Module 6. Materials and Hardware

	Level			
	A	B1	B2	B3
6.1 **Aircraft Materials — Ferrous**				
(a) Characteristics, properties and identification of common alloy steels used in aircraft;	1	2	1	2
Heat treatment and application of alloy steels.				
(b) Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.2 **Aircraft Materials — Non-Ferrous**				
(a) Characteristics, properties and identification of common non-ferrous materials used in aircraft;	1	2	1	2
Heat treatment and application of non-ferrous materials;				
(b) Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	-	1	1	1
6.3 **Aircraft Materials — Composite and Non-Metallic**				
6.3.1 *Composite and non-metallic other than wood and fabric*				
(a) Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft; Sealant and bonding agents;	1	2	2	2
(b) The detection of defects/deterioration in composite and non-metallic material;	1	2	-	2
Repair of composite and non-metallic material.				
6.3.2 *Wooden structures*	1	2	-	2
Construction methods of wooden airframe structures;				
Characteristics, properties and types of wood and glue used in aeroplanes;				
Preservation and maintenance of wooden structure;				
Types of defects in wood material and wooden structures;				
The detection of defects in wooden structure;				
Repair of wooden structure.				
6.3.3 *Fabric covering*	1	2	-	2
Characteristics, properties and types of fabrics used in aeroplanes;				
Inspections methods for fabric;				
Types of defects in fabric;				
Repair of fabric covering.				

	Level			
	A	B1	B2	B3
6.4 **Corrosion**				
(a) Chemical fundamentals; Formation by, galvanic action process, microbiological, stress;	1	1	1	1
(b) Types of corrosion and their identification; Causes of corrosion; Material types, susceptibility to corrosion.	2	3	2	2
6.5 **Fasteners**				
6.5.1 *Screw threads* Screw nomenclature; Thread forms, dimensions and tolerances for standard threads used in aircraft; Measuring screw threads.	2	2	2	2
6.5.2 *Bolts, studs and screws* Bolt types: specification, identification and marking of aircraft bolts, international standards; Nuts: self locking, anchor, standard types; Machine screws: aircraft specifications; Studs: types and uses, insertion and removal; Self tapping screws, dowels.	2	2	2	2
6.5.3 *Locking devices* Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, cotter pins.	2	2	2	2
6.5.4 *Aircraft rivets* Types of solid and blind rivets: specifications and identification, heat treatment.	1	2	1	2
6.6 **Pipes and Unions**				
(a) Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;	2	2	2	2
(b) Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2	2	1	2
6.7 **Springs** Types of springs, materials, characteristics and applications.	-	2	1	1
6.8 **Bearings** Purpose of bearings, loads, material, construction; Types of bearings and their application.	1	2	2	1

	Level			
	A	B1	B2	B3
6.9 **Transmissions** Gear types and their application; Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns; Belts and pulleys, chains and sprockets.	1	2	2	1
6.10 **Control Cables** Types of cables; End fittings, turnbuckles and compensation devices; Pulleys and cable system components; Bowden cables; Aircraft flexible control systems.	1	2	1	2
6.11 **Electrical Cables and Connectors** Cable types, construction and characteristics; High tension and co-axial cables; Crimping; Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	1	2	2	2