4.1.10. Basic Knowledge Theory Syllabus – For B1.3 Category Batches Inducted/ Admitted in July 2024 and Onwards.

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	**FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	100

Sl. No.	Topics to be Covered		Level	Hours Allotted
			B1.3	**B1.3**
3.1	**ELECTRON THEORY**			
	a.	Structure and distribution of electrical charges within: atoms, molecules, ions, compounds;	1	02
	b.	Molecular structure of conductors, semiconductors and insulators.		
3.2.	**STATIC ELECTRICITY AND CONDUCTION**			
	a.	Static electricity and distribution of electrostatic charges;	2	02
	b.	Electrostatic laws of attraction and repulsion;		
	c.	Units of charge, Coulomb's Law;		
	d.	Conduction of electricity in solids, liquids, gases and a vacuum.		
3.3.	**ELECTRICAL TERMINOLOGY**			
	a.	The following terms, their units and factors affecting them: potential difference, electromotive force, voltage, current, resistance, conductance, charge, conventional current flow, electron flow.	2	02
3.4.	**GENERATION OF ELECTRICITY**			
	a.	Production of electricity by the following methods: light, heat, friction, pressure, chemical action, magnetism and motion.	2	02
3.5.	**DC SOURCES OF ELECTRICITY**			
	a.	Construction and basic chemical action of: primary cells,	2	10
	b.	Secondary cells, lead acid cells, nickel cadmium cells, other		

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
3.5. Cont…	c.	Alkaline cells;	2	Cont…
	d.	Cells connected in series and parallel;		
	e.	Internal resistance and its effect on a battery;		
	f.	Construction, materials and operation of thermocouples;		
	g.	Operation of photocells.		
3.6.		**DC CIRCUITS**		
	a.	Ohms Law, Kirchhoff's Voltage and Current Laws;	2	04
	b.	Calculations using the above laws to find resistance, voltage and current;		
	c.	Significance of the internal resistance of a supply.		
3.7.		**RESISTANCE/ RESISTOR**		
	a.	Resistance and affecting factors;	2	09
	b.	Specific resistance;		
	c.	Resistor colour code, values and tolerances, preferred values, wattage ratings;		
	d.	Resistors in series and parallel;		
	e.	Calculation of total resistance using series, parallel and series parallel combinations;		
	f.	Operation and use of potentiometers and rheostats;		
	g.	Operation of Wheatstone Bridge.		
	h.	Positive and negative temperature coefficient conductance;	1	

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER		FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY	
	100	

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
3.7. Cont…	i.	Fixed resistors, stability, tolerance and limitations, methods of construction;	1	Cont…
	j.	Variable resistors, thermistors, voltage dependent resistors;		
	k.	Construction of potentiometers and rheostats;		
	l.	Construction of Wheatstone Bridge;		
3.8.	**POWER**			
	a.	Power, work and energy (kinetic and potential);	2	02
	b.	Dissipation of power by a resistor;		
	c.	Power formula;		
	d.	Calculations involving power, work and energy.		
3.9.	**CAPACITANCE/CAPACITOR**			
	a.	Operation and function of a capacitor;	2	08
	b.	Factors affecting capacitance area of plates, distance between plates, number of plates, dielectric and dielectric Constant, working voltage, voltage rating;		
	c.	Capacitor types, construction and function;		
	d.	Capacitor colour coding;		
	e.	Calculations of capacitance and voltage in series and parallel circuits;		
	f.	Exponential charge and discharge of a capacitor, time constants;		
	g.	Testing of capacitors.		

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	100

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
3.10.	MAGNETISM			
	a.	Theory of magnetism;	2	07
	b.	Properties of a magnet, Action of a magnet suspended in the Earth's magnetic field;		
	c.	Magnetization and Demagnetization;		
	d.	Magnetic shielding;		
	e.	Various types of magnetic material;		
	f.	Electromagnet's construction and principles of operation;		
	g.	Hand clasp rules to determine: magnetic field around current carrying conductor.		
	h.	Magnetomotive force, field strength, magnetic flux density, permeability, hysteresis loop, retentivity, coercive force reluctance, saturation point, eddy currents;		
	i.	Precautions for care and storage of magnets		
3.11.	INDUCTANCE/ INDUCTOR			
	a.	Faraday's Law;	2	06
	b.	Action of inducing a voltage in a conductor moving in a magnetic field;		
	c.	Induction principles;		
	d.	Effects of the following on the magnitude of an induced voltage: magnetic field strength, rate of change of flux, number of conductors turns;		
	e.	Mutual induction;		

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
3.11. Cont…	f.	The effect the rate of change of primary current and mutual inductance has on induced voltage;	2	Cont…
	g.	Factors affecting mutual inductance: number of turns in coil, physical size of coil, permeability of coil, position of coils with respect to each other;		
	h.	Lenz's Law and polarity determining rules;		
	i.	Back EMF, self-induction;		
	j.	Saturation point;		
	k.	Principle uses of inductors;		
3.12.		**DC MOTOR/GENERATOR THEORY**		
	a.	Basic motor and generator theory;	2	08
	b.	Construction and purpose of components in DC generator		
	c.	Operation of, and factors affecting output and direction of current flow in DC Generators		
	d.	Operation of, and factors affecting output power, torque, speed and direction of rotation of DC motors;		
	e.	Series wound, shunt wound and compound motors;		
	f.	Starter Generator construction.		
3.13.		**AC THEORY**		
	a.	Sinusoidal waveform: phase, period, frequency, cycle;	2	06
	b.	Instantaneous, average, root mean square, peak, peak to peak current values and calculations of these values, in relation to voltage, current and power Triangular/Square waves;		
	c.	Single/ 3 phase principles.		

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	100

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
3.14.	**RESISTIVE (R), CAPACITIVE (C) AND INDUCTIVE (L) CIRCUIT**			
	a.	Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel;	2	06
	b.	Power dissipation in L, C and R circuits;		
	c.	Impedance, phase angle, power factor and current calculations;		
	d.	True power, apparent power and reactive power calculations.		
3.15.	**TRANSFORMERS**			
	a.	Transformer construction principles and operation;	2	08
	b.	Transformer losses and methods for overcoming them;		
	c.	Transformer action under load and no-load conditions;		
	d.	Power transfer, efficiency, polarity markings;		
	e.	Calculation of line and phase voltages and currents;		
	f.	Calculation of power in a three-phase system;		
	g.	Primary and Secondary current, voltage, turns ratio, power, efficiency;		
	h.	Auto transformers.		
3.16.	**FILTERS**			
	a.	Operation, application and uses of the following filters: low pass, high pass, band pass, band stop.	1	02
3.17.	**AC GENERATORS**			
	a.	Rotation of loop in a magnetic field and waveform produced;	2	08

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	**FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
3.17. Cont…	b.	Operation and construction of revolving armature and revolving field type AC generators;	2	Cont…
	c.	Single phase, two phase and three phase alternators;		
	d.	Three phase star and delta connections advantage and uses;		
	e.	Permanent Magnet Generators.		
3.18	**AC MOTORS**			
	a.	Construction, principles of operation and characteristics of: AC synchronous and induction motors both single and polyphase;	2	08
	b.	Methods of speed control and direction of rotation;		
	c.	Methods of producing a rotating field: capacitor, inductor, shaded or split Pole.		

MODULE 4 – ELECTRONIC FUNDAMENTALS

APPLICABILITY IN SEMESTER	SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	70

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
4.1.		**SEMICONDUCTORS**		
4.1.1.		**DIODES**		
	a.	Diode symbols, Diode characteristics and properties;	2	15
	b.	Diodes in series and parallel;		
	c.	Main characteristics and use of silicon-controlled rectifiers (Thyristor), light emitting diode, photo conductive diode, varistor, rectifier diodes;		
	d.	Functional testing of diodes.		
4.1.2.		**TRANSISTORS**		
	a.	Transistor symbols;	1	15
	b.	Component description and orientation;		
	c.	Transistor characteristics and properties.		
4.1.3.		**INTEGRATED CIRCUITS**		
	a.	Description and operation of logic circuits and linear circuits/operational amplifiers.	1	15
4.2.		**PRINTED CIRCUIT BOARDS**		
	a.	Description and use of printed circuit boards.	1	05
4.3.		**SERVOMECHANISM**		
	a.	Understanding of the following terms: Open and closed loop systems, feedback, follow up, analogue transducers;	1	20
	b.	Principles of operation and use of the following synchro system components/features: resolvers, differential, control and torque, transformers, inductance and capacitance transmitters.		

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS

APPLICABILITY IN SEMESTER	**THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
5.1.	**ELECTRONIC INSTRUMENT SYSTEMS**			
	a.	Typical systems arrangements and cockpit layout of electronic instrument systems.	2	06
5.2.	**NUMBERING SYSTEM**			
	a.	Numbering systems: binary, octal and hexadecimal;	1	08
	b.	Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.		
5.3.	**DATA CONVERSION**			
	a.	Analogue Data, Digital Data;	1	06
	b.	Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.		
5.4.	**DATA BUSES**			
	a.	Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications	2	05
5.5.	**LOGIC CIRCUITS**			
	a.	Identification of common logic gate symbols, tables and equivalent circuits;	2	10
	b.	Applications used for aircraft systems, schematic diagrams.		
	c.	Interpretation of logic diagrams.		
5.6.	**BASIC COMPUTER STRUCTURE**			
	a.	Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM);	2	06
	b.	Computer technology (as applied in aircraft systems)		

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS

APPLICABILITY IN SEMESTER	**THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
…contd	b.	Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	…contd	…contd
5.10.	**FIBRE OPTICS**			
	a.	Advantages and disadvantages of Fibre optic data transmission over electrical wire propagation;	1	10
	b.	Fibre optic data bus;		
	c.	Fibre optic related terms;		
	d.	Terminations;		
	e.	Couplers, control terminals, remote terminals;		
	f.	Application of Fibre optics in aircraft systems.		
5.11.	**ELECTRONIC DISPLAYS**			
	a.	Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	2	10
5.12.	**ELECTROSTATIC SENSITIVE DEVICES**			
	a.	Special handling of components sensitive to electrostatic discharges;	2	04
	b.	Awareness of risks and possible damage, component and personnel anti-static protection devices.		
5.13.	**SOFTWARE MANAGEMENT CONTROL**			
	a.	Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	2	05
5.14.	**ELECTROMAGNETIC ENVIRONMENT**			
	a.	Influence of the following phenomena on maintenance practices for electronic system:	2	10

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS

APPLICABILITY IN SEMESTER	**THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	100

Sl. No.			Topics to be Covered	Level B1.3	Hours Allotted B1.3
…contd		i.	EMC-Electromagnetic Compatibility	…contd	…contd
		ii.	EMI-Electromagnetic Interference		
		iii.	HIRF-High Intensity Radiated Field		
		iv.	Lightning/ Lightning protection		
5.15.	**TYPICAL ELECTRONIC/ DIGITAL AIRCRAFT SYSTEMS**				
	a.		General arrangement of typical electronic/digital aircraft systems and associated BITE (Built in Test Equipment) testing such as	2	20
		i.	ACARS-ARINC Communication and Addressing and Reporting System		
		ii.	EICAS-Engine Indication and Crew Alerting System		
		iii.	FBW-Fly by Wire		
		iv.	FMS-Flight Management System		
		v.	IRS-Inertial reference system		
		vi.	ECAM-Electronic Centralised Aircraft Monitoring		
		vii.	EFIS-Electronic Flight Instrument System		
		viii.	GPS-Global Positioning System		
		ix.	TCAS-Traffic Collision Avoidance system		
		x.	Integrated modular Avionica		
		xi.	Cabin System		
		xii.	Information system		

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	**SECOND & THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**	
THEORY HOURS ALLOTED	**B1.3 CATEGORY**	
	SECOND SEMESTER	**60 (PARA 6.1 – 6.4)**
	THIRD SEMESTER	**60 (PARA 6.5 – 6.11)**

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
6.1.	**AIRCRAFT MATERIALS – FERROUS**			
	a.	Characteristics, properties and identification of common alloy steels used in aircraft;	2	15
	b.	Heat treatment and application of alloy steels;		
	c.	Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	1	
6.2.	**AIRCRAFT MATERIALS – NON-FERROUS**			
	a.	Characteristics, properties and identification of common non-ferrous materials used in aircraft;	2	15
	b.	Heat treatment and application of non-ferrous materials;		
	c.	Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	1	
6.3.	**AIRCRAFT MATERIALS - COMPOSITE 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;	2	10
	b.	Sealant and bonding agents.		
	c.	The detection of defects/deterioration in composite and non-metallic material.		
	d.	Repair of composite and non-metallic material.		
6.3.2.	**WOODEN STRUCTURES**			
	a.	Construction methods of wooden airframe structures	2	05
	b.	Characteristics, properties and types of wood and glue used in Airplanes;		
	c.	Preservation and maintenance of wooden structure;		

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	SECOND & THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
SECOND SEMESTER	60 (PARA 6.1 – 6.4)
THIRD SEMESTER	60 (PARA 6.5 – 6.11)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
	d.	Types of defects in wood material and wooden structures;		
	e.	The detection of defects in wooden structure;		
	f.	Repair of wooden structure.		
6.3.3.		**FABRIC COVERING**		
	a.	Characteristics, properties and types of fabrics used in airplanes;	2	05
	b.	Inspections methods for fabric;		
	c.	Types of defects in fabric; Repair of fabric covering.		
6.4.		**CORROSION**		
	a.	Chemical fundamentals;	1	10
	b.	Formation by, galvanic action process, microbiological, stress;		
	c.	Types of corrosion and their identification;	3	
	d.	Causes of corrosion;		
	e.	Material types, susceptibility to corrosion.		
6.5.		**FASTENERS**		
6.5.1.		**SCREW THREADS**		
	a.	Screw nomenclature;	2	10
	b.	Thread forms, dimensions and tolerances for standard threads used in aircraft;		
	c.	Measuring screw threads;		
6.5.2.		**BOLTS, STUDS AND SCREWS**		
	a.	Bolt types: specification, identification and marking of aircraft bolts, international standards;	2	10

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	**SECOND & THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**	
THEORY HOURS ALLOTED	**B1.3 CATEGORY**	
	SECOND SEMESTER	**60 (PARA 6.1 – 6.4)**
	THIRD SEMESTER	**60 (PARA 6.5 – 6.11)**

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
…contd	b.	Nuts: self-locking, anchor, standard types;	…contd	…contd
	c.	Machine screws: aircraft specifications;		
	d.	Studs: types and uses, insertion and removal;		
	e.	Self-tapping screws, dowels.		
6.5.3.	**LOCKING DEVICES**			
	a.	Tab and spring washers, locking plates, split pins, palnuts, wire locking, quick release fasteners, keys, circlips, and cotter pins.	2	04
6.5.4.	**AIRCRAFT RIVETS**			
	a.	Types of solid and blind rivets: specifications and identification, heat treatment.	2	10
6.6.	**PIPES AND UNIONS**			
	a.	Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;	2	04
	b.	Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2	
6.7.	**SPRINGS**			
	a.	Types of springs, materials, characteristics and applications.	2	02
6.8.	**BEARINGS**			
	a.	Purpose of bearings, loads, material, construction;	2	05
	b.	Types of bearings and their application.		
6.9.	**TRANSMISSIONS**			
	a.	Gear types and their application;	2	05

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	SECOND & THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	B1.3 CATEGORY	
	SECOND SEMESTER	60 (PARA 6.1 – 6.4)
	THIRD SEMESTER	60 (PARA 6.5 – 6.11)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
…contd	b.	Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns;	…contd	…contd
	c.	Belts and pulleys, chains and sprockets.		
6.10.		**CONTROL CABLES**		
	a.	Types of cables;	2	05
	b.	End fittings, turnbuckles and compensation devices;		
	c.	Pulleys and cable system components;		
	d.	Bowden cables;		
	e.	Aircraft flexible control systems.		
6.11.		**ELECTRICAL CABLES AND CONNECTORS**		
	a.	Cable types, construction and characteristics;	2	05
	b.	High tension and co-axial cables;		
	c.	Crimping;		
	d.	Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.		

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	1.	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
	2.	THIRD SEMESTER – B2 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

THEORY HOURS ALLOTED	B1.3 CATEGORY	B2 CATEGORY
	120	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
7.1.		SAFETY PRECAUTIONS – AIRCRAFT AND WORKSHOP		
	a.	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.	3	05
7.2.		WORKSHOP PRACTICES		
	a.	Care of tools, control of tools, use of workshop materials;	3	05
	b.	Dimensions, allowances and tolerances, standards of workmanship;		
	c.	Calibration of tools and equipment, calibration standards.		
7.3.		TOOLS		
	a.	Common hand tool types;	3	35
	b.	Common power tool types;		
	c.	Operation and use of precision measuring tools;		
	d.	Lubrication equipment and methods.		
	e.	Operation, function and use of electrical general test equipment;		
7.4.		AVIONIC GENERAL TEST EQUIPMENT		
	a.	Operation, function and use of avionic general test equipment.	2	04

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	120

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
7.5.		ENGINEERING DRAWINGS, DIAGRAMS AND STANDARDS		
	a.	Drawing types and diagrams, their symbols, dimensions, tolerances and projections;	2	05
	b.	Identifying title block information Microfilm, microfiche and computerized presentations;		
	c.	Specification 100 of the Air Transport Association (ATA) of America;		
	d.	Aeronautical and other applicable standards including ISO, AN, MS, NAS and MIL;		
	e.	Wiring diagrams and schematic diagrams.		
7.6.		FITS AND CLEARANCES		
	a.	Drill sizes for bolt holes, classes of fits;	2	05
	b.	Common system of fits and clearances;		
	c.	Schedule of fits and clearances for aircraft and engines;		
	d.	Limits for bow, twist and wear;		
	e.	Standard methods for checking shafts, bearings and other parts.		
7.7.		ELECTRICAL WIRING INTERCONNECTION SYSTEM (EWIS)		
	a.	Continuity, insulation and bonding techniques and testing;	3	10
	b.	Use of crimp tools: hand and hydraulic operated;		
	c.	Testing of crimp joints;		
	d.	Connector pin removal and insertion;		
	e.	Co-axial cables: testing and installation precautions;		

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	B1.3 CATEGORY	B2 CATEGORY
	120	100

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
7.7. Cont…	f.	Identification of wire types, their inspection criteria and damage tolerance.	3	10
	g.	Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding.		
	h.	EWIS installations, inspection, repair, maintenance and cleanliness standards.		
7.8.	**RIVETING**			
	a.	Riveted joints, rivet spacing and pitch;	2	05
	b.	Tools used for riveting and dimpling;		
	c.	Inspection of riveted joints.		
7.9.	**PIPES AND BEARINGS**			
	a.	Bending and belling/flaring aircraft pipes;	2	03
	b.	Inspection and testing of aircraft pipes and hoses;		
	c.	Installation and clamping of pipes.		
7.10.	**SPRINGS**			
	a.	Inspection and testing of springs.	2	01
7.11.	**BEARINGS**			
	a.	Testing, cleaning and inspection of bearings;	2	02
	b.	Lubrication requirements of bearings;		
	c.	Defects in bearings and their causes.		

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	B1.3 CATEGORY	B2 CATEGORY
	120	100

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
7.12.	**TRANSMISSIONS**			
	a.	Inspection of gears, backlash;	2	01
	b.	Inspection of belts and pulleys, chains and sprockets;		
	c.	Inspection of screw jacks, lever devices, push-pull rod systems.		
7.13.	**CONTROL CABLES**			
	a.	Swaging of end fittings;	2	02
	b.	Inspection and testing of control cables;		
	c.	Bowden cables; aircraft flexible control systems.		
7.14.	**MATERIAL HANDLING**			
7.14.1.	**SHEET METAL**			
	a.	Marking out and calculation of bend allowance;	2	02
	b.	Sheet metal working, including bending and forming;		
	c.	Inspection of sheet metal work.		
7.14.2.	**COMPOSITE AND NON-METALLIC**			
	a.	Bonding practices;	2	02
	b.	Environmental conditions		
	c.	Inspection methods		

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	120

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
7.15.		**WELDING, BRAZING, SOLDERING AND BONDING**		
	a.	Soldering methods; inspection of soldered joints.	2	05
	b.	Welding and brazing methods;	2	
	c.	Inspection of welded and brazed joints;		
	d.	Bonding methods and inspection of bonded joints.		
7.16.		**AIRCRAFT WEIGHT AND BALANCE**		
	a.	Centre of Gravity/Balance limits calculation: use of relevant documents;	2	05
	b.	Preparation of aircraft for weighing;		
	c.	Aircraft weighing;		
7.17.		**AIRCRAFT HANDLING AND STORAGE**		
	a.	Aircraft taxiing/towing and associated safety precautions;	2	07
	b.	Aircraft jacking, chocking, securing and associated safety precautions;		
	c.	Aircraft storage methods;		
	d.	Refuelling/ defueling procedures;		
	e.	De-icing/ anti-icing procedures;		
	f.	Electrical, hydraulic and pneumatic ground supplies.		
	g.	Effects of environmental conditions on aircraft handling and operation.		

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	120

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
7.18.	**DISASSEMBLY, INSPECTION, REPAIR AND ASSEMBLY TECHNIQUES**			
	a.	Types of defects and visual inspection techniques.	3	07
	b.	Corrosion removal, assessment and re-protection.		
	c.	General repair methods, Structural Repair Manual;	2	
	d.	Ageing, fatigue and corrosion control programmes;		
	e.	Non-destructive inspection techniques including, penetrant, radiographic, Eddy current, ultrasonic and Boroscope methods.		
	f.	Disassembly and re-assembly techniques.		
	g.	Trouble shooting techniques		
7.19.	**ABNORMAL EVENTS**			
	a.	Inspections following lightning strikes and HIRF penetration.	2	02
	b.	Inspections following abnormal events such as heavy landings and flight through turbulence.		
7.20.	**MAINTENANCE PROCEDURES**			
	a.	Maintenance planning;	2	07
	b.	Modification procedures;		
	c.	Store's procedures;		
	d.	Certification/release procedures;		
	e.	Interface with aircraft operation;		
	f.	Maintenance Inspection/Quality Control/Quality Assurance;		
	g.	Additional maintenance procedures. Control of life limited components		

MODULE 8 – BASIC AERODYNAMICS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	60

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
8.1.		**PHYSICS OF THE ATMOSPHERE**		
	a.	International Standard Atmosphere (ISA), application to aerodynamics.	2	02
8.2.		**AERODYNAMICS**		
	a.	Airflow around a body;	2	30
	b.	Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, up wash and downwash, vortices, stagnation		
	c.	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;		
	d.	Thrust, Weight, Aerodynamic Resultant;		
	e.	Generation of Lift and Drag: Angle of Attack, Lift coefficient, Drag coefficient, polar curve, stall;		
	f.	Aerofoil contamination including ice, snow, frost.		
8.3.		**THEORY OF FLIGHT**		
	a.	Relationship between lift, weight, thrust and drag;	2	18
	b.	Glide ratio;		
	c.	Steady state flights, performance;		
	d.	Theory of the turn;		
8.3. Cont…	e.	Influence of load factor: stall, flight envelope and structural limitations;	2	18
	f.	Lift augmentation.		
8.4.		**FLIGHT STABILITY AND DYNAMICS**		
	a.	Longitudinal, lateral and directional stability (active and passive).	2	10

MODULE 9A – HUMAN FACTOR

APPLICABILITY IN SEMESTER	SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY: 70

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
9.1.	**GENERAL**			
	a.	The need to take human factors into account;	2	10
	b.	Incidents attributable to human factors/human error;		
	c.	'Murphy's' law.		
9.2.	**HUMAN PERFORMANCE AND LIMITATIONS**			
	a.	Vision;	2	10
	b.	Hearing;		
	c.	Information processing;		
	d.	Attention and perception;		
	e.	Memory;		
	f.	Claustrophobia and physical access.		
9.3.	**SOCIAL PSYCHOLOGY**			
	a.	Responsibility: individual and group;	1	05
	b.	Motivation and de-motivation;		
	c.	Peer pressure;		
	d.	'Culture' issues;		
	e.	Team working;		
	f.	Management, supervision and leadership		

MODULE 9A – HUMAN FACTOR

APPLICABILITY IN SEMESTER	**SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
THEORY HOURS ALLOTED	**B1.3 CATEGORY**
	70

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
9.4.	**FACTORS AFFECTING PERFORMANCE**			
	a.	Fitness/health;	2	10
	b.	Stress: domestic and work related;		
	c.	Time pressure and deadlines;		
	d.	Workload: overload and underload;		
	e.	Sleep and fatigue, shift work;		
	f.	Alcohol, medication, drug abuse.		
9.5.	**PHYSICAL ENVIRONMENT**			
	a.	Noise and fumes;	1	05
	b.	Illumination;		
	c.	Climate and temperature;		
	d.	Motion and vibration;		
	e.	Working environment.		
9.6.	**TASKS**			
	a.	Physical work;	1	05
	b.	Repetitive tasks;		
	c.	Visual inspection;		
	d.	Complex systems.		

MODULE 9A – HUMAN FACTOR

APPLICABILITY IN SEMESTER	SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
THEORY HOURS ALLOTED	B1.3 CATEGORY
	70

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
9.7.	**COMMUNICATION**			
	a.	Within and between teams;	2	10
	b.	Work logging and recording;		
	c.	Keeping up to date, currency;		
	d.	Dissemination of information.		
9.8.	**HUMAN ERROR**			
	a.	Error models and theories;	2	10
	b.	Types of error in maintenance tasks;		
	c.	Implications of errors (i.e., accidents)		
	d.	Avoiding and managing errors.		
9.9.	**HAZARDS IN THE WORKPLACE**			
	a.	Recognizing and avoiding hazards;	2	05
	b.	Dealing with emergencies.		

MODULE 10 – AVIATION LEGISLATION

APPLICABILITY IN SEMESTER	FIRST & SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FIRST	140 (PARA 10.1 – 10.4)
	SECOND	120 (PARA 10.5 – 10.9)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
10.1.		REGULATORY FRAMEWORK		
	a.	Role of International Civil Aviation Organization (ICAO);	1	65
	b.	Aircraft Act and Rules made under the ICAO role of the DGCA		
	c.	Relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147.		
	d.	The Aircraft Rules (Applicable to Aircraft Maintenance and Release)		
	e.	Aeronautical Information Circulars (Applicable to Aircraft Maintenance and Release)		
	f.	CAR Section 1 and 2		
10.2.		CAR-66 CERTIFYING STAFF – MAINTENANCE		
	a.	Detailed understanding of CAR-66.	2	25
10.3.		CAR – M		
	a.	Detail understanding of CAR M provisions related to Continuing Airworthiness	2	35
	b.	Detailed understanding of CAR-M.		
10.4.		AIRCRAFT OPERATIONS		
	a.	Commercial Air Transport/Commercial Operations;	1	15
	b.	Air Operators Certificates;		
	c.	Operators Responsibilities, in particular regarding continuing airworthiness and maintenance;		
	d.	Documents to be carried on board;		
	e.	Aircraft Placarding (Markings);		

MODULE 10 – AVIATION LEGISLATION

APPLICABILITY IN SEMESTER	FIRST & SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FIRST	140 (PARA 10.1 – 10.4)
	SECOND	120 (PARA 10.5 – 10.9)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
10.5.		**AIRCRAFT CERTIFICATION**		
	a.	General – Certification rules: such as FAA & EACS 23/25/27/29;	1	25
	b.	Type Certification;		
	c.	Supplemental Type Certification;		
	d.	CAR-21 Design/Production Organization Approvals.		
	e.	Aircraft Modifications and repairs approval and certification		
	f.	Permit to fly requirements		
	g.	Documents- Certificate of Airworthiness;	2	
	h.	Certificate of Registration;		
	i.	Noise Certificate;		
	j.	Weight Schedule;		
	k.	Radio Station License and Approval.		
10.6.		**CAR-145 — APPROVED MAINTENANCE ORGANIZATIONS**		
	a.	Detailed understanding of CAR-145 and CAR M Subpart F	2	35
10.7.		**APPLICABLE NATIONAL AND INTERNATIONAL REQUIREMENTS**		
	a.	Maintenance Programme, Maintenance checks and inspections;	2	25
	b.	Master Minimum Equipment Lists, Minimum Equipment List, Dispatch Deviation Lists;		
	c.	Airworthiness Directives; Service Bulletins, manufacturers service information; Modifications and repairs		

MODULE 10 – AVIATION LEGISLATION

APPLICABILITY IN SEMESTER	FIRST & SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FIRST	140 (PARA 10.1 – 10.4)
	SECOND	120 (PARA 10.5 – 10.9)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
…contd	d.	Maintenance documentation: maintenance manuals, structural repair manual, Illustrated parts catalogue, etc.;	…contd	…contd
	e.	Continuing airworthiness;		
	f.	Test flights;		
	g.	ETOPS /EDTO, maintenance and dispatch requirements;		
	h.	RVSM, maintenance and dispatch requirements		
	i.	RNP, MNPS Operations, All Weather Operations		
	j.	Category 2/3 operations and minimum equipment requirements.		
10.8.	**SAFETY MANAGEMENT SYSTEM**			
	a.	State Safety Programme	2	20
	b.	Basic Safety Concepts		
	c.	Hazards & Safety Risks		
	d.	SMS Operation		
	e.	SMS Safety performance		
	f.	Safety Assurance		
10.9.	**FUEL TANK SAFETY**			
	a.	Special Federal Aviation Regulations (SFARs) from 14 CFR SFAR 88 of the FAA and of JAA TGL 47	2	15
	b.	Concept of CDCCL		
	c.	Airworthiness Limitations Items (ALI)		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.1	**Theory of Flight — Rotary Wing Aerodynamics**			
	a.	Terminology;	2	30
	b.	Effects of gyroscopic precession;		
	c.	Torque reaction and directional control;		
	d.	Dissymmetry of lift, Blade tip stall;		
	e.	Translating tendency and its correction;		
	f.	Coriolis effect and compensation;		
	g.	Vortex ring state, power settling, overpitching;		
	h.	Auto-rotation;		
	i.	Ground effect.		
12.2	**Flight Control Systems**			
	a.	Cyclic control;	3	40
	b.	Collective control;		
	c.	Swashplate;		
	d.	Yaw control: Anti-Torque Control, Tail rotor, bleed air;		
	e.	Main Rotor Head: Design and Operation features;		
	f.	Blade Dampers: Function and construction;		
	g.	Rotor Blades: Main and tail rotor blade construction and attachment;		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.	Topics to be Covered		Level	Hours Allotted
			B1.3	B1.3
12.2 ..contd	h.	Trim control, fixed and adjustable stabilisers;	3	..contd
	i.	System operation: manual, hydraulic, electrical and flyby-wire;		
	j.	Artificial feel;		
	k.	Balancing and Rigging.		
12.3	**Blade Tracking and Vibration Analysis**			
	a.	Rotor alignment;	3	23
	b.	Main and tail rotor tracking;		
	c.	Static and dynamic balancing;		
	d.	Vibration types, vibration reduction methods;		
	e.	Ground resonance.		
12.4	**Transmissions**			
	a.	Gear boxes, main and tail rotors;	3	25
	b.	Clutches, free wheel units and rotor brake.		
	c.	Tail rotor drive shafts, flexible couplings, bearings,		
	d.	vibration dampers and bearing hangers		
12.5	**Airframe Structures**			
	a.	Airworthiness requirements for structural strength;	2	40
	b.	Structural classification, primary, secondary and tertiary;		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.5 continue	c.	Fail safe, safe life, damage tolerance concepts;	2	..contd
	d.	Zonal and station identification systems;		
	e.	Stress, strain, bending, compression, shear, torsion, tension, hoop stress, fatigue;		
	f.	Drains and ventilation provisions;		
	g.	System installation provisions;		
	h.	Lightning strike protection provision.		
	i.	Construction methods of: stressed skin fuselage, formers, stringers, longerons,		
	j.	bulkheads, frames, doublers, struts, ties, beams, floor structures, reinforcement,		
	k.	methods of skinning and anti-corrosive protection.		
	l.	Pylon, stabiliser and undercarriage attachments;		
	m.	Seat installation;		
	n.	Doors: construction, mechanisms, operation and safety devices;		
	o.	Windows and windscreen construction;		
	p.	Fuel storage;		
	q.	Firewalls;		
	r.	Engine mounts;		
	s.	Structure assembly techniques: riveting, bolting, bonding;		
	t.	Methods of surface protection, such as chromating, anodising, painting;		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.5 …contd	u.	Surface cleaning.	2	contd
	v.	Airframe symmetry: methods of alignment and symmetry checks.		
12.6		**Air Conditioning (ATA 21)**		
12.6.1		**Air supply**		
	a.	Sources of air supply including engine bleed and ground cart;	2	2
12.6.2		**Air Conditioning**		
	a.	Air conditioning systems;	3	10
	b.	Distribution systems;		
	c.	Flow and temperature control systems;		
	d.	Protection and warning devices.		
12.7		**Instruments/Avionic Systems**		
12.7.1		**Instrument Systems (ATA 31)**		
	a.	Pitot static: altimeter, air speed indicator, vertical speed indicator;	2	10
	b.	Gyroscopic: artificial horizon, attitude director, direction indicator, horizontal		
	c.	situation indicator, turn and slip indicator, turn coordinator;		
	d.	Compasses: direct reading, remote reading;		
	e.	Vibration indicating systems — HUMS;		
	f.	Glass Cockpit		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	**FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**	
THEORY HOURS ALLOTED	**SEMESTER**	**B1.3 CATEGORY**
	FOURTH	**158 (PARA 12.1 – 12.5)**
	FIFTH	**92 (PARA 12.6 – 12.11)**
	SIXTH	**90 (PARA 12.12 – 12.18)**

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
…contd	g.	Other aircraft system indication.	2	…contd
12.7.2	**Avionic Systems**			
	a.	Fundamentals of system layouts and operation of:	1	05
	b.	Auto Flight (ATA 22);		
	c.	Communications (ATA 23);		
	d.	Navigation Systems (ATA 34).		
12.8	**Electrical Power (ATA 24)**			
	a.	Batteries Installation and Operation;	3	25
	b.	DC power generation, AC power generation;		
	c.	Emergency power generation;		
	d.	Voltage regulation, Circuit protection.		
	e.	Power distribution;		
	f.	Inverters, transformers, rectifiers;		
	g.	External/Ground power.		
12.9	**Equipment and Furnishings (ATA 25)**			
	a.	Emergency equipment requirements;	2	10
	b.	Seats, harnesses and belts;		
	c.	Lifting systems.		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.9 …contd	d.	Emergency flotation systems;	1	2
	e.	Cabin lay-out, cargo retention;		
	f.	Equipment lay-out;		
12.10	**Fire Protection (ATA 26)**			
	a.	Fire and smoke detection and warning systems;	3	04
	b.	Fire extinguishing systems;		
	c.	System tests.		
12.11	**Fuel Systems (ATA 28)**			
	a.	System lay-out;	3	24
	b.	Fuel tanks;		
	c.	Supply systems;		
	d.	Dumping, venting and draining;		
	e.	Cross-feed and transfer;		
	f.	Indications and warnings;		
	g.	Refuelling and defuelling.		
12.12	**Hydraulic Power (ATA 29)**			
	a.	System lay-out;	3	25
	b.	Hydraulic fluids;		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.12 …contd	c.	Hydraulic reservoirs and accumulators;	…contd	…contd
	d.	Pressure generation: electric, mechanical, pneumatic;		
	e.	Emergency pressure generation;		
	f.	Filters		
	g.	Pressure Control;		
	h.	Power distribution;		
	i.	Indication and warning systems;		
	j.	Interface with other systems.		
12.13	**Ice and Rain Protection (ATA 30)**			
	a.	Ice formation, classification and detection;	3	10
	b.	Anti-icing and de-icing systems: electrical, hot air and chemical;		
	c.	Rain repellant and removal;		
	d.	Probe and drain heating.		
	e.	Wiper system		
12.14	**Landing Gear (ATA 32)**			
	a.	Construction, shock absorbing;	3	25
	b.	Extension and retraction systems: normal and emergency;		
	c.	Indications and warning;		

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.14 …contd	d.	Wheels, tyres, brakes;	3	…contd
	e.	Steering;		
	f.	Air-ground sensing		
	g.	Skids, floats.		
12.15	**Lights (ATA 33)**			
	a.	External: navigation, landing, taxiing, ice;	3	05
	b.	Internal: cabin, cockpit, cargo;		
	c.	Emergency.		
12.16	**Pneumatic/Vacuum (ATA 36)**			
	a.	System lay-out;	3	10
	b.	Sources: engine, compressors, reservoirs, ground supply.;		
	c.	Pressure control;		
	d.	Distribution;		
	e.	Indications and warnings;		
	f.	Interfaces with other systems.		
12.17	**Integrated Modular Avionics (ATA42)**			
	a.	Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others:	2	05

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.17 …contd	b.	Bleed Management, Air Pressure Control, Air Ventilation and Control, Avionics and Cockpit Ventilation Control, Temperature Control, Air Traffic Communication, Avionics Communication Router, Electrical Load Management, Circuit Breaker Monitoring, Electrical System BITE, Fuel Management, Braking Control, Steering Control, Landing Gear Extension and Retraction, Tyre Pressure Indication, Oleo Pressure Indication, Brake Temperature Monitoring, etc.	2	…contd
	c.	Core System;		
	d.	Network Components.		
12.18		**On Board Maintenance Systems (ATA45)**		
	a.	Central maintenance computers;	2	05
	b.	Data loading system;		
	c.	Electronic library system;		
	d.	Printing;		
	e.	Structure monitoring (damage tolerance monitoring).		
12.19		**Information Systems (ATA46)**		
	a.	The units and components which furnish a means of storing, updating and retrieving digital information traditionally provided on paper, microfilm or microfiche. Includes units that are dedicated to the information storage and retrieval function such as the electronic library mass storage and controller. Does not include units or components installed for other uses and shared with other systems, such as flight deck printer or general use display.	2	05

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH , FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	SEMESTER	B1.3 CATEGORY
	FOURTH	158 (PARA 12.1 – 12.5)
	FIFTH	92 (PARA 12.6 – 12.11)
	SIXTH	90 (PARA 12.12 – 12.18)

Sl. No.		Topics to be Covered	Level	Hours Allotted
			B1.3	B1.3
12.19 …contd	b.	Typical examples include Air Traffic and Information Management Systems and Network Server Systems.	2	…contd
	c.	Aircraft General Information System;		
	d.	Flight Deck Information System;		
	e.	Maintenance Information System;		
	f.	Passenger Cabin Information System;		
	g.	Miscellaneous Information System.		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	FOURTH SEMESTER	60 (PARA 15.1 – 15.10)
	FIFTH SEMESTER	60 (PARA 15.11 – 15.15)
	SIXTH SEMESTER	80 (PARA 15.16 – 15.22)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
15.1.		FUNDAMENTALS		
	a.	Potential energy, kinetic energy, Newton's laws of motion, Brayton cycle;	2	07
	b.	The relationship between force, work, power, energy, velocity, acceleration;		
	c.	Constructional arrangement and operation of turbojet, turbofan, turbo shaft, turboprop		
15.2.		ENGINE PERFORMANCE		
	a.	Gross thrust, net thrust, choked nozzle thrust, thrust distribution, resultant thrust, thrust horsepower, equivalent shaft horsepower, specific fuel consumption;	2	12
	b.	Engine efficiencies;		
	c.	By-pass ratio and engine pressure ratio;		
	d.	Pressure, temperature and velocity of the gas flow;		
	e.	Engine ratings, static thrust, influence of speed, altitude and hot climate, flat rating, limitations		
15.3.		INLET		
	a.	Compressor inlet ducts	2	05
	b.	Effects of various inlet configurations;		
	c.	Ice protection.		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	FOURTH SEMESTER	60 (PARA 15.1 – 15.10)
	FIFTH SEMESTER	60 (PARA 15.11 – 15.15)
	SIXTH SEMESTER	80 (PARA 15.16 – 15.22)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
15.4.		**COMPRESSORS**		
	a.	Axial and centrifugal types;	2	05
	b.	Constructional features and operating principles and applications;		
	c.	Fan balancing;		
	d.	Operation:		
	e.	Causes and effects of compressor stall and surge;		
	f.	Methods of air flow control: bleed valves, variable inlet guide vanes, variable stator vanes, rotating stator blades		
	g.	Compressor ratio.		
15.5.		**COMBUSTION SECTION**		
	a.	Constructional features and principles of operation.	2	04
15.6.		**TURBINE SECTION**		
	a.	Operation and characteristics of different turbine blade types;	2	05
	b.	Blade to disk attachment;		
	c.	Nozzle guide vanes;		
	d.	Causes and effects of turbine blade stress and creep.		
15.7.		**EXHAUST**		
	a.	Constructional features and principles of operation;	2	04
	b.	Convergent, divergent and variable area nozzles;		
	c.	Engine noise reduction;		
	d.	Thrust reversers.		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	**FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**	
THEORY HOURS ALLOTED	**FOURTH SEMESTER**	**60 (PARA 15.1 – 15.10)**
	FIFTH SEMESTER	**60 (PARA 15.11 – 15.15)**
	SIXTH SEMESTER	**80 (PARA 15.16 – 15.22)**

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
15.8.	**BEARINGS AND SEAL**			
	a.	Constructional features and principles of operation.	2	03
15.9.	**LUBRICANTS AND FUELS**			
	a.	Properties and specifications;	2	05
	b.	Fuel additives;		
	c.	Safety precautions.		
15.10.	**LUBRICATION SYSTEMS**			
	a.	System operation/lay-out and components.	2	10
15.11.	**FUEL SYSTEM**			
	a.	Operation of engine control and fuel metering systems including electronic engine control (FADEC);	2	15
	b.	Systems lay-out and components.		
15.12.	**AIR SYSTEMS**			
	a.	Operation of engine air distribution and anti-ice control systems, including internal cooling, sealing and external air services.	2	10
15.13.	**STARTING AND IGNITION SYSTEMS**			
	a.	Operation of engine start systems and components;	2	10
	b.	Ignition systems and components;		
	c.	Maintenance safety requirements		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	FOURTH SEMESTER	60 (PARA 15.1 – 15.10)
	FIFTH SEMESTER	60 (PARA 15.11 – 15.15)
	SIXTH SEMESTER	80 (PARA 15.16 – 15.22)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
15.14.		**ENGINE INDICATION SYSTEMS**		
	a.	Exhaust Gas Temperature/Interstage Turbine Temperature;	2	15
	b.	Engine Thrust Indication: Engine Pressure Ratio, engine turbine discharge pressure or jet pipe pressure systems;		
	c.	Oil pressure and temperature;		
	d.	Fuel pressure and flow;		
	e.	Engine speed;		
	f.	Vibration measurement and indication;		
	g.	Torque;		
	h.	Power.		
15.15.		**POWER AUGMENTATION SYSTEMS**		
	a.	Operation and applications;	1	10
	b.	Water injection, water methanol;		
	c.	Afterburner systems.		
15.16.		**TURBO-PROP ENGINES**		
	a.	Gas coupled/ free turbine and gear coupled turbines;	2	20
	b.	Reduction gears;		
	c.	Integrated engine and propeller controls;		
	d.	Overspeed safety devices.		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	FOURTH SEMESTER	60 (PARA 15.1 – 15.10)
	FIFTH SEMESTER	60 (PARA 15.11 – 15.15)
	SIXTH SEMESTER	80 (PARA 15.16 – 15.22)

Sl. No.		Topics to be Covered	Level B1.3	Hours Allotted B1.3
15.17.		**TURBO-SHAFT ENGINES**		
	a.	Arrangements, drive systems, reduction gearing,	2	20
	b.	Couplings, control systems.		
15.18.		**AUXILIARY POWER UNITS (APUS)**		
	a.	Purpose, operation, protective systems.	2	10
15.19.		**POWER PLANT INSTALLATION**		
	a.	Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables and rods, lifting points and drains.	2	05
15.20.		**FIRE PROTECTION SYSTEMS**		
	a.	Operation of detection and extinguishing systems.	2	05
15.21.		**ENGINE MONITORING AND GROUND OPERATION**		
	a.	Procedures for starting and ground run-up;	3	15
	b.	Interpretation of engine power output and parameters;		
	c.	Trend (including oil analysis, vibration and Boroscope) monitoring;		
	d.	Inspection of engine and components to criteria, tolerances and data specified by engine manufacturer;		
	e.	Compressor washing/cleaning;		
	f.	Foreign Object Damage.		

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
THEORY HOURS ALLOTED	FOURTH SEMESTER	60 (PARA 15.1 – 15.10)
	FIFTH SEMESTER	60 (PARA 15.11 – 15.15)
	SIXTH SEMESTER	80 (PARA 15.16 – 15.22)

Sl. No.	Topics to be Covered		Level B1.3	Hours Allotted B1.3
15.22.	ENGINE STORAGE AND PRESERVATION			
	a.	Preservation and de-preservation for the engine and accessories/ systems.	2	05
	b.	High/low blade angle, reverse angle, angle of attack, rotational speed;		
	c.	Propeller slip;		
	d.	Aerodynamic, centrifugal, and thrust forces;		
	e.	Torque;		
	f.	Relative airflow on blade angle of attack;		
	g.	Vibration and resonance.		

4.1.11. Basic Knowledge Practical Syllabus – For B1.3 Category Batches Inducted/ Admitted in July 2024 and Onwards.

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY
	70

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
3.1P	GENERAL			
	a.	Familiarization of Tool/ Equipment's and Safety Precautions to be observed in the Electrical Shop.	WIIA/MOD3(B1.3)/PROCSHT/01	01:45
3.2P	ELECTRICAL TERMINOLOGY			
	a.	Measurement/ Calculation of Electrical Terminology: Potential Difference, Electromotive Force, Voltage, Current and Resistance	WIIA/MOD3(B1.3)/PROC-SHT/02	01:45
3.3P	GENERATION OF ELECTRICITY			
		Generation of electricity by light & heat methods	WIIA/MOD3(B1.3)/PROC-SHT/03	03:30
3.4P	DC SOURCES OF ELECTRICITY			
	a.	Familiarization on construction of battery	WIIA/MOD3(B1.3)/PROC-SHT/04	01:00
	b.	Preparation of Cell Connection in Series, Parallel and Both	WIIA/MOD3(B1.3)/PROC-SHT/05	00:45
	c.	Charging and Discharging of Battery	WIIA/MOD3(B1.3)/PROC-SHT/06	03:30
	d.	Construction & operation of Thermocouple	WIIA/MOD3(B1.3)/PROC-SHT/07	01:45
	e.	Operation of Photocell	WIIA/MOD3(B1.3)/PROC-SHT/08	01:45

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY	B2 CATEGORY
	70	70

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
3.5P		**DC CIRCUITS**		
	a.	Verification of Ohms Law	WIIA/MOD 3(B1.3)/PROC-SHT/9	01:45
	b.	Verification of Kirchhoff's Current & Voltage Law	WIIA/MOD3(B1.3)/PROC-SHT/10	03:30
3.6P		**RESISTANCE/ RESISTOR**		
	a.	Identification of Resistor with color coding and measurement & verification of resistance	WIIA/MOD3(B1.3)/PROC-SHT/11	01:45
	b.	Measurement of resistance when connected in series and parallel	WIIA/MOD3(B1.3)/PROC-SHT/12	01:45
	c.	Measurement of Unknown Value of Resistance when using wheat stone bridge	WIIA/MOD3(B1.3)/PROC-SHT/13	01:45
	d.	Operation and Use of Potentiometer	WIIA/MOD3(B1.3)/PROC-SHT/14	01:00
	e.	Operation and Use of Rheostat	WIIA/MOD3(B1.3)/PROC-SHT/15	00:45
3.7P		**POWER**		
	a.	Measurement of Single-Phase Power using Watt-Meter	WIIA/MOD3(B1.3)/PROC-SHT/16	01:45
	b.	Dissipation of Power using Series and Parallel Method	WIIA/MOD3(B1.3)/PROC-SHT/17	01:45
3.8P		**CAPACITANCE/CAPACITOR**		
	a.	Identification of Capacitors & Calculation	WIIA/MOD3(B1.3)/PROC-SHT/18	01:45
	b.	Calculation of Capacitance and Voltage in Series and Parallel	WIIA/MOD3(B1.3)/PROC-SHT/19	01:45
	c.	Charging/Discharging of Capacitor	WIIA/MOD3(B1.3)/PROC-SHT/20	01:45
	d.	Testing of a capacitor	WIIA/MOD3(B1.3)/PROC-SHT/21	01:45

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	**FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
	70

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
3.9P	**INDUCTANCE/ INDUCTOR**			
	a.	Identification of Inductor & Calculation of Induction	WIIA/MOD 3(B1.3)/PROC-SHT/22	01:45
	b.	Calculation of Total Inductance connected in Series & Parallel	WIIA/MOD 3(B1.3)/PROC-SHT/23	01:45
3.10P	**DC MOTOR/GENERATOR THEORY**			
	a.	Dis-Assembly of DC Motor/ Generator	WIIA/MOD 3(B1.3)/PROC-SHT/24	01:45
	b.	Inspection of Various Parts of DC Motor/ Generator	WIIA/MOD 3(B1.3)/PROC-SHT/25	01:45
	c.	Assembly of DC Motor/ Generator	WIIA/MOD 3(B1.3)/PROC-SHT/26	01:45
	d.	Operational Test of DC Motor/ Generator	WIIA/MOD 3(B1.3)/PROC-SHT/27	01:45
	e.	Configuration and Operational Test of DC Series Motor	WIIA/MOD 3(B1.3)/PROC-SHT/28	01:45
	f.	Configuration and Operational Test of DC Shunt Motor	WIIA/MOD 3(B1.3)/PROC-SHT/29	01:45
	g.	Configuration and Operational Test of DC Compound Motor	WIIA/MOD 3(B1.3)/PROC-SHT/30	01:45
	h.	Speed and Directional Control of DC Motor	WIIA/MOD 3(B1.3)/PROC-SHT/31	01:45
3.11P	**AC THEORY**			
	a.	Checking of Values of Alternating Current Using DSO/ CRO	WIIA/MOD 3(B1.3)/PROC-SHT/32	01:45
3.12P	**RESISTIVE (R), CAPACITIVE (C) AND INDUCTIVE (L) CIRCUIT**			
	a.	Measurement of Resonant Frequency using Series RLC circuit	WIIA/MOD 3(B1.3)/PROC-SHT/33	01:45

MODULE 3 – ELECTRICAL FUNDAMENTALS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY
	70

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
3.13P	TRANSFORMERS			
	a.	Familiarization of Various Transformers and Its Parts	WIIA/MOD3(B1.3)/PROC-SHT/34	01:45
	b.	Testing of transformer	WIIA/MOD3(B1.3)/PROC-SHT/35	01:45
3.14P	AC GENERATORS			
	a.	Configuration of 3-Phase Star and Delta Connection	WIIA/MOD3(B1.3)/PROC-SHT/36	01:45
3.15P	AC MOTOR			
	a.	Familiarization of 3-Phase Synchronous Motor	WIIA/MOD3(B1.3)/PROC-SHT/37	01:45
	b.	Operation of Single-Phase Induction Motor	WIIA/MOD3(B1.3)/PROC-SHT/38	01:45
	c.	Perform Speed Control of AC Motor	WIIA/MOD3(B1.3)/PROC-SHT/39	01:45

MODULE 4 – ELECTRONIC FUNDAMENTALS

APPLICABILITY IN SEMESTER	**SECOND SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
	40

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
4.1P	**GENERAL**			
	a.	Familiarization of Various Types of Tools and Equipment and Safety Precautions to be Observed in the Electronic Shop.	WIIA/MOD4(B1.3)/PROC-SHT/01	03:00
4.2P	**DIODES**			
	a.	Identification of Various Types of Diodes	WIIA/MOD 4(B1.3)/PROC-SHT/02	02:00
	b.	Functional Testing of Diodes	WIIA/MOD 4(B1.3)/PROC-SHT/03	05:00
	c.	Characteristics of Diodes	WIIA/MOD 4(B1.3)/PROC-SHT/04	03:00
	d.	Diodes in Series and Parallel	WIIA/MOD 4(B1.3)/PROC-SHT/05	03:00
	e.	Operation and Characteristics of Silicon Controlled Rectifier	WIIA/MOD 4(B1.3)/PROC-SHT/06	03:00
4.3P	**TRANSISTORS**			
	a.	Identification of Transistors	WIIA/MOD 4(B1.3)/PROC-SHT/07	03:00
	c.	Input and Output Characteristics of Transistor in Common Base	WIIA/MOD 4(B1.3)/PROC-SHT/08	02:00
	d.	Input and Output Characteristics of Transistor in Common Emitter	WIIA/MOD 4(B1.3)/PROC-SHT/09	02:00
4.4P	**INTEGRATED CIRCUITS**			
	a.	Operation of Logic Gate	WIIA/MOD 4(B1.3)/PROC-SHT/10	05:00
	b.	Perform the Inverting Amplifier using OP-AMP	WIIA/MOD 4(B1.3)/PROC-SHT/11	02:00
	c.	Perform the Non-Inverting Amplifier using OP-AMP	WIIA/MOD 4(B1.3)/PROC-SHT/12	02:00
4.5P	**PRINTED CIRCUIT BOARDS**			
	a.	Familiarization of Single Layer of PCB's	WIIA/MOD 4(B1.3)/PROC-SHT/13	05:00

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS

APPLICABILITY IN SEMESTER	**THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
	50

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
5.1P	**DATA CONVERSION**			
	a.	Practical on Analog to Digital Convertor	WIIA/MOD 5(B1.3)/PROC-SHT/01	06:00
	b.	Practical on Digital to Analog Convertor	WIIA/MOD 5(B1.3)/PROC-SHT/02	06:00
5.2P	**LOGIC CIRCUITS**			
	a.	Identification of Common Logic Gate Symbol and Verification of Truth Table	WIIA/MOD 5(B1.3)/PROC-SHT/03	05:00
	b.	Formation of Basic Logic Gate using Universal Logic Gates	WIIA/MOD 5(B1.3)/PROC-SHT/04	05:00
5.3P	**BASIC COMPUTER STRUCTURE**			
	a.	Familiarization of Computer Parts	WIIA/MOD 5(B1.3)/PROC-SHT/05	05:00
5.6P	**FIBER OPTICS**			
	a.	Familiarization on Fiber Optics Cable	WIIA/MOD 5(B1.3)/PROC-SHT/06	02:30
	b.	Familiarization and Demonstration on Fiber Optic Trainer Kit	WIIA/MOD 5(B1.3)/PROC-SHT/07	03:00
5.7P	**ELECTRONIC DISPLAY**			
	a.	Familiarization of CRT & its Component	WIIA/MOD 5(B1.3)/PROC-SHT/08	02:30
	b.	Familiarization of LCD & its Component	WIIA/MOD 5(B1.3)/PROC-SHT/09	02:30
	c.	Operation of Common Anode LCD Display	WIIA/MOD 5(B1.3)/PROC-SHT/10	02:30
	d.	Operation of Common Cathode LCD Display	WIIA/MOD 5(B1.3)/PROC-SHT/11	02:30
5.8P	**ELECTROSTSTIC SENSITIVE DEVICES**			
	a.	Familiarization on ESD device and Handling Procedure	WIIA/MOD 5(B1.3)/PROC-SHT/12	02:30

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS

APPLICABILITY IN SEMESTER	**THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
	50

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
5.9P	**ELECTROMAGNETIC ENVIRONMRNT**			
	b.	Familiarization on Lightening Protection devices	WIIA/MOD 5(B1.3)/PROC-SHT/13	02:30
5.10P	**TYPICAL ELECTRONIC/ DIGITAL AIRCRAFT SYSTEMS**			
	a.	Familiarization on Basic GPS	WIIA/MOD 5(B1.3)/PROC-SHT/14	02:30

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	**SECOND AND THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
SECOND SEMESTER	**30 (PARA 6.1P TO 6.4P)**
THIRD SEMESTER	**40 (PARA 6.5P TO 6.14P)**

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
6.1P	**AIRCRAFT MATERIALS – FERROUS**			
	a.	Identification of Common Ferrous Alloy Steel	WIIA/MOD 6(B1.3)/PROC-SHT/01	01:00
	b.	Testing of Ferrous Metal	WIIA/MOD 6(B1.3)/PROC-SHT/02	12:00
6.2P	**AIRCRAFT MATERIALS – FERROUS**			
	a.	Identification of Common Non–Ferrous Alloy Steel	WIIA/MOD 6(B1.3)/PROC-SHT/03	12:00
6.3P	**COMPOSITE AND NON-METALLIC OTHER THAN WOOD AND FABRIC**			
	a.	Familiarization on different types of Composite Material and Resin	WIIA/MOD 6(B1.3)/PROC-SHT/04	01:00
	b.	Coin Tap Test of Composite Structure	WIIA/MOD 6(B1.3)/PROC-SHT/05	02:00
6.4P	**FABRIC COVERING**			
	a.	Familiarization on different types of Fabric	WIIA/MOD 6(B1.3)/PROC-SHT/06	02:00
6.5P	**SCREW THREADS**			
	a.	Identification and Measurement of different types of Screw Threads	WIIA/MOD 6(B1.3)/PROC-SHT/07	05:00
6.6P	**BOLTS, STUDS AND SCREWS**			
	a.	Identification and marking of Various Types of Bolts	WIIA/MOD 6(B1.3)/PROC-SHT/08	03:00
	b.	Identification of Various Types of Nuts	WIIA/MOD 6(B1.3)/PROC-SHT/09	02:00
	c.	Identification of Various Types of Screws	WIIA/MOD 6(B1.3)/PROC-SHT/10	01:00
6.7P	**LOCKING DEVICES**			
	a.	Identification on Various Types of Locking Devices	WIIA/MOD 6(B1.3)/PROC-SHT/11	03:00

Prepared by:	*Approved By:*
MITHUN DEY **TRAINING MANAGER** **SIGNATURE WITH SEAL**	**The O/o DDG, Western Region, Mumbai**

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	**SECOND AND THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**
SECOND SEMESTER	**30 (PARA 6.1P TO 6.4P)**
THIRD SEMESTER	**40 (PARA 6.5P TO 6.14P)**

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
6.7P Con..	b.	Perform Safety Wire	WIIA/MOD 6(B1.3)/PROC-SHT/12	03:00
	c.	Removal and Installation of Cotter Pin	WIIA/MOD 6(B1.3)/PROC-SHT/13	03:00
6.8P	**AIRCRAFT RIVETS**			
	a.	Identification on Various Types of Rivets	WIIA/MOD 6(B1.3)/PROC-SHT/14	02:00
6.9P	**PIPES AND UNIONS**			
	a.	Identification and marking of Various Types of Rigid and Flexible Pipes	WIIA/MOD 6(B1.3)/PROC-SHT/15	02:00
6.10P	**SPRINGS**			
	a.	Identification of Various Types of Springs	WIIA/MOD 6(B1.3)/PROC-SHT/16	02:00
6.11P	**BEARINGS**			
	a.	Identification of Various Types of Bearings	WIIA/MOD 6(B1.3)/PROC-SHT/17	02:00
6.12P	**TRANSMISSIONS**			
	a.	Identification of Various Types of Gears	WIIA/MOD 6(B1.3)/PROC-SHT/18	02:00
	b.	Identification of Various Types of Chain, Pulleys and Belts	WIIA/MOD 6(B1.3)/PROC-SHT/19	02:00
6.13P	**CONTROL CABLES**			
	a.	Identification of Various Types of Cables and End Fittings	WIIA/MOD 6(B1.3)/PROC-SHT/20	02:00
	b.	Perform Turnbuckle Adjustment	WIIA/MOD 6(B1.3)/PROC-SHT/21	03:00

Prepared by:	*Approved By:*
MITHUN DEY **TRAINING MANAGER** **SIGNATURE WITH SEAL**	**The O/o DDG, Western Region, Mumbai**

MODULE 6 – MATERIALS AND HARDWARE

APPLICABILITY IN SEMESTER	**SECOND AND THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**			
PRACTICAL HOURS ALLOTED	**B1.3 CATEGORY**			
	SECOND SEMESTER	**30 (PARA 6.1P TO 6.4P)**		
	THIRD SEMESTER	**40 (PARA 6.5P TO 6.14P)**		

Sr. No.	**Topics to be Covered**		**Procedure Sheet Ref. No.**	**Hours Allotted B1.3**
6.14P	**ELECTRICAL CABLES AND CONNECTORS**			
	a.	Identification on Various Types pf Cable and Connectors	WIIA/MOD 6(B1.3)/PROC-SHT/22	03:00

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY
	80

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
7.1P	SAFETY PRECAUTIONS-AIRCRAFT AND WORKSHOP			
	a.	Safety Precautions and Practices in Aircraft and Workshop	WIIA/MOD 7A(B1.3)/PROC-SHT/01	04:00
	b.	Identification and use of different types of Fire Extinguisher	WIIA/MOD 7A(B1.3)/PROC-SHT/02	02:00
7.2P	WORKSHOP PRACTICES			
	a.	Demonstration on proper care of hand tools and equipment's	WIIA/MOD 7A(B1.3)/PROC-SHT/03	02:00
	b.	Practice on measurement of Precision Measuring Tools	WIIA/MOD 7A(B1.3)/PROC-SHT/04	06:00
7.3P	TOOLS			
	a.	Identification and use of Common Hand Tools	WIIA/MOD 7A(B1.3)/PROC-SHT/05	10:00
	b.	Identification and use of Power Tools	WIIA/MOD 7A(B1.3)/PROC-SHT/06	02:00
	c.	Identification and use of Precision Measuring Tools	WIIA/MOD 7A(B1.3)/PROC-SHT/07	02:00
	d.	Fabrication to Make Step Fitting using general tools	WIIA/MOD 7A(B1.3)/PROC-SHT/08	10:00
7.4P	AVIONICS GENERAL TEST EQUIPMENTS			
	a.	Identification and use of Avionics and Electrical General Test Equipment	WIIA/MOD 7A(B1.3)/PROC-SHT/09	02:00
7.5P	FITS AND CLEARANCE			
	a.	Practice on External and Internal threads using taps and dies	WIIA/MOD 7A(B1.3)/PROC-SHT/10	06:00
7.6P	ELECTRICAL WIRING INTERCONNECTION SYSTEM (EWIS)			
	a.	Practice on continuity, insulation and bonding techniques and testing	WIIA/MOD 7A(B1.3)/PROC-SHT/11	02:00

MODULE 7A – MAINTENANCE PRACTICES

APPLICABILITY IN SEMESTER	THIRD SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY
	80

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
7.6P Cont.	b.	Practice on Crimping of Wire	WIIA/MOD 7A(B1.3)/PROC-SHT/12	02:00
	c.	Practice on removal and installation of connector pin	WIIA/MOD 7A(B1.3)/PROC-SHT/13	02:00
7.7P	RIVETING			
	a.	Practice on using riveting tools to make Lap Joint and Butt Joint using Aluminum Sheet.	WIIA/MOD 7A(B1.3)/PROC-SHT/14	06:00
	b	Inspection and Identification of Riveting Fault.	WIIA/MOD 7A(B1.3)/PROC-SHT/15	02:00
7.8P	PIPES AND HOSES			
	a.	Practice on Tube forming processes	WIIA/MOD 7A(B1.3)/PROC-SHT/16	02:00
7.9P	CONTROL CABLES			
	a.	Inspection of various control cables and use of tensiometer	WIIA/MOD 7A(B1.3)/PROC-SHT/17	04:00
7.10P	WELDING BRAZING, SOLDERING AND BONDING			
	a.	Practice on Soft Soldering	WIIA/MOD 7A(B1.3)/PROC-SHT/18	02:00
	b.	Familiarization of welding equipment and types of flame.	WIIA/MOD 7A(B1.3)/PROC-SHT/19	04:00
	c.	Inspection of Welded Joint	WIIA/MOD 7A(B1.3)/PROC-SHT/20	02:00
7.11P	DISASSEMBLY, INSPECTION, REPAIOR AND ASSEMBLY TECHNIQUES			
	a.	Practice on different NDT	WIIA/MOD 7A(B1.3)/PROC-SHT/21	06:00

MODULE 8 – BASIC AERODYNAMICS

APPLICABILITY IN SEMESTER	FIRST SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS
PRACTICAL HOURS ALLOTED	B1.3 CATEGORY
	32

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
8.1P	AERODYNAMICS			
	a.	Familiarization on airflow around the aerofoil surfaces.	WIIA/MOD 8(B1.3)/PROC-SHT/01	08:10
	b.	Familiarization on different types of aerofoil surfaces.	WIIA/MOD 8(B1.3)/PROC-SHT/02	08:20
	c.	Familiarization on different terms associated with the wing surfaces.	WIIA/MOD 8(B1.3)/PROC-SHT/03	05:10
8.2P	THEORY OF FLIGHT			
	a.	Familiarization on lift augmenting devices.	WIIA/MOD 8(B1.3)/PROC-SHT/04	05:10
8.3P	FLIGHT STABILITY AND DYNAMICS			
	a.	Familiarization on aircraft control surfaces.	WIIA/MOD 8(B1.3)/PROC-SHT/05	05:10

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

PRACTICAL HOURS ALLOTTED	SEMESTER	B1.3 CATEGORY
	FOURTH	110 (PARA 12.1P – 12.24P)
	FIFTH	60 (PARA 12.25P – 12.37P)
	SIXTH	60 (PARA 12.38P – 12.50P)

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
12.1P		FLIGHT CONTROL SYSTEM		
	a.	Familiarization on removal and installation procedure of cyclic pitch control	WIIA/MOD 12/PROC-SHT/01	5
	b.	Familiarization on removal and installation procedure of collective pitch control lever.	WIIA/MOD 12/PROC-SHT/02	5
	c.	Familiarization of swash plate assembly	WIIA/MOD 12/PROC-SHT/03	5
	d.	Familiarization of tail rotor control system	WIIA/MOD 12/PROC-SHT/04	5
	e.	Familiarization of Main rotor head	WIIA/MOD 12/PROC-SHT/05	5
	f.	Familiarization of Main rotor.	WIIA/MOD 12/PROC-SHT/06	5
	g.	Familiarization of Main rotor blade.	WIIA/MOD 12/PROC-SHT/07	5
	h.	Familiarization on removal and installation procedure of Main rotor blade.	WIIA/MOD 12/PROC-SHT/08	5
	i.	Familiarization of Tail rotor assembly and blade.	WIIA/MOD 12/PROC-SHT/09	5
	j.	Familiarization on removal and installation procedure of Tail rotor blade.	WIIA/MOD 12/PROC-SHT/10	5
	k.	Familiarization of Tail rotor head	WIIA/MOD 12/PROC-SHT/11	5
	l.	Familiarization of Tail Boom.	WIIA/MOD 12/PROC-SHT/12	2
	m.	Familiarization on removal and installation procedure of Tail rotor guard.	WIIA/MOD 12/PROC-SHT/13	5

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	**FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**

PRACTICAL HOURS ALLOTTED	**SEMESTER**	**B1.3 CATEGORY**
	FOURTH	**110 (PARA 12.1P – 12.24P)**
	FIFTH	**60 (PARA 12.25P – 12.37P)**
	SIXTH	**60 (PARA 12.38P – 12.50P)**

Sr. No.		**Topics to be Covered**	**Procedure Sheet Ref. No.**	**Hours Allotted B1.3**
12.2P	**BLADE TRACKING AND VIBRATION ANALYSIS**			
	a.	Familiarization on Main rotor blade tip tracking procedure.	WIIA/MOD 12/PROC-SHT/14	5
12.3P	**TRANSMISSIONS**			
	a.	Familiarization on Main rotor shaft unit.	WIIA/MOD 12/PROC-SHT/15	5
	b.	Familiarization on Main rotor brake.	WIIA/MOD 12/PROC-SHT/16	3
	c.	Familiarization on Main rotor drive system	WIIA/MOD 12/PROC-SHT/17	5
	d.	Familiarization on Main gear box assembly.	WIIA/MOD 12/PROC-SHT/18	5
	e.	Familiarization on removal and installation procedure of M. G. B oil pump	WIIA/MOD 12/PROC-SHT/19	5
	f.	Familiarization on clutch unit	WIIA/MOD 12/PROC-SHT/20	5
	g.	Familiarization on Tail rotor drive system	WIIA/MOD 12/PROC-SHT/21	5
	h.	Familiarization on Tail rotor gear box	WIIA/MOD 12/PROC-SHT/22	5
	i.	Familiarization on removal and installation procedure of Mixing unit	WIIA/MOD 12/PROC-SHT/23	5
12.4P	**AIRFRAME STRUCTURES**			
	a.	Familiarization on Preflight Inspection Procedure	WIIA/MOD 12/PROC-SHT/24	5

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	**FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**

PRACTICAL HOURS ALLOTTED	**SEMESTER**	**B1.3 CATEGORY**
	FOURTH	**110 (PARA 12.1P – 12.24P)**
	FIFTH	**60 (PARA 12.25P – 12.37P)**
	SIXTH	**60 (PARA 12.38P – 12.50P)**

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
12.5P	**AIRCONDITIONING (ATA 21)**			
	a.	Familiarization on Heating- Defrosting system.	WIIA/MOD 12/PROC-SHT/25	5
12.6P	**INSTRUMENT/ AVIONICS SYSTEM**			
	a.	Familiarization on Helicopter Instrument mounting panel.	WIIA/MOD 12/PROC-SHT/26	5
	b.	Familiarization on Collective pitch Indicator.	WIIA/MOD 12/PROC-SHT/27	5
	c.	Familiarization on Navigational Instrument installed in Helicopter.	WIIA/MOD 12/PROC-SHT/28	5
12.7P	**ELECTRICAL POWER (ATA 24)**			
	a.	Familiarization on Electrical Power system	WIIA/MOD 12/PROC-SHT/29	5
	b.	Familiarization on removal and installation procedure of Battery	WIIA/MOD 12/PROC-SHT/30	5
12.8P	**EQUIPMENT AND FURNISHINGS (ATA 25)**			
	a.	Familiarization on removal and installation procedure of Baggage hold door.	WIIA/MOD 12/PROC-SHT/31	5
	b.	Familiarization on removal and installation procedure of Foot rest.	WIIA/MOD 12/PROC-SHT/32	5
	c.	Familiarization on removal and installation procedure of Front seat.	WIIA/MOD 12/PROC-SHT/33	5
	d.	Familiarization on removal and installation procedure of Rear seat.	WIIA/MOD 12/PROC-SHT/34	5

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS

PRACTICAL HOURS ALLOTTED	SEMESTER	B1.3 CATEGORY
	FOURTH	110 (PARA 12.1P – 12.24P)
	FIFTH	60 (PARA 12.25P – 12.37P)
	SIXTH	60 (PARA 12.38P – 12.50P)

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
12.9P		FIRE PROTECTION (ATA 26)		
	a.	Familiarization on Fire Extinguisher System	WIIA/MOD 12/PROC-SHT/35	3
12.10P		FUEL SYSTEMS (ATA 28)		
	a.	Familiarization on Helicopter Fuel system	WIIA/MOD 12/PROC-SHT/36	5
	b.	Familiarization on Fuel Filter inspection procedure.	WIIA/MOD 12/PROC-SHT/37	2
12.11P		HYDRAULIC POWER (ATA 24)		
	a.	Familiarization on Helicopter Hydraulic system	WIIA/MOD 12/PROC-SHT/38	5
	b.	Familiarization on Hydraulic Accumulator charging Procedure	WIIA/MOD 12/PROC-SHT/39	5
	c.	Familiarization on removal and installation procedure of Hydraulic filter.	WIIA/MOD 12/PROC-SHT/40	5
	d.	Familiarization on removal and installation procedure of Hydraulic Accumulator.	WIIA/MOD 12/PROC-SHT/41	5
12.12P		ICE AND RAIN PROTECTION (ATA 30)		
	a.	Familiarization on Windshield wiper system	WIIA/MOD 12/PROC-SHT/42	5
	b.	Familiarization on removal and installation procedure of Windshield wiper.	WIIA/MOD 12/PROC-SHT/43	5

MODULE 12 – HELICOPTER AERODYNAMICS STRUCTURES & SYSTEMS

APPLICABILITY IN SEMESTER	**FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**

PRACTICAL HOURS ALLOTTED	**SEMESTER**	**B1.3 CATEGORY**
	FOURTH	**110 (PARA 12.1P – 12.24P)**
	FIFTH	**60 (PARA 12.25P – 12.36P)**
	SIXTH	**60 (PARA 12.37P – 12.49P)**

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
12.13P	**LANDING GEAR (ATA 32)**			
	a.	Familiarization on Helicopter Landing Gear System	WIIA/MOD 12/PROC-SHT/44	5
	b.	Familiarization on removal and installation procedure of MLG Wheel.	WIIA/MOD 12/PROC-SHT/45	5
	c.	Familiarization on Nose Wheel locking device	WIIA/MOD 12/PROC-SHT/46	3
	d.	Familiarization on Parking Brake	WIIA/MOD 12/PROC-SHT/47	2
12.14P	**LIGHTS (ATA 33)**			
	a.	Familiarization on removal and installation procedure of Landing Light.	WIIA/MOD 12/PROC-SHT/48	5
	b.	Familiarization on removal and installation procedure of Navigation Light.	WIIA/MOD 12/PROC-SHT/49	5
	c.	Familiarization on removal and installation procedure of Anti-collision Light	WIIA/MOD 12/PROC-SHT/50	5

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS	
PRACTICAL HOURS ALLOTTED	SEMESTER	B1.3 CATEGORY
	FOURTH	50 (PARA 15.1P – 15.7P)
	FIFTH	25 (PARA 15.8P – 15.11P)
	SIXTH	25 (PARA 15.12P – 15.14P)

Sr. No.		Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
15.7P	LUBRICATION SYSTEM			
	a.	Demonstration on lubricating system and its component	WIIA/MOD 15/PROC-SHT/11	13:45
15.8P	FUEL SYSTEM			
	a.	Familiarization on hydromechanical fuel control system and its component.	WIIA/MOD 15/PROC-SHT/12	05:00
15.9P	AIR SYSTEM			
	a.	Familiarization on Anti-Icing System	WIIA/MOD 15/PROC-SHT/13	01:15
15.10P	STARTING AND IGNITION SYSTEM			
	a.	Demonstration on pneumatic and Electrical starting system	WIIA/MOD 15/PROC-SHT/14	05:00
	b.	Demonstration on Ignition System and its Component	WIIA/MOD 15/PROC-SHT/15	05:00
	c.	Familiarization on maintenance safety requirements while working on engine ignition system	WIIA/MOD 15/PROC-SHT/16	01:15
15.11P	ENGINE INDICATING SYSTEM			
	a.	Familiarization on engine indicating instruments	WIIA/MOD 15/PROC-SHT/17	05:00
	b.	Demonstration on EGT probes	WIIA/MOD 15/PROC-SHT/18	01:15
	c.	Demonstration on EPR probes	WIIA/MOD 15/PROC-SHT/19	01:15
15.12P	TURBO PROP ENGINE			
	a.	Demonstration on reduction gear of turbo prop engine	WIIA/MOD 15/PROC-SHT/20	07:30

MODULE 15 – GAS TURBINE ENGINE

APPLICABILITY IN SEMESTER	**FOURTH, FIFTH & SIXTH SEMESTER – B1.3 CATEGORY BATCHES INDUCTED/ ADMITTED IN JULY 2024 AND ONWARDS**	
PRACTICAL HOURS ALLOTTED	**SEMESTER**	**B1.3 CATEGORY**
	FOURTH	**50 (PARA 15.1P – 15.7P)**
	FIFTH	**25 (PARA 15.8P – 15.11P)**
	SIXTH	**25 (PARA 15.12P – 15.14P)**

Sr. No.	Topics to be Covered	Procedure Sheet Ref. No.	Hours Allotted B1.3
15.12P Cont..	a. Demonstration on reduction gear of turbo shaft engine	WIIA/MOD 15/PROC-SHT/21	07:30
15.13P	**AUXILIARY POWER UNITS (APU's)**		
	a. Demonstration on APU system	WIIA/MOD 15/PROC-SHT/22	07:30
15.14P	**FIRE PROTECTION SYSTEM**		
	a. Demonstration on engine fire detection and extinguishing system	WIIA/MOD 15/PROC-SHT/23	02:30