

Module 16

Piston Engine

	Level		
	A	B1	B2
16.1 Fundamentals Mechanical, thermal & volumetric efficiencies; Operating principles - 2 stroke, 4 stroke, Otto & Diesel; Piston displacement & compression ratio; Engine configuration & firing order.	1	2	-
16.2 Engine Performance Power calculation & measurement; Factors affecting engine power; Mixtures/leaning, pre-ignition.	1	2	-
16.3 Engine Construction Crank case, crank shaft, cam shafts, sumps; Accessory gearbox; Cylinder & piston assemblies; Connecting rods, inlet & exhaust manifolds; Valve mechanisms; Propeller reduction gearboxes.	1	2	-
16.4 Engine Fuel Systems Carburettors: Types, construction & principles of operation; Icing & heating; Fuel injection systems: Types, construction & principles of operation; Electronic engine control: Operation of engine control & fuel metering systems including electronic engine control (FADEC); System layout & components.	1	2	-
16.5 Starting & Ignition Systems Starting systems; Magneto types, construction & principles of operation; Ignition harnesses, spark plugs; Low & high tension systems.	1	2	-
16.6 Induction, Exhaust & Cooling Systems Construction & operation of induction systems including alternate air systems; Exhaust systems & engine cooling systems.	1	2	-
16.7 Supercharging/Turbocharging Principles & purpose of supercharging & its effects on engine parameters; Construction & operation of supercharging/turbocharging systems; System terminology; Control systems; System protection.	1	2	-
16.8 Lubricants & Fuels Properties & specifications; Fuel additives; Safety precautions.	1	2	-
16.9 Lubrication Systems System operation/layout & components.	1	2	-
16.10 Engine Indication Systems Engine speed; Cylinder head temperature; Oil pressure & temperature; Exhaust Gas Temperature; Fuel pressure & flow; Manifold pressure.	1	2	-
16.11 Powerplant Installation Configuration of firewalls, cowlings, acoustic panels, engine mounts, anti-vibration mounts, hoses, pipes, feeders, connectors, wiring looms, control cables & rods, lifting points & drains.	1	2	-
16.12 Engine Monitoring & Ground Operation Procedures for starting & ground run-up; Interpretation of engine power output & parameters; Inspection of engine & components: criteria, tolerances, & data specified by engine manufacturer.	1	3	-
16.13 Engine Storage & Preservation Preservation & depreservation for the engine & accessories/systems.	-	2	-