



<p style="text-align: center;">Part-66 B2 Category</p>	<p style="text-align: center;">AeroGATES cross-reference</p>	<p style="text-align: center;">Level</p>
<p>MODULE 1. MATHEMATICS</p>		
<p>1.1 Arithmetic</p>		
<p>Arithmetical terms and signs, Methods of multiplication and division, Fractions and decimals, Factors and multiples, Weights, measures and conversion factors, Ratio and proportion, Averages and percentages, Areas and volumes, squares, cubes, Square and cube roots.</p>	<p>E66-B2-01-01a-E01-R00 E66-B2-01-01b-E01-R00 E66-B2-01-01c-E01-R00 E66-B2-01-01d-E01-R00 E66-B2-01-01e-E01-R00 E66-B2-01-01f-E01-R00 E66-B2-01-01g-E01-R00 E66-B2-01-01h-E01-R00 E66-B2-01-01i-E01-R00</p>	<p>2 2 2 2 2 2 2 2 2</p>
<p>1.2 Algebra</p>		
<p>(a)</p>		
<p>Evaluating simple algebraic expressions, addition, subtraction. Multiplication and division, use of brackets, simple Algebraic fractions.</p>	<p>E66-B2-01-02a-E01-R00</p>	<p>2</p>

(b)		
Linear equations and their solutions,	E66-B2-01-02b-E01-R00	1
Indices and powers, negative and fractional indices,	E66-B2-01-02c-E01-R00	1
Binary and other applicable numbering systems,	E66-B2-01-02d-E01-R00	1
Simultaneous equations,	E66-B2-01-02e-E01-R00	1
Second degree equations with one unknown,	E66-B2-01-02f-E01-R00	1
Logarithms.	E66-B2-01-02g-E01-R00	1
1.3 Geometry		
(a)		
Simple geometrical constructions.	E66-B2-01-03a-E01-R00	1
(b)		
Graphical representation; nature and uses of graphs, Graphs of equations/functions.	E66-B2-01-03b-E01-R00	2
(c)		
Simple trigonometry; trigonometrical relationships; Use of tables and rectangular and polar coordinates.	E66-B2-01-03c-E01-R00	2
MODULE 2. PHYSICS		
2.1 Matter		
Nature of matter: the chemical elements, structure of atoms, molecules; Chemical compounds. States: solid, liquid and gaseous; Changes between states.	E66-B2-02-01-E01-R00	1
2.2 Mechanics		
2.2.1 Statics		
Forces, moments and couples, representation as vectors;	E66-B2-02-0201a-E01-R00	1

Centre of gravity.	E66-B2-02-0201b-E01-R00	1
Elements of theory of stress, strain and elasticity: tension, compression, shear and torsion;	E66-B2-02-0201c-E01-R00	1
Nature and properties of solid, fluid and gas;	E66-B2-02-0201d-E01-R00	1
Pressure and buoyancy in liquids (barometers).	E66-B2-02-0201e-E01-R00	1
2.2.2 Kinetics		
Linear movement: uniform motion in a straight line, motion under constant acceleration (motion under gravity) ;	E66-B2-02-0202a-E01-R00	1
Rotational movement: uniform circular motion (centrifugal/centripetal forces);	E66-B2-02-0202b-E01-R00	1
Periodic motion: pendular movement;	E66-B2-02-0202c-E01-R00	1
Simple theory of vibration, harmonics and resonance;	E66-B2-02-0202d-E01-R00	1
Velocity ration mechanical advantage and efficiency.	E66-B2-02-0202e-E01-R00	1
2.2.3 Dynamics		
(a)		
Mass, force, inertia, work, power, energy (potential, kinetic and total energy), heat, efficiency.	E66-B2-02-0203a-E01-R00	1
(b)		
Momentum, conservation of momentum; Impulse; Gyroscopic principles.	E66-B2-02-0203b-E01-R00	2
Friction: nature and effects, coefficient of friction (rolling resistance).	E66-B2-02-0203c-E01-R00	2
2.2.4 Fluid dynamics		
(a)		
Specific gravity and density;	E66-B2-02-0204a-E01-R00	2

(b)		
Viscosity, fluid resistance, effects of streamlining;	E66-B2-02-0204b-E01-R00	1
Effects of compressibility on fluids ; Static, dynamic and total pressure: Bernoulli's Theorem, Venturi	E66-B2-02-0204c-E01-R00	1
2.3 Thermodynamics		
(a)		
Temperature: thermometers and temperature scales : Celsius, Fahrenheit and Kelvin; Heat definition.	E66-B2-02-03a-E01-R00	2
(b)		
Heat capacity, specific heat;	E66-B2-02-03b-E01-R00	2
Heat transfer: convection, radiation and conduction; Volumetric expansion;	E66-B2-02-03c-E01-R00	2
First and second law of thermodynamics; Isothermal, adiabatic expansion and compression, engine cycles, constant volume and constant pressure, refrigera- tors and heat pumps;	E66-B2-02-03d-E01-R00	2
Gases: ideal gases laws; specific heat at constant volume and constant pressure, work done by expanding gas;	E66-B2-02-03e-E01-R00	2
Latent heat of fusion and evaporation, thermal energy, heat of combustion.	E66-B2-02-03f-E01-R00	2
2.4 Optics (Light)		
Nature of light; speed of light; Laws of reflection and refraction: reflection at plane surfaces,	E66-B2-02-04a-E01-R00	2
Reflection by spherical mirrors, refraction, lenses, fibre optics.	E66-B2-02-04b-E01-R00	2
2.5 Wave motion and sound		
Wave motion: mechanical waves, sinusoidal wave motion, Interference phenomena, standing waves; Sound: speed of sound, production of sound, intensity,	E66-B2-02-05-E01-R00	2

Pitch and quality,
Doppler effect.

MODULE 3. ELECTRICAL FUNDAMENTALS

3.1 Electron Theory

Structure and distribution of electrical charges within:
atoms, molecules, ions, compounds;
Molecular structure of conductors, semiconductors and
insulators.

E66-B2-03-01-E01-R00

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3.2 Static Electricity and Conduction

Static electricity and distribution of electrostatic charges;
Electro static laws of attraction and repulsion;
Units of charge, Coulomb's Law;
Conduction of electricity in solids, liquids, gases and
vacuum.

E66-B2-03-02-E01-R00

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3.3 Electrical Terminology

The following terms, their units and factors affecting them:
potential difference, electromotive force, voltage, current,
resistance, conductance, charge, conventional current flow,
electron flow.

E66-B2-03-03-E01-R00

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3.4 Generation of Electricity

Production of electricity by the following methods: light,
heat, friction, pressure, chemical action, magnetism and
motion.

E66-B2-03-04-E01-R00

2

3.5 DC Sources of Electricity

Construction and basic chemical action of: primary cells,
secondary cells, lead acid cells, nickel cadmium cells, other
alkaline cells; Cells connected in series and parallel;
Internal resistance and its effect on a battery;
Construction, materials and operation of thermocouples;
Operation of photo-cells.

E66-B2-03-05-E01-R00

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3.6 DC Circuits

Ohms Law,

E66-B2-03-06a-E01-R00

2

Kirchoff's Voltage and Current Laws; Calculations using the above laws to find resistance voltage and current; Significance of the internal resistance of a supply.	E66-B2-03-06b-E01-R00	2
3.7 Resistance/Resistor		
(a)		
Resistance and affecting factors; Specific resistance; Resistor colour code, values and tolerances, preferred values, wattage ratings; Resistors in series and parallel; Calculation of total resistance using series, parallel and Series parallel combinations; Operation and use of potentiometers and rheostats; Operation of Wheatstone Bridge.	E66-B2-03-07a-E01-R00	2
(b)		
Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; Construction of potentiometers and rheostats; Construction of Wheatstone Bridge.	E66-B2-03-07b-E01-R00	1
3.8 Power		
Power, work and energy (kinetic and potential); Dissipation of power by a resistor;	E66-B2-03-08a-E01-R00	2
Power formula; Calculations involving power, work and energy.	E66-B2-03-08b-E01-R00	2
3.9 Capacitance/Capacitor		
Operation and function of a capacitor; Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric constant, working voltage, voltage rating; Capacitor types, Construction and function; Capacitor colour coding; Calculations of capacitance and voltage in series and parallel circuits; Exponential charge and discharge of a capacitor, time constants; Testing of capacitors.	E66-B2-03-09-E01-R00	2
3.10 Magnetism		

(a)		
<p>Theory of magnetism; Properties of a magnet; Action of a magnet suspended in the Earth's magnetic field; Magnetisation and demagnetisation; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor.</p>	E66-B2-03-10a-E01-R00	2
(b)		
<p>Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets.</p>	E66-B2-03-10b-E01-R00	2
3.11 Inductance/Inductor		
<p>Faraday's Law; Action of inducing a voltage in a conductor moving in a magnetic field; Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, Induction principles; Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, Number of conductor turns; Mutual induction; The effect the rate of change of primary current and mutual inductance has on induced voltage; Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other; Lenz's Law and polarity determining rules; Back emf, self induction; Principle uses of inductors.</p>	E66-B2-03-11-E01-R00	2
3.12 DC Motor/Generator Theory		
<p>Basic motor and generator theory; Construction and purpose of components in DC generator ; Operation of, and factors affecting output and direction of current flow in DC generators; Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors; Series wound, shunt wound and compound motors; Starter generator construction.</p>	E66-B2-03-12-E01-R00	2

3.13 AC Theory		
<p>Sinusoidal waveform:</p> <ul style="list-style-type: none"> ○ phase, ○ period, ○ frequency, ○ cycle. <p>Instantaneous, average, root mean square, peak, peak to peak current values and calculations of the values, in relation voltage, current and power Triangular / Square waves; Single / 3 phase principles.</p>	E66-B2-03-13-E01-R00	2
3.14 Resistive (R), Capacitive (C) and Inductive (L) Circuits		
<p>Phase relation ship of voltage and current in L, C and R circuits, parallel, series and series parallel; Impedance, phase angle, power factor and current calculations; True power, apparent power and reactive power calculations.</p>	E66-B2-03-14-E01-R00	2
3.15 Transformers		
<p>Transformer construction principles and operation; Transformer losses and methods for overcoming them; Transformer action under load and no-load conditions; Power transfer, efficiency, polarity markings; Calculation of line and phase voltages and currents; Primary and Secondary current, voltage, turns ratio, power, efficiency; Auto-transformers.</p>	E66-B2-03-15-E01-R00	2
3.16 Filters		
<p>Operation, application and uses of the following filters: Low pass, high pass, band pass, band stop.</p>	E66-B2-03-16-E01-R00	2
3.17 AC Generators		
<p>Rotation of loop in a magnetic field and waveform produced; Operation and construction of revolving armature and revolving field type AC generators; Single phase, two phase and three phase alternators; Three phase star and delta connections advantages and uses ; Permanent Magnet Generators.</p>	E66-B2-03-17-E01-R00	2

3.18 AC Motors		
Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase; Methods of speed control and direction of rotation; Methods of producing a rotating field: capacitor, inductor, shaded or split pole.	E66-B2-03-18-E01-R00	2

MODULE 4. ELECTRONIC FUNDAMENTALS

4.1 Semiconductors		
4.1.1 Diodes		
(a)		
Diode symbols; Diode characteristics and properties; Diodes in series and parallel; Main characteristics and use of silicon controlled rectifiers (thyristors), light emitting diode, photo conductive diode, varistor, rectifier diodes; Functional testing of diodes.	E66-B2-04-0101a-E01-R00	2
(b)		
Materials, electron configuration, electrical properties; P and N type materials: effects of impurities on conduction, majority and minority characters;	E66-B2-04-0101b-E01-R00	2
PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions;	E66-B2-04-0101c-E01-R00	2
Diode parameters: peak inverse voltage, maximum forward current, temperature, frequency, leakage current, power dissipation;	E66-B2-04-0101d-E01-R00	2
Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers;	E66-B2-04-0101e-E01-R00	2
Detailed operation and characteristics of the following devices: silicon controlled rectifier (thyristor), light emitting diode, Schottky diode, photo conductive diode, varactor diode, varistor, rectifier diodes, Zener diode.	E66-B2-04-0101f-E01-R00	2

4.1.2 Transistors		
(a)		
Transistor symbols; Component description and orientation; Transistor characteristics and properties.	E66-B2-04-01-02a-E01-R00	2
(b)		
Construction and operation of PNP and NPN transistors;	E66-B2-04-01-02b-E01-R00	2
Base, collector and emitter configurations;	E66-B2-04-01-02c-E01-R00	2
Testing of transistors.	E66-B2-04-01-02d-E01-R00	2
Basic appreciation of other transistor types and their uses.	E66-B2-04-01-02e-E01-R00	2
Application of transistors: classes of amplifier (A,B,C);	E66-B2-04-01-02f-E01-R00	2
Simple circuits including: bias, decoupling, feedback and stabilisation;	E66-B2-04-01-02g-E01-R00	2
Multistage circuit principles: cascades, push-pull, oscillators, multivibrators ; flip-flop circuits.	E66-B2-04-01-02h-E01-R00	2
4.1.3 Integrated Circuits		
(a)		
Description and operation of logic circuits and linear circuits / operational amplifiers.	-	-
(b)		
Description and operation of logic circuits and linear circuits; Introduction to operation and function of an operational amplifier used as: integrator, differentiator, voltage follower, comparator; Operation and amplifier stages connecting methods: resistive capacitive, inductive (transformer), inductive resistive (IR), direct; Advantages and disadvantages of positive and negative feedback.	E66-B2-04-0103b-E01-R00	2
4.2 Printed circuit boards		

Description and use of printed circuit boards	E66-B2-04-02-E01-R00	2
4.3. Servomechanisms		
(a)		
Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers; Principles of operation and use of following synchro system components / Features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.	-	-
(b)		
Understanding of the following terms: Open and closed loop, followup, servomechanism, analogue, transducer, null, damping, feedback, dead band; Construction operation and use of the following synchro system components: resolvers, differential, control and torque, E and I transformers, inductance transmitters, capacitance transmitters, synchronous transmitters; Servomechanism defects, reversal of synchro leads, hunting.	E66-B2-04-03b-E01-R00	2
MODULE 5. DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS		
5.1 Electronic Instrument Systems		
Typical systems arrangements and cockpit layout of electronic instrument systems.	E66-B2-05-01-E01-R00	3
5.2 Numbering Systems		
Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	E66-B2-05-02-E01-R00	2
5.3 Data Conversion		
Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	E66-B2-05-03a-E01-R00 E66-B2-05-03a-E01-R00	2 2

5.4 Data Buses		
Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications.	E66-B2-05-04-E01-R00	2
5.5 Logic Circuits		
(a)		
Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams.	E66-B2-05-05a-E01-R00	2
(b)		
Interpretation of logic diagrams.	E66-B2-05-05b-E01-R00	2
5.6 Basic Computer Structure		
(a)		
Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems).	-	-
(b)		
Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multi address instruction words; memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	E66-B2-05-06b-E01-R00	2
5.7 Microprocessors		
Functions performed and overall operation of a microprocessor; Basic operation of each of the following microprocessor elements: <ul style="list-style-type: none"> ○ control and processing unit, ○ clock, 	E66-B2-05-07-E01-R00	2

<ul style="list-style-type: none"> ○ register, ○ arithmetic logic unit. 		
5.8 Integrated Circuits		
Operation and use of encoders and decoders; Function of encoder types; Uses of medium, large and very large scale integration.	E66-B2-05-08-E01-R00	2
5.9 Multiplexing		
Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	E66-B2-05-09-E01-R00	2
5.10 Fibre Optics		
Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.	E66-B2-05-10a-E01-R00 E66-B2-05-10b-E01-R00 E66-B2-05-10c-E01-R00	2 2 2
5.11 Electronic Displays		
Principles of operation of common types of displays used in modern aircraft, including : <ul style="list-style-type: none"> ○ Cathode Ray Tubes, ○ Light Emitting Diodes, ○ Liquid Crystal Display. 	E66-B2-05-11a-E01-R00 E66-B2-05-11b-E01-R00 E66-B2-05-11c-E01-R00 E66-B2-05-11d-E01-R00 E66-B2-05-11e-E01-R00	2 2 2 2 2
5.12 Electrostatic Sensitive Devices		
Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	E66-B2-05-12-E01-R00	2
5.13 Software Management Control		
Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	E66-B2-05-13-E01-R00	2

5.14 Electromagnetic Environment		
Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection	E66-B2-05-14-E01-R00	2
5.15 Typical Electronic / Digital Aircraft Systems		
General arrangement of typical electronic / digital aircraft systems and associated BITE (Built In Test Equipment) testing such as: ACARS – ARINC Communication and Addressing and Reporting System ECAM – Electronic Centralised Aircraft Monitoring EFIS – Electronic Flight Instrument System EICAS – Engine Indication and Crew Alerting System FBW – Fly by Wire FMS – Flight Management System GPS – Global Positioning System IRS – Inertial Reference System TCAS – Traffic Alert Collision Avoidance System	E66-B2-05-15a-E01-R00 E66-B2-05-15b-E01-R00 E66-B2-05-15c-E01-R00 E66-B2-05-15d-E01-R00 E66-B2-05-15e-E01-R00 E66-B2-05-15f-E01-R00	2 2 2 2 2 2
MODULE 6. MATERIALS AND HARDWARE		
6.1 Aircraft Materials - Ferrous		
(a)		
Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels.	E66-B2-06-01a-E01-R00	1
(b)		
Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	E66-B2-06-01b-E01-R00	1
6.2 Aircraft Materials - Non-Ferrous		
(a)		
Characteristics, properties and identification of common	E66-B2-06-02a-E01-R00	1

non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials;		
(b)		
Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	E66-B2-06-02b-E01-R00	1
6.3 Aircraft Materials - Composites and non-metallic		
6.3.1 Composite and non-metallic other than wood and fabric		
(a)		
Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents.	E66-B2-06-0301a-E01-R00	2
(b)		
The detection of defects / deterioration in composite and non-metallic material. Repair of composite and non-metallic material	-	-
6.3.2 Wooden structures		
Construction methods of wooden airframe structures; Characteristics, properties and types of wood and glue used in aeroplanes ; Preservation and maintenance of wooden structure; Types of defects in wood material and wooden structures; The detection of defects in wooden structure; Repair of wooden structure.	-	-
6.3.3 Fabric covering		
Characteristics, properties and types of fabrics used in aeroplanes; inspections methods for fabric; Types of defects in fabric; repair of fabric covering.	-	-
6.4 Corrosion		
Chemical fundamentals;	E66-B2-06-04a-E01-R00	1

Formation by, galvanic action process, microbiological, stress.		
(b)		
Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	E66-B2-06-04b-E01-R00	2
6.5. Fasteners		
6.5.1 Screw threads		
Screw nomenclature; Thread forms, dimension and tolerances for standard thread used in aircraft; Measuring screw threads	E66-B2-06-0501-E01-R00	2
6.5.2 Bolts, studs and screws		
Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machines crews: aircraft specifications; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels.	E66-B2-06-0502-E01-R00	2
6.5.3 Locking devices		
Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins .	E66-B2-06-0503-E01-R00	2
6.5.4 Aircraft rivets		
Types of solid and blind rivets: specifications and identification; Heat treatment.	E66-B2-06-0504-E01-R00	1
6.6 Pipes and Unions		
(a)		
Identification of, and types of rigid and flexible pipes and	E66-B2-06-06-01a-00	2

their connectors used in aircraft		
(b)		
Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	E66-B2-06-06-01b-00	1
6.7 Springs		
Types of springs, materials, characteristics and applications.	E66-B2-06-07-E01-R00	1
6.8 Bearings		
Purpose of bearings, loads, material, construction; Types of bearings and their application.	E66-B2-06-08-E01-R00	2
6.9 Transmissions		
Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	E66-B2-06-09-E01-R00	2
6.10 Control Cables		
Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	E66-B2-06-10-E01-R00	1
6.11 Electrical Cables and Connectors		
Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	E66-B2-06-11a-E01-R00 E66-B2-06-11b-E01-R00 E66-B2-06-11c-E01-R00	2 2 2
MODULE 7. MAINTENANCE PRACTICES		
7.1 Safety Precautions – Aircraft and Workshop		

Aspects of safe working practices including precautions to take when working with electricity, gases especially oxygen, oils and chemicals. Also, instruction in the remedial action to be taken in the event of a fire or another accident with one or more of these hazards including knowledge on extinguishing agents.	E66-B2-07-01-E01-R00	3
7.2 Workshop Practices		
Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards.	E66-B2-07-02-E01-R00	3
7.3 Tools		
Common hand tool types; Common power tool types; Operation and use of precision measuring tools; Lubrication equipment and methods. Operation, function and use of electrical general test equipment.	E66-B2-07-01-E01-R00	3
7.4 Avionic General Test Equipment		
Operation, function and use of avionic general test equipment.	E66-B2-07-01-E01-R00	3
7.5 Engineering Drawings, Diagrams and Standards		
Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information; Microfilm, microfiche and computerised presentations; Specification 100 of the Air Transport Association (ATA) of America; Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL; Wiring diagrams and schematic diagrams.	E66-B2-07-05-E01-R00	2
7.6 Fits and Clearances		
Drill sizes for bolt holes, classes of fits; Common system of fits and clearances; Schedule of fits and clearances for aircraft and engines; Limits for bow, twist and wear; Standard methods for checking shafts, bearings and other parts.	E66-B2-07-06-E01-R00	1

7.7 Electrical Cables and Connectors		
Continuity, insulation and bonding techniques and testing; Use of crimp tools: hand and hydraulic operated; Testing of crimp joints; Connector pin removal and insertion; Co-axial cables: testing and installation precautions; Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.	E66-B2-07-07-E01-R00	2
7.8 Riveting		
Riveted joints, rivet spacing and pitch; Tools used for riveting and dimpling; Inspection of riveted joints.	-	-
7.9 Pipes and Hoses		
Bending and belling / flaring aircraft pipes; Inspection and testing of aircraft pipes and hoses; Installation and clamping of pipes.	-	-
7.10 Springs		
Inspection and testing of springs.	-	-
7.11 Bearings		
Testing, cleaning and inspection of bearings; Lubrication requirements of bearings; Defects in bearings and their causes.	-	-
7.12 Transmissions		
Inspection of gears, backlash; Inspection of belts and pulleys, chains and sprockets; Inspection of screw jacks, lever devices, push-pull rod systems.	-	-
7.13 Control Cables		
Swaging of end fittings;	-	-

Inspection and testing of control cables; Bowden cables; aircraft flexible control systems.		
7.14 Material handling		
7.14.1 Sheet Metal		
Marking out and calculation of bend allowance; Sheet metal working, including bending and forming; Inspection of sheet metal work.	-	-
7.14.2 Composite and non-metallic		
Bonding practices; Environmental conditions Inspection methods	E66-B2-07-1402-E01-R00	2
7.15 Welding, Brazing, Soldering and Bonding		
(a)		
Soldering methods; inspection of soldered joints.	E66-B2-07-15a-E01-R00	2
(b)		
Welding and brazing methods; Inspection of welded and brazed joints; Bonding methods and inspection of bonded joints.	-	-
7.16 Aircraft Weight and Balance		
(a)		
Centre of Gravity Balance limits calculation: use of relevant documents.	E66-B2-07-16a-E01-R00	2
(b)		
Preparation of aircraft for weighing; Aircraft weighing.	-	-

7.17 Aircraft Handling and Storage		
Aircraft taxiing / towing and associated safety precautions; Aircraft jacking, chocking, securing and associated safety precautions; Aircraft storage methods; Refuelling / de-fuelling procedures; De-icing / anti-icing procedures; Electrical, hydraulic and pneumatic ground supplies. Effects of environmental conditions on aircraft handling and operation.	E66-B2-07-17-E01-R00	2
7.18 Disassembly, Inspection, Repair and Assembly Techniques		
(a)		
Types of defects and visual inspection techniques. Corrosion removal, assessment and re-protection.	E66-B2-07-18a-E01-R00	2
(b)		
General repair methods, Structural Repair Manual; Ageing, fatigue and corrosion control programmes.	-	-
(c)		
Non destructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and boroscope methods.	E66-B2-07-18c-E01-R00	1
(d)		
Disassembly and re-assembly techniques.	E66-B2-07-18d-E01-R00	2
(e)		
Troubleshooting techniques	E66-B2-07-18e-E01-R00	2
7.19 Abnormal Events		

(a)		
Inspections following lightning strikes and HIRF penetration.	E66-B2-07-19a-E01-R00	2
(b)		
Inspections following abnormal events such as heavy landings and flight through turbulence.	-	-
7.20 Maintenance Procedures		
Maintenance planning; Modification procedures; Stores procedures; Certification / release procedures; Interface with aircraft operation; Maintenance Inspection / Quality Control / Quality Assurance ; Additional maintenance procedures. Control of life limited components.	E66-B2-07-20-E01-R00	2

MODULE 8. BASIC AERODYNAMICS

8.1 Physics of the Atmosphere		
International Standard Atmosphere (ISA), application to aerodynamics.	E66-B2-08-01-E01-R00	2
8.2 Aerodynamics		
Airflow around a body;	E66-B2-08-02a-E01-R00	2
Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, upwash and downwash, vortices, stagnation;	E66-B2-08-02b-E01-R00	2
The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, centre of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio;	E66-B2-08-02-01c-00	2
Thrust, Weight, Aerodynamic Resultant; Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall; Aerofoil contamination including ice, snow, frost.	E66-B2-08-02d-E01-R00	2
8.3 Theory of Flight		

Relation ship between lift, weight, thrust and drag; Glide ratio;	E66-B2-08-03a-E01-R00	2
Steady stable flights, performance; Theory of the turn;	E66-B2-08-03b-E01-R00	2
Influence of load factor: stall, flight envelope and structural limitations;	E66-B2-08-03c-E01-R00	2
Lift augmentation.	E66-B2-08-03d-E01-R00	2
8.4 Flight Stability and Dynamics		
Longitudinal, lateral and directional stability (active and passive).	E66-B2-08-04-E01-R00	2
MODULE 9. HUMAN FACTORS		
9.1 General		
The need to take human factors into account; Incidents attributable to human factors / human error; 'Murphy's' law.	E66-B2-09-01-E01-R00	2
9.2 Human Performance and Limitations		
Vision; Hearing; Information processing; Attention and perception; Memory; Claustrophobia and physical access.	E66-B2-09-02-E01-R00	2
9.3 Social Psychology		
Responsibility: individual and group; Motivation and de-motivation; Peer pressure; 'Culture' issues; Team working; Management, Supervision and leadership.	E66-B2-09-03-E01-R00	1
9.4 Factors Affecting Performance		
Fitness / health; Stress: domestic and work related; Time pressure and deadlines; Workload: over load and underload; Sleep and fatigue, shiftwork;	E66-B2-09-04-E01-R00	2

Alcohol, medication, drug abuse.		
9.5 Physical Environment		
Noise and fumes; Illumination; Climate and temperature; Motion and vibration; Working environment.	E66-B2-09-05-E01-R00	1
9.6 Tasks		
Physical work; Repetitive tasks; Visual inspection; Complex systems.	E66-B2-09-06-E01-R00	1
9.7 Communication		
Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information.	E66-B2-09-07-E01-R00	2
9.8 Human Error		
Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents) Avoiding and managing errors.	E66-B2-09-08-E01-R00	2
9.9 Hazards in the Workplace		
Recognising and avoiding hazards; Dealing with emergencies.	E66-B2-09-09-E01-R00	2
MODULE 10. AVIATION LEGISLATION		
10.1 Regulatory Framework		
Role of International Civil Aviation Organisation; Role of EASA; Role of the Member States; Relationship between Part-145, Part-66, Part-147 and Part-M;	E66-B2-10-01-E01-R00	1

Relationship with other Aviation Authorities.		
10.2 Part-66 - Certifying Staff – Maintenance		
Detailed understanding of Part-66.	E66-B2-10-02-E01-R00	2
10.3 Part-145 - Approved Maintenance Organisations		
Detailed understanding of Part-145.	E66-B2-10-03-E01-R00	2
10.4 JAR-OPS – Commercial Air Transportation		
Air Operators Certificates; Operators Responsibilities; Documents to be Carried; Aircraft placarding (Markings);	E66-B2-10-04-E01-R00	1
10. 5 Aircraft certification		
(a) General		
Certification rules: such as EACS 23/ 25/ 27/ 29; Type certification; Supplemental type certification; Part-21 design / Production organisation approvals.	E66-B2-10-05a-E01-R00	1
(b) Documents		
Certificate of Airworthiness; Certificate of registration; Noise certificate; Weight schedule; Radio station licence and approval.	E66-B2-10-05b-E01-R00	2
10.6 Part-M		
Detailed understanding of Part-M.	E66-B2-10-06-E01-R00	2
10.7 Applicable National and International Requirements for (if not superseded by EU requirements)		
(a)		

Maintenance programmes, maintenance checks and inspections; Master minimum equipment lists, minimum equipment list, dispatch deviation lists; Airworthiness directives; Service bulletins, manufacturers service information; Modifications and repairs; Maintenance documentation: <ul style="list-style-type: none"> ○ maintenance, ○ manuals, ○ structural repair manual, ○ illustrated parts catalogue, etc. 	E66-B2-10-07a-E01-R00	2
(b)		
Continuing airworthiness; Test flights; ETOPS, maintenance and dispatch requirements; All Weather Operations, Category 2/3 operations and minimum equipment requirements.	E66-B2-10-07b-E01-R00	1
MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURES AND SYSTEMS		
13.1 Theory of Flight		
(a) Aeroplane aerodynamics and flight controls		
Operation and effect of: <ul style="list-style-type: none"> • roll control: ailerons and spoilers; • pitch control: elevators, stabilators, variable incidence stabilisers and canards; • yaw control, rudder limiters; Control using elevons, ruddervators; High lift devices: slots, slats, flaps; Drag inducing devices: spoilers, lift dumpers, speed brakes; Operation and effect of trim tabs, servo tabs, control surface bias.	E66-B2-13-01a-E01-R00	1
(b) High Speed Flight		
Speed of sound, subsonic flight, transonic flight, supersonic flight, Mach number, critical Mach number.	E66-B2-13-01b-E01-R00	1
(c) Rotary wing aerodynamics		

Terminology; Operation and effect of cyclic, collective and anti-torque controls.	E66-B2-13-01c-E01-R00	1
13.2 Structures – General Concepts		
(a)		
Fundamentals of structural systems.	E66-B2-13-02a-E01-R00	1
(b)		
Zonal and station identification systems;	E66-B2-13-02b-E01-R00	2
Electrical bonding; Lightning strike protection provision.	E66-B2-13-02c-E01-R00	2
13.3 Autoflight (ATA 22)		
Fundamentals of automatic flight control including working principles and current terminology; Command signal processing; Modes of operation: roll, pitch and yaw channels; Yaw dampers; Stability Augmentation System in helicopters; Automatic trim control; Autopilot navigation aids interface; Autothrottle systems. Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions.	E66-B2-13-03a-E01-R00 E66-B2-13-03b-E01-R00 E66-B2-13-03c-E01-R00	3 3 3
13.4 Communication / Navigation (ATA 23 / 34)		
Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; Working principles of following systems:		
Very High Frequency (VHF) communication; High Frequency (HF) communication; audio; Emergency Locator Transmitters;	E66-B2-13-04a-E01-R00	3
Cockpit Voice Recorder;	E66-B2-13-04b-E01-R00	3
Very High Frequency omni directional range (VOR);	E66-B2-13-04c-E01-R00	3
Automatic Direction Finding (ADF);	E66-B2-13-04d-E01-R00	3

Instrument Landing System (ILS);	E66-B2-13-04e-E01-R00	3
Microwave Landing System (MLS);	E66-B2-13-04f-E01-R00	3
Very Low Frequency and hyperbolic navigation (VLF/Omega); Doppler navigation;	E66-B2-13-04g-E01-R00	3
Flight Director systems; Distance Measuring Equipment (DME);	E66-B2-13-04h-E01-R00	3
Area navigation, RNAV systems;	E66-B2-13-04i-E01-R00	3
Hyperbolic navigation systems	E66-B2-13-04j-E01-R00	3
Flight Management Systems (FMS) and ARINC communication and reporting(ACARS).	E66-B2-13-04k-E01-R00	3
Global Positioning System (GPS), Global Navigation Satellite Systems(GNSS);	E66-B2-13-04l-E01-R00	3
Inertial Navigation System;	E66-B2-13-04m-E01-R00	3
Radar	E66-B2-13-04n-E01-R00	3
Air Traffic Control transponder, secondary surveillance radar;	E66-B2-13-04o-E01-R00	3
Weather avoidance radar;	E66-B2-13-04p-E01-R00	3
Traffic Alert and Collision Avoidance System (TCAS);	E66-B2-13-04q-E01-R00	3
Radio altimeter;	E66-B2-13-04r-E01-R00	3
13.5 Electrical power (ATA 24)		
Batteries Installation and Operation;	E66-B2-13-05a-E01-R00	3
DC power generation;	E66-B2-13-05b-E01-R00	3
AC power generation;	E66-B2-13-05c-E01-R00	3
Emergency power generation;	E66-B2-13-05d-E01-R00	3
Voltage regulation; Power distribution;		
Inverters, transformers, rectifiers;		
Circuit protection;		
External/Ground power.		
13.6 Equipment and furnishings (ATA 25)		
Electronic emergency equipment requirements;	E66-B2-13-06-E01-R00	3
Cabin entertainment equipment.		
13.7 Flight Controls (ATA 27)		
(a)		

<p>Primary controls: aileron, elevator, rudder, spoiler; Trim control; Active load control; High lift devices; Lift dump, speed brakes; System operation: manual, hydraulic, pneumatic; Artificial feel, Yaw damper, Mach trim, rudder limiter, gust locks. Stall protection systems.</p>	E66-B2-13-07a-E01-R00	1
(b)		
<p>System operation: electrical, fly by wire.</p>	E66-B2-13-07b-E01-R00	2
13.8 Instrument Systems (ATA 31)		
<p>Classification; Atmosphere; Terminology; Pressure measuring devices and systems; Pitot static systems; Altimeters; Vertical speed indicators; Air speed indicators; Machmeters; Altitude reporting / alerting systems; Air data computers; Instrument pneumatic systems; Direct reading pressure and temperature gauges; Temperature indicating systems; Fuel quantity indicating systems; Gyroscopic principles; Artificial horizons; Slip indicators; Directional gyros; Ground Proximity Warning Systems; Compass systems; Flight Data Recording systems; Electronic Flight Instrument Systems Instrument warning systems including master warning systems and centralised warning panels; Stall warning systems and angle of attack indicating systems; Vibration measurement and indication.</p>	<p>E66-B2-13-08a-E01-R00 E66-B2-13-08b-E01-R00 E66-B2-13-08c-E01-R00 E66-B2-13-08d-E01-R00 E66-B2-13-08e-E01-R00 E66-B2-13-08f-E01-R00</p>	<p>2 2 2 2 2 2</p>
13.9 Lights (ATA 33)		
<p>External: navigation, landing, taxiing, ice; Internal: cabin, cockpit, cargo; Emergency.</p>	E66-B2-13-09-E01-R00	3
13.10 On board Maintenance Systems (ATA 45)		

Central maintenance computers; Data loading system; Electronic library system; Printing; Structure monitoring (damage tolerance monitoring).	E66-B2-13-10-E01-R00	2
MODULE 14. PROPULSION		
14.1 Turbine Engines		
(a)		
Constructional arrangement and operation of turbojet, turbofan, turbo shaft and turbopropeller engines;	E66-B2-14-01a-E01-R00	1
(b)		
Electronic Engine control and fuel metering systems (FADEC).	E66-B2-14-01b-E01-R00	2
14.2 Engine Indicating Systems		
Exhaust gas temperature / Interstage turbine temperature systems; Engine speed; Engine thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems; Oil pressure and temperature; Fuel pressure, temperature and flow; Manifold pressure; Engine torque; Propeller speed.	E66-B2-14-02-E01-R00	2