MODULE 6 – MATERIALS AND HARDWARE

Sl. No.		Topics to be Covered	Level
			B1.1
6.1.	**AIRCRAFT MATERIALS – FERROUS**		
	a.	Characteristics, properties and identification of common alloy steels used in aircraft;	2
	b.	Heat treatment and application of alloy steels;	
	c.	Testing of ferrous materials for hardness, tensile strength, fatigue strength and impact resistance.	1
6.2.	**AIRCRAFT MATERIALS – NON-FERROUS**		
	a.	Characteristics, properties and identification of common non-ferrous materials used in aircraft;	2
	b.	Heat treatment and application of non-ferrous materials;	
	c.	Testing of non-ferrous material for hardness, tensile strength, fatigue strength and impact resistance.	1
6.3.	**AIRCRAFT MATERIALS - COMPOSITE AND NON- METALLIC**		
6.3.1.	**COMPOSITE AND NON-METALLIC OTHER THAN WOOD AND FABRIC**		
	a.	Characteristics, properties and identification of common composite and non-metallic materials, other than wood, used in aircraft;	2
	b.	Sealant and bonding agents.	
	c.	The detection of defects/deterioration in composite and non-metallic material.	
	d.	Repair of composite and non-metallic material.	
6.3.2.	**WOODEN STRUCTURES**		
	a.	Construction methods of wooden airframe structures	2
	b.	Characteristics, properties and types of wood and glue used in Airplanes;	
	c.	Preservation and maintenance of wooden structure;	
	d.	Types of defects in wood material and wooden structures;	
	e.	The detection of defects in wooden structure;	
	f.	Repair of wooden structure.	
6.3.3.	**FABRIC COVERING**		
	a.	Characteristics, properties and types of fabrics used in airplanes;	2
	b.	Inspections methods for fabric;	
	c.	Types of defects in fabric; Repair of fabric covering.	
6.4.	**CORROSION**		
	a.	Chemical fundamentals;	1
	b.	Formation by, galvanic action process, microbiological, stress;	
	c.	Types of corrosion and their identification;	3
	d.	Causes of corrosion;	
	e.	Material types, susceptibility to corrosion.	

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Sl. No.		Topics to be Covered	Level B1.1
6.5.	**FASTENERS**		
6.5.1.	**SCREW THREADS**		
	a.	Screw nomenclature;	2
	b.	Thread forms, dimensions and tolerances for standard threads used in aircraft;	
	c.	Measuring screw threads;	
6.5.2.	**BOLTS, STUDS AND SCREWS**		
	a.	Bolt types: specification, identification and marking of aircraft bolts, international standards;	2
	b.	Nuts: self-locking, anchor, standard types;	
	c.	Machine screws: aircraft specifications;	
	d.	Studs: types and uses, insertion and removal;	
	e.	Self-tapping screws, dowels.	
6.5.3.	**LOCKING DEVICES**		
	a.	Tab and spring washers, locking plates, split pins, pal-nuts, wire locking, quick release fasteners, keys, circlips, and cotter pins.	2
6.5.4.	**AIRCRAFT RIVETS**		
	a.	Types of solid and blind rivets: specifications and identification, heat treatment.	2
6.6.	**PIPES AND UNIONS**		
	a.	Identification of, and types of rigid and flexible pipes and their connectors used in aircraft;	2
	b.	Standard unions for aircraft hydraulic, fuel, oil, pneumatic and air system pipes.	2
6.7.	**SPRINGS**		
	a.	Types of springs, materials, characteristics and applications.	2
6.8.	**BEARINGS**		
	a.	Purpose of bearings, loads, material, construction;	2
	b.	Types of bearings and their application.	
6.9.	**TRANSMISSIONS**		
	a.	Gear types and their application;	2
	b.	Gear ratios, reduction and multiplication gear systems, driven and driving gears, idler gears, mesh patterns;	
	c.	Belts and pulleys, chains and sprockets.	
6.10.	**CONTROL CABLES**		
	a.	Types of cables;	2
	b.	End fittings, turnbuckles and compensation devices;	
	c.	Pulleys and cable system components;	
	d.	Bowden cables;	
	e.	Aircraft flexible control systems.	

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Sl. No.	**Topics to be Covered**		**Level**
			B1.1
6.11.	**ELECTRICAL CABLES AND CONNECTORS**		
	a.	Cable types, construction and characteristics;	2
	b.	High tension and co-axial cables;	
	c.	Crimping;	
	d.	Connector types, pins, plugs, sockets, insulators, current and voltage rating, coupling, identification codes.	