



MAINTENANCE TRAINING ORGANISATION EXPOSITION
PART 4: APPENDICES

DOC NO:	ARDC/BMTO/MTOE/01	
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3 YEARS TRAINING PROGRAMME
FOR
CATEGORY B2 COURSE (2400 Hrs.)
THEORY
(HOURS – 1440 Hrs.)
PRACTICALS (HOURS – 960 Hrs.)

SIGNATURE OF TRAINING MANAGER

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SYLLABUS OF EACH TRAINING COURSE B2

TERM/ SEM	MODULES	THEORY	PRACTICAL (IN-HOUSE)	AMO
			OTHER THAN ACTUAL MAINTENANCE WORKING ENVIRONMENT	ACTUAL MAINTENANCE WORKING ENVIRONMENT
1 st	7 A (MAINTENANCE PRACTICE -PART A)	90	90	00
	8 (BASIC AERODYNAMICS)	60	55	00
	10 (AVIATION LEGISLATION- PART A)	100	00	00
2 nd	3 (ELECTRICAL FUNDAMENTALS PART-A)	60	50	00
	7 A (MAINTENANCE PRACTICE –PART-B)	90	29	00
	10 (AVIATION LEGISLATION-PART B)	100	00	00
	9A (HUMAN FACTORS)	60	00	00
3 rd	3 (ELECTRICAL FUNDAMENTALS-PART-B)	60	50	00
	4 (ELECTRONIC FUNDAMENTALS)	80	80	00
	05 (DIGITAL TECHNIQUES/ELECTRONICS INSTRUMENTS SYSTEM) PART-A	60	50	00
4 th	05 (DIGITAL TECHNIQUES/ELECTRONICS INSTRUMENTS SYSTEM) PART-B	60	00	50
	6 (MATERIAL & HARDWARE-PART-A)	50	50	00
	13 (AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-A (ELECTRICAL POWER)	80	20	34
5 th	6 (MATERIAL & HARDWARE-PART-B)	70	70	00
	13 AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-B(INSTRUMENT, AUTO PILOT, COMPASS)	120	59	38
	13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-C(AIRFRAME, SYSTEM)	105	00	87
6 th	13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-D(RADIO, WEATHER RADAR)	95	00	79
	MODULE -13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-E(AIRFRAME STRUCTURE)	50	14	15
	14. PROPULSION	50	00	40
TOTAL		1440	617	343

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FRIST SEMESTER TRAINING SYLLABUS**AVIONICS B2****SEMESTER – I (THEORY)**

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 7A	MAINTENANCE PRACTICE-PART-A	AME 101	90
MODULE – 08	BASIC AERODYAMICS	AME 102	60
MODULE – 10	AVIATION LEGISLATION-PART-A	AME 103	100
TOTAL			250

SEMESTER – I (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 7A	MAINTENANCE PRACTICE-PART-A	AME 104	90	00
MODULE- 08	BASIC AERODYAMICS	AME 105	55	00
TOTAL			145	

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MODULE 7A. (MAINTENANCE PRACTICES- PART A)- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTE D HOURS
1.	---	7.1	Safety Precautions-Aircraft and Workshop <ul style="list-style-type: none"> 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	5 Hrs
2.	---	7.2	Workshop Practices <ul style="list-style-type: none"> Care of tools, control of tools, use of workshop materials; Dimensions, allowances and tolerances, standards of workmanship; Calibration of tools and equipment, calibration standards. 	3	10 Hrs
3.	---	7.3	Tools <ul style="list-style-type: none"> 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; 	3	25 Hrs
4.	---	7.4	Avionic General Test Equipment <ul style="list-style-type: none"> Operation, function and use of avionic general test equipment. 	3	5 Hrs
5.	---	7.5	Engineering Drawings, Diagrams and Standards <ul style="list-style-type: none"> Drawing types and diagrams, their symbols, dimensions, tolerances and projections; Identifying title block information 	2	10 Hrs

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			<ul style="list-style-type: none"> • Microfilm, microfiche and computerized 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. 		
6.	---	7.6	Fits and Clearances <ul style="list-style-type: none"> • 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. 	1	10 Hrs
7.	---	7.7	Electrical Wiring Interconnection System (EWIS)h <ul style="list-style-type: none"> • 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; • Identification of wire types, their inspection criteria and damage tolerance. • Wiring protection techniques: Cable looming and loom support, cable clamps, protective sleeving techniques including heat shrink wrapping, shielding. • EWIS installations, inspection, repair, maintenance and cleanliness standards. 	3	15 Hrs

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8.	---	7.15	Welding, Brazing, Soldering and Bonding <ul style="list-style-type: none">Soldering methods; inspection of soldered joints.	2	10 Hrs
TOTAL					90 Hrs

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MODULE 8. BASIC AERODYNAMICS- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	8.1	Physics of the Atmosphere <ul style="list-style-type: none"> International Standard Atmosphere (ISA), application to aerodynamics. 	2	5 Hrs
2.	---	8.2	Aerodynamics <ul style="list-style-type: none"> Airflow around a body; Boundary layer, laminar and turbulent flow, free stream flow, relative airflow, up wash and downwash, vortices, stagnation; The terms: camber, chord, mean aerodynamic chord, profile (parasite) drag, induced drag, center of pressure, angle of attack, wash in and wash out, fineness ratio, wing shape and aspect ratio; 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. 	2	30 Hrs
3.	---	8.3	Theory of Flight <ul style="list-style-type: none"> Relationship between lift, weight, thrust and drag; Glide ratio; Steady state flights, performance; Theory of the turn; Influence of load factor: stall, flight envelope and structural limitations; Lift augmentation. 	2	15 Hrs
4.	---	8.4	Flight Stability and Dynamics <ul style="list-style-type: none"> Longitudinal, lateral and directional stability (active and passive). 	2	10 Hrs
TOTAL					60 Hrs

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MODULE 10. AVIATION LEGISLATION PART-A- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	10.1	Regulatory Framework <ul style="list-style-type: none"> • Role of International Civil Aviation Organization; • The Aircraft Act and Rules made there under • Role of the DGCA; • Relationship between CAR-21, CAR-M, CAR-145, CAR-66, CAR 147 • The Aircraft Rules (Applicable to Aircraft Maintenance and Release) • Aeronautical Information Circulars (Applicable to Aircraft Maintenance and Release) • CAR Sections 1 and 2 	1	30 Hrs
2.	---	10.2	CAR-66 Certifying Staff – Maintenance <ul style="list-style-type: none"> • Detailed understanding of CAR-66. 	2	20 Hrs
3.	---	10.4	Aircraft Operations <ul style="list-style-type: none"> • Commercial Air Transport/Commercial Operations • Air Operators Certificates; • Operators Responsibilities, in particular regarding continuing airworthiness and maintenance; • Documents to be carried on board; • Aircraft Placarding (Markings); 	1	10 Hrs
4.	---	10.7	Applicable National and International Requirements <ul style="list-style-type: none"> • Maintenance Programme, 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: maintenance manuals, structural repair manual, illustrated parts catalogue, etc.; 	2	25 Hrs
			<ul style="list-style-type: none"> • Continuing airworthiness; 	1	15 Hrs

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			<ul style="list-style-type: none"> • Test flights; • ETOPS /EDTO, maintenance and dispatch requirements; • RVSM, maintenance and dispatch requirements • RNP, MNPS Operations • All Weather Operations, • Category 2/3 operations and minimum equipment requirements. 		
				TOTAL	100 Hrs

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MODULE 7A. (MAINTENANCE PRACTICES PART-A) – PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED IN	ALLOTED HOURS
1	---	7A-01	Perform care procedure of hand tools n. Care of Hammers. o. Care of Screwdrivers. p. Care of Wrenches. q. Care of Pliers and Tongs. r. Care of Chisels. s. Care of Punches. t. Care of Files. u. Care of Taps. v. Care of Dies. w. Care of Dividers & Callipers. x. Care of Micrometres. y. Care of Rules. z. Care of Scriber.	In- House	10 Hrs
2	---	7A-02	Scribe the lines on metal piece for laying out work	In- House	1 Hrs
3	---	7A-03	To make a square fit from the given mid steel pieces	In- House	4 Hrs
4	---	7A-04	To make a V-fit from the given mid steel pieces	In- House	4 Hrs
5	---	7A-05	Use the plan and Philips screw drivers to open and tight the panel mounted screws.	In- House	1 Hrs
6	---	7A-06	Use the apex bits & plain bits of screwdrivers in a combination of plain bit holders and ratchet and extension bar to open and tight the panel mounted screws.	In- House	1 Hrs
7	---	7A-07	Open and tight the panel mounted screws by using speed handle, bits and holder.	In- House	1 Hrs
8	---	7A-08	Open the panel mounted screw by using power operated screw drivers.	In- House	1 Hrs
9	---	7A-09	Install and remove the nut and bolts	In- House	1 Hrs

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			assembly by using the combination spanners & adjustable spanners.		
10	---	7A-10	Install and remove the nut and bolts assembly by using sockets, extension, ratchet, T handle, universal joint, expanders & reducers.	In- House	1 Hrs
11	---	7A-11	Install and remove the nut and bolts assembly by using offset and offset socket wrenches.	In- House	1 Hrs
12	---	7A-12	Remove and installed the set head screw or socket head screws.	In- House	1 Hrs
13	---	7A-13	Grip the job at C clamp, tool maker clamp and grip vise pliers and remove the damaged exposed screw by using grip vise pliers.	In- House	1 Hrs
14	---	7A-14	Perform the wire locking by using locking wire pliers	In- House	1 Hrs
15	---	7A-15	Set and use the given torque value of torque in different units in torque wrenches.	In- House	1 Hrs
16	---	7A-16	Use the screw extractor to remove the damage screw	In- House	1 Hrs
17	---	7A-17	Remove and install the stud from assembly part.	In- House	1 Hrs
18	---	7A-18	Use the crowfoot wrench and hook spanners to remove and installed nut and bolt from the assembly part.	In- House	1 Hrs
19	---	7A-19	Remove and installed the circlip by using the circlip pliers.	In- House	1 Hrs
20	---	7A-20	Use the impact drivers to break loose a stubborn fastener.	In- House	1 Hrs
21	---	7A-21	Perform the measurements by using the steel rule (metric and Inches).	In- House	1 Hrs
22	---	7A-22	Perform the measurement by the using the rule depth gauge.	In- House	1 Hrs

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23	---	7A-23	Perform the measurements by using the outside micrometer (imperial and metric).	In- House	1 Hrs
24	---	7A-24	Perform the measurements by using the inside Micrometer (imperial and metric).	In- House	1 Hrs
25	---	7A-25	Perform the measurements by using the Vernier calipers (imperial and metric).	In- House	1 Hrs
26	---	7A-26	Perform the measurements by using the Vernier height gauge.	In- House	1 Hrs
27	---	7A-27	Perform the measurements by using the Vernier depth gauge.	In- House	1 Hrs
28	---	7A-28	Perform the measurements by using the Telescoping gauge.	In- House	1 Hrs
29	---	7A-29	Perform the measurements by using the small hole gauge.	In- House	1 Hrs
30	---	7A-30	Perform the measurements by using the dial test indicator (imperial and metric).	In- House	1 Hrs
31	---	7A-31	Perform the angle measurement by using the simple bevel protector.	In- House	1 Hrs
32	---	7A-32	Perform the angle measurements by using the precession bevel protector.	In- House	1 Hrs
33	---	7A-33	Perform the angle measurements by using the universal and combination bevel.	In- House	1 Hrs
34	---	7A-34	Perform measurement by using the combination set.	In- House	1 Hrs
35	---	7A-35	Perform the measurements by use of sine bar.	In- House	1 Hrs
36	---	7A-36	Measure the inside diameter of a job by using the inside callipers	In- House	1 Hrs
37	---	7A-37	Measure the outside diameter of a job by using the outside callipers	In- House	1 Hrs
38	---	7A-38	Transfer the measurement from outside to inside calipers	In- House	1 Hrs
39	---	7A-39	Measure the distance and draw an arc & circle by using the dividers.	In- House	1 Hrs
40	---	7A-40	Draw parallel lines by using the jenny	In- House	1 Hrs

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			calipers & find the centre of round bars by using jenny calipers.		
41	---	7A-41	Check the hole of exact size by using Ring gauge.	In- House	1 Hrs
42	---	7A-42	Check the accuracy of holes by using plug gauge	In- House	1 Hrs
43	---	7A-43	Check the size of the drill bits by using the drill gauge	In- House	1 Hrs
44	---	7A-44	Measure the clearance or gaps by using feeler or thickness gauge	In- House	1 Hrs
45	---	7A-45	Check the inside and outside radius of a component by using a fillet or radius gauge.	In- House	1 Hrs
46	---	7A-46	Check the pitch of a thread by using screw pitch gauge	In- House	1 Hrs
47	---	7A-47	Perform the measurement by use of Go and not go gauge	In- House	1 Hrs
48	---	7A-48	Check the wire size by using the SWG/AWG.	In- House	1 Hrs
49	---	7A-49	Check the flatness of surface by using inclinometer	In- House	1 Hrs
50	---	7A-50	Drill holes as per the given size by using of pillar and sensitive drill machine.	In- House	1 Hrs
51	---	7A-51	Perform the reaming operation to enlarge the drilled holes to accurate dimensions.	In- House	1 Hrs
52	---	7A-52	Cut the internal screw thread on drilled holes by using the taps.	In- House	1 Hrs
53	---	7A-53	Cut the external screw threads on round bar metals by using the dies.	In- House	1 Hrs
54	---	7A-54	Perform the grinding operation on a specimen job	In- House	1 Hrs
55	---	7A-55	Perform the buffing operation on a specimen job	In- House	1 Hrs
56	---	7A-56	Cut the job peace by Powered hacksaw.	In- House	1 Hrs

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57	---	7A-57	Cut the metal sheet by using Sheet metal guillotine/hand shear machine.	In- House	1 Hrs
58	---	7A-58	Perform the turning operation for a job on lathe machine.	In- House	2 Hrs
59	---	7A-59	Perform the Counter boring, spot facing and countersinking operation.	In- House	2 Hrs
60	---	7A-60	To cut a spur gear tooth on a given circular blank by gear cutting processes on horizontal milling machine.	In- House	2 Hrs
61	---	7A-61	Use multimeter to meters to measure AC and DC volts, amps and resistance.	In- House	2 Hrs
62	---	7A-62	Check an aircraft electrical circuit for continuity in conjunction with an electrical wiring diagram	In- House	3 Hrs
63	---	7A-63	Check the insulation resistance by using megger	In- House	3 Hrs
64	---	7A-64	Perform wire splicing.	In- House	3 Hrs
65		7A-65	Perform the electrical wire and component soldering		
Total					90 Hrs

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MODULE 08. (BASIC AERODYNAMICS) – PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX N O.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED IN	ALLOTED HOURS
1	---	08-02	Practices on demonstration of Bernoulli's principle.	In-House	5 Hrs
2	---	08-02	Aircraft Flight Controls	In-House	4 Hrs
3	---	08-02	Familiarization of Aerofoil	In-House	5 Hrs
4	---	08-02	Familiarization of Terms associated with Aircraft Wing	In-House	5 Hrs
5	---	08-02	Understanding of Incidence board and dihedral board	In-House	5 Hrs
6	---	08-02	Location of ICE prone area	In-House	5 Hrs
7	---	08-03	Familiarization of construction of Aircraft Wing	In-House	5 Hrs
8	---	08-03	Practices to understand the methods of Controlling Boundary Layer.	In-House	4 Hrs
9	---	08-03	Lift Augmentation Devices (Flaps, Leading edge devices, Fixed airflow devices)	In-House	5 Hrs
10	---	08-04	Familiarization of High wing, Mid wing & Low wing	In-House	5 Hrs
11	---	08-04	Practices to understand the concept of stability (Longitudinal, Lateral & Directional)	In-House	7 Hrs
Total					55 Hrs

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SECOND SEMESTER TRAINING SYLLABUS

AVIONICS B2

SEMESTER – II (THEORY)

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 03	ELECTICAL FUNDAMENTALS PART-A	AME 201	60
MODULE – 7A	MAINTENANCE PRACTICE PART-B	AME 202	90
MODULE – 10	AVIATION LEGISLATION PART-A	AME 203	100
MODULE – 9A	HUMAN FACTOR	AME 204	60
TOTAL			310

SEMESTER – II (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 03	ELECTICAL FUNDAMENTALS PART-A	AME 205	50	00
MODULE- 7A	MAINTENANCE PRACTICE PART-B	AME 206	29	00
TOTAL			79	

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MODULE 3. (ELECTRICAL FUNDAMENTALS) PART-A - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	3.1	Electron Theory <ul style="list-style-type: none"> Structure and distribution of electrical charges within: atoms, molecules, ions, compounds; Molecular structure of conductors, semiconductors and insulators. 	1	5 Hrs
	---	3.2	Static Electricity and Conduction <ul style="list-style-type: none"> Static electricity and distribution of electrostatic charges; Electrostatic laws of attraction and repulsion; Units of charge, Coulomb's Law; Conduction of electricity in solids, liquids, gases and a vacuum. 	2	5 Hrs
2.	---	3.3	Electrical Terminology <ul style="list-style-type: none"> The following terms, their units and factors affecting them: <ul style="list-style-type: none"> Potential difference, electromotive force, voltage, current, resistance, conductance, Charge, conventional current flow, electron flow. 	2	3 Hrs
3.	---	3.4	Generation of Electricity <ul style="list-style-type: none"> Production of electricity by the following methods: <ul style="list-style-type: none"> Light, heat, Friction, pressure, Chemical action, magnetism and motion. 	1	4 Hrs
4.	---	3.5	DC Sources of Electricity	2	10 Hrs

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			<ul style="list-style-type: none"> 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. 		
5.	---	3.6	DC Circuits <ul style="list-style-type: none"> Ohms Law, Kirchhoff's Voltage and Current Laws; Calculations using the above laws to find resistance, voltage and current; Significance of the internal resistance of a supply. 	2	5 Hrs
6.	---	3.7	Resistance/Resistor <ul style="list-style-type: none"> Resistance and affecting factors; Specific resistance; Resistor color 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. 	2	5 Hrs
			<ul style="list-style-type: none"> Positive and negative temperature coefficient conductance; Fixed resistors, stability, tolerance and limitations, methods of construction; Variable resistors, thermistors, voltage dependent resistors; 	1	3 Hrs

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			<ul style="list-style-type: none"> • Construction of potentiometers and rheostats; • Construction of Wheatstone Bridge; 		
7.	---	3.8	Power <ul style="list-style-type: none"> • Power, work and energy (kinetic and potential); • Dissipation of power by a resistor; • Power formula; • Calculations involving power, work and energy. 	2	5 Hrs
8.	---	3.9	Capacitance/Capacitor <ul style="list-style-type: none"> • 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 color coding; • Calculations of capacitance and voltage in series and parallel circuits; • Exponential charge and discharge of a capacitor, time constants; • Testing of capacitors. 	2	5 Hrs

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9.	---	3.10	Magnetism <ul style="list-style-type: none"> Theory of magnetism; Properties of a magnet Action of a magnet suspended in the Earth's magnetic field; Magnetization and demagnetization; Magnetic shielding; Various types of magnetic material; Electromagnets construction and principles of operation; Hand clasp rules to determine: magnetic field around current carrying conductor. 	2	3 Hrs
			<ul style="list-style-type: none"> Magneto motive force, field strength, magnetic flux density, permeability, hysteresis loop, retentively, coercive force reluctance, saturation point, eddy currents; Precautions for care and storage of magnets. 	2	2 Hrs
10.	---	3.11	Inductance/Inductor <ul style="list-style-type: none"> 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, 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 	2	5 Hrs

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			coil, permeability of coil, position of coils with respect to each other; <ul style="list-style-type: none">• Lenz's Law and polarity determining rules;• Back EMF, self-induction;• Saturation point;• Principle uses of inductors;		
TOTAL					60 Hrs

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MODULE 7A. (MAINTENANCE PRACTICES PART-B)- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTE D HOURS
1.	08	7.16	Aircraft Weight and Balance <ul style="list-style-type: none">• Centre of Gravity/Balance limits calculation: use of relevant documents;	2	15 Hrs
2.	08,10,12	7.17	Aircraft Handling and Storage <ul style="list-style-type: none">• Aircraft taxiing/towing and associated safety precautions;• Aircraft jacking, chocking, securing and associated safety precautions;• Aircraft storage methods;• Refueling/defueling procedures;• De-icing/anti-icing procedures;• Electrical, hydraulic and pneumatic ground supplies.• Effects of environmental conditions on aircraft handling and operation.	2	35 Hrs

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3.	---	7.18	Disassembly, Inspection, Repair and Assembly Techniques <ul style="list-style-type: none"> Types of defects and visual inspection techniques. Corrosion removal, assessment and reproduction. Nondestructive inspection techniques including, penetrant, radiographic, eddy current, ultrasonic and borescope methods. Disassembly and re-assembly techniques. Trouble shooting techniques 	3	15 Hrs
				1	
				2	
				2	
4.	---	7.19	Abnormal Events <ul style="list-style-type: none"> Inspections following lightning strikes and HIRF penetration. 	2	10 Hrs
5.	----	7.20	Maintenance Procedures <ul style="list-style-type: none"> 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 	2	15 Hrs
TOTAL					90 Hrs

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MODULE 10. AVIATION LEGISLATION -PART-B THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	----	10.3	CAR-145 — Approved Maintenance Organizations <ul style="list-style-type: none"> Detailed understanding of CAR-145 and CAR M Subpart F 	2	30 Hrs
2.	----	10.5	Aircraft Certification	1	15 Hrs
			General <ul style="list-style-type: none"> Certification rules: such as FAA & EACS 23/25/27/29; Type Certification; Supplemental Type Certification; CAR-21 Design/Production Organization Approvals. Aircraft Modifications and repairs approval and certification Permit to fly requirements 		
			Documents <ul style="list-style-type: none"> Certificate of Airworthiness; Certificate of Registration; Noise Certificate; Weight Schedule; Radio Station License and Approval. 	2	10 Hrs
3.	----	10.6	CAR-M <ul style="list-style-type: none"> Detail understanding of CAR M provisions related to Continuing Airworthiness Detailed understanding of CAR-M. 	2	30 Hrs

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5.	----	10.8	Safety Management System <ul style="list-style-type: none">• State Safety Programme• Basic Safety Concepts• Hazards & Safety Risks• SMS Operation• SMS Safety performance• Safety Assurance	2	10 Hrs
6.	----	10.9	Fuel Tank Safety <ul style="list-style-type: none">• Special Federal Aviation Regulations (SFARs) from 14 CFR SFAR 88 of the FAA and of JAA TGL 47• Concept of CDCCL,• Airworthiness Limitations Items (ALI)	2	5 Hrs
TOTAL					100 Hrs

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MODULE 9 A. HUMAN FACTORS- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	-----	9.1	General <ul style="list-style-type: none"> • The need to take human factors into account; • Incidents attributable to human factors/human error; • 'Murphy's' law. 	2	6 Hrs
2.	-----	9.2	Human Performance and Limitations <ul style="list-style-type: none"> • Vision; • Hearing; • Information processing; • Attention and perception; • Memory; • Claustrophobia and physical access. 	2	7 Hrs
3.	-----	9.3	Social Psychology <ul style="list-style-type: none"> • Responsibility: individual and group; • Motivation and de-motivation; • Peer pressure; • 'Culture' issues; • Team working; • Management, supervision and leadership 	1	7 Hrs
4.	-----	9.4	Factors Affecting Performance <ul style="list-style-type: none"> • Fitness/health; • Stress: domestic and work related; • Time pressure and deadlines; • Workload: overload and underload; • Sleep and fatigue, shiftwork; • Alcohol, medication, drug abuse. 	2	7 Hrs
5.	-----	9.5	Physical Environment <ul style="list-style-type: none"> • Noise and fumes; • Illumination; • Climate and temperature; • Motion and vibration; 	1	7 Hrs

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			<ul style="list-style-type: none"> Working environment. 		
6.		9.6	Tasks <ul style="list-style-type: none"> Physical work; Repetitive tasks; Visual inspection; Complex systems. 	1	6 Hrs
7.		9.7	Communication <ul style="list-style-type: none"> Within and between teams; Work logging and recording; Keeping up to date, currency; Dissemination of information. 	2	7 Hrs
8.		9.8	Human Error <ul style="list-style-type: none"> Error models and theories; Types of error in maintenance tasks; Implications of errors (i.e. accidents) Avoiding and managing errors. 	2	7 Hrs
9.		9.9	Hazards in the Workplace <ul style="list-style-type: none"> Recognizing and avoiding hazards; Dealing with emergencies. 	2	6 Hrs
				TOTAL	60 Hrs

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MODULE: 3 (ELECTRICAL FUNDAMENTALS PART-A) – PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1	--	3-01	Identification of conductors, semiconductors and insulator & their	In House	3 Hrs
2	--	3-02	Associated with the Connection of the battery in series and parallel and calculation of the voltage	In House	4 Hrs
3	--	3-03	Verify the ohm law with experiments.	In House	4 Hrs
4	--	3-04	Verify the Kirchhoff law with experiment.	In House	3 Hrs
5	--	3-05	Fabricate the circuit containing the following appliance like, Switch, relay, shunt, bulb, ammeter, voltmeter, frequency meter, Fuse, circuit breaker, current limiter.	In House	6 Hrs
6	--	3-06	Identify the various types of resister and practice the value of colour code resister.	In House	3 Hrs
7	--	3-07	Demonstration of the resister in series ,parallel and in combination and measure the value of resister through AMM/DMM	In House	6 Hrs
8	--	3-08	With the simple electrical circuit demonstration of use of potentiometer and rheostat.	In House	4 Hrs
9	--	3-09	Application of Wheatstone Bridge to find out unknown resistance value.	In House	4 Hrs
10	--	3-10	Identify the various type of capacitor value; practice the value of color code capacitor, Connect the capacitor in series, parallel and in combination and measure the value of capacitor through capacitor meter.	In House	6 Hrs
11	--	3-11	Connect the inductor in series and parallel and measure the value of inductor through inductor meter. Verify the of faradays law of electromagnetic Induction	In House	7 Hrs
TOTAL					50 Hrs

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MODULE 7A. (MAINTENANCE PRACTICES PART-B)- PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFORMED ON		ALLOTTED HOURS
1	---	7A-95	Remove and refit aircraft access panels.	AIRCRAFT	2	1 Hrs
2	---	7A-96	Demonstration of the levelling of an aircraft	AIRCRAFT	2	1 Hrs
3	---	7A-97	Perform jacking of nose or tail wheel	AIRCRAFT	2	1 Hrs
4	---	7A-98	Perform jacking of complete aircraft	AIRCRAFT	2	1 Hrs
5	---	7A-99	Perform the use of chocks, sling ,trestle, ladder and other ground handling equipment	AIRCRAFT	2	2 Hrs
6	---	7A-100	Parking, mooring, chocking and grounding of aircraft	AIRCRAFT	2	1 Hrs
7	---	7A-101	Perform long time parking	AIRCRAFT	2	2 Hrs
8	---	7A-102	Perform the towing of aircraft	AIRCRAFT	2	2 Hrs
9	---	7A-103	Check the tire pressure and charge the hydraulic fluid in to the tank/reservoir of brakes	AIRCRAFT	2	2 Hrs
10	---	7A-104	Connect and use external electrical power in the aircraft	AIRCRAFT	2	2 Hrs
11	---	7A-105	Perform the fueling and defueling of aircraft	AIRCRAFT	2	2 Hrs
12	---	7A-106	Perform the de-icing operation	AIRCRAFT	2	2 Hrs
13	---	7A-107	Perform the special inspection schedule	AIRCRAFT	2	2 Hrs
14	---	7A-108	Perform the Dy. Penetrate color contrast on sample Job	LAB	3	2 Hrs
15	---	7A-109	Perform the Florescent Penetrant Inspection on sample job Magnetic particle NDT method for flaw detection.	LAB	3	2 Hrs
16	---	7A-110	Perform the Magnetic particle NDT method for flaw detection.	LAB	3	2 Hrs
17	---	7A-111	Perform the eddy current NDT method for flaw detection.	LAB	3	2 Hrs
TOTAL						29 Hrs

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THIRD SEMESTER TRAINING SYLLABUS

AVIONICS B2

SEMESTER – III (THEORY)

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 03	ELECTRICAL FUNDAMENTALS PART-B	AME 301	60
MODULE – 04	ELECTRONIC FUNDAMENTALS	AME 302	80
MODULE – 05	DIGITAL TECHNIQUES/ELECTRINICS INSTRUMENTS SYSTEM PART-A	AME 303	60
TOTAL			200

SEMESTER – III (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 03	ELECTRICAL FUNDAMENTALS PART-B	AME 304	50	00
MODULE – 04	ELECTRONIC FUNDAMENTALS	AME 305	80	00
MODULE – 05	DIGITAL TECHNIQUES/ELECTRINICS INSTRUMENTS SYSTEM PART-A	AME 306	50	00
TOTAL			180	

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MODULE 3. (ELECTRICAL FUNDAMENTALS) PART-B - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	3.12	DC Motor/Generator Theory <ul style="list-style-type: none"> • 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. 	2	15 Hrs
2.	---	3.13	AC Theory <ul style="list-style-type: none"> • Sinusoidal waveform: phase, period, frequency, cycle; 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; • Single/3 phase principles. 	2	10 Hrs
3.		3.14	Resistive (R), Capacitive (C) and Inductive (L) Circuits <ul style="list-style-type: none"> • Phase relationship of voltage and current in L, C and R circuits, parallel, series and series parallel; • Power dissipation in L, C and R circuits; • Impedance, phase angle, power factor 	2	5 Hrs

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			and current calculations; <ul style="list-style-type: none"> • True power, apparent power and reactive power calculations. 		
4.	---	3.15	Transformers <ul style="list-style-type: none"> • 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; • Calculation of power in a three phase system; • Primary and Secondary current, voltage, turns ratio, power, efficiency; • Auto transformers. 	2	6 Hrs
5.	---	3.16	Filters <ul style="list-style-type: none"> • Operation, application and uses of the following filters: low pass, high pass, band pass, band stop. 	1	4 Hrs
6.	---	3.17	AC Generators <ul style="list-style-type: none"> • 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. 	2	10 Hrs

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7.	---	3.18	AC Motors <ul style="list-style-type: none">• 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.	2	10 Hrs
TOTAL					60 Hrs

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MODULE 4. (ELECTRONICS FUNDAMENTALS) - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.		4.1	Semiconductors		
		4.1.1	Diodes		
			(a) <ul style="list-style-type: none"> • 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. 	2	15 Hrs
			(b) <ul style="list-style-type: none"> • Materials, electron configuration, electrical properties; • P and N type materials: effects of impurities on conduction, majority and minority characters; • PN junction in a semiconductor, development of a potential across a PN junction in unbiased, forward biased and reverse biased conditions; • Operation and function of diodes in the following circuits: clippers, clampers, full and half wave rectifiers, bridge rectifiers, voltage doublers and triplers; • 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. 	2	

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2.		4.1.2	Transistors	2	20 Hrs
			(a) <ul style="list-style-type: none"> • Transistor symbols; • Component description and orientation; • Transistor characteristics and properties. (b) <ul style="list-style-type: none"> • Construction and operation of PNP and NPN transistors; • Base, collector and emitter configurations; • Testing of transistors. • Basic appreciation of other transistor types and their uses. • Application of transistors: classes of amplifier (A, B, C); • Simple circuits including: bias, decoupling, feedback and stabilisation; • Multistage circuit principles: cascades, push-pull, oscillators, multivibrators, flip-flop circuits. 		
3.		4.1.3	Integrated Circuits.	2	15 Hrs
			(b) <ul style="list-style-type: none"> • 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. 		

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4.		4.2	Printed Circuit Boards. <ul style="list-style-type: none">Description and use of printed circuit boards	2	10 Hrs
5.		4.3	Servomechanisms. (b) <ul style="list-style-type: none">Understanding of the following terms: Open and closed loop, follow up, servomechanism, analogue, transducer, null, damping, feedback, deadband;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.	2	20 Hrs
TOTAL					80 Hrs

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MODULE -5 (DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS) PART -A THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTED HOURS
1.	---	5.1	Electronic Instrument Systems <ul style="list-style-type: none"> • Typical systems arrangements and cockpit layout of electronic instrument systems. 	3	5 Hrs
2.	---	5.2	Numbering Systems. <ul style="list-style-type: none"> • Numbering systems: binary, octal and hexadecimal; • Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. 	2	5 Hrs
3.	---	5.3	Data Conversion. <ul style="list-style-type: none"> • Analogue Data, Digital Data; • Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types. 	2	5 Hrs
4.	---	5.4	Data Buses. <ul style="list-style-type: none"> • Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. 	2	5 Hrs
5.	---	5.5	Logic Circuits. (a) <ul style="list-style-type: none"> • Identification of common logic gate symbols, tables and equivalent circuits; • Applications used for aircraft systems, schematic diagrams. (b) <ul style="list-style-type: none"> • Interpretation of logic diagrams. 	2	7 Hrs
6.	---	5.6	Basic Computer Structure. b) <ul style="list-style-type: none"> • 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; 	2	10 Hrs

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7.	---		<ul style="list-style-type: none">Memory associated terms;Operation of typical memory devices;Operation, advantages and disadvantages of the various data storage systems.		
8.	---	5.7	Microprocessors. <ul style="list-style-type: none">Functions performed and overall operation of a microprocessor;Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit.	2	10 Hrs
9.	---	5.8	Integrated Circuits. <ul style="list-style-type: none">Operation and use of encoders and decodersFunction of encoder typesUses of medium, large and very large scale integration.	2	7 Hrs
10.	---	5.9	Multiplexing. <ul style="list-style-type: none">Operation, application and identification in logic diagrams of multiplexers and demultiplexers.	2	6 Hrs
TOTAL					60 Hrs

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MODULE : 3 (ELECTRICAL FUNDAMENTALS PART-B)– PRACTICAL
LIST OF PRACTICAL CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1	--	3-12	Perform the brush inspection of DC generator.	In House	3 Hrs
2	--	3-13	Test the armature in Growler and through multimeter/test lamp	In House	2 Hrs
3	--	3-14	Operate the DC motor and Perform the direction reversing method of DC motor.	In House	4 Hrs
4	--	3-15	Measure the single phase, three phase, and DC Voltage by AMM/Multimeter.	In House	3 Hrs
5	--	3-16	Operate the AC motors & Perform reversing of direction of rotation of single phase and three phase Induction AC motors.	In House	4 Hrs
6	--	3-17	Perform the speed control of single phase and three phase Induction AC Motors.	In House	3 Hrs
7	--	3-18	Connect the single phase and three phase synchronous motor with starter.	In House	3 Hrs
8	--	3-19	Connect the DC alternator with voltage regulator and measure the Voltage at varying RPM of prime mover.	In House	2 Hrs
9	--	3-20	Connect the AC generator with voltage regulator and measure the Voltage at varying RPM of prime mover.	In House	3 Hrs
10	--	3-21	Fabricate the Transformer rectifier unit	In House	2 Hrs
11	--	3-22	Control the intensity of light by simple circuit.	In House	2 Hrs
12	--	3-23	Perform the connection of push to start and push to stop for electrical appliances light motors and lights.	In House	3 Hrs
13	--	3-24	Perform the operation of phase sequence relay.	In House	2 Hrs
14	--	3-25	Perform the operation of timer relay.	In House	2 Hrs

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15	--	3-26	Perform the star and delta wiring.	In House	2 Hrs
16	--	3-27	Demonstrate the operation of thermistor through experiments.	In House	4 Hrs
17	--	3-28	Demonstrate the operation of overload sensor with experiments.	In House	3 Hrs
18	--	3-29	Demonstrate the operation of overvoltage and under voltage relay with experiments.	In House	3 Hrs
TOTAL					50 Hrs

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MODULE : 4 (ELECTRONIC FUNDAMENTALS) – PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTTED HOURS
1	--	04-01	Identification of Electronics Components.	In House	8 Hrs
2	--	04-02	Identification and function of various types of Diodes.	In House	10 Hrs
3	--	04-03	Familiarization and working of PNP and NPN transistors.	In House	8 Hrs
4	--	04-04	Familiarization of Integrated Circuits.	In House	10 Hrs
5	--	04-05	Familiarization of Logic ICs(TTL, CMOS).	In House	8 Hrs
6	--	04-06	Familiarization of Operational Amplifier and its application.	In House	10 Hrs
7	--	04-07	Familiarization push-pull, oscillators, multivibrators, flip-flop circuits.	In House	10 Hrs
8	--	04-08	Familiarization of use of printed circuit boards.	In House	8 Hrs
9	--	04-09	Familiarization of Operational Servomechanisms.	In House	8 Hrs
Total					80 Hrs

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MODULE 05. (DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEM PART-A) - PRACTICAL
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1	--	05-01	Numbering systems - Conversion Practice	In House	5 Hrs
2	--	05-02	Numbering systems - Addition, Subtraction, Multiplication& Division.	In House	7 Hrs
3	--	05-03	Familiarization & application of Analog to Digital and Digital to Analog converters	In House	7 Hrs
4	--	05-04	Data bus and ARINC Systems.	In House	8 Hrs
5	--	05-05	Familiarization of ICs used in Logic Circuit: Basic, Universal and Special Logic Gates.	In House	5 Hrs
6	--	05-06	Basic Computer structure: Computer Hardware & Computer memory and Data storage devices.	In House	6 Hrs
7	--	05-07	Familiarization of Microprocessor and Microprocessor families.	In House	7 Hrs
8	--	05-08	Familiarization of Multiplexer and De-multiplexers	In House	5 Hrs
Total					50 Hrs

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FOURTH SEMESTER TRAINING SYLLABUS**AVIONICS B2****SEMESTER – IV (THEORY)**

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 05	DIGITAL TECHNIQUIS/ELECTRONICS ELECTRONICS INSTRUMENTS SYSTEMS PART-B	AME 401	60
MODULE – 06	MATERIAL & HARDWARE PART-A	AME 402	50
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-A (ELECTRICAL POWER)	AME 403	80
TOTAL			190

SEMESTER – IV (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 05	DIGITAL TECHNIQUIS/ELECTRONICS INSTRUMENTS SYSTEMS PART-B	AME 404	00	50
MODULE – 06	MATERIAL & HARDWARE PART-A	AME 405	50	00
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-A (ELECTRICAL POWER)	AME 406	20	34
TOTAL			70	84

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MODULE 5. (DIGITAL TECHNIQU/S/ELECTRONICS INSTRUMENTS
SYSTEMS PART-B) - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	5.10	Fibre Optics. <ul style="list-style-type: none"> • 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. 	2	7 Hrs
2.	---	5.11	Electronic Displays. <ul style="list-style-type: none"> • Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display. 	2	7 Hrs
3.	---	5.12	Electrostatic Sensitive Devices. <ul style="list-style-type: none"> • Special handling of components sensitive to electrostatic discharges; • Awareness of risks and possible damage, component and personnel anti-static protection devices. 	2	5 Hrs
4.	---	5.13	Software Management Control. <ul style="list-style-type: none"> • Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes. 	2	5 Hrs

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5.	---	5.14	Electromagnetic Environment. <ul style="list-style-type: none"> Influence of the following phenomena on maintenance practices for electronic system: <ul style="list-style-type: none"> EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection 	2	6 Hrs
6.	---	5.15	Typical Electronic/Digital Aircraft Systems. <ul style="list-style-type: none"> General arrangement of typical electronic/digital aircraft systems and associated BITE(Built In Test Equipment) testing such as: <ul style="list-style-type: none"> (a) For B1 and B2 only: <ul style="list-style-type: none"> ACARS-ARINC Communication and Addressing and Reporting System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System IRS-Inertial reference system (b) For B1, B2 and B3: <ul style="list-style-type: none"> ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System GPS-Global Positioning System TCAS-Traffic Collision Avoidance system Integrated modular Avionica Cabin System Information system 	2	30 Hrs
Total					60 Hrs

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MODULE 6. (MATERIALS AND HARDWARE PART-A)- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	6.1	Aircraft Materials — Ferrous		
			<ul style="list-style-type: none"> Characteristics, properties and identification of common alloy steels used in aircraft; Heat treatment and application of alloy steels; 	1	10 Hrs
			<ul style="list-style-type: none"> Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance. 	1	5 Hrs
2.	---	6.2	Aircraft Materials — Non-Ferrous		
			<ul style="list-style-type: none"> Characteristics, properties and identification of common non-ferrous materials used in aircraft; Heat treatment and application of non-ferrous materials; 	1	10 Hrs
			<ul style="list-style-type: none"> Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance. 	1	5 Hrs
3.	---	6.3	Aircraft Materials - Composite and Non- Metallic	2	10 Hrs
		6.3.1	Composite and non-metallic other than wood and fabric		
			<ul style="list-style-type: none"> Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents. 		
4.	---	6.4	Corrosion.		
			<ul style="list-style-type: none"> (a) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress; (b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion. 	1	10 Hrs
				2	
Total					60 Hrs

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MODULE 13. (AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-A) ELECTRICAL POWER - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	24	13.5	Electrical Power (ATA 24). <ul style="list-style-type: none"> • Batteries Installation and Operation; • DC power generation; • AC power generation; • Emergency power generation; • Voltage regulation; • Power distribution; • Inverters, transformers, rectifiers; • Circuit protection; • External/Ground 	3	40 Hrs
2.	33	13.9	Lights (ATA 33), <ul style="list-style-type: none"> • External: navigation, landing, taxiing, ice; • Internal: cabin, cockpit, cargo; • Emergency. 	3	10 Hrs
3.	26	13.12	Fire Protection (ATA 26). (a) <ul style="list-style-type: none"> • Fire and smoke detection and warning systems; • Fire extinguishing systems; • System tests; (b) <ul style="list-style-type: none"> • Portable fire extinguisher 	3 1	15 Hrs
4.	30	13.15	Ice and Rain Protection (ATA 30). <ul style="list-style-type: none"> • Ice formation, classification and detection; • Anti-icing systems: electrical, hot air and chemical; • De-icing systems: electrical, hot air, pneumatic, chemical; • Rain repellent; • Probe and drain heating; • Wiper Systems. 	2 2 3 1 3 1	15 Hrs
Total					80 Hrs

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MODULE 05. DIGITAL TECHNIQU/S/ELECTRONICS INSTRUMENTS
SYSTEMS PART-B)PRACTICALS
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTTED HOURS	
1	---	05-10	Familiarization of Fiber Optics cable and components.	Out Source	3 Hrs	
2	---	05-11	Familiarization of Displays used in modern aircrafts.	Out Source	3 Hrs	
3	---	05-12	Demonstration of Electrostatic Discharge Devices.	Out Source	3 Hrs	
4	---	05-13	Protection of Electronic System from Interference.	Out Source	4 Hrs	
5	---	05-14	Demonstration and use of BITE.	Out Source	4 Hrs	
6	---	05-15	Demonstration of EICAS.	Out Source	5 Hrs	
7	---	05-15	Demonstration of FMS.	Out Source	5 Hrs	
8	---	05-15	Demonstration of Fly by Wire System.	Out Source	5 Hrs	
9	---	05-15	Demonstration of IRS.	Out Source	4 Hrs	
10	---	05-15	Demonstration of ECAM.	Out Source	4 Hrs	
11	---	05-15	Demonstration of GPS.	Out Source	5 Hrs	
12	---	05-15	Demonstration of ACAS& TCAS.	Out Source	5 Hrs	
Total					Out Source = 50 Hrs	50 Hrs

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MODULE 06. (MATERIAL & HARDWARE PART-A) PRACTICALS

LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFORM-MED ON	ALLOTTED HOURS
1	---	06-01	Identification of Ferrous Metals	In House	4 Hrs
2	---	06-02	Testing of ferrous Metal.	In House	5 Hrs
3	---	06-03	Identification of Non-Ferrous Metals	In House	5 Hrs
4	---	06-04	Testing of Non-Ferrous Metals	In House	4 Hrs
5	---	06-05	sealant bonding agents	In House	4 Hrs
6	---	06-06	Identification of Composite.	In House	5 Hrs
7	---	06-07	Identification of Corrosion on Ferrous & Non-Familiarisation of ferrous Metals	In House	7 Hrs
8	---	06-08	Familiarisation of Heat treatment	In House	8 Hrs
9	---	06-09	Identification of common alloy steels used in aircraft;	In House	8 Hrs
Total					50 Hrs

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MODULE 13.(AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM PART-A)

ELECTRICAL POWER - PRACTICALS

LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFORM-MED ON	ALLOTTED HOURS
1	24	13-01	Installation and removal of batteries in Aircraft	Out Source	2 Hrs
2	24	13-02	Charging, Capacity test and Leak Test of Aircraft Batteries	In House	4 Hrs
3	24	13-03	Maintenance practices on Batteries	In House	5 Hrs
4	24	13-04	Maintenance practices and trouble shooting of DC Generator	Out Source	3 Hrs
5	24	13-05	Maintenance practices and trouble shooting of AC Generator	Out Source	3 Hrs
6	24	13-06	Familiarization of various types of Voltage regulators.	In House	5 Hrs
7	24	13-07	Familiarization of DC and AC bus bar in power distribution system.	Out Source	2 Hrs
8	24	13-08	Demonstration of inverters used in the aircraft.	In House	6 Hrs
9	24	13-09	Familiarization and Location of TRUs	Out Source	3 Hrs
10	24	13-10	Familiarization of various types of Transformer and their testing	Out Source	4 Hrs
11	24	13-11	Identification of various controlling & protection devices	Out Source	3 Hrs
12	24	13-12	Various sources of external power supply	Out Source	4 Hrs
13	26	13-13	Demonstration of Fire & Smoke detection system layout and components.	Out Source	4 Hrs
14	26	13-14	Demonstration of Portable fire extinguisher	Out Source	2 Hrs
15	30	13-15	Familiarisation of Icing, de-icing and anti-icing system, layout and components	Out Source	4 Hrs
Total				In House = 20 Hrs Out Source = 34 Hrs	54 Hrs

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FIFTH SEMESTER TRAINING SYLLABUS**AVIONICS B2****SEMESTER – V (THEORY)**

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 06	MATERIAL & HARDWARE PART-B	AME 501	70
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (INSTRUMENT, AUTO PILOT, COMPASS) PART-B	AME 502	120
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (AIRFRAME STRUCTURE) PART-C	AME 503	105
TOTAL			295

SEMESTER – V (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 06	MATERIAL & HARDWARE PART-B	AME 504	70	00
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (INSTRUMENT, AUTO PILOT, COMPASS) PART-B	AME 505	59	38
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (AIRFRAME SYSTEM) PART-C	AME 506	00	87
TOTAL			129	125

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MODULE 6. (MATERIALS AND HARDWARE) PART B- THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1.	---	6.5	Fasteners	2	10 Hrs
		6.5.1	Screw threads <ul style="list-style-type: none"> Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads; 		
2.	---	6.5.2	Bolts, studs and screws <ul style="list-style-type: none"> Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self-locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self-tapping screws, dowels. 	2	10 Hrs
3.	---	6.5.3	Locking devices <ul style="list-style-type: none"> Tab and spring washers, locking plates, split pins, palnuts, wire locking, quick release fasteners, keys, circlips, cotter pins. 	2	7 Hrs
4.	---	6.5.4	Aircraft rivets <ul style="list-style-type: none"> Types of solid and blind rivets: specifications and identification, heat treatment. 	1	7 Hrs
5.	---	6.6	Pipes and Unions <ul style="list-style-type: none"> Identification of, and types of rigid and flexible pipes and their connectors used in aircraft; 	2	4 Hrs
			<ul style="list-style-type: none"> Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes. 	1	2 Hrs
6.	---	6.7	Springs <ul style="list-style-type: none"> Types of springs, materials, characteristics and applications. 	1	4 Hrs
7.	---	6.8	Bearings <ul style="list-style-type: none"> Purpose of bearings, loads, material, construction; 	2	4 Hrs

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			<ul style="list-style-type: none"> Types of bearings and their application. 		
8.	---	6.9	Transmissions <ul style="list-style-type: none"> 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. 	2	6 Hrs
9.	---	6.10	Control Cables <ul style="list-style-type: none"> Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems. 	1	6 Hrs
10.	---	6.11	Electrical Cables and Connectors <ul style="list-style-type: none"> 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. 	2	10 Hrs
				TOTAL	70 Hrs

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MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM
(INSTRUMENT, AUTO PILOT, COMPASS) PART-B - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1	22	13.3	Auto flight (ATA 22). <ul style="list-style-type: none"> • 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; • Auto throttle systems; • Automatic Landing Systems: principles and categories, modes of operation, approach, glideslope, land, go-around, system monitors and failure conditions. 	3	50 Hrs
2.	31	13.8	Instruments (ATA 31). <ul style="list-style-type: none"> • Classification; Atmosphere; Terminology; • Pressure measuring devices and systems; • Pitot static systems; • Altimeters; • Vertical speed indicators; • Airspeed 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; 	3	60 Hrs

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			<ul style="list-style-type: none">• Compass systems;• Flight Data Recording systems;• Electronic Flight Instrument Systems;• Instrument warning systems including master warning systems and centralized warning panels;• Stall warning systems and angle of attack indicating systems;• Vibration measurement and indication;• Glass cockpit.		
3.		13.10	On Board Maintenance Systems (ATA 45). <ul style="list-style-type: none">• Central maintenance computers; Data loading system;• Electronic library system; Printing;• Structure monitoring (damage tolerance monitoring).	3	10 Hrs
Total					120 Hrs

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MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM
(AIRFRAME SYSTEM) PART-C - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1	21	13.11	Air Conditioning and Cabin Pressurisation (ATA21). 1) Air supply <ul style="list-style-type: none"> • Sources of air supply including engine bleed, APU and ground cart; 	2	10 Hrs
			2) Air Conditioning <ul style="list-style-type: none"> • Air conditioning systems; • Air cycle and vapour cycle machines; • Distribution systems; • Flow, temperature and humidity control system. 	2 3 1 3	
			3) Pressurisation <ul style="list-style-type: none"> • Pressurisation systems; • Control and indication including control and safety valves; • Cabin pressure controllers. 	3	
			4) Safety and warning devices <ul style="list-style-type: none"> • Protection and warning devices. 	3	
2.	28	13.13	Fuel Systems (ATA 28). <ul style="list-style-type: none"> • System lay-out; • Fuel tanks; • Supply systems; • Dumping, venting and draining; • Cross-feed and transfer; • Indications and warnings; • Refuelling and defuelling; • Longitudinal balance fuel systems. 	1 1 1 1 2 3 2 3	15 Hrs
3.	29	13.14	Hydraulic Power (ATA 29). <ul style="list-style-type: none"> • System lay-out; • Hydraulic fluids; • Hydraulic reservoirs and accumulators; • Pressure generation: electrical, mechanical, pneumatic; • Emergency pressure generation; • Filters; • Pressure control; • Power distribution; • Indication and warning systems; • Interface with other systems. 	1 1 1 3 3 1 3 1 3 3	15 Hrs

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4.	32	13.16	Landing Gear (ATA 32). <ul style="list-style-type: none"> • Construction, shock absorbing; • Extension and retraction systems: normal and emergency; • Indications and warnings; • Wheels, brakes, antiskid and autobraking; • Tyres; • Steering; • Air-ground sensing. 	1 3 3 3 1 3 3	15 Hrs
5.	35	13.17	Oxygen (ATA 35). <ul style="list-style-type: none"> • System lay-out: cockpit, cabin; 3 • Sources, storage, charging and distribution; 3 • Supply regulation; 3 • Indications and warnings. 	3	10 Hrs
6.	36	13.18	Pneumatic/Vacuum (ATA 36). <ul style="list-style-type: none"> • System lay-out; 2 • Sources: engine/APU, compressors, reservoirs, ground supply; 2 • Pressure control; 3 • Distribution; 1 • Indications and warnings; 3 • Interfaces with other systems. 	2 2 3 1 3 3	15 Hrs
7.	38	13.19	Water/Waste (ATA 38). <ul style="list-style-type: none"> • Water system lay-out, supply, distribution, servicing and draining; • Toilet system lay-out, flushing and servicing. 	2	5 Hrs
8.	44	13.21	Cabin Systems (ATA44). <ul style="list-style-type: none"> • The units and components which furnish a means of entertaining the passengers and providing communication within the aircraft (Cabin Intercommunication Data System) and between the aircraft cabin and ground stations (Cabin Network Service).Includes voice, data, music and video transmissions. • The Cabin Network Service typically consists on a server, typically interfacing with, among others, the following systems: 	3	10 Hrs

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			<p>— Data/Radio Communication, In-Flight Entertainment System</p> <p>The Cabin Network Service may host functions such as:</p> <ul style="list-style-type: none"> — Access to pre-departure/departure reports, — E-mail/intranet/Internet access, — Passenger database; Cabin Core System; In-flight Entertainment System; <p>External Communication System; Cabin Mass Memory System;</p> <p>Cabin Monitoring System; Miscellaneous Cabin System.</p> <ul style="list-style-type: none"> • The Cabin Intercommunication Data System provides an interface between cockpit/cabin crew and cabin systems. These systems support data exchange of the different related LRU's and they are typically operated via Flight Attendant Panels. 		
9.	46	13.22	<p>Information Systems (ATA46).</p> <ul style="list-style-type: none"> • 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. • Typical examples include Air Traffic and Information Management Systems and Network Server Systems. • Aircraft General Information System; • Flight Deck Information System; • Maintenance Information System; • Passenger Cabin Information System; • Miscellaneous Information System. 	3	10 Hrs
Total					105 Hrs

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MODULE 06. (MATERIAL & HARDWARE PART-B) PRACTICALS
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1		06-10	Identification of various threads.	In House	5 Hrs
2	---	06-11	Familiarization and Identification of Different type of bolts; Studs and Screws	In House	5 Hrs
3	---	06-12	Use of Torque Wrenches.	In House	4 Hrs
4	---	06-13	Use of Locking Devices.	In House	4 Hrs
5	---	06-14	Exercises on Wire Locking Techniques	In House	5 Hrs
6	---	06-15	Identification of Aircraft rivets.	In House	4 Hrs
7	---	06-16	Riveting Practice (Hand & Power)	In House	4 Hrs
8	---	06-17	Identification of Pipes, connectors and unions.	In House	5 Hrs
9	---	06-18	Identification of Spring.	In House	4 Hrs
10	---	06-19	Lubrication of bearings used in aircraft and engine.	In House	4 Hrs
11	---	06-20	Cleaning, Inspection and Lubrication of bearings.	In House	4 Hrs
12	---	06-21	Identification of different type of gears.	In House	5 Hrs
13	---	06-22	Identification of different type of control cables and their assemblies.	In House	5 Hrs
14	---	06-23	Identification of different type of aircraft electrical cables and connectors.	In House	5 Hrs
15	---	06-24	Crimping of Aircraft electrical cable terminal ends.	In House	7 Hrs
Total					70 Hrs

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(INSTRUMENT, AUTO PILOT, COMPASS) PART-B PRACTICALS
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTTED HOURS
1	22	13-16	Familiarization of Autopilot Controls and components	Out Source	1 Hrs
2	22	13-17	Understanding of Command Signal Processing and Data Transfer	Out Source	2 Hrs
3	22	13-18	Autopilot- Modes of operations	Out Source	2 Hrs
4	22	13-19	Demonstration of Stability Augmentation Systems experience and functional testing.	Out Source	3 Hrs
5	22	13-20	Demonstration of Automatic Flight Modes experience and Functional Testing	Out Source	3 Hrs
6	22	13-21	Demonstration of Auto throttle systems experience and Functional Testing.	Out Source	2 Hrs
7	22	13-22	Familiarization of Warning Flags on HSI and ADI Displays	Out Source	2 Hrs
8	31	13-23	Understanding of Pressure Measuring Devices and gauges	In House	8 Hrs
9	31	13-24	Instrument displays, panels and lay outs	Out Source	2 Hrs
10	31	13-25	Location of Pitot-Static System	Out Source	2 Hrs
11	31	13-26	Understanding of constructional details of Altimeters	In House	7 Hrs
12	31	13-27	Understanding of constructional details of Vertical Speed Indicator	In House	7 Hrs
13	31	13-28	Understanding of constructional details of Air Speed Indicator and MACH Meters	In House	8 Hrs
14	31	13-29	Demonstration of Air Data computer system	Out Source	3 Hrs
15	31	13-30	Understanding of Gyro Principles	In House	7 Hrs
16	31	13-31	Familiarization of Artificial Horizon	In House	7 Hrs

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17	31	13-32	Familiarization of Turn and Slip indicator	In House	8 Hrs
18	31	13-33	Familiarization of Directional Gyros	In House	7 Hrs
19	31	13-34	Demonstration of calibration of a Pitot Static System using a Pitot Static Leak tester.	Out Source	5 Hrs
20	31	13-35	Familiarization of Aircraft Altitude Reporting/Alerting System, layout and components.	Out Source	4 Hrs
21	31	13-36	Familiarization of Aircraft Direct Reading pressure and temperature gauges.	Out Source	3 Hrs
22	45	13-37	Onboard maintenance system: Central Maintenance Computer; Data Loading System; Electronic Library; Printing and Structure	Out Source	4 Hrs
In House = 59 Hrs					97 Hrs
Out Source = 38 Hrs					
Total					

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MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM
(AIRFRAME SYSTEM) PART-C PRACTICALS
LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTTED HOURS
1	21	13-38	Demonstration of airconditioning system, layout and components.	Out Source	3 Hrs
2	21	13-39	Familiarisation of air cycle and vapour cycle machine distribution system.	Out Source	2 Hrs
3	21	13-40	Familiarisation of Cabin pressurisation system, layout and components	Out Source	2 Hrs
4	21	13-41	Demonstration of with indication / warning system components	Out Source	4 Hrs
5	28	13-42	Familiarisation of fuel system, layout and components.	Out Source	3 Hrs
6	38	13-43	Demonstration of various types of lights used in aircraft system.	Out Source	3 Hrs
7	28	13-44	Familiarisation of fuel system, layout and components.	Out Source	4 Hrs
8	29	13-45	Understanding of principles of Hydraulics and terms associated with it.	Out Source	4 Hrs
9	29	13-46	Familiarization of different hydraulic fluids and quality control checks	Out Source	4 Hrs
10	29	13-47	Hydraulic systems, its various components, layout, and operational checks.	Out Source	4 Hrs
11	32	13-48	Familiarization of different types of landing gears	Out Source	5 Hrs
12	32	13-49	Functional test of typical extension/retraction system (Landing Gear)	Out Source	5 Hrs
13	32	13-50	Wheel Brake removal and installation	Out Source	5 Hrs
14	32	13-51	Wheel removal and installation	Out Source	5 Hrs
15	32	13-52	Landing gear safety devices and functional checks	Out Source	3 Hrs
16	35	13-53	Familiarization of aircraft oxygen system, components, layout, routing and plumbing	Out Source	4 Hrs

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17	35	13-54	Aircraft oxygen storage, charging, distribution, supply regulation and indication.	Out Source	5 Hrs
18	36	13-55	Aircraft pneumatic system layout and its components.	Out Source	4 Hrs
19	36	13-56	Familiarization of aircraft pneumatic/vacuum system pressure control, distribution and indication/ warnings	Out Source	3 Hrs
20	38	13-57	Familiarization of potable water supply and waste water management	Out Source	3 Hrs
21	38	13-58	Toilet system layout, Flushing and servicing	Out Source	3 Hrs
22	44	13-59	Cabin System: Cabin Network Service, Cabin Core System: Inflight Entertainment System; External Communication System, Cabin Mass Memory, Monitoring and Miscellaneous Cabin System	Out Source	4 Hrs
23	46	13-60	Familiarization of aircraft information system: Aircraft general information; Flight Deck information; Maintenance information, Passenger Cabin Information and Miscellaneous information	Out Source	5 Hrs
Out Source = 87 Hrs					87 Hrs
Total					

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SIXTH SEMESTER TRAINING SYLLABUS**AVIONICS B2****SEMESTER – VI (THEORY)**

MODULE	SUBJECT	SUBJECT CODE	ALLOTTED HOURS
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (RADIO, WEATHER RADAR) PART-D	AME 601	95
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (AIRFRAME STRUCTURE) PART-E	AME 602	50
MODULE – 14	PROPULSION	AME 603	50
TOTAL			195

SEMESTER – VI (PRACTICAL)

MODULE	SUBJECT	SUBJECT CODE	OTHER THAN ACTUAL WORKING ENVIRONMENT	ACTUAL WORKING ENVIRONMENT
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (RADIO, WEATHER RADAR) PART-D	AME 604	00	79
MODULE – 13	AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM (AIRFRAME STRUCTURE) PART-E	AME 605	14	15
MODULE – 14	PROPULSION	AME 606	00	40
TOTAL			14	134

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(RADIO, COMM., WEATHER RADAR) PART-D - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1	23/ 34	13.4	<p>Communication/Navigation (ATA 23/34).</p> <ul style="list-style-type: none"> • Fundamentals of radio wave propagation, antennas, transmission lines, communication, receiver and transmitter; • Working principles of following systems: <ul style="list-style-type: none"> — Very High Frequency (VHF) communication, — High Frequency (HF) communication, — Audio, — Emergency Locator Transmitters, — Cockpit Voice Recorder, — Very High Frequency omnidirectional range (VOR), — Automatic Direction Finding (ADF), — Instrument Landing System (ILS), — Microwave Landing System (MLS), — Flight Director systems, Distance Measuring Equipment (DME), — Very Low Frequency and hyperbolic navigation (VLF/Omega), — Doppler navigation, — Area navigation, RNAV systems, — Flight Management Systems, — Global Positioning System (GPS), Global Navigation Satellite Systems (GNSS), — Inertial Navigation System, — Air Traffic Control transponder, secondary surveillance radar, — Traffic Alert and Collision Avoidance System (TCAS), — Weather avoidance radar, — Radio altimeter, — ARINC communication and reporting. 	3	80 Hrs

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2.	42	13.20	Integrated Modular Avionics (ATA42). <ul style="list-style-type: none">• Functions that may be typically integrated in the Integrated Modular Avionic (IMA) modules are, among others:• 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.;• Core System; Network Components.	3	15 Hrs
TOTAL					95 Hrs

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MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM
(AIRFRAME STRUCTURE) PART-E - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1	---	13.1	Theory of Flight.	1	20 Hrs
			(a)	1	
			(c)	1	
2.	---	13.2	Structures — General Concepts.	1	10 Hrs
				2	

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3.	25	13.6	Equipment and Furnishings (ATA 25). <ul style="list-style-type: none"> • Electronic emergency equipment requirements; • Cabin entertainment equipment. 	3	10 Hrs
4.	27	13.7	Flight Controls (ATA 27). (a) <ul style="list-style-type: none"> • 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; (b) <ul style="list-style-type: none"> • System operation: electrical, fly-by-wire. 	2	10 Hrs
				3	
				TOTAL	

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MODULE 14. (PROPULSION) - THEORY

INDEX NO.	ATA	TASK NUMBER	DESCRIPTION	LEVEL	ALLOTTED HOURS
1	---	14.1	Turbine Engines. (a) <ul style="list-style-type: none"> • Constructional arrangement and operation of turbojet, turbofan, turbo shaft and turbo propeller engines; (b) <ul style="list-style-type: none"> • Electronic Engine control and fuel metering systems (FADEC). 	1 2	15 Hrs
2.	---	14.2	Engine Indicating Systems. <ul style="list-style-type: none"> • Exhaust gas temperature/Inter stage 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. 	2	20 Hrs
3.	---	14.3	Starting and Ignition Systems. <ul style="list-style-type: none"> • Operation of engine start systems and components; • Ignition systems and components; • Maintenance safety requirements. 	2	15 Hrs
Total					50 Hrs

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LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTTED HOURS
1	23/ 34	13-61	Propagation of waves, Ground waves, Sky waves propagation, Space waves and its application in Communication System	Out Source	4 Hrs
2	23/ 34	13-62	Understanding of Communication Systems HF-VHF	Out Source	4 Hrs
3	23/ 34	13-63	Understanding of AM, FM and PM	Out Source	3 Hrs
4	23/ 34	13-64	Understanding of VHF Trans receiver and its components	Out Source	3 Hrs
5	23/ 34	13-65	Demonstration of HF/VHF transmitter & Receiver.	Out Source	4 Hrs
6	23/ 34	13-66	Demonstration of CVR	Out Source	2 Hrs
7	23/ 34	13-67	Identification and location of various components of ATC Transponder	Out Source	3 Hrs
8	23/ 34	13-68	Identification and location of TACAS and ACAS	Out Source	2 Hrs
9	23/ 34	13-69	Familiarization of Data Bus by ARINC Communication.	Out Source	4 Hrs
10	23/ 34	13-70	Understanding of ELT and its frequencies	Out Source	5 Hrs
11	23/ 34	13-71	Demonstration VOR systems using appropriate test equipment	Out Source	2 Hrs
12	23/ 34	13-72	ADF component identification and functional test.	Out Source	5 Hrs
13	23/ 34	13-73	Demonstration ILS testing with appropriate test equipment	Out Source	3 Hrs
14	23/ 34	13-74	Understanding of MLS and principle of operation.	Out Source	4 Hrs
15	23/ 34	13-75	Demonstration of Distance Measuring equipment with appropriate test equipment.	Out Source	5 Hrs

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16	23/ 34	13-76	Demonstration of Radio Altimeter appropriate test equipment	Out Source	4 Hrs
17	23/ 34	13-77	Understanding of VLF and Hyperbolic Navigation System	Out Source	3 Hrs
18	23/ 34	13-78	Understanding of Doppler Navigation and operational principle.	Out Source	3 Hrs
19	23/ 34	13-79	Understanding of Area Navigation and RNAV System	Out Source	4 Hrs
20	23/ 34	13-80	Demonstration Global Positioning System and Global Navigation Satellite system.	Out Source	3 Hrs
21	23/ 34	13-81	Demonstration of Inertial Navigation System Monitoring.	Out Source	4 Hrs
22	42	13-82	Integrated Modular Avionics system.	Out Source	5 Hrs
Out Source = 79 Hrs					79 Hrs
Total					

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SIGNATURE OF QUALITY MANAGER

MAINTENANCE TRAINING ORGANISATION
EXPOSITION (MTOE)
(Organisation Seal)



MAINTENANCE TRAINING ORGANISATION EXPOSITION PART 4: APPENDICES

DOC NO:	ARDC/BMTO/MTOE/01	
ISSUE NUMBER AND DATE	01	FEB 2021
REVISION NUMBER & DATE	01	JUN 2022

MODULE 13. AIRCRAFT AERODYNAMICS, STRUCTURE & SYSTEM

(AIRFRAME STRUCTURE) PART-E PRACTICALS

LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1	---	13-83	Understanding of Flight Controls and its operations	In House	7 Hrs
2	---	13-84	Understanding of Aircraft Stability	In House	7 Hrs
3	---	13-85	Understanding of Helicopter Stability	Out Source	7 Hrs
4	---	13-86	Familiarization of trim tabs, servo tabs, control surface bias;	Out Source	5 Hrs
5	25	13-87	electronic emergency equipment and cabinet entertainment equipment	Out Source	3 Hrs
In House = 14 Hrs Out Source = 15 Hrs					29 Hrs
Total					

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MODULE 14. (PROPULSION) -PRACTICALS

LIST OF PRACTICALS CARRIED OUT AT INHOUSE/OUTSOURCE

INDEX NO.	ATA	TASK NUMBER	BASIC PRACTICAL TASKS	PERFOR-MED ON	ALLOTED HOURS
1	---	14-01	Familiarization of Constructional details, location and parts of turbo Jet Engine.	Out Source	3 Hrs
2	---	14-02	Familiarization of Constructional details, location and parts of Turbo Prop Engines.	Out Source	3 Hrs
3	---	14-03	Familiarization of Constructional details, location and parts of Turbo Shaft Engines.	Out Source	3 Hrs
4	---	14-04	Familiarization of Constructional details, location and parts of Turbo Fan Engines.	Out Source	3 Hrs
5	---	14-05	Demonstration of Electronic Engine Control and Fuel Metering System (FADEC).	Out Source	2 Hrs
6	---	14-06	Familiarisation of Engine Indicating System, layout and components.	Out Source	2 Hrs
7	---	14-07	Familiarization of Starting operation, Ignition system.	Out Source	8 Hrs
8	---	14-08	Familiarization of Maintenance safety requirements	Out Source	8 Hrs
9	---	14-09	Demonstration of Propeller speed.	Out Source	8 Hrs
Out Source = 40 Hrs					40 Hrs
Total					

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