

Section W

Student Flight Engineer's Licence

1. Requirements for the issue of licence— An applicant for a Student Flight Engineer's Licence shall satisfy the following requirements—

- (a) Age— He shall not be less than twenty-one years of age on the date of application.
- (b) Educational Qualifications— He shall have passed class ten plus two with Physics and Mathematics or its equivalent form a recognised Board/University.
- (c) Medical Fitness— He shall produce on a prescribed proforma a certificate of physical fitness from an approval Medical Board after undergoing a medical examination during which he shall have established his medical fitness on the basis of compliance with the requirements as notified by the Director-General under Rule 39B.
- (d) Technical Qualification— He shall have completed a Flight Engineer's Ground Course of Instructions in the basic technical and aeronautical knowledge required of a Flight Engineer as approved by the Director-General.
- (e) Knowledge— Subject to the successful completion of the course mentioned in clause (d) above, he shall pass a written examination in the following subjects—
 - (i) Regulations and procedures, including rules, in so far as duties of flight engineers are concerned;
 - (ii) Fundamental of aerodynamics and theory of flight and navigation;
 - (iii) General principles of constructions, maintenance and functioning of airframe, power plants, including their accessories, instruments, installed equipment and related systems;
 - (iv) Selected elements of flight planning, including centre of gravity computation, fuel consumption and endurance, power plant output and centre of power output, engine power curves and mathematical computation involved;
 - (v) Aircraft performance characteristics and limitations;
 - (vi) Flight documentation relating to the duties of flight engineers;
 - (vii) Procedures in the event of power plant or system malfunction or emergencies particularly in the event of fire;

(viii) Knowledge of varying meteorological conditions and their effect on aircraft, power plant operations;

(ix) Detailed knowledge of flight/operation manuals, including the knowledge of the functioning of the aircraft systems and other components installed in the systems;

(x) Procedures of airworthiness checks, defects reporting, pre-flight inspection, types of fuel precautions during refuelling and use of external power.

2. Validity— The period of validity shall commence from the date of issue or renewal of the licence. The licence shall be valid for a period specified in rule 39C subject to compliance with renewal requirements as stipulated in para 3 hereinafter.

3. Renewal— Licence may be renewed for a period not exceeding twelve months from the date of a successful medical examination.

4. Aircraft Rating— Licence shall indicate the type of aircraft on which the holder is entitled to fly in the capacity of a student flight engineer.

5. Extension of aircraft rating— For extension of aircraft rating to include an additional type of aircraft, an applicant shall have completed a flight engineer's ground course of instructions as per para 7.2 approved by the Director-General and passed a written examination subsequent to successful completion of the approved course, in aircraft engine and systems pertaining to the type of aircraft for which extension of aircraft rating is desired.

6. Privileges— Subject to the validity of endorsements and ratings in the licence, the privileges of the holder of a student flight engineer's licence shall be to act as a student flight engineer on any type of aircraft entered in aircraft rating of his licence and which has separate flight engineer's station, provided that :

(a) he shall so act at all times under personal supervision of a flight engineer and solely for the purpose of gaining flight experience required for obtaining a flight engineer's licence;

(b) he shall not act as a student flight engineer of a transport aircraft carrying passengers unless he has satisfactorily completed a course of training for a minimum of ten hours on local training flights or non-passenger carrying flight during which he shall have carried out not less than ten take-offs and ten landings and he has been certified fit by an examiner to operate as student flight engineer on the type of transport aircraft carrying passengers. Out of the ten hours stipulated as training experience, not more than eight hours shall be on an approved synthetic device shall not count towards the ten landings referred to above.

7. Flight Engineer's Ground Course of Instructions as referred to in para 1(d) shall consist of : (i) Basic Course, (ii) Type Course, as per the details given in para 7.1 below :

7.1 Basic Course : The duration of the course shall be decided by the Director-General, keeping in view the educational and experience background of trainees and course shall consist of the following subjects:

- (a) Aircraft rules and civil airworthiness requirements in so far as duties of flight engineers are concerned.
- (b) Theory of flight.
- (c) Properties of air.
- (d) Basic airframe and associated systems.
- (e) Basic engine— gas turbine engine or piston engine including propeller system as applicable.
- (f) Basic electrical.
- (g) Ground instruments.
- (h) Ground handling and servicing procedures.
- (i) Weight and balance.
- (j) Emergency equipments.
- (k) Fuel Systems.
- (l) Ice and rain protection.

7.2 Type Course— The duration of the course shall be as approved by the Director-General of keeping in view complexity of aircraft and shall cover the following subjects :—

- (a) Aircraft systems and accessories including malfunction analysis.
- (b) Aircraft engines— Gas turbine engine or piston engine, including propeller system as applicable, including malfunction analysis.
- (c) Fuel management.
- (d) Ground handling and servicing procedures.
- (e) Weight and balance.

- (f) Use of cockpit list/minimum equipment list.
- (g) External and internal pre-flight checks.
- (h) Normal operation procedures.
- (i) Alternate or emergency operating procedures.
- (j) Aircraft performance.
- (k) Documents relating to aircraft airworthiness.
- (l) Emergency equipment.
- (m) Fire protection systems.
- (n) Aircraft system, power plants systems, instrument system, electrical system operating limitation.
- (o) Ice and rain protection.
- (p) Landing gear and braking system.
- (q) A general knowledge of normal, abnormal and emergency use of radio, communication, navigation and radar systems.

8. Exemption— Where an applicant produces acceptable evidence that he has attended a ground course of instructions or has passed Aircraft Maintenance Engineer's Licence examinations of at least equal standards in any subject specified earlier in this section, he may be granted exemption from the requirements of paras 7.1 and 7.2, as applicable, by the Director-General.