

PERUBAHAN KEEMPAT ATAS KEPUTUSAN MENTERI PERHUBUNGAN NOMOR KM 42 TAHUN 2001 TENTANG SERTIFIKASI PENERBANG DAN INSTRUKTUR TERBANG

(Peraturan Menteri Perhubungan Republik Indonesia Nomor PM 66 Tahun 2017, tanggal 4 Agustus 2017)

DENGAN RAHMAT TUHAN YANG MAHA ESA
MENTERI PERHUBUNGAN REPUBLIK INDONESIA,

Menimbang :

- a. bahwa ketentuan mengenai sertifikasi penerbang dan instruktur terbang telah diatur dalam Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 tentang Sertifikasi Penerbang dan Instruktur Terbang;
- b. bahwa perlu dilakukan penyesuaian terhadap beberapa ketentuan seperti ketentuan terkait persyaratan kemahiran bahasa, penggunaan alat simulasi pelatihan bagi penerbang, sertifikat kesehatan dan ketentuan lainnya dalam Keputusan Menteri Perhubungan sebagaimana dimaksud dalam huruf a, untuk menyesuaikan dengan standar dan rekomendasi yang diatur dalam *ICAO Annex 1 Personnel Licensing Amandemen 173*;
- c. bahwa berdasarkan pertimbangan sebagaimana dimaksud dalam huruf a dan b, perlu menetapkan Peraturan Menteri Perhubungan tentang Perubahan Keempat atas Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 tentang Sertifikasi Penerbang dan Instruktur Terbang;

Mengingat :

1. Undang-Undang Nomor 1 Tahun 2009 tentang Penerbangan (Lembaran Negara Republik Indonesia Tahun 2009 Nomor 1, Tambahan Lembaran Negara Republik Indonesia Nomor 4956);
2. Peraturan Presiden Nomor 7 Tahun 2015 tentang Organisasi Kementerian Negara (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 8);
3. Peraturan Presiden Nomor 40 Tahun 2015 tentang Kementerian Perhubungan (Lembaran Negara Republik Indonesia Tahun 2015 Nomor 75);
4. Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 tentang Sertifikasi Penerbang dan Instruktur Terbang sebagaimana telah beberapa

kali diubah, terakhir dengan Peraturan Menteri Perhubungan Nomor PM 50 Tahun 2016 tentang Perubahan Ketiga atas Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 tentang Sertifikasi Penerbang dan Instruktur Terbang (Berita Negara Republik Indonesia Tahun 2016 Nomor 692);

5. Peraturan Menteri Perhubungan Nomor PM 189 Tahun 2015 tentang Organisasi dan Tata Kerja Kementerian Perhubungan (Berita Negara Republik Indonesia Tahun 2015 Nomor 1844) sebagaimana telah beberapa kali diubah, terakhir dengan Peraturan Menteri Perhubungan Nomor PM 44 Tahun 2017 tentang Perubahan Kedua atas Peraturan Menteri Perhubungan Nomor PM 189 Tahun 2015 tentang Organisasi dan Tata Kerja Kementerian Perhubungan (Berita Negara Republik Indonesia Tahun 2017 Nomor 816);

MEMUTUSKAN :

Menetapkan :

PERATURAN MENTERI PERHUBUNGAN TENTANG PERUBAHAN KEEMPAT ATAS KEPUTUSAN MENTERI PERHUBUNGAN NOMOR KM 42 TAHUN 2001 TENTANG SERTIFIKASI PENERBANG DAN INSTRUKTUR TERBANG.

Pasal I

Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 tentang Sertifikasi Penerbang dan Instruktur Terbang yang telah beberapa kali diubah dengan Peraturan Menteri Perhubungan:

- a. Nomor KM 61 Tahun 2008 tentang Perubahan atas Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001;
- b. Nomor KM 30 Tahun 2010 tentang Perubahan Kedua atas Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001;

c. Nomor PM 50 Tahun 2016 tentang Perubahan Ketiga atas Keputusan Menteri Perhubungan Nomor KM 42 Tahun 2001 (Berita Negara Republik Indonesia Tahun 2016 Nomor 692);

diubah sebagai berikut :

1. Butir 61.7 huruf a diubah, sehingga butir 61.7 secara keseluruhan berbunyi sebagai berikut :

61.7 Language Proficiency Requirements

(a) *Aeroplane and helicopter pilots shall demonstrate the ability to speak and understand the language used for radiotelephony communications according to English Language Proficiency Rating Scale required by International Civil Aviation Organization (ICAO), as prescribed in Appendix C;*

(b) *The language proficiency of airplane and helicopter pilots who demonstrate proficiency below the expert Level (Level 6) shall be formally evaluated at intervals in accordance with an individual's demonstrated proficiency level, as follows:*

(1) *Those demonstrating language proficiency at the Operational Level (Level 4) should be evaluated at least every three years; and*

(2) *Those demonstrating language proficiency at the extended level (Level 5) should be evaluated at least once every 6 (six) years.*

2. Butir 61.9 reserved diubah, sehingga berbunyi sebagai berikut:

61.9 Use of a flight simulation training device for acquisition of experience and demonstration of skill *The use of a flight simulation training device for acquiring the experience or performing any manoeuvre required during the demonstration of skill for the issue of a licence or rating shall be approved by the DGCA.*

3. Butir 61.23 Duration of Medical Certificate diubah, sehingga berbunyi sebagai berikut:

61.23 Medical Certificate

(a) *Holders of a licence shall not exercise the privileges of that licence if medical certificate is not current or suspect or*

that their physical or mental condition renders them unfit to exercise such privileges.

(b) *Classification of pilot medical certificate as follows:*

(1) *Class 1 Medical Certificate;*

i. *commercial pilot licenses — aeroplane, airship, and helicopter;*

ii. *airline transport pilot licenses — aeroplane, and helicopter .*

(2) *Class 2 Medical Certificate;*

i. *private pilot licences - aeroplane, airship, helicopter, gyroplane, glider, and free balloon;*

ii. *sport pilot licenses;*

iii. *Student pilot licenses.*

(c) *The validity of medical certificate is in accordance with CASR part 67.*

4. Butir 61.65 diubah, sehingga berbunyi sebagai berikut:

61.65 Instrument Rating

(a) *General. To be eligible for an instrument rating (airplane) or an instrument rating (helicopter), an applicant must:*

(1) *Hold at least a current private pilot license with an aircraft rating appropriate to the instrument rating sought;*

(2) *Be able to read, speak, and understand the English language; and*

(3) *Comply with the applicable requirements of this Part.*

(b) *Aeronautical knowledge*

The applicant shall have demonstrated a level of knowledge appropriate to the privileges granted to the holder of an instrument rating, in at least the following subjects:

Air law

(1) *rules and regulations relevant to flight under IFR; related air traffic services practices and procedures; Aircraft general knowledge for the aircraft category being sought*

(2) *use, limitation and serviceability of avionics, electronic devices*

and instruments necessary for the control and navigation of aircraft under IFR and in instrument meteorological conditions; use and limitations of autopilot;

- (3) compasses, turning and acceleration errors; gyroscopic instruments, operational limits and precession effects; practices and procedures in the event of malfunctions of various flight instruments;

Flight performance and planning for the aircraft category being sought

- (4) pre-flight preparations and checks appropriate to flight under IFR;
- (5) operational flight planning; preparation and filing of air traffic services flight plans under IFR; altimeter setting procedures;

Human performance for the aircraft category being sought

- (6) human performance relevant to instrument flight in aircraft including principles of threat and error management;

Meteorology for the aircraft category being sought

- (7) application of aeronautical meteorology; interpretation and use of reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information; altimetry;
- (8) causes, recognition and effects of icing; frontal zone penetration procedures; hazardous weather avoidance;
- (9) in the case of helicopters and poweredlifts, effects of rotor icing;

Navigation for the aircraft category being sought

- (10) practical air navigation using radio navigation aids;
- (11) use, accuracy and reliability of navigation systems used in de-

parture, en-route, approach and landing phases of flight; identification of radio navigation aids;

Operational procedures for the aircraft category being sought

- (12) application of threat and error management to operational performance;
- (13) interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations, and instrument procedure charts for departure, en-route, descent and approach;
- (14) precautionary and emergency procedures; safety practices associated with flight under IFR; obstacle clearance criteria;

Radiotelephony

- (15) communication procedures and phraseology as applied to aircraft operations under IFR; action to be taken in case of communication failure.

- (c) *Skill and flight instruction – airplanes.*
An applicant for the flight test for an instrumentrating (airplane) must present a logbook record certified by an flight instructor showing that he received instrument flight instruction in an airplane in the following pilot operations, and has been found competent in each of them.

Skill

- (1) recognize and manage threats and errors;
- (2) operate the aircraft for the category being sought, within its limitations;
- (3) complete all manoeuvres with smoothness and accuracy;
- (4) exercise good judgement and airmanship;
- (5) apply aeronautical knowledge; and
- (6) maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is as-

sured.

Flight Instruction

- (1) pre-flight procedures, including the use of the flight manual or equivalent document, and appropriate air traffic services documents in the preparation of an IFR flight plan;
 - (2) pre-flight inspection, use of checklists, taxiing and pre-take-off checks;
 - (3) procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:
 - a. transition to instrument flight on take-off;
 - b. standard instrument departures and arrivals;
 - c. en-route IFR procedures;
 - d. holding procedures;
 - e. instrument approaches to specified minima;
 - f. missed approach procedures;
 - g. landings from instrument approaches;
 - (4) in-flight manoeuvres and particular flight characteristics.
- (d) *Instrument instruction and skill – (helicopter).*

An applicant for the flight test for an instrument rating (helicopter) must preset a logbook record certified to by an authorized flight instructor showing that he has received instrument flight instruction in a helicopter in the following pilot operations, and has been found competent in each of them:

- (1) The control and accurate maneuvering of a helicopter solely by reference to instruments.
- (2) IFR navigation by the use of the VOR and ADF systems, including compliance with air traffic instructions and procedures.

- (3) Instrument approaches to published minimums using the VOR, ADF, and ILS system (instruction in the use of the ADF and ILS may be received in an instrument ground trainer, and instruction in the use of the ILS glide slope may be received in an airborne ILS simulator).
 - (4) Cross-country flying under simulated or actual IFR conditions, on airways or as routed by ATC, including one flight of at least 100 nautical miles, including VOR, ADF, and ILS approaches at different airports.
 - (5) Simulated IFR emergencies, including equipment malfunctions, missed approach procedures, and deviations to unplanned alternates.
- (e) *Flight experience.* An appliance for an instrument rating must have at least the following flight time as a pilot:
- (1) A total of 125 hours of pilot flight time, of which 50 hours are as pilot in command in cross-country flight in a powered aircraft with other than a student pilot license. Each cross-country flight must have a landing at a point more than 50 nautical miles from the original departure point.
 - (2) 40 hours of simulated or actual instrument time, of which not more than 20 hours may be instrument instruction by an authorized instructor in an instrument ground trainer acceptable to the Director General.
 - (3) 15 hours of instrument flight instruction by an authorized flight instructor, including at least 5 hours in an airplane or a helicopter, as appropriate.
- (f) *Written test.* An applicant for an instrument rating must pass a written test appropriate to the instrument

rating sought on the subjects in which ground instruction is required by Paragraph (b) of this Part.

- (g) *Practical test.* An applicant for an instrument rating must pass a flight test in an airplane or a helicopter, as appropriate. The test must include instrument flight procedures selected by the inspector conducting the test to determine the applicant's ability to perform competently the IFR operations on which instruction is required by Paragraph (c) or (d) of this Part.
- (h) *Applicants who hold a private pilot licence shall have established their hearing acuity on the basis of compliance with the hearing requirements for the issue of a Class 1 Medical Assessment.*
- (i) *The privileges of the holder of an instrument rating with a specific aircraft category shall be to pilot that category of aircraft under IFR.*

5. Butir 61.105 diubah, sehingga berbunyi sebagai berikut:

61.105 Aeronautical Knowledge

(a) Airplane, Airship, and Helicopter

Air law

- (1) *rules and regulations relevant to the holder of a private pilot licence; rules of the air; altimeter setting procedures; appropriate air traffic services practices and procedures;*

Aircraft general knowledge for aeroplanes, airships, and helicopters

- (2) *principles of operation and functioning of engines, systems and instruments;*
- (3) *operating limitations of the relevant category of aircraft and engines; relevant operational information from the flight manual or other appropriate document;*
- (4) *for helicopters and powered-lifts, transmission (power trains) where applicable;*

- (5) *for airships, physical properties and practical application of gases;*

Flight performance, planning and loading

- (6) *effects of loading and mass distribution on flight characteristics; mass and balance calculations;*
- (7) *use and practical application of take-off, landing and other performance data;*
- (8) *pre-flight and en-route flight planning appropriate to private operations under VFR; preparation and filing of air traffic services flight plans; appropriate air traffic services procedures; position reporting procedures; altimeter setting procedures; operations in areas of high-density traffic;*

Human performance

- (9) *human performance including principles of threat and error management;*

Meteorology

- (10) *application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry; hazardous weather conditions;*

Navigation

- (11) *practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;*

Operational procedures

- (12) *application of threat and error management to operational performance;*
- (13) *altimeter setting procedures;*
- (14) *use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;*
- (15) *appropriate precautionary and*

emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence and other operating hazards;

- (16) *in the case of helicopters, and if applicable, powered-lifts, settling with power; ground resonance; retreating blade stall; dynamic rollover and other operating hazards; safety procedures, associated with flight in VMC;*

Principles of flight

- (17) *principles of flight;*

Radiotelephony

- (18) *communication procedures and phraseology as applied to VFR operations; action to be taken in case of communication failure.*

(b) Glider

Air law

- (1) *rules and regulations relevant to the holder of a glider pilot licence; rules of the air; appropriate air traffic services practices and procedures;*

Aircraft general knowledge

- (2) *principles of operation of glider systems and instruments;*
- (3) *operating limitations of gliders; relevant operational information from the flight manual or other appropriate document;*
- Flight performance, planning and loading*
- (4) *effects of loading and mass distribution on flight characteristics; mass and balance considerations;*
- (5) *use and practical application of launching, landing and other performance data;*
- (6) *pre-flight and en-route flight planning appropriate to operations under VFR; appropriate air traffic services procedures; altimeter setting procedures; operations in areas of high-density traffic;*

Human performance

- (7) *human performance relevant to the glider pilot including principles of threat and error management;*
- (8) *application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry;*

Navigation

- (9) *practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;*

Operational procedures

- (10) *use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;*
- (11) *different launch methods and associated procedures;*
- (12) *appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence and other operating hazards;*

Principles of flight

- (13) *principles of flight relating to gliders.*

(c) Free Balloon

Air law

- 1) *rules and regulations relevant to the holder of a free balloon pilot licence; rules of the air; appropriate air traffic services practices and procedures;*

Aircraft general knowledge

- 2) *principles of operation of free balloon systems and instruments;*
- 3) *operating limitations of free balloons; relevant operational information from the flight manual or other appropriate document;*
- 4) *physical properties and practical application of gases used in free balloons;*

Flight performance, planning and loading

- 5) *effects of loading on flight characteristics; mass calculations;*
- 6) *use and practical application of launching, landing and other performance data, including the effect of temperature;*
- 7) *pre-flight and en-route flight planning appropriate to operations under VFR; appropriate air traffic services procedures; altimeter setting procedures; operations in areas of high-density traffic;*

Human performance

- 8) *human performance relevant to the free balloon pilot including principles of threat and error management;*
- 9) *application of elementary aeronautical meteorology; use of, and procedures for obtaining, meteorological information; altimetry;*

Navigation

- 10) *practical aspects of air navigation and dead-reckoning techniques; use of aeronautical charts;*

Operational procedures

- 11) *use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;*
- 12) *appropriate precautionary and emergency procedures, including action to be taken to avoid hazardous weather, wake turbulence and other operating hazards;*

Principles of flight

- 13) *principles of flight relating to free balloons.*

mand of an aircraft within the appropriate category of aircraft, the procedures and manoeuvres described under this section with a degree of competency appropriate to the privileges granted to the holder of a private pilot licence, and to:

- (a) *recognize and manage threats and errors;*
- (b) *operate the aircraft within its limitations;*
- (c) *complete all manoeuvres with smoothness and accuracy;*
- (d) *exercise good judgement and air-manship;*
- (e) *apply aeronautical knowledge; and*
- (f) *maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured.*

Flight Instruction

(a) Airplane

- (1) *recognize and manage threats and errors;*
- (2) *pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;*
- (3) *aerodrome and traffic pattern operations, collision avoidance precautions and procedures;*
- (4) *control of the aeroplane by external visual reference;*
- (5) *flight at critically slow air-speeds; recognition of, and recovery from, incipient and full stalls;*
- (6) *flight at critically high air-speeds; recognition of, and recovery from, spiral dives;*
- (7) *normal and crosswind take-offs and landings;*
- (8) *maximum performance (short field and obstacle clearance) take-offs; short-field landings;*
- (9) *flight by reference solely to instruments, including the completion of a level*

6. Butir 61.107 diubah, sehingga berbunyi sebagai berikut:

61.107 Skill and Flight Instruction

Skill

The applicant shall have demonstrated the ability to perform as pilot-in-com-

180° turn;

- (10) cross-country flying using visual reference, dead reckoning and, where available, radio navigation aids;
- (11) emergency operations, including simulated aeroplane equipment malfunctions;
- (12) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures; and
- (13) communication procedures and phraseology.

Helicopter

The instructor shall ensure that the applicant has operational experience in at least the following areas to the level of performance required for the private pilot:

- (1) recognize and manage threats and errors;
- (2) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;
- (3) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- (4) control of the helicopter by external visual reference;
- (5) recovery at the incipient stage from settling with power; recovery techniques from low-rotor rpm within the normal range of engine rpm;
- (6) ground manoeuvring and run-ups; hovering; take-offs and landings — normal, out of wind and sloping ground;
- (7) take-offs and landings with minimum necessary power; maximum performance take-off and landing techniques; restricted site operations; quick stops;

- (8) cross-country flying using visual reference, dead reckoning and, where available, radio navigation aids, including a flight of at least one hour;
- (9) emergency operations, including simulated helicopter equipment malfunctions; autorotative approach;
- (10) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures; and
- (11) communication procedures and phraseology.

Glider

- (1) pre-flight operations, including glider assembly and inspection;
- (2) techniques and procedures for the launching method used, including appropriate airspeed limitations, emergency procedures and signals used;
- (3) traffic pattern operations, collision avoidance precautions and procedures;
- (4) control of the glider by external visual reference;
- (5) flight throughout the flight envelope;
- (6) recognition of, and recovery from, incipient and full stalls and spiral dives;
- (7) normal and crosswind launches, approaches and landings;
- (8) cross-country flying using visual reference and dead reckoning;
- (9) emergency procedures.

Airship

- (1) recognize and manage threats and errors;
- (2) pre-flight operations, including mass and balance determination, airship inspection and servicing;
- (3) ground reference manoeuvres;
- (4) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;

- (5) *techniques and procedures for the take-off, including appropriate limitations, emergency procedures and signals used;*
- (6) *control of the airship by external visual reference;*
- (7) *take-offs, landings and go-arounds;*
- (8) *maximum performance (obstacle clearance) take-offs;*
- (9) *flight by reference solely to instruments, including the completion of a level 180° turn;*
- (10) *navigation, cross-country flying using visual reference, dead reckoning and radio navigation aids;*
- (11) *emergency operations (recognition of leaks), including simulated airship equipment malfunctions; and*
- (12) *communication procedures and phraseology.*

Free Balloon

- (1) *pre-flight operations, including balloon assembly, rigging, inflation, mooring and inspection;*
- (2) *techniques and procedures for the launching and ascent, including appropriate limitations, emergency procedures and signals used;*
- (3) *collision avoidance precautions;*
- (4) *control of the free balloon by external visual reference;*
- (5) *recognition of, and recovery from, rapid descents;*
- (6) *cross-country flying using visual reference and dead reckoning;*
- (7) *approaches and landings, including ground handling;*
- (8) *emergency procedures.*

7. Butir 61.118 diubah, sehingga berbunyi sebagai berikut:

61.118 Private Pilot Privileges And Limitations : Pilot In Command

- (a) *Subject to compliance with validity and type rating requirements, the privileges of the holder of a private*

pilot license - airplane shall be to act, but not for remuneration, as pilot-in-command or co-pilot of any airplane engaged in non-revenue flights.

- (b) *Before exercising the privileges at night, the license holder shall have received dual instruction in airplanes in night flying, including take-offs, landing and navigation.*

- (c) *The privileges of the holder of a glider pilot licence shall be to act as pilot-in-command of any glider provided the licence holder has operational experience in the launching method used.*

8. Butir 61.119 diubah, sehingga berbunyi sebagai berikut:

61.119 Free balloon Rating: Limitations

- (a) *If the applicant for a free balloon rating takes his flight test in a hot air balloon with an airborne heater, his pilot license contains an endorsement restricting the exercise of the privilege of that rating to hot air balloons with airborne heaters.*

The restriction may be deleted when the holder of the license obtains the pilot experience required for a rating on a gas balloon.

- (b) *If the applicant for a free balloon rating takes his flight test in a hot air balloon without an airborne heater, his pilot license contains an endorsement restricting the exercise of the privileges of that rating to hot air balloons without airborne heaters. The restriction may be deleted when the holder of the license obtains the pilot experience and passes the tests required for a rating on a free balloon with an airborne heater or a gas balloon.*

- (c) *If the privileges of free balloon rating are to be exercised at night, the applicant shall have gained, under appropriate supervision, operational experience in free balloons in night flying.*

9. Butir 61.125 diubah, sehingga berbunyi sebagai berikut:

61.125 Aeronautical knowledge

(a) Airplane, airship, and helicopter

Air law

- (1) rules and regulations relevant to the holder of a commercial pilot licence; rules of the air; appropriate air traffic services practices and procedures;

Aircraft general knowledge for aeroplanes, airships, helicopters and powered-lifts

- (2) principles of operation and functioning of engines, systems and instruments;
- (3) operating limitations of the relevant category of aircraft and engines; relevant operational information from the flight manual or other appropriate document;
- (4) use and serviceability checks of equipment and systems of appropriate aircraft;
- (5) maintenance procedures for airframes, systems and engines of appropriate aircraft;
- (6) for helicopters and powered-lifts, transmission (power trains) where applicable;
- (7) for airships, physical properties and practical application of gases;

Flight performance, planning and loading

- (8) effects of loading and mass distribution on aircraft handling, flight characteristics and performance; mass and balance calculations;
- (9) use and practical application of take-off, landing and other performance data;
- (10) pre-flight and en-route flight planning appropriate to commercial operations under VFR; preparation and filing of air traffic services flight plans; appropriate air traffic services

procedures; altimeter setting procedures;

- (11) in the case of airships, helicopters and powered-lifts, effects of external loading on handling;

Human performance

- (12) human performance including principles of threat and error management;

Meteorology

- (13) interpretation and application of aeronautical meteorological reports, charts and forecasts; use of, and procedures for obtaining, meteorological information, pre-flight and in-flight; altimetry;
- (14) aeronautical meteorology; climatology of relevant areas in respect of the elements having an effect upon aviation; the movement of pressure systems, the structure of fronts, and the origin and characteristics of significant weather phenomena which affect take-off, en-route and landing conditions;
- (15) causes, recognition and effects of icing; frontal zone penetration procedures; hazardous weather avoidance;

Navigation

- (16) air navigation, including the use of aeronautical charts, instruments and navigation aids; an understanding of the principles and characteristics of appropriate navigation systems; operation of airborne equipment;
- (17) in the case of airships:

Operational procedures

- (18) application of threat and error management to operational performance;
- (19) use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations;

- (20) *altimeter setting procedures;*
- (21) *appropriate precautionary and emergency procedures;*
- (22) *operational procedures for carriage of freight; potential hazards associated with dangerous goods;*
- (23) *requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from aircraft;*
- (24) *in the case of helicopters, and if applicable, powered-lifts, settling with power; ground resonance; retreating blade stall; dynamic rollover and other operating hazards; safety procedures, associated with flight in VMC;*

Principles of flight

- (25) *principles of flight;*

Radiotelephony

- (26) *communication procedures and phraseology as applied to VFR operations; action to be taken in case of communication failure.*

(b) Free balloons.

- (1) *The regulations of the CASRs pertinent to commercial free balloon piloting privileges limitations, and flight operations;*
- (2) *The use of aeronautical charts and the magnetic compass for free balloon navigation;*
- (3) *The recognition of weather conditions significant to free balloon flight operations, and the procurement and use of aeronautical weather reports and forecasts appropriate to free ballooning;*
- (4) *Free balloon flight and ground instruction procedures; and*
- (5) *Operating principles and procedures for free balloons, including emergency procedures such as crowd control and protection, high wind and water land-*

ings, and operations in proximity to buildings and power lines.

10. Butir 61.127 diubah, sehingga berbunyi sebagai berikut:

61.127 Skill and Flight Instruction

Skill

The applicant shall have demonstrated the ability to perform as pilot-in-command of an aircraft within the appropriate category of aircraft, the procedures and manoeuvres described under this section with a degree of competency appropriate to the privileges granted to the holder of a commercial pilot licence, and to:

- a. recognize and manage threats and errors;*
- b. operate the aircraft within its limitations;*
- c. complete all manoeuvres with smoothness and accuracy;*
- d. exercise good judgement and airmanship;*
- e. apply aeronautical knowledge; and*
- f. maintain control of the aircraft at all times in a manner such that the successful outcome of a procedure or manoeuvre is assured.*

Flight Instruction

(a) Airplane

- (1) *recognize and manage threats and errors;*
- (2) *pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;*
- (3) *aerodrome and traffic pattern operations, collision avoidance precautions and procedures;*
- (4) *control of the aeroplane by external visual reference;*
- (5) *flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls;*
- (6) *flight with asymmetrical power for multiengine class or type ratings;*

- (7) *flight at critically high airspeeds; recognition of, and recovery from, spiral dives;*
 - (8) *normal and crosswind take-offs and landings;*
 - (9) *maximum performance (short field and obstacle clearance) take-offs; short-field landings;*
 - (10) *basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments;*
 - (11) *cross-country flying using visual reference, dead reckoning and radio navigation aids; diversion procedures;*
 - (12) *abnormal and emergency procedures and manoeuvres including simulated aeroplane equipment malfunctions;*
 - (13) *operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures; and*
 - (14) *communication procedures and phraseology.*
- (b) *Helicopter*
- (1) *recognize and manage threats and errors;*
 - (2) *pre-flight operations, including mass and balance determination, helicopter inspection and servicing;*
 - (3) *aerodrome and traffic pattern operations, collision avoidance precautions and procedures;*
 - (4) *control of the helicopter by external visual reference;*
 - (5) *recovery at the incipient stage from settling with power; recovery techniques from low-rotor rpm within the normal range of engine rpm;*
 - (6) *ground manoeuvring and run-ups; hovering; take-offs and landings - normal, out of wind and sloping ground; steep approaches;*
 - (7) *take-offs and landings with minimum necessary power; maximum performance take-off and landing techniques; restricted site operations; quick stops;*
 - (8) *hovering out of ground effect; operations with external load, if applicable; flight at high altitude;*
 - (9) *basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments;*
 - (10) *cross-country flying using visual reference, dead reckoning and radio navigation aids; diversion procedures;*
 - (11) *abnormal and emergency procedures, including simulated helicopter equipment malfunctions, autorotative approach and landing;*
 - (12) *operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures; and*
 - (13) *communication procedures and phraseology.*
- (c) *Gyroplanes.*
- (1) *Preflight operations, including line inspection and gyroplane servicing;*
 - (2) *Straight and level flight, turns, climbs, and descents;*
 - (3) *Flight maneuvering by ground references;*
 - (4) *Maneuvering at critically slow airspeeds, and the recognition of and recovery from high rates of descent at slow airspeeds;*
 - (5) *Normal and crosswind take-offs and landings;*
 - (6) *Airport and traffic pattern operations, including collision avoidance precautions and radio communications;*
 - (7) *Cross-country flight operations; and*
 - (8) *Emergency procedures, such*

as power failure, equipment malfunctions, maximum performance takeoffs and landings and simulated liftoffs at low air-speed and high angles of attack.

(d) *Airships.*

- (1) Ground handling, mooring, and preflight operations;
- (2) Straight and level flight, turns, climbs, and descents, under VFR and simulated IFR conditions;
- (3) Take off and landings with positive and with negative static lift;
- (4) Turns and figure eights;
- (5) Precision turns to headings under simulated IFR conditions;
- (6) Preparing and filing IFR flight plans, and complying with IFR clearances;
- (7) IFR radio navigation and instrument approach procedures;
- (8) Cross-country flight operations, using pilotage, dead reckoning, and radio aids; and
- (9) Emergency operations, including engine out operations, free ballooning an airship, and ripcord procedures (may be simulated).

(e) *Freeballoons.*

- (1) Assembly of basket and burner to the envelope, and rigging, inflating, and tethering of a free balloon;
- (2) Ground and flight crew briefing;
- (3) Ascents;
- (4) Descents;
- (5) Landings;
- (6) Operation of airborne heater, if balloon is so equipped; and
- (7) Emergency operations, including the use of the ripcord (may be simulated), and recovery from a terminal velocity descent if a balloon with an airborne heater is used.

61.153 Airplane Rating: Aeronautical Knowledge
The applicant shall have demonstrated a level of knowledge appropriate to the privileges to the holder of an airline transport pilot license -airplane, in at least the following subjects:

Air Law

- (a) rules and regulations relevant to the holder of an airline transport pilot license -airplanes; rules of the air; appropriate air traffic services practices and procedures;

Aircraft General Knowledge

- (b) general characteristics and limitations of electrical, hydraulic, pressurisation and other airplane systems; flight control systems, including autopilot and stability augmentation;
 - (c) principles of operation, handling procedures and operating limitations of airplane powerplants; effects of atmospheric conditions on engine performance; relevant operational information from the flight manual or other appropriate document;
 - (d) operating procedures and limitations of appropriate airplanes; effects of atmospheric conditions on airplane performance;
 - (e) use and serviceability checks of equipment and systems of appropriate airplanes;
 - (f) flight instruments; compasses, turning and acceleration errors; gyroscopic instruments, operational limits and precession effects; practices and procedures in the event of malfunctions of various flight instruments;
 - (g) maintenance procedures for airframes, systems and powerplants of appropriate airplanes;
- Flight performance and planning*
- (h) effects of loading and mass distribution on airplane handling, flight characteristics and performance; mass and balance calculations;
 - (i) use and practical application of take-off, landing and other performance

11. Butir 61.153 diubah, sehingga berbunyi sebagai berikut:

data, including procedures for cruise control;

- (j) preflight and en-route operational flight planning; preparation and filing of air traffic services flight plans; appropriate air traffic services procedures; altimeter setting procedures;

Human performance and limitations

- (k) human performance and limitations relevant to the airline transport pilot - airplane;

Meteorology

- (l) interpretation and application of aeronautical meteorological reports, charts and forecasts; codes and abbreviations; use of, and procedures for obtaining, meteorological information, preflight and inflight; altimetry;
- (m) aeronautical meteorology; climatology of relevant areas in respect of the elements having an effect upon aviation; the movement of pressure systems; the structure of fronts, and the origin and characteristics of significant weather phenomena which affect takeoff, en-route and landing conditions;
- (n) causes, recognition and effects of engine and airframe icing; frontal zone penetration procedures; hazardous weather avoidance;
- (o) practical high altitude meteorology, including interpretation and use of weather reports, charts and forecasts; jetstreams;

Navigation

- (p) air navigation, including the use of aeronautical charts, radio navigation aids and area navigation systems; specific navigation requirements for long-range flights;
- (q) use, limitation and serviceability of avionics and instruments necessary for the control and navigation of airplanes;
- (r) use, accuracy and reliability of navigation systems used in departure, en-route, approach and landing

phases of flight; identification of radio navigation aids;

- (s) principles and characteristics of self-contained and external-referenced navigation systems; operation of airborne equipment;

Operational procedures

- (t) interpretation and use of aeronautical documentation such as AIP, NOTAM, aeronautical codes and abbreviations, and instrument procedure charts for departure, en-route, descent and approach;
- (u) precautionary and emergency procedures; safety practices associated with flight under IFR;
- (v) operational procedures for carriage of freight and dangerous goods;
- (w) requirements and practices for safety briefing to passengers, including precautions to be observed when embarking and disembarking from airplanes;

Principles of flight

- (x) principles of flight relating to airplanes; subsonic aerodynamics; compressibility effects, manoeuvre boundary limits, wing design characteristics, effects of supplementary lift and drag devices; relationships between lift, drag and thrust at various airspeeds and in different flight configurations;

Radiotelephony

- (y) radiotelephony procedures and phraseology; action to be taken in case of communication failure.

In addition to the above subjects, the applicant for an airline transport pilot license applicable to the airplane category shall have met the knowledge requirements for the instrument rating described in under Part 61.65.

12. Butir 61.155 diubah, sehingga berbunyi sebagai berikut:
[Bersambung]