Saskatchewan Apprenticeship and Trade Certification Commission

Apprenticeship

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Aircraft Maintenance Engineer Technician

Provincial Occupational Analysis

January 2000

Block	Task	Subtask	Knowledge, Skills & Abilities
A. Uses safe work practices	A1. Applies accident prevention principles and practices to the workplace	A1.1 Identifies the dangers of working in an aircraft operations area A1.2 Follows safety precautions when performing work on aircraft A1.3 Follows correct procedures for securing land and seaplanes A1.4 Understands the conditions under which aircraft can be jacked and hoisted A1.5 Uses safe procedures to jack and hoist aircraft A1.6 Conducts ground movement of aircraft safely	Knowledge of personal protective equipment Ability to maintain, clean and store personal protective equipment Knowledge of proper procedures for securing land and sea planes Knowledge of safe jacking and hoisting procedures Ability to use safe jacking procedures Knowledge of standard marshalling techniques for aircraft Knowledge of the procedures necessary for the safe movement of aircraft by towing Knowledge of the conditions necessary for the safe movement of aircraft by taxiing
	A2. Applies WHMIS	A2.1 Interprets WHMIS labels A2.2 Interprets WHMIS material safety data sheets	Knowledge of WHMIS Ability to apply WHMIS
	A3. Follows fire protection procedures	A3.1 Identifies fire extinguisher type appropriate to fire class A3.2 Employs proper fire extinguisher techniques	Knowledge of fire classes Knowledge of fire extinguisher types Ability to use fire extinguisher appropriately
B. Understands service equipment and servicing	B1. Identifies basic ground servicing equipment and purpose	B1.1 Understands the purpose of a variety of ground servicing equipment	Knowledge of ground servicing equipment
	B2. Recognises aviation fuels and procedures for refueling	B2.1 Identifies types of aviation fuels B2.2 Describes the correct handling of fuels with regard to contamination and control B2.3 Describes the requirements and procedures for fuelling and	Knowledge of various grades, markings and specifications of aviation fuels Knowledge of fuel contamination and control Knowledge of the requirements and procedures for fuelling and

		defueling of aircraft B2.4 Identifies common aviation fuel additives and their purpose	defuelling aircraft Ability to identify common aviation fuel additives and their purpose
	B3. Identifies aviation grease types and performance	B3.1 Identifies the basic types and performance characteristics of aviation greases	Knowledge of the basic types of aviation greases Knowledge of the characteristics of aviation greases
	B4. Demonstrates acceptable practices for care of aircraft exteriors and interiors	B4.1 Identifies acceptable practices for care of aircraft exteriors and interiors	Knowledge of acceptable practices for care of aircraft exteriors and interiors
C. Uses hand tools	C1. Uses and maintains hand tools including measuring and layout tools	C1.1 Identifies hand tools C1.2 Uses hand tools safely for appropriate applications C1.3 Maintains hand tools C1.4 Identifies measuring and layout tools C1.5 Performs safetying using hand tools	Ability to identify, use and maintain a variety of hand tools Ability to identify a wide variety of measuring and layout tools Ability to use precision measuring tools and interpret readings Ability to safety wire lock bolts, screws and nuts, safety wire lock electrical plugs, safety lock turnbuckles using wire and clip-type locks and install cotter pins in nuts and clevis pins
D. Understands aircraft hardware and cable types, specifications and standards	D1. Identifies common aircraft hardware specifications and standards organizations	D1.1 Identifies common aircraft hardware specifications D1.2 Identifies standards organizations	Knowledge of common aircraft hardware specifications Knowledge of reasons for standards and specifications
	D2. Recognises aircraft hardware types and use	D2.1 Identifies aircraft hardware, materials used in manufacture, marking, classifications D2.2 Identifies condition of use	Knowledge of aircraft hardware Knowledge of materials used to manufacture aircraft hardware Knowledge of conditions under which hardware is used
	D3. Identifies steel aircraft cable types and use	D3.1 Identifies three types of steel aircraft cable D3.2 Identifies condition of use D3.3 Identifies cable terminations	Knowledge of steel aircraft cable Knowledge of condition of use Knowledge of cable terminations
	D4. Specifies types of non-metallic aircraft hardware	D4.1 Identifies various non-metallic aircraft hardware	Knowledge of o-rings, seals, bungee cords, sealants, phenolic
	D5. Identifies methods of safetying aircraft hardware	D5.1 Identifies methods of safetying aircraft hardware	Knowledge of the methods of safetying aircraft hardware

E. Installs fluid lines and fittings	E1. Interprets specifications and standards for fluid lines and fittings	E1.1 Identifies rigid fluid lines by approved identification systems E1.2 Identifies flexible hoses by approved identification systems E1.3 Defines the measurement of rigid and flexible lines	Knowledge of specifications and standards for fluid lines and fittings Knowledge of approved identification systems Knowledge of the measurement of rigid and flexible lines
	E2. Recognises types of lines	E2.1 Understands materials in rigid fluid line applications E2.2 Identifies construction and application of low, medium and high pressure flexible hoses	Knowledge of materials in rigid fluid lines Knowledge of materials and application of flexible hoses
	E3. Recognises types of fittings	E3.1 Recognises various types of fittings used in fluid line applications E3.2 Understands proper installation techniques for flareless fittings E3.3 Recognises the difference between AN, AC and automotive flared fittings	Knowledge of fittings used in fluid line systems Knowledge of proper installation techniques for flareless fittings Knowledge of difference between AN, AC and automotive flared fittings
	E4. Fabricates lines	E4.1 Fabricates a rigid line using tube cutters, tube benders and flaring tools E4.2 Fabricates a bead on a low pressure line	Ability to fabricate a rigid line using tube cutters, tube benders and flaring tools Ability to fabricate a bead on a low pressure fluid line
	E5. Installs lines and fittings	E5.1 Installs reusable fittings on flexible hose E5.2 Installs rigid tubing in aircraft E5.3 Installs flexible hose assemblies in aircraft	Ability to install reusable fittings on flexible hose Ability to install rigid tubing Ability to install flexible hose assemblies in aircraft
	E6. Repairs rigid lines	E6.1 Repairs rigid lines	Ability to repair rigid lines
F. Repairs airframe fuel systems	F1. Recognises basic fuel system requirements	F.1 1 Recognises basic fuel system requirements in aircraft F1.2 Identifies fuel system movement in single engine and multi-engine aircraft fuel systems	Knowledge of basic aircraft fuel system requirements Knowledge of fuel system movement in single engine and multi-engine aircraft
	F2. Identifies, diagnoses and repairs/replaces fuel system components	F2.1 Understands construction and advantages of various components F2.2 Identifies component operation	Knowledge of fuel tanks and filler caps, fuel selector and shutoff valves, and common types of fuel pumps

		F2.3 Repairs/replaces components	Ability to locate and service fuel sump drains and fuel filters Knowledge of fuel heating systems used on turbine engines Knowledge of fuel quantity indicators, flowmeters, temperature and pressure gauges Ability to repair/replace components
	F3. Tests fuel tanks	F3.1 Uses correct procedures to seal and test fuel tanks	Knowledge of correct procedures for testing fuel tanks
	F4. Repairs fuel tanks	F4.1 Uses correct procedures to repair fuel tanks using manufacturer's specifications and all safety precautions F4.2 Uses safe procedures for fueling and defueling of aircraft	Ability to repair fuel tanks safely Ability to fuel and defuel aircraft safely
G. Repairs hydraulic/pneumatic power systems	G1. Understands fluid dynamics	G1.1 Analyses the relationship between pressure, force and area in hydraulics G1.2 Analyses the relationship between area, distance and volume in hydraulics	Knowledge of the relationship between pressure, force and area in hydraulics Knowledge of the relationship between area, distance and volume in hydraulics
	G2. Identifies hydraulic fluids and seals	G2.1 Defines the viscosity, chemical stability, flash point and fire point characteristics of hydraulic fluids G2.2 Identifies the three types of hydraulic fluids G2.3 Identify the seals used with each type of fluid G2.4 Describe the health hazards, first aid treatment and safety requirements when handling hydraulic fluid	Knowledge of characteristics of hydraulic fluids Knowledge of types of hydraulic fluids Ability to identify seals Knowledge of safety measures
	G3. Identifies hydraulic system components	G3.1 Identifies function and operating principles of in-line and integral reservoirs G3.2 Understands function and operation of hydraulic filters G3.3 Identifies the construction and operation of hydraulic pumps	Knowledge of construction, function, operating principles and installation of in-line and integral reservoirs, hydraulic filters, pumps, valves, accumulators, actuators and seals in hydraulic systems

		G3.4 Understands the operation of flow control and pressure control valves G3.5 Understands the operation and servicing of piston, bladder and diaphragm type accumulators G3.6 Understands the operation of linear and rotary actuators G3.7 Uses proper installation procedures and precautions for seals in a given hydraulic system or component	
	G4. Installs hydraulic system components	G4.1 Installs hydraulic system components	Ability to install hydraulic system components
	G5. Services hydraulic system components	G5.1 Services hydraulic system components	Ability to service hydraulic system components
	G6. Verifies the correct functioning of hydraulic systems in an aircraft	G6.1 Understands the operation of various hydraulic systems used in an aircraft G6.2 Understands the operation of an aircraft hydraulic system that has a utility and an auxiliary system	Knowledge of various aircraft hydraulic systems Knowledge of utility and auxiliary systems in aircraft hydraulic systems
	G7. Recognises operation of pneumatic systems	G7.1 Describes the operation and maintenance of high pressure pneumatic systems G7.2 Understands the relative advantages and disadvantages of pneumatic and hydraulic systems G7.3 Understands how a pneumatic backup system allows emergency extension of hydraulically operated landing gear and emergency braking	Knowledge of operation and maintenance of high pressure pneumatic systems Knowledge of the relative advantages and disadvantages of pneumatic and hydraulic systems Ability to understand how a pneumatic backup system allows emergency extension of hydraulically operated landing gear and emergency braking
	G8. Identifies pneumatic system components	G8.1 Describes the function and operation of relief, control and check valves G8.2 Understands the need for restrictions in a pneumatic system G8.3 Understands the adjustment of variable restrictors	Knowledge of the function and operation of pneumatic valves Knowledge of the need for restrictions in a pneumatic system Knowledge of the types of filters used in pneumatic systems Knowledge of the operation of a

		G8.4 Describes the types of filters used in pneumatic systems G8.5 Understands the operation of a moisture separator and dessicant unit G8.6 Describes pneumatic shuttle valve operation	moisture separator and dessicant unit Knowledge of pneumatic shuttle valve operation
	G9. Repairs/replaces hydraulic system components	G9.1 Identifies and explains the operation of various hydraulic systems used in aircraft G9.2 Explains the operation of an aircraft hydraulic system that has a utility and an auxiliary system	Ability to identify and explain the operation of various hydraulic systems used in aircraft Ability to explain the operation of an aircraft hydraulic system that has a utility and an auxiliary system
H. Service, maintain and repair landing gear systems	H1. Identifies landing gear types	H1.1 Understands tailwheel, tricycle and tandem type wheel arrangements for landing gear H1.2 Identifies typical nose and tailwheel steering systems	Knowledge of tailwheel, tricycle and tandem type wheel arrangements for landing gear Ability to identify typical nose and tailwheel steering systems
	H2. Recognises the function of landing gear components	H2.1 Identifies the purpose and types of shimmy dampers H2.2 Specifies the relative advantages of fixed and retractable landing gear, amphibious aircraft, floats and skiis H2.3 Recognises landing gear shock absorbing systems H2.4 Services oleo struts following accepted safety precautions	Knowledge of shimmy dampers Knowledge of the relative advantages of fixed and retractable landing gear, amphibious aircraft, floats and skiis Ability to recognise landing gear shock absorbing systems Ability to service oleo struts following accepted safety precautions
	H3. Verifies landing gear alignment, retraction and maintenance	H3.1 Identify toe-in, toe-out and camber H3.2 Specify the measurement and adjustment of each H3.3 Describe the operation of landing gear retraction/extension systems H3.4 Identify the function of components of the system H3.5 Describe various emergency extension systems H3.6 Understands retractable	Knowledge of toe-in, toe-out and camber Ability to specify the measurement and adjustment of each Knowledge of the operation of landing gear retraction/extension systems Ability to identify the function of components of the system Knowledge of various emergency extension systems Knowledge of retractable landing

		landing gear safety devices H3.7 Identifies rigging and maintenance items for retractable landing gear systems	gear safety devices Knowledge of rigging and maintenance items for retractable landing gear systems
	H4. Determines maintenance and repair for wheel assemblies	H4.1 Identifies the common materials and designs of aircraft wheels H4.2 Removes wheel assembly from aircraft following strict safety precautions H4.3 Disassembles wheel assembly H4.4 Inspects wheel assembly in accordance with manufacturer's specifications H4.5 Mounts tire, balances wheel, lubricates bearings and installs on aircraft to manufacturer's specifications	Knowledge of the common materials and designs of aircraft wheels Ability to remove a wheel assembly from aircraft following strict safety precautions Ability to disassemble a wheel assembly Ability to inspect a wheel assembly in accordance with manufacturer's specifications Ability to mount a tire, balance wheel, lubricate bearings and install on aircraft to manufacturer's specifications
	H5. Maintains aircraft tires and tubes	H5.1 Describes aircraft tire construction, wear limits, classification and storage H5.2 Describes aircraft tube construction, classification and storage H5.3 Identifies types of tire damage H5.4 Establishes causes of tire damage	Knowledge of aircraft tire construction, wear limits, classification and storage Knowledge of aircraft tube construction, classification and storage Ability to identify types of tire damage Knowledge of causes of tire damage
	H6. Maintains brake assemblies	H6.1 Identifies various types of aircraft braking systems H6.2 Understands the operation of aircraft braking systems H6.3 Determines the operation of independent master cylinders, boosted brakes and power brakes H6.4 Inspects, services and troubleshoots brake assemblies H6.5 Understands the operation of antiskid systems	Knowledge of various types of aircraft braking systems Knowledge of the operation of aircraft braking systems Knowledge of the operation of independent master cylinders, boosted brakes and power brakes Ability to inspect, service and troubleshoot brake assemblies Knowledge of the operation of antiskid systems
	H7. Maintains skiis and floats	H7.1 Identifies ski ski components and their function	Knowledge of ski components Knowledge of ski component

		H7.2 Describes basic installation and rigging procedures for skiis H7.3 Identifies inspection and repair methods for skiis H7.4 Identifies float components and state their function H7.5 Describes basic installation and rigging procedures for floats H7.6 Identifies inspection and basic repair methods for floats	function Ability to inspect and repair skiis Knowledge of float components and their function Knowledge of basic installation and rigging procedures for floats Ability to inspect and repair floats
I. Maintains structures/assembly and rigging	I1. Identifies aircraft structure types	I1.1 Understands the development of aircraft structural design	Knowledge of aircraft structural design
	I2. Identifies airfoil construction	I2.1 Understands various types of wing construction I2.2 Identifies how aerodynamic principles act upon an airfoil I2.3 Identifies loads placed upon wing spars	Knowledge of various types of wing construction Ability to identify how aerodynamic principles act upon an airfoil Knowledge of loads placed upon wing spars
	I3. Maintains flight controls and auxiliary lift devices	I3.1 Identifies the three axes about which an aircraft can rotate I3.2 Understands how each of the three axes rotations are controlled I3.3 Understands the construction and configuration of aircraft flight controls I3.4 Identifies differences between various types of flaps, slats and slots used to modify lift I3.5 Explains operation of various types of flaps, slats and slots used to modify lift I3.6 Identifies and explains operation of various types of trim and control tabs I3.7 Identifies operation of spoilers and speed brakes I3.8 Recognises the effect of stall strips and vortex generators	Knowledge of axes and rotation Knowledge of aircraft flight controls construction and configuration Ability to identify difference between and explain operation of flaps, slats and slots used to modify lift Knowledge of trim and control tabs Knowledge of spoiler and speed brake operation Knowledge of stall strips and vortex generators
	I4. Maintains fuselage	I4.1 Identifies the Pratt and the Warren types of truss construction I4.2 Understands the monocoque	Knowledge of Pratt and the Warren types of truss construction Knowledge of monocoque and semi-

		and semi-monocoque types of stressed-skin structure	monocoque types of stressed-skin structure
	I5. Identifies aerodynamic principles	I5.1 Identifies the laws of physics that affect aerodynamics I5.2 Identifies the aerodynamic effect of special wing tips, winglets, wing fences, canard surfaces and T-tail configurations I5.3 Identifies the design factors used to create stability	Knowledge of laws of physics that affect aerodynamics Knowledge of aerodynamics of winglets, wing fences, canard surfaces and T-tail configurations Knowledge of design factors used to create stability
	I6. Maintains assembly and rigging	I6.1 Identifies wing installation and alignment procedures I6.2 Locates the control surface travel specifications for a given aircraft I6.3 Recognises control system components and their method of operation I6.4 Installs and adjusts primary and secondary controls I6.5 Inspects control cable systems I6.6 Replaces control cables I6.7 Adjusts cable tensions after rigging is completed I6.8 Adjusts safety turnbuckles after rigging is completed	Knowledge of wing installation and alignment procedures Ability to locate the control surface travel specifications for a given aircraft Ability to recognise control system components and their method of operation Ability to install and adjust primary and secondary controls Ability to inspect control cable systems Ability to replace control cables Ability to adjust cable tensions after rigging is completed Ability to adjust safety turnbuckles after rigging is completed
J. Applies Aeronautics Act, Air Regulations, Canadian Aeronautics Code, Information and Airworthiness Publications, Stores Procedures and Log Books	J1. Applies Aeronautics Act	J1.1 Defines terminology found in interpretation of the Aeronautics Act J1.2 Locates and explains information found in the Aeronautics Act part 1, 3 and 4	Knowledge of terminology found in the Aeronautics Act Ability to locate and explain information found in the Aeronautics Act part 1, 3 and 4
	J2. Applies Air Regulations and Canadian Aeronautics Code Series II	J2.1 Locates and interprets information contained in air Regulations part I and VIII J2.2 Describes the procedure to obtain and maintain a certificate of airworthiness J2.3 Describes the procedure to obtain and maintain a certificate of	Ability to locate and interpret information contained in air Regulations part I and VIII Knowledge of the procedure to obtain and maintain a certificate of airworthiness Knowledge of the procedure to obtain and maintain a certificate of

		registration J2.4 States the requirements for identification markings and plates on an aircraft, engine, propeller, component and appliance J2.5 Describes the specifications for aircraft identification marks J2.6 Describes the procedure for import and export of aircraft	registration Knowledge of the requirements for identification markings and plates on an aircraft, engine, propeller, component and appliance Ability to describe the specifications for aircraft identification marks Ability to describes the procedure for import and export of aircraft
	J3. Applies the regulations of the Personnel Licensing Handbook	J3.1 Describes the function of the Personnel Licensing Handbook volume 2 part 1 J3.2 Identifies requirements to obtain and maintain an aircraft maintenance engineer license in various categories J3.3 Identifies the requirements to obtain a type endorsement on an aircraft maintenance engineer's license	Knowledge of the function of the Personnel Licensing Handbook volume 2 part 1 Knowledge of requirements to obtain and maintain an aircraft maintenance engineer license in various categories Ability to identifiy the requirements to obtain a type endorsement on an aircraft maintenance engineer's license
	J4. Applies the ATA 100 System	J4 1 Explains the purpose of the Air Transport Association of America system J4.2 Locates information found in technical publications using the A.T.A. system	Knowledge of the function of the Personnel Licensing Handbook volume 2 part 1 Knowledge of the r requirements to obtain and maintain an aircraft maintenance engineer license in various categories Ability to identify the requirements to obtain a type endorsement on an aircraft maintenance engineer's license
	J5. Knowledge of Technical Publications	J5.1 Describes technical information found in aircraft type approvals /certificate and supplemental type approvals/certificate J5.2 Identifies the use of technical publications relating to aircraft maintenance J5.3 Identifies manufacturers '	Knowledge of technical information found in aircraft type approvals /certificate and supplemental type approvals/certificate Ability to use technical publications relating to aircraft maintenance including: maintenance, parts, overhaul, structural repair, flight and wiring diagram manuals

		service bulletin compliance requirements	Knowledge of manufacturers ' service bulletin compliance requirements
	J6. Knowledge of Information Publications	J6.1 Explains the function and procedure for submitting service difficulty reports J6.2 Describes the purpose of aviation publications J6.3 Describes the information contained in aviation publications	Knowledge of the function and procedure for submitting service difficulty reports Knowledge of the purpose of aviation publications such as service difficulty advisories, service difficulty alerts, "feed back", "maintainer", and advisory circulars Ability to describe the information contained in aviation publications
	J7. Knowledge of Airworthiness Publications	J7.1 Explains airworthiness notices function, subject grouping and distribution criteria J7.2 Locates and interprets information pertinent to aircraft maintenance engineers contained in air navigation series I, II, IV, V, VII, VIII J7.3 Explains the function of the airworthiness manual and airworthiness manual advisories J7.4 Locates and interprets information contained in specific airworthiness manual chapters	Knowledge of airworthiness notices function, subject grouping and distribution criteria Ability to locate and interpret information pertinent to aircraft maintenance engineers contained in air navigation series I, II, IV, V, VII, VIII Knowledge of the function of the airworthiness manual and airworthiness manual advisories Ability to locate and interpret information contained in specific airworthiness manual chapters: 501 definition of terms 505 delegation of authority 507 general procedures 511 type approval: aeronautical products 513 design approval: modification and repair
	J8. Identifies Stores Procedures	J8.1 Explains the requirements for product control and parts identification J8.2 Explains the term, function, and control of quarantine stores	Knowledge of the requirements for product control and parts identification Ability to explain the term, function, and control of quarantine

			stores
	J9. Interprets Airworthiness Publications	J9.1 Locates and interprets information contained in specific airworthiness standards	Ability to locate and interpret airworthiness standards for aircraft emissions, gliders, normal, utility, aerobatic and commuter category airplanes, transport category airplanes, manned free balloons, aircraft engines, propellers, appliances, amateur built aircraft, manufacture of aeronautical products and distribution of aeronautical products
	J10. Follows Log Book Procedures	J10.1 Enters information in journey and technical log books	Knowledge of entry and certification requirements for journey and technical log books
K. Repairs reciprocating engines and systems	K1. Defines reciprocating engines	K10.1 Defines the difference between air-cooled and liquid-cooled engines K10.2 Determines the cylinder arrangement and numbering system of radial, in-line, V-type and opposed engines K10.3 Identifies the advantages and limitations of various designs of reciprocating engines K10.4 Interprets standard engine designations	Knowledge of the difference between air-cooled and liquid-cooled engines Ability to determine the cylinder arrangement and numbering system of radial, in-line, V-type and opposed engines Ability to identify the advantages and limitations of various designs of reciprocating engines Ability to interpret standard engine designations
	K2. Recognises principles of energy transformation	K2.1 Identifies the sequence of five events that occur during the operation of an internal combustion engine K2.2 Defines the principles of operation of a two-stroke and four-stroke engine K2.3 Defines horsepower K2.4 Specifies the difference between brake, friction and indicated horsepower K2.5 Describes the factors that affect the power output of an engine	Knowledge of the sequence of five events that occur during the operation of an internal combustion engine Ability to define the principles of operation of a two-stroke and four-stroke engine Ability to defines horsepower Knowledge of the difference between brake, friction and indicated horsepower Ability to describes the factors that affect the power output of an engine

	K3. Identifies the construction and design of reciprocating engines	K3.1 Explains the design factors that affect an engine's application in an aircraft	Knowledge of the design factors that affect an engine's application in an aircraft
		K3.2 Identifies the major components and operation of radial and opposed engines	Knowledge of the major components and operation of radial and opposed engines
		K3.3 Specifies the function and construction of radial and opposed engine crankcases	Knowledge of the function and construction of radial and opposed engine crankcases
		K3.4 Performs engine mounting using correct provisions	Ability to perform engine mounting using correct provisions
		K3.5 Recognises different types of crankshaft function and construction	Ability to recognise different types of crankshaft function and construction
		K3.6 Identifies static balance, dynamic balance and dynamic dampening of a crankshaft	Ability to identifiy static balance, dynamic balance and dynamic dampening of a crankshaft
		K3.7 Identifies connecting rod function, construction and operation in radial and opposed engines	Knowledge of connecting rod function, construction and operation in radial and opposed engines
		K3.8 Identifies piston, piston pin, and piston ring features, type and material used	Knowledge of piston, piston pin, and piston ring features, type and material used
		K3.9 Identifies cylinder function, construction, wall hardening processes and their identification	Ability to identify cylinder function, construction, wall hardening processes and their identification
		K3.10 Identifies valves and valve seat construction	Ability to identify valves and valve seat construction
		K3.11 Identifies various valve operating mechanisms in detail	Knowledge of various valve operating mechanisms in detail
		K3.12 Identifies bearings used in reciprocating engines and their applications	Ability to identify bearings used in reciprocating engines and their applications
		K3.13 Specifies the advantages and types of propeller reduction gearing systems	Ability to specify the advantages and types of propeller reduction gearing systems
		K3.14 Identifies the three types of propeller shafts	Knowledge of the three types of propeller shafts
		K3.15 Describes inertia and direct-cranking starter systems	Knowledge of inertia and direct-cranking starter systems

	K4. Diagnoses induction and exhaust systems	K4.1 Determines components and operation of a normally aspirated induction system K4.2 Specifies the purpose of supercharging and turbocharging K4.3 Identifies various types of turbochargers, components and operation K4.4 Troubleshoots turbochargers K4.5 Defines operation of turbocompound systems K4.6 Identifies the open and collector type exhaust systems for radial and opposed engines K4.7 Recognises reciprocating engine exhaust heat exchanger systems K4.8 Specifies the function of exhaust augmentor tubes K4.9 Demonstrates exhaust system maintenance and inspection practices	Knowledge of components and operation of a normally aspirated induction system Knowledge of the purpose of supercharging and turbocharging Ability to identify various types of turbochargers, components and operation Ability to troubleshoot turbochargers Knowledge of operation of turbocompound systems Ability to identify the open and collector type exhaust systems for radial and opposed engines Ability to recognise reciprocating engine exhaust heat exchanger systems Knowledge of the function of exhaust augmentor tubes Knowledge of exhaust system maintenance and inspection practices
	K5. Diagnoses engine fuel systems	K5.1 Identifies engine fuel system and fuel metering requirements K5.2 Describes the operating principles of float carburetors K5.3 Describes the advantages and operating principles of pressure carburetors K5.4 Specifies carburetor maintenance, adjustment and control rigging procedures	Ability to identify engine fuel system and fuel metering requirements Knowledge of the operating principles of float carburetors Knowledge of the advantages and operating principles of pressure carburetors Knowledge of carburetor maintenance, adjustment and control rigging procedures
	K6. Diagnoses ignition systems	K6.1 Recognises the design, construction/selection and inspection of spark plugs K6.2 Demonstrates spark plug cleaning, testing and installation methods	Knowledge of the design, construction/selection and inspection of spark plugs Ability to clean, test and install spark plugs
	K7. Diagnoses lubricating and	K7.1 Identifies the functions,	Ability to identify the functions,

	cooling systems	requirements, classifications, types and characteristics of lubricating oils K7.2 Differentiates between wet sump and dry sump lubrication system K7.3 Identifies the design characteristics of oil tanks K7.4 Describes oil pump operation K7.5 Identifies differences between full flow and by-pass filtration systems K7.6 Recognises oil filter types, inspection and cleaning requirements K7.7 Describes the operation and adjustment of oil pressure relief and compensated relief valves K7.8 Identifies oil pressure and oil temperature indicators K7.9 Identifies oil temperature regulator, oil cooler and flow control valve function and operation K7.10 Specifies the methods of internal lubrication of reciprocating engines K7.11 Demonstrates lubrication system maintenance, dilution and oil analysis practices K7.12 Recognises engine cooling system K7.13 Identifies air cooled system function, operation, components and maintenance K7.14 Monitors cylinder temperature indicating systems	requirements, classifications, types and characteristics of lubricating oils Ability to differentiate between wet sump and dry sump lubrication system Ability to identify the design characteristics of oil tanks Ability to describe oil pump operation Knowledge of differences between full flow and by-pass filtration systems Ability to recognise oil filter types, inspection and cleaning requirements Knowledge of the operation and adjustment of oil pressure relief and compensated relief valves Ability to identify oil pressure and oil temperature indicators Knowledge of oil temperature regulator, oil cooler and flow control valve function and operation Ability to specify the methods of internal lubrication of reciprocating engines Ability to demonstrate lubrication system maintenance, dilution and oil analysis practices Knowledge of engine cooling systems Ability to identify air cooled system function, operation, components and maintenance Ability to monitor cylinder temperature indicating systems
	K8. Monitors engine maintenance and operation	K8.1 Identifies cylinder assembly compression test and inspection procedures K8.2 Performs top overhaul in	Knowledge of cylinder assembly compression test and inspection procedures Ability to perform top overhaul in

		accordance with manufacturer's procedures K8.3 Specifies reasons for engine replacement K8.4 Identifies the procedures for engine removal and installation observing all safety requirements K8.5 Demonstrates engine and component de-preservation and preservation procedures K8.6 Verifies the function and purpose of the following engine instruments: oil pressure, oil temperature, fuel flow, fuel pressure, manifold air pressure, tachometer, carburetor air temperature, cylinder head temperature, exhaust gas temperature K8.7 Performs ground run operational check in accordance with manufacturer's specifications and troubleshoot malfunctions K8.8 Identifies the use of ignition analyzers and cold cylinder check for troubleshooting purposes K8.9 Replaces spark plug insert threads K8.10 Replaces engine studs using oversize studs or heli-coil inserts	accordance with manufacturer's procedures Ability to specify reasons for engine replacement Knowledge of the procedures for engine removal and installation observing all safety requirements Ability to demonstrate engine and component de-preservation and preservation procedures Knowledge of the function and purpose of the following engine instruments: oil pressure, oil temperature, fuel flow, fuel pressure, manifold air pressure, tachometer, carburetor air temperature, cylinder head temperature, exhaust gas temperature Ability to perform ground run operational check in accordance with manufacturer's specifications and troubleshoot malfunctions Knowledge of the use of ignition analyzers and cold cylinder check for troubleshooting purposes Ability to replace spark plug insert threads Ability to replace engine studs using oversize studs or heli-coil inserts
L. Installs/repairs propellers	L1. Identifies basic propeller principles	L1.1 Defines the terms associated with aircraft propellers L1.2 Explains the theory of operation and design characteristics of propellers L1.3 Defines the forces that act upon a propeller blade L1.4 Identifies the different types and classifications of propellers	Knowledge of the terms associated with aircraft propellers Ability to explain the theory of operation and design characteristics of propellers Ability to define the forces that act upon a propeller blade Ability to identify the different types and classifications of propellers

	L2. Identifies propeller operation	L2.1 Recognises the construction, designation, operation and installation of the following types of propellers: fixed pitch, constant speed, Hydromatic, counterweight L2.2 Identifies the components and operation of aircraft feathering systems	Knowledge of the construction, designation, operation and installation of the following types of propellers: fixed pitch, constant speed, Hydromatic, counterweight Knowledge of the components and operation of aircraft feathering systems
	L3. Describes propeller governors	L3.1 Identifies propeller components L3.2 Describes operation of propeller governors L3.3 Describes propeller control rigging and adjustment	Ability to identify propeller components Knowledge of the operation of propeller governors Knowledge of propeller control rigging and adjustment
	L4. Recognizes propeller synchronizing systems	L4.1 Identifies components and operation of synchronization systems and synchrophasing systems	Ability to identify components and operation of synchronization systems and synchrophasing systems
	L5. Verifies propeller ice control	L5.1 Recognises the requirement for propeller ice control L5.2 Identifies the components of a typical fluid anti-icing system L5.3 Describes the operation of a typical fluid anti-icing system L5.4 Identifies the components of a typical electrical de-icing system L5.5 Describes operation of electrical de-icing systems	Ability to recognise the requirement for propeller ice control Knowledge of the components of a typical fluid anti-icing system Knowledge of the operation of a typical fluid anti-icing system Knowledge of the components of a typical electrical de-icing system Knowledge of the operation of electrical de-icing systems
	L6. Identifies propeller inspection and maintenance	L6.1 Describes inspection procedures and allowable repairs for a propeller blade L6.2 Identifies various propeller removal and installation procedures L6.3 Checks propeller blade tracking following safety precautions L6.4 Describes methods of checking propeller blade angles and propeller balancing L6.5 Identifies causes of vibration in propellers	Knowledge of inspection procedures and allowable repairs for a propeller blade Knowledge of various propeller removal and installation procedures Ability to check propeller blade tracking following safety precautions Knowledge of methods of checking propeller blade angles and propeller balancing Knowledge of causes of vibration in propellers

		L6.6 Identifies the purpose of a propeller blade cuff	Ability to identify the purpose of a propeller blade cuff
	L7. Identifies turbo propellers	L7.1 Identifies turboprop control and operation in the alpha and beta ranges L7.2 Describes the function of a reduction gear assembly L7.3 Explains the components, controls and operation of a reversing propeller system	Knowledge of turboprop control and operation in the alpha and beta ranges Ability to describe the function of a reduction gear assembly Ability to explain the components, controls and operation of a reversing propeller system
M. Repairs Aircraft Coverings and Finishes	M1. Repairs aircraft coverings	M1.1 Identifies the terms and types of materials used in fabric covering M1.2 Explains the requirements and regulations for repair or replacement of fabric covering M1.3 Describes how to determine if the strength of a fabric covering is considered airworthy M1.4 Describe structure inspection and testing technique M1.5 Performs correct fabric repair and recovering projects following necessary safety precautions M1.6 Installs inspection rings and drain grommets M1.7 Identifies and applies fabric finishing processes M1.8 Describes the methods used to prevent common finishing problems	Knowledge of the terms and types of materials used in fabric covering Knowledge of the requirements and regulations for repair or replacement of fabric covering Ability to determine if the strength of a fabric covering is considered airworthy Knowledge of structure inspection and testing technique Ability to perform correct fabric repair and recovering projects following necessary safety precautions Ability to install inspection rings and drain grommets Ability to identify and apply fabric finishing processes Ability to describe the methods used to prevent common finishing problems
	M2. Repairs aircraft sheet metal basics	M2.1 Identifies the stresses acting upon aircraft sheet metal structures M2.2 Differentiates between shear strength and bearing strength M2.3 Explains the reason to stop drill a crack prior to patch repairing M2.4 Identifies aluminum sheet alloy and temper designations M2.5 Explains the use of exotic materials in sheet metal	Knowledge of the stresses acting upon aircraft sheet metal structures Ability to differentiate between shear strength and bearing strength Ability to explain the reason to stop drill a crack prior to patch repairing Ability to identify aluminum sheet alloy and temper designations Ability to explain the use of exotic materials in sheet metal

		applications M2.6 Identifies tools and equipment used in basic sheet metal work M2.7 Identifies correct layout of rivets for a given repair M2.8 Selects and installs countersunk and universal rivets to approved standard aircraft practices M2.9 Selects and installs blind rivets to approved standard aircraft practices M2.10 Performs layout, removal and installation processes for sheet metal fabrication and repair	applications Knowledge of tools and equipment used in basic sheet metal work Knowledge of correct layout of rivets for a given repair Ability to select and install countersunk and universal rivets to approved standard aircraft practices Ability to select and install blind rivets to approved standard aircraft practices Knowledge of layout, removal and installation processes for sheet metal fabrication and repair
	M3. Lays out, cuts and forms sheet metal	M3.1 Identifies and demonstrates the correct use of portable and stationary metal cutting tools M3.2 Identifies and demonstrates the correct use of equipment required to form compound curves M3.3 Explains the terminology used in sheet metal layout M3.4 Calculates bend allowances, lays out flat patterns and operates bending equipment to produce specific projects M3.5 Describes equipment used for mass production of straight bends and compound curves M3.6 Uses bumping to form a specific part M3.7 Explains purpose and performs flanging of a lightning hole M3.8 Explains purpose and performs joggling of sheet metal and stringer material	Knowledge of the correct use of portable and stationary metal cutting tools Knowledge of the correct use of equipment required to form compound curves Ability to explain the terminology used in sheet metal layout Ability to calculate bend allowances, lays out flat patterns and operates bending equipment to produce specific projects Ability to describe equipment used for mass production of straight bends and compound curves Ability to use bumping to form a specific part Ability to explain purpose and perform flanging of a lightning hole Ability to explain purpose and perform joggling of sheet metal and stringer material
	M4. Repairs sheet metal	M4.1 Describes typical patch repairs for stressed skins in	Knowledge of typical patch repairs for stressed skins in accordance

		accordance with accepted standards and procedures M4.2 Describes typical repair schemes for stringers, trailing edges, corrugated skins, pressurized structures, bulkheads, spars, leading edges M4.3 Describes inspection panel installation and location criteria	with accepted standards and procedures Knowledge of typical repair schemes for stringers, trailing edges, corrugated skins, pressurized structures, bulkheads, spars, leading edges Knowledge of inspection panel installation and location criteria
	M5. Performs aircraft finishing	M5.1 Describes aircraft paint removal processes M5.2 Prepares sheet metal surface for painting M5.3 Applies finishing processes to sheet metal surfaces M5.4 Identifies common finishing problems and describes their rectificstion	Ability to describe aircraft paint removal processes Ability to prepare sheet metal surface for painting Knowledge of finishing processes to sheet metal surfaces Ability to identify common finishing problems and describe their rectificstion
N. Identifies Aircraft Structural Materials	N1. Identifies metals	N1.1 Explains the terms used to describe the various properties of metals N1.2 Identifies the types, characteristics and uses of alloyed steels and aluminum alloys N1.3 Identifies and describes the processes that affect the characteristics of non-ferrous and ferrous metals N1.4 Describes the function and operation of a Brinell and Rockwell hardness tester	Knowledge of the terms used to describe the various properties of metals Knowledge of the types, characteristics and uses of alloyed steels and aluminum alloys Knowledge of the processes that affect the characteristics of non-ferrous and ferrous metals Knowledge of the function and operation of a Brinell and Rockwell hardness tester
	N2. Identifies non-metallic materials	N2.1 Identifies the types and requirements of wood used in aircraft structures N2.2 Describes the guidelines for the inspection of wooden components of aircraft structures N2.3 Differentiates between thermo plastic and thermoset plastic materials	Ability to identify the types and requirements of wood used in aircraft structures Ability to describe the guidelines for the inspection of wooden components of aircraft structures Ability to differentiate between thermo plastic and thermoset plastic materials

		N2.4 Identifies types of transparent thermoplastic materials	Ability to identify types of transparent thermoplastic materials
	N3. Treats corrosion	N3.1 Identifies conditions causing the formation of corrosion N3.2 Identifies types of corrosion and their effects N3.3 Identifies substances that may cause corrosive reactions N3.4 Describes methods of inspection for corrosion and identifies where corrosion often occurs N3.5 Describes corrosion removal, treatment and prevention techniques	Knowledge of conditions causing the formation of corrosion Ability to identify types of corrosion and their effects Ability to identify substances that may cause corrosive reactions Knowledge of methods of inspection for corrosion and identifies where corrosion often occurs Knowledge of corrosion removal, treatment and prevention techniques
	N4. Identifies composite materials	N4.1 Identifies composite materials used in aircraft construction N4.2 Explains composite materials inspection techniques N4.3 Assesses damage to a composite component and identify repair procedures N4.4 Performs composite repairs in accordance with acceptable methods	Ability to identify composite materials used in aircraft construction Knowledge of composite materials inspection techniques Ability to assess damage to a composite component and identify repair procedures Ability to perform composite repairs in accordance with acceptable methods
O. Identifies Weight and Balance Requirements	O1. Determines weight and balance in aircraft	O1.1 Identifies and explains requirements of weight and balance reports for aircraft O1.2 Identifies the principles and terms used in weight and balance calculations O1.3 Describes the types of equipment used to weigh aircraft O1.4 Weighs aircraft and completes a weight and balance report O1.5 Identifies the purpose of an equipment list O1.6 Performs a weight and balance calculation and equipment	Ability to identify and explain requirements of weight and balance reports for aircraft Knowledge of principles and terms used in weight and balance calculations Knowledge of the types of equipment used to weigh aircraft Ability to weigh aircraft and complete a weight and balance report Ability to identify the purpose of an equipment list Ability to perform a weight and

		list amendment O1.7 Describes the effects of improper loading and explain the use of loading charts and graphs	balance calculation and equipment list amendment Knowledge of the effects of improper loading and explain the use of loading charts and graphs
	O2. Completes an electrical load analysis	O2.1 Identifies the purpose of and completes an electrical load analysis	Ability to identify the purpose of and to complete an electrical load analysis
P. Demonstrates Knowledge of Electron Theory	P1. Recognises electron theory	P1.1 Explains the principles of electron flow P1.2 Describes the composition and characteristics of matter P1.3 Identifies and explains the units of electrical measurement and the associated metric prefixes P1.4 Explains the cause, effect and control of static electricity	Knowledge of the principles of electron flow Ability to describe the composition and characteristics of matter Knowledge of the units of electrical measurement and the associated metric prefixes Ability to explain the cause, effect and control of static electricity
	P2. Explains magnetism	P2.1 Explains magnetic theory and associated terms P2.2 Explains the principles of electro-magnetism	Knowledge of magnetic theory and associated terms Knowledge of the principles of electro-magnetism
	P3. Identifies electro motive force	P3.1 Identifies the sources of electrical energy	Ability to identify the sources of electrical energy
	P4. Defines Ohm's Law	P4.1 Defines Ohm's Law P4.2 Solves problems using Ohm's Law	Knowledge of Ohm's Law Ability to solve problems using Ohm's Law
	P5. Recognises circuit elements	P5.1 Identifies and explains the function of electronic circuit devices P5.2 Identifies electrical schematic symbols	Knowledge of the function of electronic circuit devices Ability to identify electrical schematic symbols
	P6. Verifies circuit arrangements	P6.1 Identifies and solves simple series circuit equations, simple parallel circuit equations, complex series/parallel equations and voltage dividing equations	Knowledge of simple series circuit equations, simple parallel circuit equations, complex series/parallel equations and voltage dividing equations
	P7. Identifies alternating current	P7.1 Explains the advantages of alternating current in aircraft systems P7.2 Recognises AC terms	Ability to explain the advantages of alternating current in aircraft systems Ability to recognise AC terms: inductive reactance, capacitive reactance, impedance, cycle,

			alternation, frequency, sign wave values, phase
	P8. Tests electronic control devices	P8.1 Identifies function of vacuum tubes, diodes, transistors, silicon controlled rectifiers P8.2 Tests semi-conductor devices	Knowledge of function of vacuum tubes, diodes, transistors, silicon controlled rectifiers Ability to test semi-conductor devices
	P9. Identifies measuring instruments	P9.1 Explains principles of a D'arsonval meter P9.2 Explains principles of operation of volt, ohm, amps and multimeters P9.3 Identifies/explains function of oscilloscopes and other types of meters used for electrical measurements	Knowledge of principles of a D'arsonval meter Ability to explain principles of operation of volt, ohm, amps and multimeters Ability to identify/explain function of oscilloscopes and other types of meters used for electrical measurements
	P10. Inspects motors and generators	P10.1 Describes the operating principles of DC and AC generating devices P10.2 Inspects and tests generating devices P10.3 Explains the function, application, and operation of various generator control devices P10.4 Explains operating principles of DC and AC motors P10.5 Inspects, tests and repairs various aircraft electrical motors	Knowledge of the operating principles of DC and AC generating devices Ability to inspect and test generating devices Ability to explain the function, application, and operation of various generator control devices Knowledge of operating principles of DC and AC motors Ability to inspect, test and repair various aircraft electrical motors
	P11. Troubleshoots batteries	P11.1 Identifies safety precautions for lead acid and Nicad batteries P11.2 Explains theory, construction and operation of lead acid batteries P11.3 Tests and charges lead acid batteries P11.4 Explains theory, construction and operation of Nicad batteries P11.5 Performs a deep cycle operation on a Nicad aircraft battery	Knowledge of safety precautions for lead acid and Nicad batteries Ability to explain theory, construction and operation of lead acid batteries Ability to test and charge lead acid batteries Knowledge of theory, construction and operation of Nicad batteries Ability to perform a deep cycle operation on a Nicad aircraft battery
	P12. Implements standard wiring	P12.1 Reads and interprets various	Ability to read and interpret various

	practices	types of wiring diagrams P12.2 Identifies symbols and identification markings used in electrical diagrams P12.3 Explains standard aircraft wire identification codes P12.4 Describes standard wiring installation practices P12.5 Installs wiring and various wire termination devices on a specific wiring project	types of wiring diagrams Knowledge of symbols and identification markings used in electrical diagrams Ability to explain standard aircraft wire identification codes Knowledge of standard wiring installation practices Ability to install wiring and various wire termination devices on a specific wiring project
	P13. Identifies electrical system	P13.1 Identifies single/multi engine aircraft electrical system components P13.2 Describes function and operation of aircraft electrical system components P13.3 Describes aircraft lighting system (interior, instrument, exterior and emergency)	Knowledge of single/multi engine aircraft electrical system components Knowledge of function and operation of aircraft electrical system components Ability to describe aircraft lighting system (interior, instrument, exterior and emergency)
Q. Repairs Turbine Engines	Q1. Identifies types of turbine engines	Q1.1 Explains development of turbine engines Q1.2 Identifies types of turbine engines used on aircraft	Knowledge of development of turbine engines Ability to identify types of turbine engines used on aircraft
	Q2. Recognises principles of energy transformation	Q2.1 Explains the principles of the Brayton Cycle Q2.2 Explains how thrust is produced Q2.3 Identifies laws affecting thrust Q2.4 Identifies factors affecting thrust	Knowledge of the principles of the Brayton Cycle Ability to explain how thrust is produced Knowledge of laws affecting thrust Knowledge of factors affecting thrust
	Q3. Identifies design and construction	Q3.1 Identifies various inlet designs and their components Q3.2 Identifies types of compressors and principles of operation Q3.3 Identifies the causes of compressor stall and the prevention mechanisms Q3.4 Explains the function of the	Ability to identify various inlet designs and their components Knowledge of types of compressors and principles of operation Ability to identify the causes of compressor stall and the prevention mechanisms Knowledge of function of the compressor diffuser and the process

		compressor diffuser and the process of diffusion Q3.5 Explains the common types of combustors and principles of operation Q3.6 Identifies the components of a turbine section and explain their operation Q3.7 Explains the function of the nozzle diaphragm Q3.8 Identifies extreme operating conditions in the turbine section Q3.9 Explains how turbine blade attachment, containment and cooling is accomplished Q3.10 Identifies components ad function of the exhaust section Q3.11 Identifies the differences in exhaust sections used on sub and supersonic aircraft Q3.12 Explains the basic functions of thrust reversers, afterburners and noise suppressors Q3.13 Identifies the components and explains the function of the accessory section Q3.14 Identifies various accessories driven by the accessory section Q3.15 Identifies various types of bearings and seals used on turbine engines	of diffusion Ability to explain the common types of combustors and principles of operation Ability to identify the components of a turbine section and explain their operation Knowledge of the function of the nozzle diaphragm Ability to identify extreme operating conditions in the turbine section Ability to explain how turbine blade attachment, containment and cooling is accomplished Ability to identify components ad function of the exhaust section Knowledge of the differences in exhaust sections used on sub and supersonic aircraft Ability to explain the basic functions of thrust reversers, afterburners and noise suppressors Ability to identify the components and explain the function of the accessory section Ability todentify various accessories driven by the accessory section Ability to identify various types of bearings and seals used on turbine engines
	Q4. Identifies turbine engine fuel systems	Q4.1 Identifies fuel system requirements of a turbine engine Q4.2 Identifies the types of turbine fuels in use and describes the purpose of jet fuel additives Q4.3 Identifies the components of the fuel system and explains their function and operation Q4.4 Explains the purpose and function of water injection systems	Knowledge of fuel system requirements of a turbine engine Ability to identify the types of turbine fuels in use and describe the purpose of jet fuel additives Ability to identify the components of the fuel system and explain their function and operation Knowledge of the purpose and function of water injection systems

		Q4.5 Identifies different types of injection fluids commonly used	Knowledge of different types of injection fluids commonly used
	Q5. Recognises ignition and starting systems	Q5.1 Identifies the types and components of turbine engine ignition systems Q5.2 Explains operation and safety problems Q5.3 Describes the design, construction and servicing of igniters and glow plugs Q5.4 Identifies various types of starting systems and explain their operating principles	Knowledge of the types and components of turbine engine ignition systems Ability to explain operation and safety problems Ability to describe the design, construction and servicing of igniters and glow plugs Ability to identify various types of starting systems and explain their operating principles
	Q6. Operates and maintains turbines	Q6.1 Describes the function of fan speed, E.P.R. indicator, torquemeter, tachometer, EGT indicator, engine oil pressure, fuel flow indicator and engine oil temperature Q6.2 Describes turbine engine ground run-up procedures Q6.3 Explains the testing, inspection, troubleshooting and maintenance of turbine engines and their components Q6.4 Identifies purpose, operation and types of APU systems	Knowledge of the function of fan speed, E.P.R. indicator, torquemeter, tachometer, EGT indicator, engine oil pressure, fuel flow indicator and engine oil temperature Knowledge of turbine engine ground run-up procedures Knowledge of the testing, inspection, troubleshooting and maintenance of turbine engines and their components Knowledge of purpose, operation and types of APU systems
R. Determines Fire Protection	R1. Identifies fire protection systems	R1.1 Identifies requirements of fire protection systems R1.2 Describes the operating principles of various types of fire detection systems R1.3 Identifies smoke and toxic gas detection systems	Knowledge of requirements of fire protection systems Ability to describe the operating principles of various types of fire detection systems Knowledge of smoke and toxic gas detection systems
	R2. Demonstrates fire extinguishing knowledge	R2.1 Identifies the various extinguishing systems and agents R2.2 Describes fire extinguishing systems and maintenance practices R2.3 Demonstrates basic knowledge of powerplant compartment fire zones	Knowledge of various extinguishing systems and agents Knowledge of fire extinguishing systems and maintenance practices Ability to demonstratesbasic knowledge of powerplant compartment fire zones

S. Repairs Instruments	S1. Identifies pressure measuring intruments	S1.1 Explains the principles of Bourdon tube and aneroid instruments measuring instruments S1.2 Describes the operating principles of the various types of pressure measuring instruments	Ability to explain the principles of Bourdon tube and aneroid instruments measuring instruments Ability to describe the operating principles of the various types of pressure measuring instruments
	S2. Recognises temperature measuring instruments	S2.1 Describes the principles of operation of non-electrical and electrical measuring instruments S2.2 Identifies the various types of temperature measuring instruments and their function	Knowledge of principles of operation of non-electrical and electrical measuring instruments Ability to identify the various types of temperature measuring instruments and their function
	S3. Identifies gyroscopic instruments	S3.1 Explains gyroscopic theory S3.2 Identifies the various types of gyroscopic instruments, their functions and maintenance practices	Ability to explain gyroscopic theory Ability to identify the various types of gyroscopic instruments, their functions and maintenance practices
	S4. Calibrates direction indicating instruments	S4.1 Explains the principles of operation of magnetic compass systems and recalibration requirements S4.2 Performs a compass recalibration swing	Knowledge of the principles of operation of magnetic compass systems and recalibration requirements Ability to perform a compass recalibration swing
	S5. Maintains pneumatic operated instrument systems	S5.1 Identifies components and explain the operation of a venturi system S5.2 Identifies components , explain the operation and maintenance of vacuum and positive pressure air systems	Knowledge of components and explain the operation of a venturi system Knowledge of components , explain the operation and maintenance of vacuum and positive pressure air systems
	S6. Tests pitot/static systems	S6.1 Explains the operating principles and maintenance practices for pitot/static systems S6.2 Describes the requirements for performing a pitot/static system test S6.3 Performs a pitot/static system test and troubleshoots the system	Ability to explain the operating principles and maintenance practices for pitot/static systems Knowledge of the requirements for performing a pitot/static system test Ability to perform a pitot/static system test and troubleshoots the system
	S7. Inspects fuel monitoring systems	S7.1 Describes the operation and maintenance of mechanical, DC and capacitance type quantity indication	Knowledge of the operation and maintenance of mechanical, DC and capacitance type quantity indication

		systems S7.2 Explains operating principles of fuel pressure indicating systems S7.3 Explains the operating principle of fuel flow-indicating systems	systems Ability to explain operating principles of fuel pressure indicating systems Ability to explain the operating principle of fuel flow-indicating systems
	S8. Monitors stall warning and angle of attack systems	S8.1 Explains operation of electric and nonelectric stall warning systems S8.2 Identifies components and explains operating of angle of attack indicating systems	Knowledge of operation of electric and nonelectric stall warning systems Ability to identify components and explain operating of angle of attack indicating systems
	S9. Monitors electronic instruments	S9.1 Explains the principles of operating of Electronic Flight Instrument Systems, Electronic Attitude Director Indicator, Electronic Horizontal Situation Indicator, Electronic Monitoring Displays	Knowledge of the principles of operating of Electronic Flight Instrument Systems, Electronic Attitude Director Indicator, Electronic Horizontal Situation Indicator, Electronic Monitoring Displays
	S10. Maintains, lays out and installs other instruments, installations and markings	S10.1 Explains principles of operation of torquemeters, clocks, autosyn and magnesyn systems, accellerometers, tachometers, outside air temperature gauge, outside air temperature guage, hourmeters S10.2 Describes instrument mounting methods and typical panel layout S10.3 Explains the purpose of various instrument range markings	Ability to explain principles of operation of torquemeters, clocks, autosyn and magnesyn systems, accellerometers, tachometers, outside air temperature gauge, outside air temperature guage, hourmeters Ability to describe instrument mounting methods and typical panel layout Ability to explain the purpose of various instrument range markings
T. Maintains Communication/Navigation Systems	T1. Explains fundamentals of analog and digital electronics	T1.1 Explains the fundamentals of analog and digital electronics S10.2 Identifies how the logic gates create their truth table	Ability to explain the fundamentals of analog and digital electronics Ability to identify how the logic gates create their truth table
	T2. Identifies communication systems	T2.1 Explains basic fundamentals of radio transmission and reception T2.2 Identifies components and function of a basic communication	Knowledge of basic fundamentals of radio transmission and reception Ability to identify components and function of a basic communication

		system T2.3 Identifies common aviation frequency ranges and their uses T2.4 Describes operation and maintenance of emergency locator transmitters	system Knowledge of common aviation frequency ranges and their uses Knowledge of operation and maintenance of emergency locator transmitters
	T3. Identifies navigation systems	T3.1 Describes the function and operating principles of navigation instruments including: Automatic Direction Finder, Omnirange systems, Instrument Landing Systems, Distance Measuring Equipment, Transponder, Omega, Marker beacon, Loran, Global Positioning System	Ability to describe the function and operating principles of navigation instruments including: Automatic Direction Finder, Omnirange systems, Instrument Landing Systems, Distance Measuring Equipment, Transponder, Omega, Marker beacon, Loran, Global Positioning System
	T4. Inspects and maintains communication and navigation systems	T4.1 Describes the proper installation and maintenance practices for communication and navigation systems T4.2 Identifies and describes the types and purpose of antennas T4.3 Describes the installation procedures and requirements for aircraft antennas	Ability to describe the proper installation and maintenance practices for communication and navigation systems Knowledge of the types and purpose of antennas Knowledge of the installation procedures and requirements for aircraft antennas
	T5. Maintains radar systems	T5.1 Identifies the components and operating principles of a basic radar system T5.2 Identifies the accepted maintenance practices and safety precautions for radar equipment	T5.1 Identifies the components and operating principles of a basic radar system T5.2 Identifies the accepted maintenance practices and safety precautions for radar equipment
	T6. Maintains autopilot systems	T6.1 Identifies the components and explains the operation of a basic autoflight system T6.2 Describes the functions of the components of a typical autopilot system T6.3 Describes the purpose and operation of a yaw damper system T6.4 Identifies the functions of a flight director system T6.5 Identifies accepted	Ability to identify the components and explain the operation of a basic autoflight system Knowledge of the functions of the components of a typical autopilot system Ability to describe the purpose and operation of a yaw damper system Knowledge of the functions of a flight director system Ability to identify accepted

		maintenance practices for auto flight systems	maintenance practices for auto flight systems
U. Identifies Environmental Systems	U1. Identifies physiology of flight	U1.1 Identifies physiological effects of flight including hypoxia, hyperventilation and carbon monoxide poisoning	Ability to identify physiological effects of flight including hypoxia, hyperventilation and carbon monoxide poisoning
	U2. Services oxygen systems	U2.1 Identifies characteristics and various forms of oxygen U2.2 Describes components and their functions in typical aviation oxygen systems U2.3 Identifies the servicing, safety and maintenance procedures for oxygen systems U2.4 Explains requirements for testing of pressure bottles	Knowledge characteristics and various forms of oxygen Ability to describe components and their functions in typical aviation oxygen systems Ability to identify the servicing, safety and maintenance procedures for oxygen systems Knowledge of requirements for testing of pressure bottles
	U3. Maintains pressurization systems	U3.1 Explains the purpose of aircraft pressurization systems U3.2 Identifies the sources of air for pressurization U3.3 Describes pressurization system components and operation U3.4 Describes pressurization system maintenance and troubleshooting procedures	Ability explain the purpose of aircraft pressurization systems Ability to identify the sources of air for pressurization Knowledge of pressurization system components and operation Ability to describe pressurization system maintenance and troubleshooting procedures
	U4. Identifies air conditioning systems	U4.1 Identifies components and explains operation of the air cycle system U4.2 Identifies the components and explains operation of the vapor cycle air conditioning systems	Ability to identify components and explain operation of the air cycle system Ability to identify the components and explain operation of the vapor cycle air conditioning systems
	U5. Inspects and troubleshoots heating systems	U5.1 Identifies various types of aircraft heating systems and describes their operation U5.2 Describes the construction and inspection criteria of exhaust type cabin heaters U5.3 Identifies components, explains operation and safety features of aircraft combustion heaters	Ability to identify various types of aircraft heating systems and describe their operation Knowledge of the construction and inspection criteria of exhaust type cabin heaters Ability to identify components, explain operation and safety features of aircraft combustion heaters

		U5.4 Performs operational runs, pressure decay tests and explains troubleshooting procedures of an aircraft combustion heater	Ability to perform operational runs, pressure decay tests and explain troubleshooting procedures of an aircraft combustion heater
	U6. Identifies rain control systems	U6.1 Identifies various types and operation of rain removal systems	Ability to identify various types and operation of rain removal systems
V. Identifies Welding Procedures and Welds	V1. Inspects welding procedures and welds	V1.1 Identifies various types of welding systems, safety equipment and procedures	Ability to identify various types of welding systems, safety equipment and procedures
W. Specifies Non-destructive Inspection	W1. Performs visual inspection	W1.1 Explains the importance of visual inspection and identifies tools used to assist in visual inspection	Ability to explain the importance of visual inspection and identify tools used to assist in visual inspection
	W2. Performs liquid visual inspection	W.2.1 Identifies conditions when liquid penetrant can be used W2.2 Demonstrates procedures and interprets results	Ability to identify conditions when liquid penetrant can be used Ability to demonstrate procedures and interprets results
	W3. Performs magnetic particle inspection	W3.1 Identifies conditions when Magnetic Particle can be used W3.2 Demonstrates procedures and interprets results	Ability to identify conditions when Magnetic Particle can be used Ability to demonstrate procedures and interpret results
	W4. Uses ultrasonic, eddy current and radiology inspection	W4.1 Identifies the theory and types of defects which may be detected with these methods	Knowledge of the theory and types of defects which may be detected with these methods