

MODULE 5 – DIGITAL TECHNIQUES ELECTRONIC INSTRUMENT SYSTEMS		
Sl. No.	Topics to be Covered	Level
		B1.1
5.1.	ELECTRONIC INSTRUMENT SYSTEMS	
	a.	Typical systems arrangements and cockpit layout of electronic instrument systems.
5.2.	NUMBERING SYSTEM	
	a.	Numbering systems: binary, octal and hexadecimal;
	b.	Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.
5.3.	DATA CONVERSION	
	a.	Analogue Data, Digital Data;
	b.	Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.
5.4.	DATA BUSES	
	a.	Identification of common logic gate symbols, tables and equivalent circuits;
	b.	Applications used for aircraft systems, schematic diagrams.
	c.	Interpretation of logic diagrams.
5.5.	LOGIC CIRCUITS	
	a.	Identification of common logic gate symbols, tables and equivalent circuits;
	b.	Applications used for aircraft systems, schematic diagrams.
	c.	Interpretation of logic diagrams.
5.6.	BASIC COMPUTER STRUCTURE	
	a.	Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM);
	b.	Computer technology (as applied in aircraft systems)
5.7.	INTEGRATED CIRCUITS	
	a.	Operation and use of encoders and decoders
	b.	Function of encoder types
	c.	Uses of medium, large and very large-scale integration.
5.8.	FIBRE OPTICS	
	a.	Advantages and disadvantages of Fibre optic data transmission over electrical wire propagation;
	b.	Fibre optic data bus;
	c.	Fibre optic related terms;
	d.	Terminations;
	e.	Couplers, control terminals, remote terminals;
	f.	Application of Fibre optics in aircraft systems.

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5.9.	ELECTRONIC DISPLAYS		
	a.	Principles of operation of common types of displays used in modern aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	2
5.10.	ELECTROSTATIC SENSITIVE DEVICES		
	a.	Special handling of components sensitive to electrostatic discharges;	2
	b.	Awareness of risks and possible damage, component and personnel anti-static protection devices.	
5.11.	SOFTWARE MANAGEMENT CONTROL		
	a.	Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes.	2
5.12.	ELECTROMAGNETIC ENVIRONMENT		
	a.	Influence of the following phenomena on maintenance practices for electronic system:	2
	i.	EMC-Electromagnetic Compatibility	
	ii.	EMI-Electromagnetic Interference	
	iii.	HIRF-High Intensity Radiated Field	
iv.	Lightning/ Lightning protection		
5.13.	TYPICAL ELECTRONIC/ DIGITAL AIRCRAFT SYSTEMS		
	a.	General arrangement of typical electronic/digital aircraft systems and associated BITE (Built in Test Equipment) testing such as	2
	i.	ACARS-ARINC Communication and Addressing and Reporting System	
	ii.	EICAS-Engine Indication and Crew Alerting System	
	iii.	FBW-Fly by Wire	
	iv.	FMS-Flight Management System	
	v.	IRS-Inertial reference system	
	vi.	ECAM-Electronic Centralised Aircraft Monitoring	
	vii.	EFIS-Electronic Flight Instrument System	
	viii.	GPS-Global Positioning System	
	ix.	TCAS-Traffic Collision Avoidance system	
	x.	Integrated modular Avionics	
	xi.	Cabin System	
xii.	Information system		