

Annex A to AMC/GM Part 147 - Module 5 - Digital techniques electronic instrument systems

| CASA module Examinations subjects | CASA mech basics exams equavelant | CASA avionic basics exams equavelant |
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| Module 5 Digital techniques electronic intrument systems (B1 & B2) | | |
| 5.1 Electronic instrument systems | | |
| Typical systems arrangements and cockpit layout of electronic instrument systems. | Nil | IZ |
| 5.2 Numbering systems | | |
| Numbering systems: binary, octal and hexadecimal; | Nil | QE |
| Demonstration of conversions between the decimal and binary, octal and hexadecimal systems and vice versa. | Nil | QE |
| 5.3 Data conversion | | |
| Analogue data, digital data; | Nil | QE |
| Operation and application of analogue to digital, and digital to analogue converters, inputs and outputs, limitations of various types. | Nil | QE |
| 5.4 Data buses | | |
| Operation of data buses in aircraft systems, including knowledge of ARINC and other specifications. | Nil | Nil |
| 5.5 Logic circuits | | |
| (a) | | |
| Identification of common logic gate symbols, tables and equivalent circuits; | BC | QC |
| Applications used for aircraft systems, schematic diagrams. | Nil | Nil |
| (b) | | |
| Interpretation of logic diagrams. | Nil | QC |
| 5.6 Basic computer structure | | |
| (a) | | |
| Computer terminology (including bit, byte, software, hard ware, CPU, IC and various memory devices such as RAM, ROM, PROM); | Nil | QE |
| Computer technology (as applied in aircraft systems); | Nil | Nil |
| (b) | | |
| Computer related terminology; | Nil | QE |
| Operation, layout and interface of the major components in a microcomputer including their associated bus systems; | Nil | QE |
| Information contained in single and multi address instruction words; | Nil | QE |
| Memory associated terms; | Nil | QE |
| Operation of typical memory devices; | Nil | QE |
| Operation, advantages and disadvantages of the various data storage systems. | Nil | QE |
| 5.7 Microprocessors | | |

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| Functions performed and overall operation of a microprocessor; | Nil | QE |
| Basic operation of each of the following microprocessor elements: control and processing unit, clock, register, arithmetic logic unit. | Nil | QE |
| 5.8 Integrated circuits | | |
| Operation and use of encoders and decoders; | Nil | QE |
| Function of encoder types; | Nil | QE |
| Uses of medium, | Nil | QE |
| large and very large scale integration. | Nil | Nil |
| 5.9 Multiplexing | | |
| Operation, application and identification in logic diagrams of multiplexers and demultiplexers. | Nil | QE |
| 5.10 Fibre optics | | |
| Advantages and disadvantages of fibre optic data transmission over electrical wire propagation; | Nil | Nil |
| Fibre optic data bus; | Nil | Nil |
| Fibre optic related terms, terminations; | Nil | Nil |
| Couplers, control terminals, remote terminals; | Nil | Nil |
| Application of fibre optics in aircraft systems. | Nil | Nil |
| 5.11 Electronic displays | | |
| Principles of operation of common types of displays used in modern aircraft, including cathode ray tubes, light emitting diodes and liquid crystal display. | Nil | QE |
| 5.12 Electrostatic sensitive devices | | |
| Special handling of components sensitive to electrostatic discharges; | BC | QE |
| Awareness of risks and possible damage, component and personnel anti static protection devices. | BC | QE |
| 5.13 Software management control | | |
| Awareness of restrictions, airworthiness requirements and possible catastrophic effects of unapproved changes to software programs. | Nil | Nil |
| 5.14 Electromagnetic environment | | |
| Influence of the following phenomena on maintenance practices for electronic system: | Nil | Nil |
| EMC-electromagnetic compatibility; | Nil | Nil |
| EMI-electromagnetic interference; | Nil | Nil |
| HIRF-high intensity radiated field; | Nil | Nil |
| Lightning and lightning protection. | Nil | Nil |
| 5.15 Typical electronic and digital aircraft systems | | |
| General arrangement of typical electronic and digital aircraft systems and associated BITE testing such as: | Nil | Nil |
| · ACARS-ARINC communication and addressing and reporting system | Nil | Nil |
| · ECAM-electronic centralised aircraft monitoring | Nil | IZ |
| · EFIS-electronic flight instrument system | Nil | Nil |
| · EICAS-engine indication and crew alerting system | Nil | IZ |

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| · FBW-fly-by-wire | Nil | Nil |
| · FMS-flight management system | Nil | IZ |
| · GPS-global positioning system | Nil | WL |
| · IRS-inertial reference system | Nil | IK |
| · TCAS-traffic alert collision avoidance system. | Nil | Nil |