

Fluid Mechanics: Basic concepts of fluids: Density, specific volume, relative density, specific gravity, specific energy, surface tension. Fluid Statics: Pressure, types of manometers. Fluid Dynamics: Continuity equation, compressible flows, incompressible flows, volumetric flow rate, mass flow rate and Bernoulli equation.

Thermodynamics: Basics of thermodynamics: Temperature, pressure, volume, mass, energy types. Types of heat transfer, intensive and extensive properties of matter, ideal gas laws, first law and second law applications to the closed and open systems.

Hydraulic and Pneumatic Circuits: Basics of hydraulics and pneumatics. Operating principles of circuit elements: tank, pump, valve, cylinder etc.

Aircraft Materials: Aircraft material types, mechanics and strength of materials, heat treatments of materials, definition and types of corrosion.

Aircraft Hardware: Aircraft bolt identification, springs, bearings, transmissions, hose, control cable, cable construction and cable fittings.

Mechanic Maintenance Practices: Safety precautions-aircraft and workshop, workshop practices, tools, avionics general test equipment, engineering drawings, diagrams and standards, electrical cables and connectors, riveting, pipes and hoses, springs, bearings, transmissions, control cables, aircraft weight and balance, aircraft handling and storage, disassembly, inspection, repair and assembly techniques and maintenance procedures.

Piston Engine: Fundamentals, Engine Performance, Engine Construction, Engine Fuel Systems, Starting and Ignition Systems, Induction, Exhaust and Cooling Systems, Supercharging/Turbocharging, Lubricants and Fuels, Lubrication Systems, Engine Indication Systems, Powerplant Installation, Engine Monitoring and Ground Operation, Engine Storage and Preservation.

Propellers: Fundamentals, Propeller Construction, Propeller Pitch Control, Propeller Synchronising, Propeller Ice Protection, Propeller Maintenance, Propeller Storage and Preservation.

Technical Drawing: Fundamentals drawings, perspective drawing, standard machine elements, removable/non removable fasteners, shaft, gear, springs, bearings, machine parts and tolerances, surface symbols, assembly drawing.

Basic Aerodynamics: Physics of the Atmosphere, Aerodynamics, Theory of Flight, Flight Stability and Dynamics.

Aircraft Structures and Systems I: Theory of flight, High Speed Flight, Airframe Structures-General Concepts, Airframe Structures, Equipment and Furnishings, Oxygen Air Conditioning and Cabin Pressurization, Water/Waste, Systems.

Aircraft Structures and Systems II: Ice and Rain Protection, Fire Protection, Fuel, Hydraulic Power, Landing Gear, Pneumatic/Vacuum, On Board Maintenance Systems.

Gas Turbine Engines: Fundamentals (Brayton cycle, Constructional arrangement and operation of turbojet, turbofan, turboshaft, turboprop), Engine Performance, inlet, compressor, combustion chamber, turbine section, exhaust, lubrication systems, fuel systems, air systems, starting and ignition systems, engine indication systems.

Aviation Legislation: Role of the International Civil Aviation Organization, Role of EASA, Role of Federal Aviation Administration, Role of Directorate General Of Civil Aviation (DGCA), Certifying Staff-Maintenance DGCA 66-01 (EASA Part-66), Approved Maintenance Organizations DGCA 145-01 (EASA Part-145).

Basic Electricity-Electronic: Electron Theory, Static Electricity and Conduction, Electrical Terminology, Generation of Electricity, DC Sources of Electricity, DC Circuits, Resistance/Resistor, Power, Capacitance/Capacitor, Inductance/Inductor, Magnetism, Magnetic induction, AC Theory, AC Circuits, Transformers, motor and generators.

Aircraft Electronic System: Instruments, electronic flight instrument systems, automatic flight control systems, aircraft electrical system, lights, communication and navigation systems.