point 66.A.10, point (e), the new text 'or Annex Vd (Part-CAO)' is added after the text 'Annex II (Part-145)';

4. in point 66.A.20, the new text is added at the end of point (a)7 as follows:

   'A Category C aircraft maintenance licence issued with respect to complex motor-powered aircraft shall include the privileges of category C aircraft maintenance licence also with respect to other than complex motor-powered aircraft.';

5. point 66.A.25 is replaced by the following:

   '66.A.25 Basic knowledge requirements

   (a) The applicant for an aircraft maintenance licence shall demonstrate by examination a level of knowledge of the related subject modules in accordance with Appendix I (applicable to category A, B1, B2, B2L, B3 and C licences) or Appendix VII (applicable to category L licences) to Annex III (Part-66).

   (b) The basic knowledge examinations shall comply with the standard set out in Appendix II (applicable to category A, B1, B2, B2L, B3 and C licences) or Appendix VIII (applicable to category L licences) to Annex III (Part-66) and shall be conducted either by:

      (1) a training organisation approved in accordance with Annex IV (Part-147); or

      (2) the competent authority; or

      (3) for category L licences, another organisation as agreed by the competent authority.

   (c) The basic knowledge examinations shall have been passed within 10 years prior to the application for an aircraft maintenance licence or the addition of a category or subcategory to such a licence. If the basic knowledge examinations have not been

passed within that 10-year period, credits for basic knowledge examinations may be alternatively obtained by the applicant in accordance with point (d).

The 10 years' validity requirement applies to each individual module examination, except for those module examinations which were already passed as part of another licence category and the licence has already been issued.

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

(1) basic knowledge examinations which were passed more than 10 years before the application for an aircraft maintenance licence was submitted (see point (c));

(2) any other national technical training and examination considered by the competent authority as equivalent to the corresponding basic knowledge requirements of Annex III (Part-66).

The applicant shall provide evidence of the granted credits by referring to an examination credit report approved by the competent authority in accordance with Subpart E of Section B of Annex III (Part-66).

(e) A basic training course without Modules 1 and 2 of Appendix I to Annex III (Part-66) is considered a full Part-147 approved basic training course only when knowledge of those Modules 1 and 2 is subsequently demonstrated by the applicant by examination and are credited by the competent authority.

(f) The holder of an aircraft maintenance licence applying for the addition of a different category or subcategory, shall complement by examination the level of knowledge that is appropriate to the related subject modules in accordance with Appendix I (for category A, B1, B2, B2L, B3 and C licences) or Appendix VII (for category L licences) to Annex III (Part-66).

Appendix IV to Annex III (Part-66) details the modules of Appendix I (for category B1, B2, B2L, B3 and C licences) or Appendix VII (for category L licences) required for the addition of a new category or subcategory to an existing Part-66 licence.';

6. in point 66.A.30, the last two paragraphs of point (a)2b are deleted;

7. in point 66.A.30, points (a)3, 4 and 5 are replaced by the following:

'3. for category C with respect to complex motor-powered aircraft (CMPA):

(i) 3 years of experience in exercising category B1.1, B1.3 or B2 privileges as certifying staff or support staff, or both, according to point 145.A.35, at a maintenance organisation working on CMPA, including 12 months of experience as base maintenance support staff; or

(ii) 5 years of experience in exercising category B1.2, B1.4 or L5 privileges as certifying staff or support staff, or both, according to point 145.A.35, at a maintenance organisation working on CMPA, including 12 months of experience as base maintenance support staff; or

(iii) for applicants holding an academic degree, 3 years of experience in working at an aircraft maintenance environment, on a representative selection of tasks that are directly associated with aircraft maintenance, including 6 months of participation in the performance of base maintenance tasks in operating CMPA.

(iv) To extend the endorsed category C with respect to other than CMPA to CMPA:

a) 2 years of experience in exercising category B1.1, B1.2, B1.3, B1.4, B2 or L5 privileges as certifying staff or support staff, or both, according to point 145.A.35, at a maintenance organisation in operating CMPA, including 6 months of experience as base maintenance support staff; or

b) when holding a category C licence based on an academic degree, 2 years of experience in working at an aircraft maintenance environment on a representative selection of tasks that are directly associated with aircraft maintenance, including 3 months of participation in the performance of base maintenance tasks in operating CMPA.

4. for category C with respect to other than CMPA:

(i) 3 years of experience in exercising category B1, B2, B2L, B3 or L privileges as certifying staff or support staff, or both, according to point 145.A.35, at a maintenance organisation in operating other than CMPA, including 6 months of experience as base maintenance support staff; or

(ii) for holders of an academic degree, 3 years of experience in working at an aircraft maintenance environment, on a representative selection of tasks that are directly associated with aircraft maintenance, including 6 months of participation in the performance of base maintenance tasks in operating other than CMPA.

5. The academic degree shall be in a relevant technical discipline, issued by a university or any other higher educational institution recognised by the competent authority.';

8. in point 66.A.30, point (e) is replaced by the following:

'(e) Notwithstanding point (a), experience in aircraft maintenance gained in organisations not approved in accordance with Part-145 or Part-CAO may be recognised when such maintenance is equivalent to that required by Annex III (Part-66) as established by the competent authority.

However, demonstration of additional experience in organisations approved in accordance with Part-145, Part-CAO or under the supervision of independent certifying staff, shall be required to ensure adequate understanding of the Part-145 or Part-CAO aircraft maintenance environment.';

9. in point 66.A.40, point (b), new text ‘or Annex Vd (Part-CAO)’ is added after the text ‘Annex II (Part-145)’;

10. in point 66.A.45, in the first bullet point of point (d), ‘aircraft type examination’ is replaced by ‘aircraft type evaluation’;

11. in point 66.A.45, the third paragraph of point (h)(ii)(3) is deleted;

12. the following point 66.B.2 ‘Means of compliance’ is inserted:

‘66.B.2 Means of compliance

(a) The Agency shall develop acceptable means of compliance (“AMC”) that may be used to establish compliance with Regulation (EU) 2018/1139 and its delegated and implementing acts.

(b) Alternative means of compliance may be used to establish compliance with this Regulation.

(c) Competent authorities shall inform the Agency of any alternative means of compliance used by persons under their oversight or by themselves for establishing compliance with this Regulation.’;

13. in point 66.B.105, the title is changed into ‘Procedure for the issue of an aircraft maintenance licence via a maintenance organisation approved in accordance with Annex II (Part-145) or Annex Vd (Part-CAO)’ and the new text ‘or Annex Vd (Part-CAO)’ is added after the text ‘Annex II (Part-145)’;

14. in point 66.B.110, point (d) is replaced by the following:

‘(d) The experience and basic knowledge modules or part modules required for adding a new licence category or subcategory to an existing Part-66 licence are outlined in the tables of Appendix IV.’;

15. in point 66.B.130, the following point (c) is added:

‘(c) The Certificate of Recognition (CoR) (EASA Form 149b) of Appendix III to Annex IV (Part-147) shall be used for the recognition of completion of either the theoretical elements, the practical elements or both the theoretical and practical elements of the type rating training course.’;

16. the following point 66.B.135 is added:

‘66.B.135 ‘Procedure for the approval of multimedia-based training (MBT) courses’

The competent authority, whenever it approves courses, including multimedia-based training (MBT) courses, which are delivered in a physical and/or virtual environment, shall verify that the aircraft basic training and the aircraft type training comply with Appendix I and Appendix III respectively.

The approval procedure shall include the principles and criteria of Appendix IX 'Evaluation method for the multimedia-based training (MBT)'.';

17. in point 66.B.200, points (c) and (d) are replaced by the following:

'(c) Basic examinations shall follow the standard specified in Appendices I and II or in Appendices VII and VIII to this Annex (Part-66), as applicable.

The Certificate of Recognition (CoR) (EASA Form 148b) of Appendix III to Annex IV (Part-147) shall be used for the recognition of completion of basic examinations.

(d) Type training examinations and type evaluations shall follow the standard specified in Appendix III to this Annex (Part-66).

The Certificate of Recognition (CoR) (EASA Form 149b) of Appendix III to Annex IV (Part-147) shall be used for the recognition of completion of aircraft type training examinations and type evaluations.';

18. in point 66.B.200, point (g) is replaced by the following:

'(g) Apart from specific documentation needed for type evaluations, only the examination documents may be available to the candidate during the evaluation.';

19. in SUBPART E – EXAMINATION CREDITS, the first sentence is replaced by the following:

'This Subpart provides the procedures for granting examination credits referred to in point 66.A.25(d).';

20. in point 66.B.400, the following point (d) is added:

'(d) Competent authorities shall collaborate when an applicant refers to a credit report approved by another competent authority.';

21. in point 66.B.405, the last paragraph of point (a) is replaced by the following:

'This comparison shall state whether compliance has been demonstrated and shall contain the justifications for each statement and the possible conditions and/or additional considerations.';

22. in Appendix I, point 2. is replaced by the following:

'**2. Modularisation**

Qualification on basic subjects for each aircraft maintenance licence category or subcategory shall be in accordance with the following matrix, where applicable subjects are indicated by an 'X', while 'n/a' means that the subject module is neither applicable nor required.

Subject module	B1.1 A1	B1.2 A2	B1.3 A3	B1.4 A4	B3	B2	B2L	C
	Turbine engine	Piston engine	Turbine engine	Piston engine	Piston-engine non-pressurised aeroplanes MTOM ≤ 2 t			
1. MATHEMATICS	X	X	X	X	X	X	X	X
2. PHYSICS	X	X	X	X	X	X	X	X
3. ELECTRICAL FUNDAMENTALS	X	X	X	X	X	X	X	X
4. ELECTRONICS FUNDAMENTALS	X	X	X	X	X	X	X	X
5. DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS	X	X	X	X	X	X	X	X
6. MATERIALS AND HARDWARE	X	X	X	X	X	X	X	X
7. MAINTENANCE PRACTICES	X	X	X	X	X	X	X	X
8. BASIC AERODYNAMICS	X	X	X	X	X	X	X	X
9. HUMAN FACTORS	X	X	X	X	X	X	X	X
10. AVIATION LEGISLATION	X	X	X	X	X	X	X	X
11. AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	X	X	n/a	n/a	X	n/a	n/a	11, 15 & 17 as B1.1 or 11, 16 & 17 as B1.2 or 12 & 15 as B1.3 or 12 & 16 as B1.4 or 13 & 14 as B2
12. HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS	n/a	n/a	X	X	n/a	n/a	n/a	
13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS	n/a	n/a	n/a	n/a	n/a	X	X	
14. PROPULSION	n/a	n/a	n/a	n/a	n/a	X	X	
15. GAS TURBINE ENGINES	X	n/a	X	n/a	n/a	n/a	n/a	
16. PISTON ENGINE	n/a	X	n/a	X	X	n/a	n/a	
17. PROPELLER	X	X	n/a	n/a	X	n/a	n/a	

MODULE 1. MATHEMATICS

MODULE 1. MATHEMATICS	LEVEL	
	A	B1 B2 B2L B3
1.1 Arithmetic	1	2
1.2 Algebra		
(a) Simple algebraic expressions;	1	2
(b) Equations.	—	1
1.3 Geometry		
(a) Simple geometrical constructions;	—	1
(b) Graphical representation;	2	2
(c) Trigonometry.	—	2

MODULE 2. PHYSICS

MODULE 2. PHYSICS	LEVEL	
	A B3	B1 B2 B2L
2.1 Matter	1	2
2.2 Mechanics		
2.2.1 Statics	1	2
2.2.2 Kinetics	1	2
2.2.3 Dynamics		
(a) Mass, force and energy;	1	2
(b) Momentum and conservation of momentum.	1	2
2.2.4 Fluid dynamics		
(a) Gravity and density;	2	2
(b) Viscosity; compressibility on fluids; static, dynamic, and total pressure.	1	2
2.3 Thermodynamics		
(a) Temperature;	2	2
(b) Heat.	1	2
2.4 Optics (light)	—	2
2.5 Wave motion and sound	—	2

MODULE 3. ELECTRICAL FUNDAMENTALS

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

MODULE 4. ELECTRONICS FUNDAMENTALS

MODULE 4. ELECTRONICS FUNDAMENTALS	LEVEL		
	A	B1 B3	B2 B2L
4.1 Semiconductors			
4.1.1 Diodes			
(a) Description and characteristics;	—	2	2
(b) Operation and function.	—	—	2
4.1.2 Transistors			
(a) Description and characteristics;	—	1	2
(b) Construction and operation.	—	—	2
4.1.3 Integrated circuits			
(a) Basic description and operation;	—	1	—
(b) Description and operation.	—	—	2
4.2 Printed circuit boards	—	1	2
4.3 Servomechanisms			
(a) Principles;	—	1	2
(b) Construction, operation, and use.	—	—	2

MODULE 5. DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS

MODULE 5. DIGITAL TECHNIQUES/ELECTRONIC INSTRUMENT SYSTEMS	LEVEL			
	A	B3	B1	B2 B2L
5.1 Electronic instrument systems	1	1	1	1
5.2 Numbering systems	—	—	1	2
5.3 Data conversion	—	—	1	2
5.4 Data buses	—	—	2	2
5.5 Logic circuits				
(a) Identification and applications;	—	—	2	2
(b) Interpretation of logic diagrams.	—	—	—	2
5.6 Basic computer structure				
(a) Computer terminology and technology;	1	1	2	2
(b) Computer operation.	—	—	—	2
5.7 Microprocessors	—	—	—	2
5.8 Integrated circuits	—	—	—	2
5.9 Multiplexing	—	—	—	2
5.10 Fibre optics	—	—	1	2
5.11 Electronic displays	1	1	2	2
5.12 Electrostatic sensitive devices	1	1	2	2
5.13 Software management control	—	1	2	2
5.14 Electromagnetic environment	—	1	2	2
5.15 Typical electronic/digital aircraft systems	1	1	1	1

MODULE 6. MATERIALS AND HARDWARE	LEVEL		
	A	B1 B3	B2 B2L
6.1 Aircraft materials — ferrous			
(a) Alloy steels used in aircraft;	1	2	1
(b) Testing of ferrous materials;	—	1	1
(c) Repair and inspection procedures.	—	2	1
6.2 Aircraft materials — non-ferrous			
(a) Characteristics;	1	2	1
(b) Testing of non-ferrous materials;	—	1	1
(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;	1	2	2
(b) Detection of defects;	1	2	—
(c) Repairs and inspection procedures.	—	2	1
6.3.2 Wooden structures	1	1	—
6.3.3 Fabric covering	—	1	—
6.4 Corrosion			
(a) Chemical fundamentals;	1	1	1
(b) Types of corrosion.	2	3	2
6.5 Fasteners			
6.5.1 Screw threads	2	2	2
6.5.2 Bolts, studs, and screws	2	2	2
6.5.3 Locking devices	2	2	2
6.5.4 Aircraft rivets	1	2	1
6.6 Pipes and unions			
(a) Identification;	2	2	2
(b) Standard unions.	2	2	1
6.7 Springs	—	2	1
6.8 Bearings	1	2	2
6.9 Transmissions	1	2	2
6.10 Control cables	1	2	1
6.11 Electrical cables and connectors	1	2	2

MODULE 7. MAINTENANCE PRACTICES

MODULE 7. MAINTENANCE PRACTICES	LEVEL		
	A	B1 B3	B2 B2L
7.1 Safety precautions — aircraft and workshop	3	3	3
7.2 Workshop practices	3	3	3
7.3 Tools	3	3	3
7.4 (Reserved)	—	—	—
7.5 Engineering drawings, diagrams and standards	1	2	2
7.6 Fits and clearances	1	2	1
7.7 Electrical wiring interconnection system (EWIS)	1	3	3
7.8 Riveting	1	2	—
7.9 Pipes and hoses	1	2	—
7.10 Springs	1	2	—
7.11 Bearings	1	2	—
7.12 Transmissions	1	2	—
7.13 Control cables	1	2	—
7.14 Material handling			
7.14.1 Sheet metal	—	2	—
7.14.2 Composite and non-metallic	—	2	—
7.14.3 Additive manufacturing	1	1	1
7.15 (Reserved)	—	—	—
7.16 Aircraft weight and balance			
(a) Centre-of-gravity calculation;	—	2	2
(b) Aircraft weighing.	—	2	—
7.17 Aircraft handling and storage	2	2	2
7.18 Disassembly, inspection, repair and assembly techniques			
(a) Types of defects and visual inspection techniques;	2	3	3
(b) General repair methods — structural repair manual;	—	2	—
(c) Non-destructive inspection techniques;	—	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
7.21 Documentation & communication	1	2	2

MODULE 8. BASIC AERODYNAMICS

MODULE 8. BASIC AERODYNAMICS	LEVEL	
	A B3	B1 B2 B2L
8.1 Physics of the atmosphere International Standard Atmosphere (ISA), application to aerodynamics	1	2

MODULE 8. BASIC AERODYNAMICS	LEVEL	
	A B3	B1 B2 B2L
8.2 Aerodynamics	1	2
8.3 Theory of flight	1	2
8.4 High-speed airflow	1	2
8.5 Flight stability and dynamics	1	2

MODULE 9. HUMAN FACTORS

MODULE 9. HUMAN FACTORS	LEVEL
	ALL
9.1 General	2
9.2 Human performance and limitations	2
9.3 Social psychology	1
9.4 Factors that affect performance	2
9.5 Physical environment	1
9.6 Tasks	1
9.7 Communication	2
9.8 Human error	2
9.9 Safety management	2
9.10 The 'Dirty Dozen' and risk mitigation	2

MODULE 10. AVIATION LEGISLATION

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

MODULE 11. AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
(a) Aeroplane aerodynamics and flight controls;	1	1	2	2	1
(b) Aeroplane, other aerodynamic devices.	1	1	2	2	1
*11.2 Airframe structures **(ATA 51)***					
(a) General concepts;	2	2	2	2	2
(b) Airworthiness requirements for structural strength;	2	2	2	2	2
(c) Construction methods.	1	1	2	2	2
11.3 Airframe structures — aeroplanes					
*11.3.1 Fuselage, doors, windows (**ATA 52/53/56**)*	1	1	2	2	1
(a) Construction principles;					
(b) Airborne towing devices;	1	1	1	1	1
(c) Doors.	1	1	2	1	-
*11.3.2 Wings (**ATA 57**)*	1	1	2	2	1
*11.3.3 Stabilisers (**ATA 55**)*	1	1	2	2	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	2	1
*11.4 Air conditioning and cabin pressurisation (**ATA 21**)*					
(a) Pressurisation;	1	1	3	3	—
(b) Air supply;	1	—	3	—	—
(c) Air conditioning;	1	—	3	—	—
(d) Safety and warning devices;	1	1	3	3	—
(e) Heating and ventilation system.	—	1	—	3	1
11.5 Instruments/avionics systems					
*11.5.1 Instrument systems (**ATA 31**)*	1	1	2	2	2
11.5.2 Avionics systems Fundamentals of system layouts and operation of: Autoflight (**ATA 22**); Communications (**ATA 23**); Navigation systems (**ATA 34**).	1	1	1	1	1
*11.6 Electrical power (**ATA 24**)*	1	1	3	3	3
*11.7 Equipment and furnishings **(ATA 25)***					
(a) Emergency equipment;	2	2	2	2	2
(b) Cabin and cargo layout.	1	1	1	1	—
*11.8 Fire protection **(ATA 26)***					
(a) Fire and smoke detection system and fire-extinguishing systems;	1	1	1	1	—
(b) Portable fire extinguisher.	1	1	1	1	1
*11.9 Flight controls **(ATA 27)***					
(a) Primary and secondary flight controls;	1	1	3	3	2
(b) Actuation and protection;	1	—	3	—	—
(c) System operation;	1	—	3	—	—
(d) Balancing and rigging.	1	1	3	3	2
*11.10 Fuel systems **(ATA 28, ATA 47)***					
(a) Systems layout;	1	1	3	3	1
(b) Fuel handling;	1	1	3	3	1
(c) Indication and warnings;	1	1	3	3	1
(d) Special systems;	1	—	3	—	—

MODULE 11. AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS	LEVEL				
	A1	A2	B1.1	B1.2	B3
(e) Balancing.	1	—	3	—	—
*11.11 Hydraulic power **(ATA 29)***					
(a) System description;	1	1	3	3	2
(b) System operation (1);	1	1	3	3	2
(c) System operation (2).	1	—	3	—	—
*11.12 Ice and rain protection **(ATA 30)***					
(a) Principles;	1	1	3	3	1
(b) De-icing;	1	1	3	3	1
(c) Anti-icing;	1	—	3	—	—
(d) Wipers;	1	1	3	3	1
(e) Rain repellent systems	1	—	3	—	—
*11.13 Landing gear **(ATA 32)***					
(a) Description;	2	2	3	3	2
(b) System operation;	2	2	3	3	2
(c) Air-ground sensing;	2	—	3	—	—
(d) Tail protection.	2	2	3	3	2
*11.14 Lights **(ATA 33)***	2	2	3	3	2
*11.15 Oxygen **(ATA 35)***	1	1	3	3	2
*11.16 Pneumatic/vacuum **(ATA 36)***					
(a) Systems;	1	1	3	3	2
(b) Pumps.	1	1	3	3	2
*11.17 Water/waste **(ATA 38)***					
(a) Systems;	2	2	3	3	2
(b) Corrosion.	2	2	3	3	2
*11.18 On-board maintenance systems **(ATA 45)***	1	—	2	—	—
*11.19 Integrated modular avionics **(ATA 42)***					
(a) Overall system description and theory;	1	—	2	—	—
(b) Typical system layouts.	1	—	2	—	—
*11.20 Cabin systems **(ATA 44)***	1	—	2	—	—
*11.21 Information systems **(ATA 46)***	1	—	2	—	—

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	1	2
*12.2 Flight control systems **(ATA 67)***	2	3
*12.3 Blade tracking and vibration analysis **(ATA 18)***	1	3
12.4 Transmission	1	3
*12.5 Airframe structures **(ATA 51)***		
(a) General concept;	2	2
(b) Construction methods of the principal elements.	1	2
*12.6 Air conditioning **(ATA 21)***		

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

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

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

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) Aeroplane Aerodynamics and Flight Controls;	1	1	—	—	—	—	—
(b) Rotary Wing Aerodynamics.	1	1	—	—	—	—	—
13.2 Structures — General Concepts ***(ATA 51)***							
(a) General concept;	2	2	—	—	—	—	—
(b) Fundamentals of structural systems;	1	1	—	—	—	—	—
13.3 Autoflight ***(ATA 22)***							
(a) Fundamentals of automatic flight control;	3	—	—	—	3	—	—
(b) Autothrottle systems and automatic landing systems.	3	—	—	—	3	—	—
13.4 Communication/Navigation ***(ATA 23/34)***							
(a) Fundamentals of communication and navigation systems;	3	—	3	—	—	—	—
(b) Fundamentals of aircraft surveillance systems.	3	—	—	—	—	3	—
13.5 Electrical power ***(ATA 24)***	3	3	—	—	—	—	—
13.6 Equipment and furnishings ***(ATA 25)***	3	—	—	—	—	—	—
13.7 Flight controls							
(a) Primary and secondary flight controls ***(ATA 27)***;	2	—	—	—	2	—	—
(b) Actuation and protection;	2	—	—	—	2	—	—
(c) System operation;	3	—	—	—	3	—	—
(d) Rotorcraft flight controls ***(ATA 67)***.	2	—	—	—	2	—	—
13.8 Instruments ***(ATA 31)***	3	—	—	3	—	—	—
13.9 Lights ***(ATA 33)***	3	3	—	—	—	—	—
13.10 On-board maintenance systems ***(ATA 45)***	3	—	—	—	—	—	—
13.11 Air conditioning and cabin pressurisation ***(ATA 21)***							
(a) Pressurisation;	3	—	—	—	—	—	3
(b) Air supply;	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;	3	—	—	—	—	—	3
(b) Portable fire extinguisher.	1	—	—	—	—	—	1
13.13 Fuel systems ***(ATA 28, ATA 47)***							
(a) System layout;	1	—	—	—	—	—	1
(b) Fuel handling;	2	—	—	—	—	—	2
(c) Indications and warnings;	3	—	—	—	—	—	3
(d) Special systems;	1	—	—	—	—	—	1
(e) Balancing.	3	—	—	—	—	—	3
13.14 Hydraulic power ***(ATA 29)***							
(a) System layout;	1	—	—	—	—	—	1
(b) System operation (1);	3	—	—	—	—	—	3
(c) System operation (2).	3	—	—	—	—	—	3
13.15 Ice and rain protection ***(ATA 30)***							
(a) Principles;	2	—	—	—	—	—	2
(b) De-icing;	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
(c) Anti-icing;	2	—	—	—	—	—	2
(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)***	3	-	—	—	—	—	3
13.18 Pneumatic/vacuum ***(ATA 36)***	2		—	—	—	—	2
13.19 Water/waste ***(ATA 38)***	2	-	—	—	—	—	2
13.20 Integrated modular avionics ***(ATA 42)***			—	—	—	—	—
(a) Overall system description and theory;	3	-	—	—	—	—	—
(b) Typical system layouts.	3	-	—	—	—	—	—
13.21 Cabin systems ***(ATA 44)***	3	-	—	—	—	—	—
13.22 Information systems ***(ATA 46)***	3	-	—	—	—	—	—

MODULE 14. PROPULSION

MODULE 14. PROPULSION	LEVEL
	B2 **B2L Instruments** **B2L Airframe & Systems**
14.1 Engines	
(a) Turbine engines;	1
(b) Auxiliary power units (APUs);	1
(c) Piston engines;	1
(d) Electric and hybrid engines;	2
(e) Engine control.	2
14.2 Electric/electronic engine indication systems	2
14.3 Propeller systems	2
14.4 Starting and ignition systems	2

MODULE 15. GAS TURBINE ENGINE

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

MODULE 16. PISTON ENGINE

MODULE 16. PISTON ENGINE	LEVEL	
	A2 A4	B1.2 B1.4 B3
16.1 Fundamentals	1	2
16.2 Engine performance	1	2
16.3 Engine construction	1	2
16.4 Engine fuel systems *16.4.1 Carburettors*	1	2
16.4.2 Fuel injection systems	1	2
16.4.3 Electronic engine control	1	2
16.5 Starting and ignition systems	1	2
16.6 Induction, exhaust and cooling systems	1	2
16.7 Supercharging/turbocharging	1	2
16.8 Lubricants and fuels	1	2
16.9 Lubrication systems	1	2
16.10 Engine indication systems	1	2
16.11 Power plant installation	1	2

MODULE 16. PISTON ENGINE	LEVEL	
	A2 A4	B1.2 B1.4 B3
16.12 Engine monitoring and ground operation	1	3
16.13 Engine storage and preservation	—	2
16.14 Alternative piston engine constructions	1	1

MODULE 17. PROPELLER

MODULE 17. PROPELLER	LEVEL	
	A1 A2	B1.1 B1.2 B3
17.1 Fundamentals	1	2
17.2 Propeller construction	1	2
17.3 Propeller pitch control	1	2
17.4 Propeller synchronising	—	2
17.5 Propeller ice protection	1	2
17.6 Propeller maintenance	1	3
17.7 Propeller storage and preservation	1	2

’;

23. in Appendix I, the following point 3. is added:

‘**3. Basic training methods**

An appropriate training method, or combination of methods, shall be determined for the entire course or for each of its modules or submodules, with regard to the scope and objectives of each training phase and taking into consideration the benefits and limitations of the available training methods.

Multimedia-based training (MBT) methods may be used in order to achieve the training objectives either in a physically or in a virtually controlled environment.’;

24. in Appendix II, point 1.4 is replaced by the following:

‘1.4. Suitable essay questions shall be drafted and evaluated using the knowledge syllabus in Appendix I Module 7.’;

25. in Appendix II, point 1.11 is replaced by the following:

‘1.11 An examination in a module may not be retaken earlier than 90 days following the date of a failed examination in that module, except in the case of a maintenance training organisation approved in accordance with Annex IV (Part-147) which delivers a course of retraining tailored to the failed subjects in the particular module; the failed module may be retaken after 30 days.’;

26. in Appendix II, point 1.12 is replaced by the following:

‘1.12. Basic knowledge examinations with a maximum allowed time of more than 90 or more than 180 minutes may be split in two or three partial exams respectively.

Each partial exam shall:

(a) be complementary to the other partial exam or exams taken by the candidate, ensuring that the combination of partial exams meets the examination requirements for the subject module;

(b) be similarly sized;

(c) be passed with 75 % or more of the questions answered correctly;

(d) have a number of questions that is multiple of four;

(e) be listed on the same certificate of recognition that will be issued after the last partial exam has been successfully passed; the certificate of recognition shall list the dates and the results of the partial exams — without averaging the results;

(f) be taken within the same organisation, following the normal examination provisions for retaking failed exams.’;

27. in Appendix II, point 1.13 is replaced by the following:

‘1.13. The maximum number of attempts for each examination is three in a 12-month period.

The applicant shall provide a written statement to the approved maintenance training organisation or the competent authority to which they apply for an examination, the number, and dates of attempts during the 12 months preceding the examination, and the organisation or the competent authority where these attempts took place. The approved maintenance training organisation or the competent authority is responsible for checking the number of attempts within the applicable time frames.’;

28. in Appendix II, the following point 1.14 is added:

‘1.14 While it is accepted that the subject matter of the questions may be the same, the questions used as part of the MBT learning programme shall not be used in examinations.’;

29. in Appendix II, point 2. is replaced by the following:

‘**2. Number of questions per module**

2.1. MODULE 1 — MATHEMATICS

Category A: 16 multiple-choice, no essay questions.
Time allowed: 20 minutes.
Category B1, B2, B2L and B3: 32 multiple-choice, no essay questions.
Time allowed: 40 minutes.

2.2. MODULE 2 — PHYSICS

Category A and B3: 32 multiple-choice, no essay questions.
Time allowed: 40 minutes.
Category B1, B2 and B2L: 52 multiple-choice, no essay questions.
Time allowed: 65 minutes.

2.3. MODULE 3 — ELECTRICAL FUNDAMENTALS

Category A: 20 multiple-choice, no essay questions.
Time allowed: 25 minutes.
Category B3: 24 multiple-choice, no essay questions.
Time allowed: 30 minutes.
Category B1, B2 and B2L: 52 multiple-choice, no essay questions.
Time allowed: 65 minutes.

2.4. MODULE 4 —ELECTRONICS FUNDAMENTALS

Category B1 and B3: 20 multiple-choice, no essay questions.
Time allowed: 25 minutes.
Category B2 and B2L: 40 multiple-choice, no essay questions.
Time allowed: 50 minutes.

2.5. MODULE 5 — DIGITAL TECHNIQUES / ELECTRONIC INSTRUMENT SYSTEMS

Category A and B3: 20 multiple-choice, no essay questions.
Time allowed: 25 minutes.
Category B1: 40 multiple-choice, no essay questions.
Time allowed: 50 minutes.
Category B2 and B2L: 72 multiple-choice, no essay questions.
Time allowed: 90 minutes.

2.6. MODULE 6 — MATERIALS AND HARDWARE

Category A: 52 multiple-choice, no essay questions.
Time allowed: 65 minutes.
Category B1 and B3: 80 multiple-choice, no essay questions.
Time allowed: 100 minutes.
Category B2 and B2L: 60 multiple-choice, no essay questions.
Time allowed: 75 minutes.

2.7. MODULE 7 — MAINTENANCE PRACTICES

Category A: 76 multiple-choice and 2 essay questions.
Time allowed: 95 minutes plus 40 minutes.
Category B1 and B3: 80 multiple-choice and 2 essay questions.
Time allowed: 100 minutes plus 40 minutes.
Category B2 and B2L: 60 multiple-choice and 2 essay questions.
Time allowed: 75 minutes plus 40 minutes.

2.8. MODULE 8 — BASIC AERODYNAMICS

Category A, B3, B1, B2 and B2L: 24 multiple-choice, no essay questions.
Time allowed: 30 minutes.

2.9. MODULE 9 — HUMAN FACTORS

Category A, B1, B3, B2 and B2L: 28 multiple-choice, no essay questions.
Time allowed: 35 minutes.

2.10. MODULE 10 — AVIATION LEGISLATION

Category A: 32 multiple-choice, no essay questions.
Time allowed: 40 minutes.
Category B1, B3, B2 and B2L: 44 multiple-choice, no essay questions.
Time allowed: 55 minutes.

2.11. MODULE 11 — TURBINE AEROPLANE AERODYNAMICS, STRUCTURES AND SYSTEMS

Category A1: 108 multiple-choice, no essay questions.
Time allowed: 135 minutes.
Category A2: 72 multiple-choice, no essay questions.
Time allowed: 90 minutes.

Category B1.1: 140 multiple-choice, no essay questions.

Time allowed: 175 minutes.

Category B1.2: 100 multiple-choice, no essay questions.

Time allowed: 125 minutes.

Category B3: 60 multiple-choice, no essay questions.

Time allowed: 75 minutes.

2.12. MODULE 12 — HELICOPTER AERODYNAMICS, STRUCTURES AND SYSTEMS:

Category A: 100 multiple-choice, no essay questions.

Time allowed: 125 minutes.

Category B1.3 and B1.4: 128 multiple-choice, no essay questions.

Time allowed: 160 minutes.

2.13. MODULE 13 — AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS

Category B2: 188 multiple-choice, no essay questions.

Time allowed: 235 minutes.

Category B2L:

System rating	Number of multiple-choice questions	Time allowed (in minutes)
Basic requirements (Submodules 13.1, 13.2, 13.5 and 13.9)	32	40
COM/NAV (Submodule 13.4(a))	24	30
INSTRUMENTS (Submodule 13.8)	20	25
AUTOFLIGHT (Submodules 13.3 and 13.7)	28	35
SURVEILLANCE (Submodule 13.4(b))	20	25
AIRFRAME SYSTEMS (Submodules 13.11 to 13.19)	52	65

2.14. MODULE 14 — PROPULSION

Category B2 and B2L: 32 multiple-choice, no essay questions.

Time allowed: 40 minutes.

NOTE: The B2L examination for Module 14 is only applicable to the ‘Instruments’ and ‘Airframe Systems’ ratings.

2.15. MODULE 15 — GAS TURBINE ENGINE

Category A1 and A3: 60 multiple-choice, no essay questions.

Time allowed: 75 minutes.

Category B1.1 and B1.3: 92 multiple-choice, no essay questions.

Time allowed: 115 minutes.

2.16. MODULE 16 — PISTON ENGINE

Category A2 and A4: 52 multiple-choice, no essay questions.
Time allowed: 65 minutes.
Category B3, B1.2 and B1.4: 76 multiple-choice, no essay questions.
Time allowed: 95 minutes.

2.17. MODULE 17 — PROPELLER

Category A1 and A2: 20 multiple-choice, no essay questions.
Time allowed: 25 minutes.
Category B3, B1.1 and B1.2: 32 multiple-choice, no essay questions.
Time allowed: 40 minutes.';

30. in Appendix III, the title is changed into 'Aircraft type training and type evaluation standard — on-the-job training (OJT)';

31. in Appendix III, point 1.(a)(ii) is replaced by the following:

'(ii) Shall comply with the standard set out in point 3.1 of this Appendix and, if existing, the elements defined in the operational suitability data (OSD) established in accordance with Regulation (EU) No 748/2012.';

32. in Appendix III, point 1.(b)(ii) is replaced by the following:

'(ii) Shall comply with the standard set out in point 3.2 of this Appendix and, if existing, the elements defined in the OSD established in accordance with Regulation (EU) No 748/2012.';

33. in Appendix III, point 1.(b)(iv) is replaced by the following:

'(iv) Shall include demonstrations using equipment, components, maintenance simulation training devices (MSTDs), maintenance training devices (MTDs), or real aircraft.';

34. in Appendix III, point 1.(c)(i) is replaced by the following:

'(c) Differences training

(i) Differences training is the training required to cover the training differences between:

(a) two different aircraft type ratings of the same manufacturer as determined by the Agency; or

(b) two different licence categories in respect of the same aircraft type rating.';

35. In Appendix III, the following point 1.(c)(iv) is added:

'(iv) the Differences training shall have been started and completed within 3 years preceding the application for the new type rating (case (a)) or for the new licence category (case (b)).';

36. in Appendix III, the two following paragraphs are added after the first paragraph of point 3.:

'An appropriate training method, or combination of training methods, shall be determined for the entire course or for each of its parts with regard to the scope and objectives of each training phase and taking into consideration the benefits and limitations of the available training methods.

Multimedia-based training (MBT) methods may be used in order to achieve the training objectives either in a physically or in a virtually controlled environment.';

37. in Appendix III point 3.1.(a), the term 'approved maintenance data' is replaced by 'maintenance data';

38. in Appendix III, the fourth paragraph of point 3.1.(d) is modified as following:

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

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

39. in Appendix III point 3.1.(e), the following paragraph is added at the end of the text before the table:

'If it exists, the minimum syllabus of the operational suitability data (OSD), established in accordance with Regulation (EU) No 748/2012, shall be included.';

40. in Appendix III, in the table of point 3.1.(e), Chapter '27A Flight Control Surfaces (All)' is renamed '55/57 Flight control surfaces (All)' and moved after Chapter '50 Cargo and Accessory compartments';

41. in Appendix III, in the table of point 3.1.(e), the following Chapter 47 is inserted after Chapter 46, as follows:

'Level **Chapters**	**Aeroplanes turbine**		**Aeroplanes piston**		**Helicopters turbine**		**Helicopters piston**		**Avionics**
Licence category	B1	C	B1	C	B1	C	B1	C	B2
[…]									
Airframe systems:									
[…]									
47 Nitrogen generation system	3	1	3	1	—	—	—	—	2

‘Level Chapters	Aeroplanes turbine		Aeroplanes piston		Helicopters turbine		Helicopters piston		Avionics
[…]									
									’;

42. in Appendix III, point 3.1.(f) is deleted;

43. in Appendix III, point 3.2.(b), the following paragraph is inserted between the third and fourth paragraph:

‘If it exists, the minimum list of practical tasks of the operational suitability data (OSD), established in accordance with Regulation (EU) No 748/2012, shall be part of the practical elements to be selected.’;

44. in Appendix III, in the table of point 3.2.(b), ‘27A Flight Control Surfaces’ is renamed ‘55/57 Flight control surfaces’;

45. in Appendix III, in the table of point 3.2.(b), the following Chapter 47 is inserted after Chapter 46:

[...]

‘Chapters	B1/B2	B1					B2				
	LOC	FOT	SGH	R/I	MEL	TS	FOT	SGH	R/I	MEL	TS
[…]											
47 Nitrogen generation system	X/X	X	X	X	X	X	X	—	—	—	X
[…]											’;

[…]

46. in Appendix III, point 4.1.(f) is replaced by the following:

‘(f) The number of questions shall be at least one question per hour of training. The number of questions for each chapter and level shall be proportionate to:

— the effective training hours spent on teaching at that chapter and level; or

— in case of student-centred methods, the anticipated average time to complete the training; and

— the learning objectives as given by the training needs analysis.

The competent authority shall assess the number and the level of the questions when approving the course.’;

47. in Appendix III, the following point 4.1.(j) is added:

‘(j) Whilst it is accepted that the subject matter of the questions may be the same, the questions used as part of the MBT learning programme shall not be used in course or phase examinations.’;

48. in Appendix III, point 5. is replaced as follows:

‘5. **Type evaluation standard for Group 2 and Group 3 aircraft**

Type evaluation relative to aircraft of Group 2 or Group 3 shall be conducted by training organisations appropriately approved under Part-147 or by the competent authority.

The evaluation shall consist of practical assessment and oral examination and comply with the following requirements:

(a) The practical assessment shall determine the candidate’s competence to perform maintenance tasks applicable to the particular aircraft type.

(b) The oral examination shall be on a sample of chapters drawn from point 3. ‘Aircraft type training standard’, at the indicated level in point 3.1.(e).

(c) Both oral examinations and practical assessments shall ensure that the following objectives are met:

1. properly discuss with confidence the aircraft type and its systems;

2. ensure safe performance of maintenance, inspections, and routine work according to the maintenance manual and other relevant instructions and tasks as appropriate for the type of aircraft, for example, troubleshooting, repairs, adjustments, replacements, rigging and functional checks such as engine run, etc., if required;.

3. correctly use all technical literature and documentation for the aircraft;

4. correctly use specialist/special tooling and test equipment, perform removal and replacement of components and modules unique to type, including any on-wing maintenance activity.

(d) The following conditions apply to the type evaluation:

1. The maximum number of attempts for each examination is three in a 12-month period. A waiting period of 30 days is required after the first failed attempt within one set, and a waiting period of 60 days is required after the second failed attempt.

The applicant shall confirm in writing to the maintenance training organisation or the competent authority to which they apply for an examination, the number, and dates of attempts during the last 12-month period and the maintenance training organisation or the competent authority where these attempts took place. The maintenance training organisation or the competent authority is responsible for checking the number of attempts within the applicable time frames.

2. The type evaluation shall be passed, and the required practical experience shall be completed within the 3 years preceding the application for the rating endorsement on the aircraft maintenance licence.

3. Type evaluation shall be performed with at least one examiner present. The examiner(s) shall not have been involved in the applicant's training.

(e) A written and signed report shall be prepared and made available to the candidate by the examiner(s) to explain why the candidate has passed or failed.';

49. in Appendix III, point 6. 'On the Job Training' is replaced by the following:

'6. On-the-job training (OJT)

6.1 General

The OJT is the training that the applicant is given on a particular aircraft type in a real workplace, having the possibility to learn maintenance best practices and correct release-to-service procedures. The OJT shall comply with the following:

(a) The list of the OJT tasks and programme shall be accepted by the competent authority which has issued the maintenance licence before starting the OJT training.

(b) The OJT shall be conducted at and under the control of a maintenance organisation appropriately approved according to this Regulation for the maintenance of that aircraft type.

(c) The applicant shall have a category A, B or L5 licence before undergoing the OJT or have finished the theoretical type training and cumulated at least 50 % of the basic experience requirement (point 66.A.30) as regards the category of aircraft he or she is trained for.

(d) The applicant shall start and complete the OJT within 3 years preceding the application for the first type rating endorsement. At least 50 % of the OJT tasks shall take place after the related aircraft theoretical type training has been completed.

(e) The applicant shall undergo the OJT under the mentorship of a qualified mentor or mentors, on a one-to-one supervision basis, during which the mentors verify the technical knowledge, the skills, and responsibilities of a typical certifying staff. During the OJT, the mentors transmit also knowledge and experience to the applicant, providing the necessary advice, support, and guidance.

(f) Each task shall be signed off by the applicant and refer to an actual job card/work sheet, etc. The mentors shall verify and countersign off the tasks performed during the OJT, because they shall assume the responsibility for the tasks at support staff or certifying staff level, as applicable, depending on the release-to-service procedure.

(g) At the satisfactory completion of the OJT programme, the mentors shall issue a recommendation for the final assessment of the applicant to be conducted by designated assessors.

6.2 OJT Content and OJT logbook

The OJT shall include a series of activities and tasks representative of the aircraft type rating, systems, and licence category applied for and may cover more than one licence category.

The OJT shall be documented in an OJT logbook reporting the following:

(a) Name of the applicant;

(b) Date of birth of the applicant;

(c) The approved maintenance organisation(s) where the OJT was carried out;

(d) Aircraft rating and licence categories applied for;

(e) List of tasks, including:

- task description;
- reference to job card/work order/aircraft tech log, etc.;
- location of task completion;
- date of task completion; and
- aircraft registration(s).

(f) Name of the mentors (including licence number, if applicable);

(g) A signed recommendation of the mentors for the successive final assessment of the applicant.

6.3 Final assessment of the applicant

The final assessment of the applicant may only be performed once the OJT logbook has been completed and the mentors have signed the related recommendation.

The designated assessor(s) conducting the final assessment shall notify the date of the assessment to the licensing authority well in advance to allow a possible participation of the same authority.

The objective of the final assessment is to verify that the applicant has sufficient technical knowledge as well as the appropriate skills and attitude and that he or she is competent to work independently as type-rated certifying staff on a particular aircraft type.

The final assessment shall have a minimum duration of one working day.

(a) The assessment shall sample:

(1) the general technical knowledge required for the particular licence category;

(2) the aircraft-type-specific knowledge and skills for the particular licence category;

(3) the understanding of the licence privileges relevant to the aircraft and to the licence category;

(4) the appropriate behaviour and safety attitude of the applicant in relation to the maintenance environment.

(b) The assessment shall be recorded in a report containing the following information:

(1) Identification data of the applicant;

(2) Identification data of the assessor(s);

(3) Date and time frame of the assessment;

(4) Content of the assessment;

(5) Result of the assessment: Passed or Failed.

(6) Signature of the assessor(s), the candidate and, if applicable, the independent observer(s).

(c) A failed assessment may be retaken after 3 months or, if additional training has been received and a new recommendation by the mentors has been made, earlier than 3 months if agreed by the assessor(s). After three failed attempts, the complete OJT shall be repeated.

6.4 Requirements for mentors and assessors

Mentors and assessors are maintenance staff with the following qualifications:

(a) Mentors:

- hold a valid Part-66 AML or a valid ICAO AML in accordance with Appendix IV to Annex II (Part-145), which is acceptable to the competent authority;
- hold at least the same AML category, when compared to the one for which the OJT is being mentored, and same type rating to exercise the privileges on this or closely related aircraft for at least 1 year;
- have the necessary release or sign-off privileges in the maintenance organisation where the OJT is performed;
- have experience in training other people (such as being apprenticeship trainers, Part-147 trainers, having received train-the-trainer courses or having any other comparable national qualification, or having a training to do so that is acceptable to the competent authority).

(b) Assessors of the final assessment:

- hold a valid Part-66 AML or a valid ICAO AML in accordance with Appendix IV to Annex II (Part-145), which is acceptable to the competent authority;
- hold at least the same AML category, when compared to the one for which the OJT is being mentored, and same type rating to exercise the privileges on this or on a closely related aircraft for at least 3 years;
- have experience and/or have received training in assessing others (such as being apprenticeship trainers, Part-147 examiners, having received train-the-trainer courses, or having any other comparable national qualification, or having a training to do so that is acceptable to the competent authority);
- shall not have been involved as a mentor of the applicant in the OJT; when the assessor has taken part in the OJT performance, then an independent observer shall be present during the OJT assessment.

6.5 OJT documentation and records

The satisfactory accomplishment of the OJT shall be attested to the applicant with the final assessment report and the OJT logbook.

The OJT documentation shall be provided to the competent authority to support the application for the issue or change of the licence as laid down in Part-66 Subpart B.

Records of the OJT documentation shall be kept by the maintenance organisation where the OJT is conducted, in accordance with the procedures agreed with the competent authority of the maintenance organisation.';

50. Appendix IV is replaced by the following:

'*Appendix IV*

Experience and basic knowledge modules or part modules required for extending a Part-66 aircraft maintenance licence

'A. Experience requirements

Table A below shows the experience requirements, in months, for adding a new category or subcategory to an existing Part-66 licence.

The experience requirements can be reduced by 50 % if the applicant has completed an approved Part-147 basic training course relevant to a particular subcategory.

Table A

To: / From:	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2	B2L	B3	L1	L2	L3	L4	L5
A1	—	6	6	6	24	6	24	12	24	12	6	12	12	12	12	24
A2	6	—	6	6	24	6	24	12	24	12	6	12	12	12	12	24
A3	6	6	—	6	24	12	24	6	24	12	12	12	12	12	12	24
A4	6	6	6	—	24	12	24	6	24	12	12	12	12	12	12	24
B1.1	—	6	6	6	—	6	6	6	12	12	6	6	6	12	12	12
B1.2	6	—	6	6	24	—	24	6	24	12	—	—	—**	12	12	12
B1.3	6	6	—	6	6	6	—	6	12	12	6	6	6	12	12	12
B1.4	6	6	6	—	24	6	24	—	24	12	6	6	6	12	12	12
B2	6	6	6	6	12	12	12	12	—	—	12	6	6	12	12	24
B2L	6	6	6	6	12	12	12	12	12	—	12	6	6	12	12	24
B3	6	—	6	6	24	6	24	12	24	12	—	—	—**	12	12	12
L1	24	24	24	24	36	24	36	24	36	24	24	—	6*	12*	12*	24*
L2	24	12	24	24	36	12	36	24	36	24	12	—	—	12*	12*	24*
L3	30	30	30	30	48	30	48	30	48	30	30	12*	12*	—	6*	24*
L4	30	30	30	30	48	30	48	30	48	30	30	12*	12*	—	—	24*
L5	24	24	24	24	36	24	36	24	36	24	24	12*	12*	12*	—	—

* Experience may be reduced by 50 % but allowing a licence with limitations, i.e. a licence endorsed with the exclusion of 'complex maintenance tasks provided for in Appendix VII to Annex I (Part-M), standard

changes provided for in point 21.A.90B of Annex I (Part 21) to Regulation (EU) No 748/2012, and standard repairs provided for in point 21.A.431B of Annex I (Part 21) to Regulation (EU) No 748/2012’.

** Experience in other than piston-engine ELA1 aeroplanes is not covered.

B. Basic knowledge modules or part modules required

The purpose of this table is to outline the examinations required to add a new basic category/subcategory to a Part-66 AML.
The Part-66 Appendix I and Appendix VII syllabi require different levels of knowledge for different licence categories within a module; therefore, there are additional examinations applicable to certain modules for licence holders wishing to extend a Part-66 AML to include another category/subcategory and an analysis of the module shall be conducted to determine the subjects missing or passed at a lower level.

Table B

To From	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2	B2L	B3	L1C	L1	L2C	L2	L3H	L3G	L4H	L4G	L5
A1	None	16.	12.	12, 16.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 2, 8, 9.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 9.
A2	11, 15.	None	12, 15.	12.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 2, 8, 9.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 9.
A3	11, 17.	11, 16, 17.	None	16.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 2, 8, 9.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 9.
A4	11, 15, 17.	11, 17.	15.	None	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 9.	All except 2, 8, 9.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 2L.	All except 9.
B1.1	None	16.	12.	12, 16.	None	16.	12.	12, 16.	4, 5, 13,14	4, 5, 13SQ, 14SQ	16.	12L.	12L.	8L**, 12L.	8L**, 12L.	9L.	10L.	9L,11L.	10L, 11L.	8L**, 10L,11, 12L.
B1.2	11,15.	None	12, 15.	12.	11, 15.	None	12, 15.	12.	4, 5,13,14	4, 5, 13SQ. 14SQ	None	12L.	12L.	8L*, 12L.	8L*, 12L.	9L.	10L.	9L,11L.	10L, 11L.	8L*, 10L,11, 12L.
B1.3	11, 17.	11, 16, 17.	None	16.	11, 17.	11, 16, 17.	None	16.	4, 5,13,14	4, 5, 13SQ. 14SQ	11, 16, 17.	7L,12L.	7L,12L.	7L,8L**,12L.	7L,8L**,12L.	9L.	10L.	9L,11L.	10L, 11L.	8L**, 10L,11, 12L.
B1.4	11, 15, 17.	11, 17.	15.	None	11, 15, 17.	11, 17.	15.	None	4, 5,13,14	4, 5, 13SQ. 14SQ	11, 17.	7L,12L.	7L,12L.	7L,8L*, 12L.	7L,8L*, 12L.	9L.	10L.	9L,11L.	10L, 11L.	8L*, 10L,11, 12L.
B2	6, 7, 11, 15, 17.	6, 7, 11, 16, 17.	6, 7, 12, 15.	6, 7, 12, 16.	6, 7, 11, 15, 17.	6, 7, 11, 16, 17.	6, 7, 12, 15.	6, 7, 12, 16.	None	None	6, 7, 11, 16, 17.	5L, 7L.	4L, 5L, 6L,7L.	5L,7L, 8L.	4L,5L, 6L,7L, 8L.	9L.	10L.	9L, 11L.	10L, 11L.	6, 7, 11 or 12, 15 or 16, 17, 8L, 10L
B2L	6, 7, 11, 15, 17.	6, 7, 11, 16, 17.	6, 7, 12, 15.	6, 7, 12, 16.	6, 7, 11, 15, 17.	6, 7, 11, 16, 17.	6, 7, 12, 15.	6, 7, 12, 16.	13SQ, 14SQ.	None	6, 7, 11, 16, 17.	5L, 7L, 12LSQ.	4L, 5L, 6L, 7L, 12LSQ.	5L, 7L, 8L, 12LSQ.	4L, 5L, 6L, 7L, 8L, 12LSQ.	9L.	10L.	9L, 11L.	10L, 11L.	6, 7, 11 or 12, 15 or 16, 17, 8L, 10L
B3	11,15.	11	12,15.	12.	2,3,5,8, 11,15.	2,3,5,8, 11.	2,3,5, 8, 12,15.	2,3,5,8, 12.	2,3,4, 5, 8, 13, 14.	2,3,4, 5, 8, 13SQ.	None	12L.	12L.	8L*, 12L.	8L*, 12L.	9L.	10L.	9L, 11L.	10L, 11L.	2,3,5,8, 11 or 12, 8L*, 10L, 11L, 12L.

To From	A1	A2	A3	A4	B1.1	B1.2	B1.3	B1.4	B2	B2L	B3	L1C	L1	L2C	L2	L3H	L3G	L4H	L4G
L1C	All	All	All	All	All	All	All	All	All	All	All	None	4L, 6L.	8L.	4L, 6L, 8L.	9L.	10L.	8L,9L, 11L.	8L, 10L, 11L.
L1	All	All	All	All	All	All	All	All	All	All	All	None	None	8L.	8L.	9L.	10L.	8L,9L, 11L.	8L,10L, 11L.
L2C	All	All	All	All	All	All	All	All	All	All	All	None	4L,6L.	None	4L, 6L.	9L.	10L.	9L,11L.	10L, 11L.
L2	All	All	All	All	All	All	All	All	All	All	All	None	None	None	None	9L.	10L.	9L,11L.	10L, 11L.
L3H	All	All	All	All	All	All	All	All	All	All	All	5L,7L.	4L,5L, 6L,7L.	5L,7L, 8L.	4L,5L, 6L,7L, 8L.	None	10L.	8L,11L.	8L,10L, 11L.
L3G	All	All	All	All	All	All	All	All	All	All	All	5L,7L.	4L,5L, 6L,7L.	5L,7L, 8L.	4L,5L, 6L,7L, 8L.	9L.	None	8L,9L, 11L.	8L,11L.
L4H	All	All	All	All	All	All	All	All	All	All	All	5L,7L.	4L,5L, 6L,7L.	5L,7L.	4L,5L, 6L,7L.	None	10L.	None	10L.
L4G	All	All	All	All	All	All	All	All	All	All	All	5L,7L.	4L,5L, 6L,7L.	5L,7L.	4L,5L, 6L,7L.	9L.	None	9L.	None

SQ = it depends on system qualification
*: excluding the subjects related to piston engines
**: excluding the subjects related to turbine engines

51. in Appendix VI, part XIII. of EASA Form 26 is replaced by the following:

XIII. PART-66 LIMITATIONS
Licence valid until:
III. Licence No:

EASA Form 26 Issue 6';

52. Appendix VII is replaced by the following:

'Appendix VII

Basic knowledge requirements for a category L aircraft maintenance licence

The definitions of the different levels of knowledge required in this Appendix are the same as those contained in point 1 of Appendix I to Annex III (Part-66).

1. Modularisation

The modules required for each aircraft licence subcategory/category shall be in accordance with the following matrix. Where applicable, the subject modules are indicated by an 'X', while 'n/a' means that the Subject Module is not applicable nor required.

The basic knowledge requirement for L5 shall be the same as for any B1 subcategory (as indicated in Appendix I) plus other modules as shown in the matrix.

	Licence subcategories								
	Composite sailplanes	Sailplanes	Composite powered sailplanes and composite ELA1 aeroplanes	Powered sailplanes and ELA1 aeroplanes	Hot-air balloons	Gas balloons	Hot-air airships	ELA2 gas airships	Gas airships above ELA2
Subject modules	**L1C**	**L1**	**L2C**	**L2**	**L3H**	**L3G**	**L4H**	**L4G**	**L5**
1L 'BASIC KNOWLEDGE'	X	X	X	X	X	X	X	X	n/a
2L 'HUMAN FACTORS'	X	X	X	X	X	X	X	X	n/a
3L 'AVIATION LEGISLATION'	X	X	X	X	X	X	X	X	n/a
4L 'WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC'	n/a	X	n/a	X	n/a	n/a	n/a	n/a	n/a
5L 'COMPOSITE STRUCTURE'	X	X	X	X	n/a	n/a	n/a	n/a	n/a
6L 'METALLIC STRUCTURE'	n/a	X	n/a	X	n/a	n/a	n/a	n/a	n/a
7L 'AIRFRAME — GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS'	X	X	X	X	n/a	n/a	n/a	n/a	n/a
8L 'POWER PLANT'	n/a	n/a	X	X	n/a	n/a	X	X	X*
9L 'BALLOONS — HOT-AIR BALLOONS'	n/a	n/a	n/a	n/a	X	n/a	X	n/a	n/a
10L 'BALLOONS — GAS (FREE/TETHERED) BALLOONS'	n/a	n/a	n/a	n/a	n/a	X	n/a	X	X
11L 'AIRSHIPS — HOT-AIR / GAS AIRSHIPS'	n/a	n/a	n/a	n/a	n/a	n/a	X	X	X
12L 'RADIO COM / ELT / TRANSPONDER / INSTRUMENTS'	X	X	X	X	n/a	n/a	X	X	X

* Only applicable propulsion subjects of Module 8L are required; these depend on the B1 subcategory the applicant comes from.

MODULE 1L — BASIC KNOWLEDGE

MODULE 1L — BASIC KNOWLEDGE		Level
1L.1	Mathematics — Arithmetic — Algebra — Geometry	1
1L.2	Physics — Matter — Mechanics — Temperature	1
1L.3	Electrics — AC and DC circuits	1
1L.4	Aerodynamics/aerostatics	1
1L.5	Workplace safety and environmental protection	2

MODULE 2L — HUMAN FACTORS

MODULE 2L — HUMAN FACTORS		Level
2L.1	General	1
2L.2	Human performance and limitations	1
2L.3	Social psychology	1
2L.4	Factors that affect performance	1
2L.5	Physical environment	1
2L.6	The 'Dirty Dozen' and risk mitigation	2

MODULE 3L — AVIATION LEGISLATION

MODULE 3L — AVIATION LEGISLATION		Level
3L.1	Regulatory framework	1
3L.2	Continuing airworthiness regulations	1
3L.3	Repairs and modifications (Part-ML)	2
3L.4	Maintenance data (Part-ML)	2
3L.5	Licence privileges and how to exercise them properly (Part-66, Part-ML)	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	2
4L.2	Materials	2
4L.3	Identifying damages and defects	3
4L.4	Standard repair and maintenance procedures	3

MODULE 5L — COMPOSITE STRUCTURE

MODULE 5L — COMPOSITE STRUCTURE		Level
5L.1	Airframe fibre-reinforced plastic (FRP)	2
5L.2	Materials	2
5L.3	Identifying damages and defects	3
5L.4	Standard repair and maintenance procedures	3

MODULE 6L — METALLIC STRUCTURE

MODULE 6L — METALLIC STRUCTURE		Level
6L.1	Metallic airframe	2
6L.2	Materials	2
6L.3	Identifying damages and defects	3
6L.4	Standard repair and maintenance procedures	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	1
7L.2	Airframe structure — gliders and aeroplanes	1
7L.3	Air conditioning (ATA 21)	1
7L.4	Electrical power, cables and connectors (ATA 24)	2
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)	2
7L.12	Lights (ATA 33)	2
7L.13	Oxygen (ATA 35)	2
7L.14	Pneumatic/vacuum (ATA 36)	2
7L.15	Water ballast (ATA 41)	2
7L.16	Fasteners	2
7L.17	Pipes, hoses and connectors	2
7L.18	Springs	2
7L.19	Bearings	2
7L.20	Transmissions	2
7L.21	Control cables	2
7L.22	Fits and clearances	2
7.L23	Aircraft weight and balance	2
7L.24	Workshop practices and tools	2

MODULE 7L — AIRFRAME — GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS	Level
7L.25 Disassembly, inspection, repair and assembly techniques	2
7L.26 Abnormal events	2
7L.27 Maintenance procedures	2

MODULE 8L — POWER PLANT

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

MODULE 9L — BALLOONS — HOT-AIR BALLOONS

MODULE 9L — BALLOONS — HOT-AIR BALLOONS	Level
9L.1 Theory of flight — hot-air balloons	1
9L.2 General airframe of hot-air balloons	2
9L.3 Envelope	3
9L.4 Heater system/burner	3

MODULE 9L — BALLOONS — HOT-AIR BALLOONS		Level
9L.5	Basket and basket suspension (including alternative devices)	3
9L.6	Instruments	2
9L.7	Equipment	2
9L.8	Hot-air balloon handling and storage	2
9L.9	Disassembly, inspection, repair and assembly techniques	3

MODULES 10L — BALLOONS — GAS (FREE/TETHERED) BALLOONS

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

MODULES 11L — AIRSHIPS — HOT-AIR / GAS AIRSHIPS

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

MODULE 12L — RADIO COM/ELT/TRANSPONDER/INSTRUMENTS

MODULE 12L — RADIO COM/ELT/TRANSPONDER/INSTRUMENTS	Level
12L.1 Radio Com/ELT	2
12L.2 Transponder and FLARM	2
12L.3 Instruments	2
12L.4 Avionics general test equipment	1’;

53. in Appendix VIII, the following points (vi) and (vii) are added to point (a):

‘(vi) a failed module may not be retaken for at least 90 days from the date of the failed module examination;

(vii) The maximum number of attempts for each examination is three in a 12-month period.’;

54. in Appendix VIII, point (b) is replaced by the following:

‘(b) The number of questions per module shall be as follows:

(i) MODULE 1L ‘BASIC KNOWLEDGE’: 20 questions.
Time allowed: 25 minutes;

(ii) MODULE 2L ‘HUMAN FACTORS’: 20 questions.
Time allowed: 25 minutes;

(iii) MODULE 3L ‘AVIATION LEGISLATION’: 28 questions.
Time allowed: 35 minutes;

(iv) MODULE 4L ‘WOODEN AND/OR METAL-TUBE STRUCTURE COVERED WITH FABRIC’: 40 questions.
Time allowed: 50 minutes;

(v) MODULE 5L ‘COMPOSITE STRUCTURE’: 32 questions.
Time allowed: 40 minutes;

(vi) MODULE 6L ‘METALLIC STRUCTURE’: 32 questions.
Time allowed: 40 minutes;

(vii) MODULE 7L ‘AIRFRAME — GENERAL, MECHANICAL AND ELECTRICAL SYSTEMS’: 60 questions.
Time allowed: 75 minutes;

(viii) MODULE 8L ‘POWER PLANT’: 64 questions.
Time allowed: 80 minutes;

(ix) MODULE 9L ‘BALLOONS — HOT-AIR BALLOONS’: 36 questions.
Time allowed: 45 minutes;

(x) MODULE 10L ‘BALLOONS — GAS (FREE/TETHERED) BALLOONS’: 44 questions.
Time allowed: 55 minutes;

(xi) MODULE 11L ‘AIRSHIPS — HOT-AIR / GAS AIRSHIPS’: 40 questions.
Time allowed: 50 minutes;

(xii) MODULE 12L ‘RADIO COM / ELT / TRANSPONDER / INSTRUMENTS’: 20 questions.

Time allowed: 25 minutes.’;

55. the following Appendix IX is added:

'Appendix IX

Assessment method for the multimedia-based training (MBT)

1. The purpose of this Appendix is to establish the requirements for the assessment and approval by a competent authority of any course that includes MBT according to point 66.B.135.

   This Appendix may be used for the assessment of other training courses if the competent authority decides that the assessment method laid down in this Appendix are appropriate for such other courses.

   The assessment shall be conducted by the competent authority against all the criteria laid down in Table (A), grouped in four categories from (a) to (d). The competent authority shall clearly identify in the table the MBT product being assessed and its production and update versions.

2. The competent authority carrying out the assessment shall put itself in the position of the student or the end user and shall rate each criterion listed in Table (A) individually on a rating scale from 1 to 5, as follows:

   1: Not acceptable. Does not meet the required criteria.
   2: Partially acceptable, but improvement is needed to meet the required criteria.
   3: Acceptable. Meets the required criteria.
   4: Good. Meets the required criteria with enhancements made.
   5: Excellent. Exceeds the required criteria.

3. If one or more of the criteria is rated below 3, an alternative learning process shall be requested by the competent authority in order to enhance the suitability of the product to an acceptable level.

4. Once the competent authority has rated each of the individual criteria listed in Table (A), the following combined rating scale shall be used by the competent authority to determine the overall suitability level for each MBT learning resource:

   — 100–80: Excellent learning resource. It offers different functionalities and meets the required suitability criteria.

   — 79–60: The learning resource meets the required suitability criteria.

   — 59–40: The learning resource does not allow for a sufficiently worthy educational use. It can be used for 'informal' training only.

   — 39–20: The learning resource is below the average. It does not meet several required suitability criteria.

   Before approving the product, the competent authority shall check that the final score of the MBT is equal to or above 60, and that there is no single criterion that is rated below 3.

Table (A): Assessment for the multimedia-based training (MBT)

Assessment table for the multimedia-based training (MBT)		
Product identification:		
Name:	Version:	
		SCORE (1–5)
Category (a) 'academic quality'		
Information reliability	1. The information is reliable.	
Information relevance	2. The information is relevant.	
Category (b) 'pedagogical quality'		
Pedagogical formulation / construction	3. The quality of the resource simplification is adequate.	
	4. The educational resource presents an appropriate number of overviews and summaries.	
	5. The resource is clearly structured (summaries, plans).	
	6. The structure promotes its use in the pedagogical context.	
Pedagogical strategies	7. The learning objectives are stated.	
	8. The resource includes stimuli to promote learning.	
	9. The resource creates interaction between student and instructor.	
	10. The active engagement of the student is fostered.	
	11. Student-centred learning is present.	
	12. Problem-solving tasks encourage learning.	
	13. The resource enables communication between students.	
	14. The student is able to see their learning progress.	
Student assessment methods	15. The resource provides a self-assessment procedure.	
Category (c) 'didactic quality'		
Learning activities	16. The content refers to real-life situations that the student could possibly face in an actual maintenance environment.	
Learning content	17. The content is adequate to meet the learning objectives.	
Category (d) 'technical quality'		

Assessment table for the multimedia-based training (MBT)		
Product identification:		
Name:	Version:	
		SCORE (1–5)
Design	18. The content and organisation of the learning resource includes the appropriate use of colours, interactivity, graphic quality, animations, and illustrations.	
Browsing	19. Navigation methods are clear, consistent, and intuitive.	
Technological aspects	20. Multimedia techniques promote the transfer of information.	
	Final score:	

Notes:

The following shall be taken into account by the competent authority when assessing the MBT against the individual criteria listed in Table (A):

Categories:

(a) Academic quality

The information presented in the multimedia resource shall have two characteristics:

i. ***Reliability:*** the information is reliable, current, and relatively free of errors. The information complies with the current regulatory requirements.

ii. ***Relevance:*** the information is relevant to the learning objectives defined for the course. It supports the student in achieving the learning objectives.

(b) Pedagogical quality

The MBT emphasises the activities which promote the development of the required knowledge and skills.

The main criteria for each product are related to three aspects:

i. ***Pedagogical formulation/construction:*** *it is characterised by the quality of simplification, the presence of summaries as well as the use of diagrams, figures, animations, and illustrations. It evaluates whether the structure of the learning resource promotes its use in a pedagogical context. This refers to the ease of orientation (summary, lesson plan), presence of appropriate interactions, usability (back, forward, scroll boxes, etc.), and communication resources (questions and answers, FAQs, forum, etc.)*

ii. ***Pedagogical strategies:*** *teaching and learning styles should be based on active teaching approaches to build meaningful situations related to learning objectives and to learner motivation.*

iii. ***Student assessment methods:*** *methods are implemented to measure the achievement of learning objectives.*

(c) Didactic quality

i. ***Learning activities:*** *the content refers to real-life situations the student could possibly face in an actual maintenance environment.*

ii. ***Learning content:*** *the content is adequate to meet the learning objectives.*

(d) Technical quality

This section assesses the design, browsing and technological aspects of the learning resources:

i. ***Design:*** *the content and organisation of the learning resource shall promote the appropriate use of colours, interactivity, graphic quality for selected images, animations, and illustrations.*

ii. ***Browsing:*** *while navigating, the student should be able to find a plan, an index, or a detailed table of contents. The suggested choices or guidelines shall be clear and the groupings within the menus shall be consistent.*

iii. ***Technological aspects:*** *multimedia techniques aim to combine and exploit the capacities of any new technology in education to enhance the transfer of knowledge. Therefore, the system shall favour the use of animations, simulations, or any other interactive elements.'.*

ANNEX II

ANNEX IV (Part-147) to Commission Regulation (EU) No 1321/2014 is amended as follows:

1. in point 147.A.100, point (b) is replaced by the following:

‘(b) Fully enclosed, appropriate accommodation, separate from other facilities, shall be provided for the delivery of the theoretical training and the conduct of knowledge examinations.’;

2. in point 147.A.100, point (f) is replaced by the following:

‘(f) The maximum number of students undergoing practical training during any training course shall not exceed 15 per instructor or assessor.’;

3. in point 147.A.100, point (h) is replaced by the following:

‘(h) Secure storage facilities shall be provided for examination and training records. The storage environment shall be such that documents remain in good condition for the retention period as specified in 147.A.125. The storage facilities and office accommodation may be combined, subject to adequate security.’;

4. In point 147.A.100, the following point (j) is added:

‘(j) By derogation from points (a) through (d) and (f), in the case of distance learning performed at a location where the Part-147 organisation has no control over the environment where the student is located, the Part-147 organisation shall brief the student and raise their awareness regarding the suitability of their learning location. This derogation applies only to distance learning and not to the corresponding examination and/or assessment.’;

5. in point 147.A.105, point (c) is replaced by the following:

‘(c) The maintenance training organisation shall contract with sufficient staff to plan/perform theoretical and practical training, conduct knowledge examinations and practical assessments in accordance with the approval.’;

6. in point 147.A.115, point (a) is replaced by the following:

‘(a) Each classroom shall have appropriate presentation equipment of a standard that ensures that students can easily read presentation text/drawings/diagrams and figures from any position in the classroom.

For virtual training environments, the training content shall be designed in such a way to assist students in their understanding of the particular subject matter, ensuring that students can easily read presentation text/drawings/diagrams and figures.

The presentation equipment may include representative maintenance simulation training devices (MSTDs) to assist students in their understanding of the particular subject matter where such devices are considered beneficial for such purposes.';

7. in point 147.A.115, point (d) is replaced by the following:

'(d) The aircraft type training organisation as specified in 147.A.100(e) must have access to the appropriate aircraft type. MSTDs may be used when such training devices ensure adequate training standards.';

8. in point 147.A.120, the following point (c) is added:

'(c) Access to the maintenance training material relevant to basic or type training courses can be provided in any medium (hard copy or electronic) provided that the student has the appropriate means to access such material at any given time during the entire duration of the course.';

9. in point 147.A.135, the following point (d) is added:

'(d) The examination shall be performed in a controlled environment by a Part-147 training organisation and described in its maintenance training organisation exposition (MTOE).

For examination purposes, a 'controlled environment' shall be that for which the following can be established and verified: the identity of the students, the proper conduct of the examination process, the integrity of the examination, and the security of the examination material.';

10. in point 147.A.145, point (b) is replaced by the following:

'(b) Theoretical training, knowledge examinations, practical training and practical assessments may be carried out only at the locations identified in the approval certificate and/or at any location specified in the MTOE.';

11. in point 147.A.200, point (g) is replaced by the following:

'(g) Notwithstanding point (f), in order to benefit from changes in training technologies and methods (theoretical training), the number of hours as established in Appendix I (Basic training course duration) may be amended provided that the syllabus content and schedule describe and justify the proposed changes. A procedure shall be included in the MTOE to justify these changes.';

12. in point 147.A.200, the existing point (g) is renumbered as new point (h);

13. point 147.A.305 is replaced by the following:

'147.A.305 Aircraft type evaluation and task assessment

A maintenance training organisation approved in accordance with point 147.A.300 to conduct aircraft type training shall conduct the aircraft type evaluation or aircraft task assessment specified in Annex III (Part-66) subject to compliance with the aircraft type and/or task standard specified in point 66.A.45 of Annex III (Part-66).';

14. in Appendix III, after the second paragraph of point 1., the following paragraphs are added:

‘EASA Form 148a shall be used for training and examinations conducted by a Part-147 training organisation.

EASA Form 148b shall be used for examinations conducted by the competent authority.’;

15. in Appendix III, Form 148 is replaced by the following:

‘Page 1 of 1

CERTIFICATE OF RECOGNITION

Reference: [MEMBER STATE CODE (*)].147.[XXXX].[YYYYY]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE OF BIRTH]

By:

[COMPANY NAME AND ADDRESS]

Reference: [MEMBER STATE CODE (*)].147.[XXXX]

a maintenance training organisation approved to provide training and conduct examinations within its approval schedule and in accordance with Annex IV (Part-147) to Commission Regulation (EU) No 1321/2014.

This certificate attests that the above-named person has successfully attended and/or passed (**) the approved basic training course(s) (**) and/or the basic examination(s) (**) stated below in compliance with Regulation (EU) 2018/1139 of the European Parliament and of the Council and with Commission Regulation (EU) No 1321/2014.

[BASIC TRAINING COURSE(S) (**)] / [BASIC EXAMINATION(S) (**)]

[LIST OF PART-66 MODULES / EXAMINATION PASSED ON]

Date: .....

Signed: .....

For: [COMPANY NAME]

EASA Form 148a Issue 1

(*) Or ‘EASA’, if EASA is the competent authority.

(**) Delete as appropriate. Possible cases:

- attended and passed the basic training course(s); or
- attended only the basic training course(s); or
- passed only the basic examination(s).

CERTIFICATE OF RECOGNITION

Reference: [MEMBER STATE CODE(*)].CAA.[XXXX].[YYYY]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE OF BIRTH]

By:

[COMPETENT AUTHORITY NAME]

[COMPETENT AUTHORITY ADDRESS]

after having conducted examination in accordance with Section B, Subpart C of Annex III (Part-66) to Commission Regulation (EU) No 1321/2014.

This certificate attests that the above-named person has successfully passed the basic examination(s) stated below in compliance with Regulation (EU) 2018/1139 of the European Parliament and of the Council and with Commission Regulation (EU) No 1321/2014.

[BASIC EXAMINATION(S)]

[LIST OF PART-66 MODULES /EXAMINATION(S) PASSED ON]

Date:……..

Signed: …….....

For: [COMPETENT AUTHORITY NAME]

EASA Form 148b Issue 1';

16. in Appendix III, the title of point 2 is changed into ‘Type Training Examination and Assessment’;

17. in Appendix III, in point 2, the first paragraph is replaced by the following:

‘The type training certificate template shall be used for recognition of completion of either the examination of the theoretical element (training included) or the assessment of the practical element (training included), or both elements of the type rating training course (Part-66 Appendix III 1(a) and (b)).’;

18. in Appendix III to Part-147, in point 2, new text is added after the fourth paragraph:

The same form shall be used for the recognition of completion of the aircraft type evaluation (66.A.45(d) and Appendix III point 5).

EASA Form 149a shall be used for training and examinations conducted by a Part-147 training organisation.

EASA Form 149b shall be used for training examinations conducted by the competent authority or as recognition of completion of aircraft type training approved through the direct approval procedure of point 66.B.130.

CERTIFICATE OF RECOGNITION

Reference: [MEMBER STATE CODE (*)].147.[XXXX].[YYYYY]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE OF BIRTH]

By:

[COMPANY NAME AND ADDRESS]

Reference: [MEMBER STATE CODE (*)].147.[XXXX]

a maintenance training organisation approved to provide training and conduct examinations within its approval schedule and in accordance with Annex IV (Part-147) to Commission Regulation (EU) No 1321/2014.

This certificate attests that the above-named person has successfully passed the theoretical (**) and/or the practical elements (**) of the approved aircraft type training course; or completed the aircraft type evaluation (**) stated below in compliance with Regulation (EU) 2018/1139 of the European Parliament and of the Council and with Commission Regulation (EU) No 1321/2014.

[AIRCRAFT TYPE TRAINING COURSE (**)]

[START and END DATES]

[SPECIFY THE THEORETICAL / PRACTICAL ELEMENTS]
or
[AIRCRAFT TYPE EVALUATION (**)]

[END DATE]

Date:.....

Signed:.....

For: [COMPANY NAME]

EASA Form 149a Issue 1

(*) Or 'EASA', if EASA is the competent authority.

(**) Delete as appropriate. Possible cases:

- completely attended and passed the theoretical elements and positively assessed on the practical elements of the type training course; or
- completely attended and passed only the theoretical elements; or
- positively assessed on the practical elements; or
- positively completed the aircraft type evaluation.

CERTIFICATE OF RECOGNITION

Reference: [MEMBER STATE CODE(*)].CAA.[XXXX].[YYYY]

This certificate of recognition is issued to:

[NAME]

[DATE and PLACE OF BIRTH]

By:

[COMPETENT AUTHORITY NAME]

[COMPETENT AUTHORITY ADDRESS]

after having conducted examination in accordance with Section B, Subpart C of Annex III (Part-66) to Commission Regulation (EU) No 1321/2014 or according to the procedure for the direct approval of aircraft type training of point 66.B.130 of Annex III (Part-66) to Commission Regulation (EU) No 1321/2014.

This certificate attests that the above-named person has successfully passed the theoretical (*) and/or the practical elements (*) of the approved aircraft type training course; or completed the aircraft Type Evaluation (*) stated below in compliance with Regulation (EU) 2018/1139 of the European Parliament and of the Council and with Commission Regulation (EU) No 1321/2014.

[AIRCRAFT TYPE TRAINING COURSE (*)]

[START and END DATES]

[SPECIFY THE THEORETICAL / PRACTICAL ELEMENTS]
or
[AIRCRAFT TYPE EVALUATION (*)]

[END DATE]

Date: .....

Signed: .....

For: [COMPETENT AUTHORITY NAME]

EASA Form 149b Issue 1

(*) Delete as appropriate. Possible cases:

- completely attended and passed the theoretical elements and positively assessed on the practical elements of the type training course; or
- completely attended and passed only the theoretical elements; or
- positively assessed on the practical elements; or
- positively completed the aircraft type evaluation.