

## SEMESTER IV

### Subject : Digital Technique /electronic Instrument system Theory

Topics	Level
5.1 Electronic Instrument Systems Typical systems arrangements and cockpit layout of electronic instrument Systems	2
5.2 Numbering Systems Numbering systems: binary, octal and hexadecimal; Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa.	1
5.3 Data Conversion Analogue Data, Digital Data; Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types.	1
5.4 Data Buses Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications	1
5.5 Logic Circuits (A)Identification of common logic gate symbols, tables and equivalent circuits; Applications used for aircraft systems, schematic diagrams (B) Interpretation of logic diagrams	2
5.6 Basic Computer Structure (A)Computer terminology (including bit, byte, software, hardware, CPU, IC, and various memory devices such as RAM, ROM, PROM); Computer technology (as applied in aircraft systems). (B) Computer related terminology; Operation, layout and interface of the major components in a micro computer including their associated bus systems; Information contained in single and multi address instruction words; Memory associated terms; Operation of typical memory devices; Operation, advantages and disadvantages of the various data storage systems.	2
5.10 Fiber Optics Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; Fibre optic data bus; Fibre optic related terms; Terminations; Couplers, control terminals, remote terminals; Application of fibre optics in aircraft systems.	1
5.11 Electronic Displays Principles of operation of common types of displays used in modern	2

aircraft, including Cathode Ray Tubes, Light Emitting Diodes and Liquid Crystal Display.	
5.12 Electrostatic Sensitive Devices Special handling of components sensitive to electrostatic discharges; Awareness of risks and possible damage, component and personnel anti-static protection devices.	2
5.13 Software Management Control Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programmes	2
5.14 Electromagnetic Environment Influence of the following phenomena on maintenance practices for electronic system: EMC-Electromagnetic Compatibility EMI-Electromagnetic Interference HIRF-High Intensity Radiated Field Lightning/lightning protection	2
5.15 Typical Electronic/Digital Aircraft Systems General arrangement of typical electronic/digital aircraft systems and associated BITE (Built In Test Equipment) testing such as: ACARS-ARINC Communication and Addressing and Reporting System ECAM-Electronic Centralised Aircraft Monitoring EFIS-Electronic Flight Instrument System EICAS-Engine Indication and Crew Alerting System FBW-Fly by Wire FMS-Flight Management System GPS-Global Positioning System IRS-Inertial reference system TCAS-Traffic Collision Avoidance system Integrated modular Avionics Cabin System Information system	2