

## **Aeronautical Engineering (Module II)**

**Part II**

**Marks 10**

### **Codes, Aircraft Rules and Regulations**

Knowledge of Aircraft Rules as far as they relate to airworthiness and safety of aircraft.

Knowledge of Privileges and responsibilities of the various categories of AME Licence and approved persons.

Knowledge of "Civil Airworthiness Requirements", "Aeronautical Information Circulars (relating to airworthiness)", "Advisory Circulars" and AME Notices issued by DGCA.

Knowledge of various mandatory documents like Certificate of Registration, Certificate of Airworthiness, Flight Manual, Export Certificate of Airworthiness.

Method of identifying approved material on Aircraft.

Knowledge of various documents/ certificates issued to establish airworthiness of Aircraft parts.

Various logbooks required to be maintained for Aircraft. Method of maintaining the logbook. Procedure for making entries in logbooks; Journey logbook, Technical logbook etc.

Use of schedules, its certification, preservation.

Stores: Bonded and Quarantine stores, storage of various aeronautical products including rubber goods, various fluids.

Knowledge of various terms such as Certificate of Flight Release, Certificate of Maintenance, Approved Certificates.

Condition under which Aircraft is required to be test flown; Certificate to be issued by AME for test flight.

Circumstances under which C of A is suspended.

Ferry Flight, MEL, CDL.

Minimum equipments, instruments required for various types of operation.

Modification, concession, Airworthiness Directive, Service Bulletins.

Approval of Organisation. Documents required to be carried on board. Issue of Type Approval. Registration markings.

Human performance and limitations relevant to the duties of an aircraft maintenance engineer licence holder.

Standard Atmosphere and aircraft speeds

## **Aeronautical Engineering (Module II) -- continued**

### **PART III**

**Marks : 50**

#### **Aircraft, Engine, Principles of Flight**

Knowledge of the functions of the major aircraft components and types of propulsion systems used in aircraft industry.

Knowledge of the terms lift, drag, angle of attack, stall.

Knowledge of principle of four stroke cycle and Brayton's cycle as applied to piston engines and jet engines.

Level, climbing, turning flight. Longitudinal and directional static stability; dihedral stability. Longitudinal and lateral modes.

#### **Aircraft Structures, Materials & Metallurgy**

Knowledge of commonly used ferrous, nonferrous and composite materials, their identification, properties, heat treatment processes, testing and their application in aircraft industry.

Knowledge of various types of corrosion, its cause and protection.

Detailed knowledge of the hot oil and chalk, dye penetrant and fluorescent and magnetic particle techniques and the subsequent inspection of the parts.

Knowledge of the X-ray, Ultrasonic and eddy current inspections.

Knowledge of arc welding, gas welding, brazing and soldering.

to be added

#### **Electrical and Instruments**

Knowledge of electrical terminology and components used in AC/DC circuitry, Ohm's law, Kirchoff's law and their application. Principle of Electromagnetic Induction and their application. Various methods of voltage regulation. Principle of operation of electrical test equipments.

Knowledge of Batteries and their maintenance.

Knowledge of principle of operation of aircraft and engine instruments.

Knowledge of various types of diodes/ triodes/ transistors and their function.

Knowledge of conversion from decimal to binary system and vice-versa. Symbols used in logic gates.

Elementary knowledge of computers, its applications.

Identify the bands of frequency spectrum, their use and propagation characteristics.

## **Aeronautical Engineering (Module II) -- continued**

### **Propulsion**

Aerothermodynamics, Compressors, Turbines, Combustion.

### **Navigation, Control and Guidance**