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GOVERNMENT OF INDIA

**OFFICE OF THE DIRECTOR GENERAL OF CIVIL AVIATION**

TECHNICAL CENTRE, OPP. SAFDURJUNG AIRPORT, NEW DELHI

**CIVIL AVIATION REQUIREMENTS  
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**Subject: Flying training syllabus for grant of pilots licences and ratings.**

1. **INTRODUCTION**

For acquiring a pilot's licence or rating, an applicant has to meet the applicable requirements stipulated in Schedule-II of the Aircraft Rules, 1937. Amongst other requirements, a candidate has to undergo flying training in accordance with the syllabus prescribed by the Director General. This CAR lays down the flying training syllabus for grant of various pilots' licences and ratings in accordance with Schedule-II of the Aircraft Rules, 1937. The syllabus is based on the provisions contained in ICAO Annex. 1. The CAR is issued under Rule 133A of the Aircraft Rules.

2. **FLYING TRAINING SYLLABUS**

2.1 **Private Pilot Licence (Aeroplane/Microlight)**

A pilot trainee shall receive dual instructions in aeroplanes/microlights as applicable, from an authorised Flight Instructor who shall ensure that the pilot trainee has operational experience in at least the following areas to the level of performance required for the private pilot:

- a) pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;

- b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
  - c) control of the aeroplane by external visual reference;
  - d) flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls;
  - e) flight at critically high airspeeds; recognition of, and recovery from, spiral dives;
  - f) normal and cross-wind take-offs and landings;
  - g) maximum performance (short field and obstacle clearance) take-offs; short-field landings;
  - h) flight by reference solely to instruments, including the completion of a level 180 degree turn;
  - i) cross-country flying using visual reference, dead-reckoning and, where available, radio navigation aids;
  - j) emergency operations, including simulated aeroplane equipment malfunctions; and
  - k) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio-telephony procedures and phraseology.
- l) Threat and Error management
  - m) Upset Prevention and Recovery

If the privileges of the licence are to be exercised at night as well, the applicant shall receive dual instructions in aeroplanes/microlights in night flying, including take-offs, landings and navigation.

## **2.2 Private Pilot Licence (Helicopter)**

A pilot trainee shall receive not less than 20 hours of dual instructions in helicopters from an authorised Flight Instructor who shall ensure that the applicant has operational experience in at least the following areas to the level of performance required for the private pilot.

- a) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;
- b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- c) control of the helicopter by external visual reference;
- d) recovery at the incipient stage from settling with power; recovery techniques from low-rotor rpm within the normal range of engine rpm;
- e) ground manoeuvring and run-ups; hovering; take-offs and landings – normal, out of wind and sloping ground;
- f) take-offs and landings with minimum necessary power; maximum performance take-off and landing techniques; restricted site operations ; quick stops;
- g) cross-country flying using visual reference, dead-reckoning and, where available, radio navigation aids, including a flight of at least one hour; diversion procedures;
- h) emergency operations, including simulated helicopter equipment malfunctions; auto-rotative approach and landing;
- i) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio-telephony procedures and phraseology; and
- j) operational experience in flight solely by reference to instrument, including the completion of a level 180 degrees turn, in a suitably instrumented helicopter.

If the privileges of the licence are to be exercised at night as well, the applicant shall receive dual instructions in helicopters in night flying including take-offs, landings and navigation.

### 2.3 **Pilot Licence (Glider)**

A glider pilot trainee shall have gained, under appropriate supervision, operational experience in gliders in at least the following areas;

- a) pre-flight operation, including glider assembly and inspection;
- b) techniques and procedures for the landing method used, including appropriate airspeed limitations, emergency procedures and signals used;
- c) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- d) control of the glider by external visual reference;
- e) flight through the flight envelope;
- f) recognition of, and recovery from, incipient and full stalls and spiral dives;
- g) normal and cross-wind launches, approaches and landings;
- h) cross-country flying using visual reference and dead-reckoning; and
- i) emergency procedures.
- j) **Threat and Error management**
- k) **Upset Prevention and Recovery**

#### **2.4 Pilot Licence (Balloons)**

A balloon pilot trainee shall have gained, under appropriate supervision, operational experience in free balloons in at least the following areas;

- a) pre-flight operation, including balloon assembly, rigging, inflation, mooring and inspection;
- b) techniques and procedures for launching and ascent, including appropriate limitation, emergency procedures and signals used;
- c) collision avoidance procedures;
- d) control of free balloon by external visual reference;

- e) recognition of, and recovery from, rapid descents;
- f) cross-country flying using visual reference and dead-reckoning;
- g) approaches and landings, including ground handling; and
- h) emergency procedures.

If the privileges of the licence are to be exercised at night, the trainee pilot shall have gained, under appropriate supervision, operational experience in balloon night flying.

#### 2.5 **Commercial Pilot Licence (Aeroplane)**

A pilot trainee shall have received dual instructions in aeroplanes from an authorised Flight Instructor who shall ensure that the pilot trainee has operational experience in at least the following areas to the level of performance required from a Commercial Pilot:

- a) pre-flight operations, including mass and balance determination, aeroplane inspection and servicing;
- b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- c) control of the aeroplane by external visual reference;
- d) flight at critically slow airspeeds; spin avoidance; recognition of, and recovery from, incipient and full stalls;
- e) flight at critically high airspeeds; recognition of, and recovery from, spiral dives;
- f) normal and cross-wind take-offs and landings;
- g) maximum performance (short field and obstacle clearance) take-offs; short-field landings;
- h) basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments;

- i) cross-country flying using visual reference, dead-reckoning and radio navigation aids; diversion procedures;
  - j) abnormal and emergency procedures and manoeuvres;
  - k) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio-telephony procedures and phraseology; and
  - l) dual instructions in aeroplane in night flying, including take-offs, landings and navigation.
- m) Threat and Error management
- n) Upset Prevention and Recovery

#### 2.6 **Commercial Pilot Licence (Helicopter)**

A pilot trainee shall have received dual instructions in helicopters from an authorised Flight Instructor, who shall ensure that the pilot trainee has operational experience in at least the following areas to the level of performance required from a commercial pilot:

- a) pre-flight operations, including mass and balance determination, helicopter inspection and servicing;
- b) aerodrome and traffic pattern operations, collision avoidance precautions and procedures;
- c) control of the helicopter by external visual reference;
- d) recovery at the incipient stage from settling with power; recovery techniques from low-rotor rpm within the normal range of engine rpm;
- e) ground manoeuvring and run-ups; hovering; take-offs and landings – normal, out of wind and sloping ground steep approaches;
- f) take-offs and landings with minimum necessary power; maximum performance take-off and landing techniques; restricted site operations; quick stops;
- g) hovering out of ground effect; operations with external load, if applicable; flight at high altitude;

- h) basic flight manoeuvres and recovery from unusual attitudes by reference solely to basic flight instruments;
- i) cross-country flying using visual reference, dead-reckoning and radio navigation aids; diversion procedures;
- j) abnormal and emergency procedures, including simulated helicopter equipment malfunctions, auto-rotative approach and landing;
- k) operations to, from and transiting controlled aerodromes, compliance with air traffic services procedures, radio-telephony procedures and phraseology; and
- l) dual instructions in helicopters in night flying, including take-offs, landings and navigation.

#### 2.7 **Airline Transport Pilot Licence (Aeroplane)**

A pilot applicant shall have received dual flight instructions required for the issue of the commercial pilot licence (aeroplane) and for the issue of Instrument Rating (aeroplane) and acquired flight experience as required in para 1(e) of Section M of Schedule-II of the Aircraft Rules, 1937. The pilot applicant shall have demonstrated the ability to perform as Pilot-in-Command, the following procedures and manoeuvres with a degree of competence appropriate to the privileges granted to the holder of an Airline Transport Pilot Licence (Aeroplane).

- a) pre-flight procedures, including the preparation of the operational flight plan and filing of the air traffic services flight plan;
- b) normal flight procedures and manoeuvres during all phases of flight;
- c) procedures and manoeuvres for IFR operations under normal, abnormal and emergency conditions, including simulated engine failure, and covering at least the following:
  - transition to instrument flight on take-off;

- standard instrument departures and arrivals;
  - en-route IFR procedures and navigation;
  - holding procedures;
  - instrument approaches to specified minima;
  - missed approach procedures;
  - landings from instrument approaches
- d) abnormal and emergency procedures and manoeuvres related to failures and malfunctions of equipment, such as power plant, systems and airframe; and
- e) procedures for crew incapacitation and crew coordination, including allocation of pilot tasks, crew cooperation and use of check-lists in case of multi-pilot aeroplanes.
- f) Threat and Error management
- g) Upset Prevention and Recovery

## 2.8 **Airline Transport Pilot Licence (Helicopter)**

A pilot applicant shall have received the dual flight instructions required for the issue of the commercial pilot licence (helicopter) and for the issue of Instrument Rating (helicopter) and acquired flight experience as required in para 1(e) of Section N of Schedule-II of the Aircraft Rules 1937. The pilot applicant shall have demonstrated the ability to perform as Pilot-in-Command of a helicopter, the following procedures and manoeuvres:

- a) pre-flight procedures, including the preparation of the operational flight plan and filing of the air traffic services flight plan;
- b) normal flight procedures and manoeuvres during all phases of flight;
- c) abnormal and emergency procedures and manoeuvres related to failures and malfunctions of equipment, such as power plant, systems and airframe; and



- d) procedures for crew incapacitation and crew coordination including allocation of pilot tasks, crew cooperation and use of checklists in case of multi-pilot helicopters.

The pilot shall demonstrate the ability to perform the above procedures and manoeuvres with a degree of competency appropriate to the privileges granted to the holder of an Airline Transport Pilot Licence (Helicopter).

## 2.9 **Instrument Rating (Aeroplane)**

The applicant shall have gained not less than 10 hours of instrument flight time while receiving dual instrument flight instructions in aeroplanes from an authorised flight instructor. The instructor shall ensure that the applicant has operational experience in at least the following areas to the level of performance required for the holder of an instrument rating:

- a) pre-flight procedures for IFR flights, including the use of the flight manual or equivalent document, and appropriate air traffic services documents in the preparation of an IFR flight plan;
- b) pre-flight inspection, use of checklists, taxiing and pre-take-off checks;
- c) procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least:
- transition from visual to instrument flight on take off;
  - standard instrument departures and arrivals;
  - enroute IFR procedures;
  - proper understanding and use of Instrument Approach Charts;
  - holding procedures;
  - instrument approaches to specified minima;
  - missed approach procedures;
  - landings from instrument approaches, including circling;

- d) in-flight manoeuvres and particular flight characteristics;
- e) If the privileges of the instrument rating are to be exercised on multi-engined aeroplanes, the applicant shall have received dual instrument flight instruction in such an aeroplane from an authorised flight instructor. The instructor shall ensure that applicant has operational experience in the operation of the aeroplane solely by reference to instruments with simulated one engine inoperative. The exercises of simulated one engine inoperative shall be carried out at safe altitude, unless carried out in a flight simulator.

#### 2.10 **Instrument Rating (Helicopter)**

The pilot shall have gained 10 hours of the instrument flight time while receiving dual instrument flight instructions in helicopters from an authorised flight instructor, who shall ensure that the pilot has operational experience in at least the following areas and to the level of performance required for the holder of an instrument rating:

- a) pre-flight procedures for IFR flights, including the use of the flight manual or equivalent document, and appropriate air traffic services documents in the preparation of an IFR flight plan;
- b) pre-flight inspection, use of check-lists, taxiing and pre-take off checks;
- c) procedures and manoeuvres for IFR operation under normal, abnormal and emergency conditions covering at least;
  - transition from visual to instrument flight on take off;
  - standard instrument departures and arrivals;
  - en-route IFR procedures;
  - holding procedures;
  - instrument approaches to specified minima;
  - missed approach procedures;
  - landings from instrument approaches, including circling;
- d) in-flight manoeuvres and particular flight characteristics;  
and

- e) if appropriate, operation of a multi-engine helicopter in the above exercises, including operation of the helicopter solely by reference to instruments with one engine simulated inoperative. This exercise should be carried out at a safe altitude unless carried out in a simulator.

2.11 **Assistant Flight Instructor and Flight Instructor Rating (Aeroplane/Helicopter)**

The objective of the Flight Instructor Rating training course is to train the student instructor to teach the ground subjects and air exercises and to ensure that the student instructor attains a sufficiently high standard of flying. The training should comprise at least the following areas:

- i) The learning process;
- ii) The teaching process;
- iii) Training philosophies;
- iv) Techniques of applied instructions;
- v) Student evaluation and testing;
- vi) Training programme development;
- vii) Human performance and limitations relevant to flight instructions;
- viii) Hazards involved in simulating systems failures and malfunctions in the aircraft during flight.
- ix) Training administration.
- x) Use of training aids.
- xi) Elements of effective teaching.
- xii) Lesson planning.
- xiii) Class-room instructional techniques.
- xiv) analysis and correction of student errors.

The student instructor should complete flight training to practise the principles of basic instructions at PPL level. The applicant shall have received flying training instructions in at least the following applicable areas to the level of performance required for the holder of an Assistant Flight Instructor Rating (AFIR) and Flight Instructor Rating (FIR) as indicated below:

Sl.No.	Air Exercise	AFIR/FIR
1.	Familiarisation with aircraft and cockpit	AFIR & FIR
2.	Preparation for and action after flight	AFIR & FIR
3.	Air experience, taxiing	AFIR & FIR
4.	Effects of controls	AFIR & FIR
5.	Straight and level flight	AFIR & FIR
6.	Climbing and descending	AFIR & FIR
7.	Turns	AFIR & FIR
8.	Slow flight and stalling *	AFIR & FIR
9.	Steep turn	AFIR & FIR
10.	Take off and climb	AFIR & FIR
11.	Approach and landing	AFIR & FIR
12.	Low flying	AFIR & FIR
13.	Side slip/forward slip *	AFIR & FIR
14.	Forced landing	AFIR & FIR
15.	Pilot navigation, navigation at lower levels and reduced visibility	AFIR & <del>FIR</del>
16.	Emergencies	AFIR & FIR
17.	Auto-rotations **	AFIR & FIR
18.	Hovering and hover taxiing **	AFIR & FIR
19.	Transitions and hover taxiing **	AFIR & FIR
20.	Sideways and backwards flight **	AFIR & FIR
21.	Circuit procedure and airmanship	AFIR & FIR
22.	Cross wind take off and landing *	FIR
23.	First Solo	FIR
24.	Precautionary landing	FIR
20.	Radio navigation and instrument flying	FIR
25.	Night flying	FIR
26.	Spin recovery at the incipient stage *	<del>FIR</del>
27.	Circuits and emergencies – including demonstration of simulated engine off landings and simulated tail rotor failure **	FIR
28.	Spot turns **	FIR
29.	Vortex ring **	FIR
30.	Advanced auto-rotations **	FIR
31.	Sloping ground **	FIR
32.	Limited power **	FIR
33.	Confined areas **	FIR

\* For fixed wing aircraft only.

\*\* For helicopters only.

The applicant shall demonstrate on the aeroplane/helicopter for which Instructor's rating is sought, his ability to instruct to the satisfaction of the Examiner.

**3. DOZIER OF TRAINING**

The training institute imparting training to pilots shall develop standard doziers of training instructions, which should cover the entire syllabus prescribed in this CAR for various licences and ratings. While imparting training, the flight instructors shall regularly fill the dozier of each trainee giving details of the progress made by the trainee pilot including deficiencies observed and the corrective training given.

**4. SKILL TEST**

After receiving flight training, the pilot trainee shall demonstrate to an Examiner, his competency to perform the procedures and manoeuvres prescribed in the syllabus to the degree of competence appropriate to the privileges of the licence/rating and to :

- a) operate the aeroplane/helicopter within its limitations;
- b) complete all manoeuvres with smoothness and accuracy;
- c) exercise good judgement and airmanship;
- d) apply aeronautical knowledge;
- e) maintain control of the aeroplane/helicopter at all times in a manner such that the successful outcome of a procedure or manoeuvre is never seriously in doubt;
- f) understand and apply crew coordination and incapacitation procedures and communicate effectively with the other flight crew members in case of multi-pilot aeroplane/helicopter; and
- g) demonstrate ability to operate multi-engined aeroplanes/helicopters solely by reference to instruments with one engine inoperative, or simulated inoperative if the privileges of the instrument rating are to be exercised on such aeroplanes/ helicopters.

**5. OPERATING PRECAUTIONS**

All exercises stipulated in this CAR should be carried out at safe altitude and within the permissible limits of the aeroplane/helicopter and in accordance with the procedures laid down by the manufacturers.

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