Module 5 (B2)

Digital Techniques / Electronic Instrument Systems

1. An FMS system, besides controlling navigation, thrust and auto-nav, also provides:
- **a) take-off and landing warnings**
- *** b) dedicated status and warnings**
- **c) GPWS warnings**

2. EADI sky and ground display is provided by:
- **a) synthetic TV signals**
- *** b) raster scan**
- **c) stroke pulse**

3. HSI heading is valid if the heading flag is :
- **a) in view**
- **b) green**
- *** c) out of view**

4. A NOR gate with both inputs inverted becomes a:
- **a) NAND gate**
- *** b) AND gate**
- **c) OR gate**

5. An ARINC 429 binary coded decimal data word occupies bits:
- **a) 11 to 28**
- *** b) 11 to 29**
- **c) 1 to 8**

6. A fiber optic cable consists of
- **a) a plastic core with a cladding having a higher refractive index**
- **b) a silica glass core with a cladding having a higher refractive index**
- *** c) a silica glass core with a cladding having a lower refractive index**

7. The command bars on an ADI relate to:
- *** a) path required**
- **b) path being followed**
- **c) roll indications**

8. The recording medium in an FDR is:
- **a) a high density floppy disc**
- *** b) magnetic tape coated with ferrite**
- **c) copper foil coated with ferrite**

9. Convert 0111012 to octal :

a) 25
b) 33
*** c) 35**

10. What does the CADC feed :

a) Altimeter / FMS / secondary radar
b) standby altimeter / mach meter
*** c) cabin pressure controller sensor / mach meter / altimeter**

11. What kind of light is used in a fiber optic systems?

*** a) Infrared**
b) Visible
c) Ultraviolet

12. Typical displays on an EHSI are:

*** a) VOR, Map, Plan and weather radar**
b) VOR, Plan, Map and Attitude
c) Engine indications

13. An EADI display showing a moving runway moves down during the final stages of an approach. The aircraft must:

a) fly up
*** b) fly down**
c) hold descent path

14. A flight data recorder can obtain information from aircraft Instruments:

*** a) provided there is adequate isolation**
b) by direct connection to the instruments
c) provided there is adequate damping

15. Adding invertors to the two inputs of an AND gate makes a :

a) NAND gate
b) OR gate
*** c) NOR gate**

16. The binary number 11010111 expressed as a decimal is:

a) 207
b) 223
*** c) 215**

17. The octal number 1001 expressed as a decimal is:

a) 65
*** b) 513**
c) 9

18. This truth table is for a:

A	B	C
0	0	0
1	0	0
0	1	0
1	1	1

a) NAND gate
* b) AND gate
c) OR gate

19. The inputs and outputs of a CADC are:
a) pitot and static in; altitude, attitude, CAS and VS out
* b) pitot and static in; altitude, CAS, mach and VS out
c) pitot in; static, altitude, mach, CAS and VS out

20. EICAS provides the following:
a) engine parameters only
* b) engine parameters and system warnings only
c) engine parameters and engine warnings only

21. During an instrument approach, the glide slope pointer deflect below the glide-slope centre mark. This means the aircraft is positioned:
* a) above the glide-slope
b) below the glide-slope
c) to the left of the localizer

22. Engine parameters are displayed on:
* a) ECAM
b) EHSI
c) FMSCDU

23. A central maintenance computer provides:
* a) ground and flight monitoring and testing on an on-board computer
b) ground and BITE testing using a portable control panel
c) display of system warnings and cautions

24. Where are the Digital Flight Data Recorder outputs supplied to?
a) The recording unit
b) Flight instruments
* c) There are no outputs

25. FMS failure and warnings are;
* a) displayed on EICAS
b) engine warnings only
c) EFIS warnings only

26. Who is responsible for the operational program of the FMS?

* a) The pilot
b) The engineer
c) The manufacturer

27. If a signal has quantity in volts and physical position it is:

a) digital
b) synchronous
* c) analogue

28. What is the fixed feature of an ADI?

a) The glide-slope pointer
b) The lateral deviation bar
* c) The aircraft symbol

29. What information is required before completion of the alignment of an Inertial Navigation System?

* a) Aircraft present position
b) Aircraft present position and heading
c) Heading and attitude

30. IRS accelerometers are mounted:

a) 60o to each other
b) 45o to each other
* c) 90o to each other

31. An FMS navigation database is updated:

a) at the operators request
b) once a month
* c) every 28 days

32. A single failure of a fly-by-wire system:

* a) has no effect on aircraft operation
b) will limit the flight profile
c) will reduce operational heights and speeds

33. On an EADI, the Flight Director command bars show :

a) the actual path with respect to the required path
* b) the required path with respect to the actual path
c) the path with respect to the horizon

34. What instrument includes a display of a rising runway?

* a) EADI
b) EHSI
c) ECAM

35. In order to maintain HIRF protection, bonding checks between airframe and electrical components carrying voltages greater than 50 volts RMS or DC or main earth return should not exceed:

a) 1 mega ohm
*** b) 1 ohm**
c) 0.05 ohm

36. If an EFIS has 3 symbol generators, what is the purpose of the 3rd symbol generator?

a) Comparison with No.1 symbol generator
*** b) Standby**
c) Parity function

37. FMS operational program is updated every:

a) 7 days
*** b) 28 days**
c) 90 days

38. What is 345 in binary?

a) 100111001
b) 110011001
*** c) 101011001**

39. Which logic gate can be represented as a parallel circuit?

*** a) OR gate**
b) Exclusive OR gate
c) NAND gate

40. HIRF is prevented from entering a fiber optic cable by:

a) enclosing it in a metal braid
b) grounding the fiber at both ends
*** c) using an opto-isolator coupling**

41. Continuity of a fiber optic cable is checked by:

a) a light source and an opto-power meter
b) a calibrated light source
*** c) a calibrated light source and an optometry**

42. To shield a fiber optic from EMI you must:

a) earth both transducer and couplings
b) shield it with a braided shield
*** c) use an opto-isolator**

43. A symbol generator displays ESDs warning. During replacement:

a) you must wear a wrist strap connected to an approved earth point
*** b) make sure the pins are not touched and covers fitted**
c) you must earth the unit to the airframe structure

44. An FDR fitted to a helicopter begins recording:

a) on take-off
*** b) on engine start-up**
c) when power is applied to the aircraft

45. MIL-ST-1533 is a data bus for:

a) Flight Data Recorders
b) Inertial Reference System
*** c) Digital Information Transfer System**

46. Making an invertors from a NAND or NOR gate is achieved by:

a) inverting the input
b) connecting two in series
*** c) connecting the inputs**

47. The FMS databases consist of:

a) one navigation and one performance database
b) two performance and one navigation database
*** c) one performance and two navigation databases**

48. The FMS can update the IRS position outputs by using information from either:

a) VOR and DME only
b) DME and GPS only
*** c) GPS, DME, LOC and VOR**

49. The accepted error from INS/IRS is:

a) 1 mile/hour + 3 miles
b) 2 miles per hour + 3 miles
*** c) 3 miles / hour + 3 miles**

50. Before an IRS can complete the alignment sequence :

a) the shutdown present position must be entered
*** b) the current present position must be entered**
c) either the last or current position must be entered

51. What warnings can an FMS provide?

*** a) Discrete warnings**
b) Spurious faults
c) Ground faults only

52. Centralized Aircraft Monitoring System:

a) performs in-flight and ground tests of aircraft systems by carrying out a BITE interrogation
*** b) give red warnings and amber cautions to display system status**
c) performs in-flight BITE interrogation only

53. The Centralized Aircraft Monitoring System uses the maintenance mode of operation:

a) in the air only
*** b) on the ground only**
c) either in the air or on the ground

54. What functions are available on the EHSI?

a) Full arc and Wx. only
*** b) Full arc, Wx. and Map Mode**
c) Full Arc only

55. EFIS displays of the right hand and left hand displays are compared by comparators in the:

a) FMS
b0) EICAS
*** c) Symbol Generators**

56. What is the approximate earth rate?

a) 5º/hour
b) 10º/hour
*** c) 15º/hour**

57. An IRS platform has:

a) two accelerometers
*** b) three accelerometers**
c) two or three accelerometers depending on the system

58. IRS Laser Ring Gyros provide:

*** a) rate movement about an axis**
b) displacement about an axis
c) both rate and displacement about an axis

59. What are the outputs of a Digital ADC:

*** a) TAS, MACH, Altitude, TAT and SAT**
b) TAS, MACH and Altitude
c)TAS, MACH, Altitude and TAT

60. A fiber optic data bus used on an aircraft:

a) connects non-essential systems only
*** b) can transmit on several channels at the same time**
c) can send only one message at a time

61. Light travels along a fiber optic by:

*** a) reflection**
b) refraction
c) dispersion

62. Manufacturers of aircraft can ensure HIRF protection by:

* a) designing specific avionic areas that are shielded against HIRF
b) ensuring all single wires are shielded with metal conduit
c) advising operators of all points susceptible to deterioration due to corrosion, moisture ingress, flexing etc.

63. An AND gate output is 1 when inputs are:

a) both 0
b)1 and 0
* c) both 1

64. What is hex 110 in decimal:

* a) 272
b) 282
c) 32

65. Convert the binary word 1100 to decimal:

a) 16
* b) 12
c) 11

66. Convert the binary word 1110 to decimal:

a) 12
* b) 14
c) 15

67. What is the main disadvantage of a fiber optic data bus?

* a) Bend radius and moisture ingress at connections
b) Less strong and durable when compared to twisted pair and coaxial cable
c) Expensive to install

68. Fly By Wire systems in the fully active mode, the actuators will:

a) both be active
* b) one in active mode, one in damping mode
c) both be in damping mode, awaiting control inputs

69. The parity bit in digital information is used:

a) for BITE programs
* b) to check the validity of data information
c) to check the status of the system

70. On a Fly By Wire system, what controls the stab trim:

a) ELAC
* b) ELAC and SEC
c)SEC

71. Convert the binary number 110010 to decimal :

a) 80
* b) 50
c) 34

72. What is serial to parallel and vice-versa called:

a) Encoder/Decoder
* b) Multiplex/ De-multiplex
c) Switching

73. Control of software is by:

* a) the National Aviation Authority
b) engineers
c) the aircraft manufacturers

74. A typical fiber optic connector is:

a) F-type connector
* b) coupling type, with lens fitted
c) push-pull connector

75. Which of the following is an optoelectronic device?

a) Triac
b) Thyristor
* c) Laser Diode

76. What is the advantage of a single mode fibre optic over ordinary wire?

* a) Large bandwidth
b) Small bend radius
c) Not prone to damage

77. How many LRUs can be connected to an ARINC 429 data bus:

a) 120
* b) 20
c) 60

78. Convert the hexadecimal number D into decimal:

* a) 13
b) 14
c) 14

79. Convert decimal 15 into binary:

a) 1101
* b) 1111
c) 1110

80. Convert 448 to hex:

a) 3616
* b) 2416
c) 2216

81. When will a NAND gate give logic 0 at the output?

a) When both inputs are at 0
* b) When both inputs are at 1
c) When the inputs are different

82. Convert decimal 15 into hexadecimal:

a) E
b) G
* c) F

83. Which logic gate can be represented as a parallel circuit?

* a) OR
b) Exclusive OR
c) NAND

84. What is the definition of level one software?

* a) Critical
b) Essential
c) Non-essential

85. What is 345 in binary?

* a) 101011001
b) 110011001
c) 100111001

86. Convert 1D to binary:

a) 29
* b) 11101
c) 101001

87. Convert 2C hex to octal:

* a) 54
b) 44
c) 35

88. A fiber optic light source is normally:

a) a filament lamp
* b) a laser or LED
c) a strobe light

89. What precautions are required when removing ESDS equipment

* a) Wear a wrist strap connected to an approved ground point
b) Keep one hand on the airframe
c) No special precautions are required

90. ARINC Communications Addressing and Reporting Systems is used To:

a) download aircraft status reports
*** b) connect the aircraft to base**
c) make telephone calls

91. With radio coupled autopilot, what are the inputs:

a) ADF and ILS
b) ADF and VOR
*** c) ILS and VOR**

92. The basic principle of radar is based upon:

a) the amount of power in the signal returned
*** b) the time delay between outward and returning pulse**
c) ultrasonic wave propagation

93. Engine parameters are displayed on:

*** a) ECAM**
b) EHSI
c) CDU

94. A flight deck CRT LRU is being replaced. What does the ESDS label indicate?

a) Wrist straps should be worn
*** b) Do not touch plug pins or leave them exposed**
c) Remove power before connecting

95. What systems does the ADC feed?

a) Altimeter / FMS / secondary radar
b) Standby altimeter/mach meter
*** c) Cabin pressure controller sensor / mach meter / Altimeter**

96. 1012 converted to decimal is:

a) 52
*** b) 510**
c) 210

97. Physical variables in quantitative forms, such as voltage or angular rotation of a shaft are:

*** a) analogue**
b) digital
c) binary

98. Within a 3 bit frequency cascade, division is to:

*** a) 8**
b) 4
c) 2

99. When is a radio altimeter active?

- a) Up to 10,000 ft
- * b) Up to 2,500 ft
- c) Up to 100 ft

100. The binary coded decimal number 10011000 expressed as a decimal number is:

- * a) 98 b10
- b) 152 10
- c) 152 2

101. The decimal number 7 expressed as a binary number is:

- * a) 111_2
- b) 7_2
- c) 101_2

102. Convert 011101 binary to octal:

- a) 25
- b) 33
- * c) 35

103. The 'fan-in' in a gate is the :

- a) number of outputs from a gate
- * b) number of inputs to a gate
- c) number of inputs and outputs of a gate

104. Very Large Scale Integrated (VLSI) means the number of gates in a single IC is:

- a) up to 1000
- b) up to 10,000
- * c) over 10,000

105. The fiber optic cable can be identified on aircraft by its jacket color which is:

- * a) purple
- b) red
- c) yellow

106. For a fiber optic cable connector that is not regularly disconnected you would use the:

- a) ceramic lens type
- b) ball lens type
- * c) butt type

107. Binary Number: 110010 :

- a) 80
- * b) 50
- c) 34

108. How are engine indications sent to the FDR?

* a) Via ARINC 573
b) Via ARINC 629
c) Source isolated

109. To stop earth loops forming, you would:

a) leave both ends of the cable screen open circuit
b) earth both ends of the cable screen
* c) earth only one end of the cable screen

110. How many satellite signals are required to achieve precise 3D positioning?

* a) 4
b) 5
c) 6

111. Binary addition of 1101 + 101101 is:

* a) 58
b) 61
c) 70

112. What system uses base 8?

* a) ARINC 429, in data word labels only
b) ARINC 629
c) ARINC 573

113. What sort of gate is this?

a) Or gate
* b) NOR gate
c) NOT gate

114. An aircraft may have been HIRF affected:

* a) A static wick check is required
b) A bonding load check is required
c) Test all radio frequencies for interference

115. The binary number 11010111 is expressed as a decimal is:

* a) 215
b) 107
c) 53

116. The octal number 1001 expressed as a decimal is:

* a) 513
b) 613
c) 713

117. With a relative humidity of 10% to 20%, if you walked over a carpet what electrostatic voltage value would you expect to see?

a) 6,000 volts
b) 12,000 volts
*** c) 35,000 volts**

118. The minimum requirement for an aeroplane CVR is:

a) from power on
*** b) from engine start**
c) from beginning of take off roll

119. The output of a NOT gate is logic 1. The input is :

a) logic 1
*** b) logic 0**
c) both logic 1

120. An Inertial Navigation System (INS/IRS) computes distance from acceleration by:

a) a simple integration
b) a differentiation followed by an integration
*** c) two successive integrations**

121. Before the aircraft is moved from the loading pier the pilot must:

*** a) insert the latitude and longitude of the pier into the IRS**
b) set the altitude to be fed into the INS
c) insert the longitude and latitude of the first waypoint into the INS

122. An IRS system requires data for wind computation from:

*** a) central Air Data Computer**
b) satellites
c) Doppler System

123. Pitch Control of a fly by wire system is achieved by:

a) elevators only
*** b) stabilizer and elevator**
c) stabilizer only

124. A basic IRS platform has:

a) 3 accelerometers and 2 laser gyros
b) 2 Accelerometers and 3 laser gyros
*** c) 3 accelerometers and 3 laser gyros**

125. What must be entered into the IRS before the aircraft can be moved?

*** a) Present position**
b) Flight plan
c) Cruise height

126. The FMS Operational Data Base is:

a) updated once a month

* b) is fed with information on aircraft weight, cruise altitude and cost index before take off

c) needs no update information

127. An INS/IRS Battery Unit provides :

* a) standby power when airborne and on the ground

b) standby power only whilst in flight

c) standby power only on the ground

128. IRS alignment:

* a) takes up to 10 minutes and the present position can be entered at any time during alignment

b) takes up to 10 minutes and present position must be entered before alignment.

c) takes up to 10 minutes and the previous flight shut down present position is used for the alignment

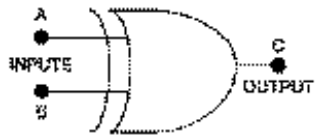
129. A Liquid Crystal Display (LCD) has the advantage over a CRT Because:

a) it displays more colors

b) it requires less servicing

* c) it requires no cooling

130. What is this symbol:

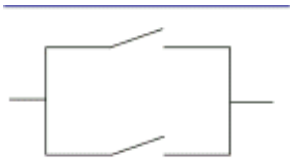


a) Exclusive AND gate

* b) Exclusive OR gate

c) Exclusive NOR gate

131. What Logic Gate does this switch circuit indicate?



a) AND gate

* b) OR gate

c) NOR gate

132. Digital Computer Processes information in a :

* a) Binary State.
b) Unique Application.
c) Analog fashion.
.

133. The higher degree of integration of system and Flexibility for aircraft Designers, will be achieved by:

a) The using analog technology.
* b) The usage of digital technology.
c) The degradation of units.

134. The Hardware type of computer are:

a-) Analog computer.
b) Digital computer .
* c) Analog- Digital- Hybrid computer.

135- The application type or task of computer are:

a) Reference, information. and storage/monitor.
b) Controlling, Interactive.
* c) Answer "A" and "B" both can be.

136. Digital computers use input, which are …….. …….. or ……. And …

* a) Digital signal --- High – Low.
b) Analog signal --- Peak – Peak./
c) Hybrid signal --- High – Low.

137. For adaptation of a computer on several different airframes:

a) Program must be changed.
* b) Strapping Pins should be used.
c) Potentiometer is used.

138.What is the name of computer, which is used for a source of information or data?

A) Storage computer.
b) Controlling computer.
* c) Reference computer.

139.An example of reference computer is:

a) Central Air Data computer(CADC).
* b) Inertial Reference System.
c) E.I.C.A.S. Engine indication and crew alerting system.

140. The computer, which perform several different task, depending on operator inputs, is known as.

* a) Interactive computer.
b) Controlling computer.
c) Reference computer.

141. In the numbering system, the LSD and MSD stands for:

* a) Least significant digit and most significant digit.
b) Line signal display.
c) Most signal distortion.

142. The decimal number 4572 is equal to:

a) $(4x10^{2}) + (5x10^{3}) + (7x10^{1}) + (2x10^{0})$.
b) $(4x10^{0}) + (5x10^{2}) + (7x10^{3}) + (2x10^{1})$.
* c) $(4x10^{3}) + (5x10^{2}) + (7x10^{1}) + (2x10^{0})$.

143. The decimal numbering system, which is on base 10, has:

a) 5 digits.
* b) 10 digits.
c) 8 digits.

.

144. The binary system has:

a) A basic 7
b) A basic 16
* c) A basic 2.

145. The 0 and 1 are two binary digit, which is known as:

* a) Bits.
b) Words.
c) Frame.

146. All input to digital computer must be converted to :

a) Decimal number.
* b) Binary (0-1)
c) Hexadecimal.

.

147. Convert 9110 to binary form:

a) 011011.
* b) 1011011.
c) 110011.

148. The MSB, in one,s complement method, is set to “0”, it indicate:

* a) Positive number.
b) Negative number
c) Decimal number.

.

149. Which stated below, indicate binary subtraction rules.

a) 0 – 0 = 0 , 1 – 0 = 1
b) 1 – 1 = 0 , 0 – 1 = 1
* c) Answer “A” and “B” both correct.

150. The short method of adding a numbers to itself as many times as is specified. Is known as:

a) Addition.
*** b) Multiplication.**
c) Divider

151. The real world is …… in nature:

a) Digital.
*** b) Analog.**
c) Hybrid

152. The Aircraft control surface is driven by:

a) Digital signal.
b) Discrete Signal.
*** c) Analog signal.**

153. The circuits used to interface digital computers to the analog world are known as:

*** a) D/A converter.**
b) A/D converter.
c) Discrete circuit.

154. System information has to be transmitted to the peripherals, in the form of ……. Or …… …….. signal and are known as …….. :

a) Mechanical – Electrical – CPU.
b) Electrical – Mechanical – ALU.
*** c) Electrical – Fiber optic – Data Buses.**

155. The ARINC, stands for:

a) Aircraft radio incorporation.
*** b) Aeronautical radio incorporated.**
c) Aeronautical range indication.

156. The ARINC activity is:

*** a) To produce specifications and reports.**
b) To supply electronics parts.
c) To train in avionics field.

157. The specification for transfer of digital data between avionics components, Exist in:

a) ARINC 561.
b) ARINC 573.
*** c) ARINC 429.**

158. The data bus is:

a) A single wire.
*** b) A pair of twisted wires with shielding.**
c) A coaxial cable.

159. What is the MIL-STD-1553B:

a) A military standard, which adapted as a NATO standard. It is a multiple source data transmission system
b) The transmission can take place from more than one source.
* c) All above answer are correct.

160. Many different kind of logical outputs can be obtained by:

* a) Logic gates.
b) Operational Amplifiers.
c) Detector units.

161. What are the logical gates?

a) AND, OR, NOT.
b) Exclusive OR , Exclusive NOR.
* c- AND, OR, NAND, NOR, Exclusive OR, NOT.

162. The logical gates are made-up of electronic components, and output can be presented by:

* a) Boolean Algebra.
b) Newton's law.
c) Bernoulli law.

.

162. An apparatus, which made up of electronic circuitry , that generate an output based on the input of one or more variable is known as:

* a) Logic element.
b) Oscillator.
c) Amplifier.

163. What is the function of logic elements?

a) They operates like amplifier.
* b) Allows digital circuits to make decision based on various input parameter.
c) Current to flow in one way only.

164. For more complicated decision:

* a) More logic elements needed.
b) Only, one element required.
c) Only one logic gate enough.

165. What is the name of gate, which provide "1" output, while all inputs are "1"?

a) OR gate.
b) NOR gate.
* c) And gate.

166. The equivalent circuit for an AND gate is:

a) Parallel circuits.
* b) Series circuits.
c) Combination circuits.

167. What is the name of the gate, which is combination of AND gate and an Inverter?

a)AND gate.
* b)NAND gate.
c)NOR gate.

168. An "OR" gate with all inputs inverted is similar to:

* a) NAND gate
b) NOR gate.
c) OR gate.

169. The Boolean expression for OR gate is:

a) $A \cdot B = S$.
* b) $A + B = S$
c) $A + \overline{B} = S$.

170. The below Boolean expression , Indicate:

$$\overline{A \cdot B} = S$$

a) AND logic gate.
b) OR logic gate.
* c) NAND logic gate.

.

171. The system for mathematically analysis of logic system , is known as:

a) Boolean algebra.
b) Geometry.
* c) Exclusive gate.

172. The system for mathematical analysis of logic system , is known as:

* a) Boolean algebra.
b) Geometry.
c) Trigonometry

172. The operation of the logic gate, can be described by means of:

a) Electronic components.
* b) Truth Table.
c) AND gate only.

.

173. The Boolean expression is $A \cdot B=S$, what is the name of relative gate?

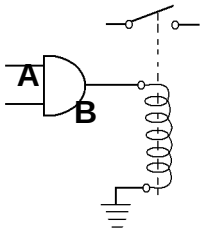
a) Inverter.
b) Exclusive or gate.
* c) AND gate.

174. The exclusive or gate indicate:

a) Equal condition of inputs.
* b) Different condition of inputs.
c) Availability of all inputs.

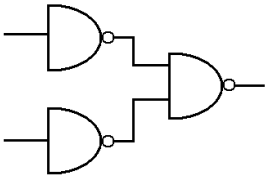
178. In order to energize the relay in the circuit shown below, the logic state at the input must be:

a) logic 0 at points A and B
b) logic 0 at point A and logic 1 at point B
* c) logic 1 at both points



179. The circuit shown below, performs a logic:

a)AND gate
b) NAND gate
* c) NOR gate



180. The M.P.U. stands for:

* a) Microprocessor unit.
b) Maintenance Power Unit.
c) Micro computer unit.

181. The M.P.U. is similar to:

a) Memory.
b) A.L.U.
* c) C.P.U.

182. What device is used for storing information and computer operation:

a)A.L.U. device.
* b) Memory device.
c) Input / output device.

183. The fundamental unit of information used in the computer is:

* a) Word.
b) Alphabet.
c) Octal.

185. The most important characteristics of any microprocessor is:

a) Memory capacity.
b) C.P.U.
* c) Word length.

186. Each word contains:

a) 10 bit.
b) 6 bit.
* c) 8 bit.

187. The L.S.B. of computer word number, located:

* **a)on the right of the number.**
  b)On the left of the number.
  c) On the central of the number.

188. The physical equipment of a computer system is known as:

  a) Software.
* **b) Hardware.**
  C_ Instruction.

.

189. What is the software?

  a- Physical equipment of computer.
  b- Input information.
* **c- It is the instructions that make the hardware function..**

190. The combination of hardware and software is refer to:

* **a) Firmware.**
  b) Hard-Software.
  c) Hardware.

191. A binary digit is:

* **a- Bit.**
  b- Word.
  c- Map.

192. The element of computer which, store and retrieve, bit or words is Known as:

* **a-C.P.U.**
  b-A.L.U.
  c-Memory.

193. What are the format of data bits, which can be stored in memory?

  a- Parallel.
  b- Serial.
* **c- Parallel or serial.**

194. The memory capacity is generally specified in term of:.

  a- K bites.
  b- M bites. 0r G bite
* **c- All of the above answers are correct.**

195. In computer application “K” means:

* **a- 1024 bits.**
  b- 4056 bits.
  c- 11224 bits.

196. What is the name of a memory device, from which data can repeatedly be read out but can not written into it?

a-Random access memory.
*** b-Read only memory.**
c-Dynamic ram device.

197. Computer classified by hardware, as:

a- Analog computer. Ana Digital computer
b- Hybrid computer.
*** c- Analog ,digital, hybrid computer.**

198. Computers used on aircraft, are classified, according to task, as:

a- Reference, Information computers. Controlling computer
b- Storage / Monitoring computers. And Interactive computer
*** d- All above answers are used on aircraft.**

199. The computer, which has a combination of the amplitude of input signals and analog circuitry, to produce output of continuous voltage or current. Is known as:

a-Digital computer.
*** b-Analog computer.**
c-Flight management system

200. In digital computer processing occurs in:

a- Central processing units.
b- Microprocessors.
*** c- Microprocessors, or central processing units.**

201. What is the name of computer, which use, both analog and digital elements in one computer:

a-Analog computer.
b-Digital computer.
*** c-Hybrid computer.**

202. The flight management computer, is an example of:

a- Reference computer.
b- Controlling computer.
*** c- Interactive computer.**

203. For high-speed transmission of data, by light:

*** a-The Fiber Optics are used.**
b-The Microwave signal s are used.
c-The R.F. signals are used.

203. What are the elements of an optical fiber?

a- Central core of suitable glass material.
b- Outer cladding with lower refracting index.
*** c- All above answer are correct.**

204. The transmission of light in any optical fiber, depends on:

a- Outer covering materials.
*** b- Optical property of total internal reflection.**
c- Cladding material.

205. The modes, by which light can be guided along a fiber optics depends on:

*** a- Incident angle (Φ).**
b- Light intensity.
c- Cladding material.

206. What are the basic modes of fiber optics?

a- Single mode fiber.
b- Multimode fiber.
*** c- Answer "A" and "B" both correct.**

207. The fiber optic data bus, is specified by:

a- Arinc 429 .
b- Arinc 636.
*** c- Arinc 629.**

208. The fiber optic link between, flight control computers and the actuator control electronics is:

*** a-A two way system.**
b-A single way system.
c-A four root system.

209 LED (light emitting diode) emits light when:

a-It is reverse biased.
*** b-It is Forward biased.**
c-It has no current flow through it.

210. The configuration, of LED s, which are used on aircraft displays are:

a- Seven segment LED display.
b- DOT matrix.
*** c- Seven segment or Dot matrix.**

211. LCD stands for:

a- Liquid Control display .
*** b- Liquid Crystal Display.**
c- Light control display.

212. The Cathode ray tube (CRT) is:

*** a- An evacuated glass tube.**
b- An liquid crystal display.
c- A diode.

213. The color CRT has:

a-Single electron guns.
b- double electron guns.
*** c- three electron guns.**

214. The display which produces light, when electrically activated is known as:

a- Passive display.
*** b- Active display.**
c- Fail passive display.

215. E.F.I.S. stands for:

*** a- Electronic Flight Instrument Systems.**
b- Liquid crystal display.
c- Electronic fault isolation system.

216. The electrostatic charge or:

*** a-Electrical energy at rest.**
b-Electrical energy, which has no voltage.
c-Electrical energy, which has current flow.

217. Electro static charge, generated due to:

a- different phase between current and voltage.
*** b- Friction between different materials.**
c- High voltage in the circuit.

218. The material, which store, electrostatic charge is:

a- A conductive materials.
b- A semiconductor materials.
*** c- A non-conductive materials.**

.

219. The transfer of electrostatic charge between bodies at different electrostatic potentials is known as:

a-Energy at rest.
b-Semiconductor devices.
*** c-Electrostatic Discharge (EDS).**

220. The electrostatic discharge (EDS) ,caused by:

a- Direct contact.
b- Induced by an electrostatic field.
*** c- Direct contact or induced by electrostatic field.**

221. The precautions necessary for safe handling of units, identified by:

*** a- ESDS labels.**
b- Voice warning.
c- Voltage indication.

222. For identifying the ESD sensitive area or equipments, that contain ESDS device:

*** a-A yellow caution sensitive label uses.**
b-A red caution label uses.
c-A green label can be used.

223. What are the type of labels(decals), which are used to identify units as containing ESDS sensitive circuits?

a-The military and commercial symbols are used on some units. and The international (JEDEC) symbol is used on most ESDS decals.
b-ESDS printed circuit boards (cards) that are LRU,s are identified by decals labeled" Static Sensitive".
*** c-All above answers are the three basic types of labels(decals).**

224. What colors are the conductive caps and covers?

a- black or green.
b- green or gray.
*** c- black or gray.**

225. The electrostatic voltage is generated by the :

a- Sliding action between materials. or separating action between material
b- Rubbing action between materials.
*** c- By action on all above answer the electrostatic voltages will be generated.**

226. The control and certification of software in aircraft systems and components is laid down in:

a-Annex 1.
*** b-Airworthiness Notices 45 and 45A.(AWN 45.,45A)**
c-Air low.

227. The aircraft systems, which uses software are:

a- Flying controls, engine control, Electrical generation and distribution.
b- Brakes, Radio and Navigational equipment.
*** c- Answer A and B plus Flight instruments and AFCS components.**

228. The E.M.I. stands for:

a-Electromagnetic indicator.
*** b-Electromagnetic Interference.**
c-Electromagnetic Image.

229. The unit or system, can be damaged by:

a- EMI.
b- Electromagnetic Interference.
*** c- Answer "A" and "B" are the same.**

230. For equipment protection, the unit must be effectively screened from:

a- B.M.I.
b- A.T.A.
*** c- E.M.I.**

231. The electromagnetic interference created from:

a- Lightning strikes. Or failures in the electromagnetic screening system.
b- Over flying high power radio/radar transmitter (E.M.C.)
*** c- The EMI arise from all above answer.**

232. The electromagnetic compatibility(EMC) stated that.

a- The equipment must not exceed specified emission level for a wide range of radio frequencies. Or Must not be susceptible to external source of high level of radio frequency energy over very wide frequency band.
b- The equipment must be able to withstand the very high electromagnetic pulse arising from lightning strikes.
*** c- All above answers are stated in EMC.**

233. HIRF. Means:

a- High internal radiated frequency.
b- High injected ray frequency.
*** c- High intensity radiated field.**

234. A multi-function display (MFD) an be:

*** a) used only for basic flight information**
(b) configured for more than one type of information
(c) set to display information from the standby magnetic compass.

235.Which standby instruments are driven from the aircraft's pitot-Static system?

*** (a) airspeed indicator, altimeter, and vertical speed indicator**
(b) airspeed indicator, vertical speed indicator, and magnetic compass
(c) airspeed indicator, altimeter, and angle of attack indicator.

236. Static pressure is fed:

(a) only to the airspeed indicator
(b) only to the airspeed indicator and vertical speed indicator
*** (c) to the airspeed indicator as well as the altimeter and vertical speed indicator.**

2374. The horizontal situation indicator (HSI) uses information derived from:

*** (a) the VO receiver**
(b) the pitot-static system

(c) the airspeed indicator.

238. The term 'glass cockpit' refers to:
* (a) the use of LCD and C T displays
(b) the use of toughened glass windows

239. Basic air data instruments are:
(a) airspeed indicator, altimeter, and magnetic compass
* (b) airspeed indicator, altimeter, and vertical speed indicator
(c) airspeed indicator, vertical speed indicator, and artificial horizon.

240.Three airborne parameters that an be used to assess air raft Position are:
(a) airspeed, height and weight
* b) heading, airspeed and height
(c) heading, weight and airspeed.

241. Engine parameters such as turbine speed, are displayed on:
* (a) ECAM
(b) EHSI
(c) EADI.

242. The aircraft slip indicator is found in the:
* (a) EADI
(b) ECAM
(c) C Ts in the passenger cabin.

243. Where is the 'rising runway'?
* a) EADI
(b) ECAM
(c) C Ts in the passenger cabin.

244. Under visual flight rules (VF) the pilot's most important sour e of Information concerning the air raft's position and attitude is:
* (a) the view out of the cockpit window
(b) the altimeter and vertical speed indicators
(c) the airspeed indicator and the magnetic compass.

245. The EFIS fitted to a large air raft usually consists of:
(a) a single multi-function display
* (b) separate primary flight and navigation displays
(c) a primary display with several standby instruments.

246. In a basic T- configuration of instruments:
(a) the ADI appears on the left and the ASI appears on the right
(b) the ADI appears on the left and the HSI appears on the right.
* (c) the ASI appears on the left and the altimeter appears on the right.

247. The flight director system receives information:
(a) only from the VO /localizer
(b) only from the attitude gyro and altimeter
*** (c) from both of the above.**

248. EICAS provides the following:
(a) engine parameters only
*** (b) engine parameters and system warnings**
(c) engine parameters and navigational data.

249. The two sets of flight regulations that a pilot may fly by are:
*** (a) VF and IF**
(b) VHF and IF
(c) VF and IFU.

250. Secondary heading information is obtained from:
*** (a) the gyro**
(b) the compass
(c) the pitot-static system.

251. A major advantage of EFIS is a reduction in:
(a) effects of EMI
(b) wiring and cabling
*** (c) moving parts present in the flight deck.**

252. The term 'artificial horizon' is sometimes used to describe the indication produced by:
(a) the altimeter
*** (b) the attitude indicator.**
(c) the vertical speed indicator.

253. Typical displays on an EHSI are:
(a) engine indications
*** (b) VO , heading, track**
(c) VO , altitude, rate of limb.

254. In a basic T- configuration of instruments:
*** (a) the ADI appears at the top and the HSI appears at the bottom**
(b) the HSI appears at the top and the ASI appears at the bottom
(c) the ASI appears at the top and the ADI appears at the bottom.

255. Operational faults in FMS an be detected by:
*** (a) automatically comparing outputs on a continuous basis**
(b) routine maintenance inspection of the air raft
(c) pre-flight checks.

256. The upper ECAM display provides:
- (a) navigation information
- (b) secondary flight information
- * (c) engine parameters.

257. The binary number 10101 is equivalent to the decimal number:
- (a) 19
- * (b) 21
- (c) 35.

258. The decimal number 29 is equivalent to the binary number:
- (a) 10111
- (b) 11011
- * (c) 11101.

259. Which one of the following gives the two 's complement f the Binary number 1 11 ?
- * (a) 01010
- (b) 01001
- (c) 10001.

260.The binary coded decimal (BCD) number 1001000 1 is equivalent to the decimal number:
- (a) 19
- * (b) 91
- (c) 145.

261.The decimal number 37 is equivalent to the binary coded decimal (BCD) number:
- * (a) 00110111
- (b) 00100101
- (c) 00101111.

262. Which one of the following numbers could NOT be an octal number?
- (a) 11011
- (b) 771
- * (c) 139.

263.The octal number 73 is equivalent to the decimal number:
- * (a) 47
- (b) 59
- (c) 111.

264.The binary number 100010001 is equivalent to the octal number:
- (a) 111
- (b) 273
- * (c) 421.

265. The hexadecimal number 111 is equivalent to the octal number:

(a) 73
(b) 273
*** (c) 421.**

266 .The hexadecimal number C9 is equivalent to the decimal number:

(a) 21
(b) 129
*** (c) 2 1.**

267.The binary number 10110011 is equivalent to the hexadecimal number:

(a) 93
*** (b) B3**
(c) 113.

268.The hexadecimal number AD is equivalent to the binary number:

(a) 10101101
(b) 11011010
(c) 10001101.

269.The number $70\ 6_8$ is equivalent to :

*** (a) $1C6_{16}$**
(b) $11100\ 1110_2$
(c) 4841_{10}

270. A DAC can produce 256 different output voltages. This DAC has A resolution of:

*** (a) 8 bits**
(b) 128 bits
(c) 256 bits.

271. In a bipolar ADC a logic 1 in the MSB position indicates:

(a) zero input voltage
*** (b) negative input voltage**
(c) positive input voltage.

272. Which one of the following types of ADC is the fastest?

(a) ramp type
*** (b) flash type**
(c) successive approximation type.

273. Which one of the following ADC types uses a large number of comparators?

(a) ramp type
*** (b) flash type**
(c) successive approximation type.

274. T e advantage of an R-2R ladder DAC is that:
- **(a) it uses less resistors overall**
- **(b) it uses a smaller number of analogue switches**
- * **(c) it avoids having a large number of different value resistors.**

275. A 10-bit DAC is capable of producing:
- **(a) 10 different output levels**
- **(b) 100 different output levels**
- * **(c) 1,024 different output levels.**

276. The process of sampling approximating an analogue signal to a series of discrete levels is referred to as:
- **(a) interfacing**
- * **(b) quantizing**
- **(c) data conversion.**

277. In a binary weighted DAC the voltage gain for each digital input is determined by:
- **(a) a variable slope ramp**
- **(b) a variable reference voltage**
- * **(c) resistors having different values.**

278. The resolution of a DAC is stated in terms of:
- **(a) the accuracy of t e voltage reference**
- **(b) the open-loop gain of t e comparator**
- * **(c) the number of bits used in t e conversion.**

279. The conversion time of a flash ADC is typically in the range:
- * **(a) 50 ns to 1 µs**
- **(b) 50 µs to 1 ms**
- **(c) 50 ms to 1 s.**

280. The DAC used in a successive approximation ADC is usually:
- **(a) ramp type**
- * **(b) binary weighted type**
- **(c) successive approximation type.**

281. A bus that supports the transfer of data in both directions is referred to as:
- **(a) universal**
- * **(b) bidirectional**
- **(c) asynchronous.**

282. The main advantage of using a serial bus in an aircraft is:
- **(a) there is no need for data conversion**
- **(b) it supports the highest possible data rates**
- * **(c) reduction in the size and weight of cabling.**

283. Which one of the following is used to minimize reflections present in a bus cable?
- (a) coupler panels
- * (b) bus terminators
- (c) shielded twisted pair cables.

284. The data format in an ARINC 429 stub cable consists of:
- * (a) serial analogue doublets
- (b) parallel data from the local bus
- (c) Manchester encoded serial data.

285. In order to represent negative data values, BNR data uses:
- * (a) two's complement binary
- (b) BCD data and a binary sign bit.
- (c) an extra parity bit to indicate the sign

286. The physical bus media specified in ARINC 629 is:
- (a) fiber optic
- (b) coaxial cable
- * (c) shielded twisted pair.

287. The validity of an ARINC 429 data word is checked b using:
- * (a) a parity bit
- (b) a checksum
- (c) multiple redundancy .

288. The label field in an ARINC 429 data word consists of:
- (a) five bits
- (b) three bits
- * (c) eight bits.

289. The voltages present on an ARINC 429 d a t a bus cable are:
- * (a) ±5 V
- (b) ±15 V
- (c) +5 V and +10V

290. The maximum bit rate supported b ARINC 429 is:
- (a) 12.5 Kbps
- * (b) 100 Kbps
- (c) 1 Mbps.

291. An ARINC 429 NULL state is represented b :
- (a) a voltage of .5 V
- * (b) a voltage of 0 V
- (c) a voltage of +5 V.

292. The maximum data rate supported MIL-STD- 1553 is:
- (a) 12.5 Kbps
- (b) 100 Kbps
- * (c) 1 Mbps.

293. A bus that is self-clocking is referred to as:
- **(a) universal**
- **(b) bidirectional**
- *** (c) asynchronous.**

294. The physical bus media specified in MIL- STD-1773B is:
- *** (a) fiber optic**
- **(b) coaxial cable**
- **(c) shielded twisted pair.**

295. The length of an ARINC 429 word is:
- **(a) 16 bits**
- **(b) 20 bits**
- *** (c) 32 bits.**

296. ARINC 573 is designed for use with:
- **(a) INS**
- *** (b) FDR**
- **(c) Weather radar.**

297. The normal supply voltage for a TTL logic device is:
- **(a) 2.5 V ±5%**
- *** (b) 5 V ±5%**
- **(c) 12 V ±5%.**

298. A two-input NAND gate will produce a logic 0 output when:
- **(a) both of the inputs are at logic 0**
- **(b) either one of the inputs is at logic 0**
- *** (c) both of the inputs are at logic 1.**

299. In a binary count r, the clock input of ach bi-stable stag is fed from:
- **(a) the same clock line**
- *** (b) the Q output of the previous stag**
- **(c) the CLEA line .**

300. In an optical fiber, the refractive index of the core is :
- **(a) the same as the cladding**
- *** (b) larger than the cladding**
- **(c) smaller than the cladding.**

301. A suitable optical transmitter for use with an optical fiber i :
- **(a) a photodiode**
- **(b) a phototransistor**
- *** (c) a low-power laser diode.**

302.The typical core diameter for a mono-mode fiber is :
- *** (a) 5 µm**
- **(b) 50 µm**
- **(c) 125 µm.**

303. In a multi-core fiber optic cable:
(a) the core are color coded
(b) the cladding i color coded
*** (c) the buffer are color coded.**

304. The typical wavelength of light in a fiber is :
*** (a) 1.3 µm**
(b) 13 µm

305. What aircraft standard applies to fiber optic network ?
(a) ARINC 429
(b) ARINC 573
*** (c) ARINC 636.**

306. In order to support a high data rate, a fiber optic cable should have:
(a) zero bandwidth
(b) limited bandwidth
*** (c) wide bandwidth.**

307. A significant advantage of fiber optic network in large passenger aircraft Is:
(a) lower installation co t
*** (b) reduced weight**
(c) ea e of maintenance.

308. A particular problem with the build-up of static charge is that:
(a) it is worse when wet
(b) it is invariably lethal
*** (c) it cannot easily be detected.**

309. The typical resistance of a wrist strap lead is:
(a) 1 B
(b) 1 kB
*** (c) 1 MB.**

310.which one of the following devices is most susceptible to damage from stray static charges:
(a) a power rectifier
(b) a TTL logic gate
*** (c) a MOSFET transistor.**

311. The static voltage generated when a person walks across a carpet can be:
(a) no more than about 10 kV
(b) between 10 kV and 20 kV
*** (c) more than 20 kV.**

312. Which of the materials listed is negative on the tribo-electric scale?
- **(a) glass**
- **(b) silk**
- * **(c) polyester.**

313. When transporting ESD it is important to:
- * **(a) keep them in a conductive package**
- **b) remove them and place them in metal foil**
- **(c) place them in an insulated plastic package.**

314. To reduce the risk of damaging an ESD during soldering it is important to:
- * **(a) use only a low- voltage soldering iron**
- **(b) use only a mains operated soldering iron**
- **(c) use only a low-temperature soldering iron.**

315.Which one of the following items of clothing is most likely to cause static problems?
- * **(a) nylon overalls**
- **(b) a cotton T-shirt**
- **(c) polyester-cotton trousers.**

316. A Level C software classification is one in which a failure could result in:
- **(a) aircraft loss**
- **(b) fatal injuries to passengers or crew**
- * **(c) minor injuries to passengers or crew.**

317. A Level B software classification is one in which the probability of failure is:
- **(a) extremely i probable**
- * **(b) extremely remote**
- **(c) remote.**

18. A software Configuration Management Plan (CMP) must be created and maintained by:
- **(a) the CAA or AA**
- **(b) the aircraft operator**
- * **(c) the relevant DO.**

319. Weather radar is an example of:
- **(a) Class B software**
- **(b) Class C software**
- * **(c) Class D software.**

320. Electronic Engine Control (EEC) software is an example of:
- **(a) D LD**
- * **(b) LSAP**
- **(c) OSS.**

321. OSS and UMS are specific classes of:
- * (a) LS
- b) LSAP
- (c) D LD.

322. The final stage of loading EEC software is:
- (a) disconnecting the PDL
- * (b) verifying the loaded software
- (c) switching on and testing the syste .

323. A periodic noise is:
- * (a) regular but not continuous
- (b) regular and continuous
- (c) entirely random in nature.

324. EMI an be conveyed from a source to a receiver by:
- (a) conduction only
- (b) radiation only
- * (c) conduction and radiation.

325. The display produced by a spectrum analyzer shows:
- (a) frequency plotted against time
- (b) amplitude plotted against time
- * (c) amplitude plotted against frequency.

326. EMI an be reduced by means of:
- (a) screening only
- (b) screening and filtering
- * (c) screening, bonding and filtering.

327. The effects of HIRF an be reduced by:
- (a) screening only
- (b) screening and filtering
- (c) screening, bonding and filtering.

328. The typical maximum value of bonding resistance is:
- * (a) less than 0.005 M
- (b) between 0.005 M and 0.05 M
- (c) more than 0.05 M.

329. Effective protection against lightning and static discharge damage to an air raft requires that:
- (a) all isolated conducting parts must have high resistance to ground
- * (b) all parts of the metal structure of the air raft must be bonded to ground
- (c) all power and bus cables must be well insulated.

330. Supply borne noise an be eliminated by means of:

* **(a) a low-pass filter**
(b) a high-pass filter
(c) a band-pass filter.

331. Noise generated by a switching circuit is worse when:

(a) switching is fast and current is low
(b) switching is slow and current is high
* **(c) switching is fast and current is high.**

332. The standard for ACARS is defined in:

(a) ARINC 429
(b) ARINC 573
* **(c) ARINC 724.**

333. Engine parameters are displayed on:

* **(a) ECAM**
(b) EHSI
(c) CDU.

334. A basic IRS platform has:

(a) three accelerometers and two laser gyros
(b) two accelerometers and three laser gyros
* **(c) three accelerometers and three laser gyros.**

335. The operational FMS database is:

(a) updated once a month
* **(b) is fed with information on aircraft weight before take off**
(c) needs no update information.

336. The left and right cockpit displays:

(a) are supplied from separate symbol generators at all times
(b) are supplied from the same symbol generator
* **(c) will only b supplied from the same symbol generator when all other symbol generators have failed.**

337. A single failure in a fly-by-wire system should:

(a) cause the system to revert to mechanical op ration
(b) result in immediate intervention by the flight crew
* **(c) not have any effect on the operation of the system.**

338. On a flight deck EFIS system, if all of the displays were missing information from a particular source , the most likely cause would be :

a) the symbol generator and display
* **(b) the sensor, input bus or display controller**
(c) the display controller and symbol generator.

339. A central maintenance computer provides:
* (a) ground and in-flight monitoring and testing
(b) ground and BITE testing using a portable control pan l
(c) display of system warnings and cautions.

340. The FMS navigation database is updated:
(a) at the request of the flight crew
(b) during pre -flight checks
* (c) every 28 days.

341. In an EFIS with three symbol generators, what is the purpose of the third symbol generator?
(a) Comparison with the pilot's symbol generator
* (b) Standby in case of failure
(c) To provide outputs for ECAM.

342. The ACARS system uses channels in the :
(a) HF spectrum
* (b) VHF spectrum
(c) UHF spectrum.

343. A method used in modern aircraft for reporting in-flight faults to an engineering and monitoring ground station is:
(a) TCAS II
* (b) ACARS
(c) GPS.

344. In a successive approximation ADC, the time interval between the SC and EOC signals is:
(a) the clock time
(b) the cycle time
* (c) the conversion time.

345. An advantage of a dual-ramp ADC is:
(a) a fast conversion time
* (b) an inherent ability to reject noise
(c) the ability to operate wit out the need for a clock.

346. A bus that supports the transfer of data in both directions is referred to as:
(a) universal
* (b) bidirectional
(c) asynchronous.

347. The main advantage of using a serial bus in an aircraft is:
(a) there is no need for data conversion
(b) it supports the highest possible data rates
* (c) reduction in the size and weight of cabling.

348. Which one of the following is used to minimize reflections present in a bus cable?

(a) coupler panels
*** (b) bus terminators**
(c) shielded twisted pair cables.

349.The data format in an ARINC 429 stub cable consists of:

*** (a) serial analogue doublets**
(b) parallel data from the local bus
(c) Manchester encoded serial data.

350. In order to represent negative data values, BNR data uses:

*** (a) two's complement binary**
(b) BCD data and a binary sign bit.
(c) an extra parity bit to indicate the sign

351. The physical bus media specified in ARINC 629 is:

(a) fiber optic
(b) coaxial cable
*** (c) shielded twisted pair.**

352. The validity of an ARINC 429 data word is checked b using:

*** (a) a parity bit**
(b) a checksum
(c) multiple redundancy .

353. The label field in an ARINC 429 data word consists of:

(a) five bits
(b) three bits
*** (c) eight bits.**

354.The voltages present on an ARINC 429 d a t a bus cable are:

*** (a) ±5 V**
(b) ±15 V
(c) +5 V and +10V

355. The maximum bit rate supported by ARINC 429 is:

(a) 12.5 Kbps
*** (b) 100 Kbps**
(c) 1 Mbps.

356. An ARINC 429 NULL state is represented b :

(a) a voltage of .5 V
*** (b) a voltage of 0 V**
(c) a voltage of +5 V.

357. The maximum data rate supported MIL-STD- 1553 is:
(a) 12.5 Kbps
(b) 100 Kbps
*** (c) 1 Mbps.**

358. A bus that is self-clocking is referred to as:
(a) universal
(b) bidirectional
*** (c) asynchronous.**

359. The physical bus media specified in MIL- STD-1773B is:
*** (a) fiber optic**
(b) coaxial cable
(c) shielded twisted pair.

360. The length of an ARINC 429 word is:
(a) 16 bits
(b) 20 bits
*** c) 32 bits.**

361. ARINC 573 is designed for use with:
a) INS
*** (b) FDR**
(c) Weather radar.

362. The maximum data rate supported by the FDDI bus is:
(a) 1 Mbps
(b) 10 Mbps
*** (c) 100 Mbps.**

363. Which computer bus is used to specify memory locations?
*** (a) address b s**
(b) control b s
(c) data b s.

364. What is the largest hexadecimal address that can appear on a 24-bit address b s?
(a) FFFF
*** (b) FFFFF**
(c) FFFFFF.

365. Bus arbitration is required in order to:
(a) prevent memory loss
*** (b) avoid b s contention**
(c) reduce errors ca used by noise and EMI.

366. A memory device in which any item of data can be retrieved with equal ease is known as:

- (a) parallel access
- * (b) random access
- (c) sequential access.

367. Which one of the following memory devices can be erased and reprogrammed?

- (a) Mask programmed ROM
- (b) OTP EPROM
- * (c) EPROM.

368. The processor instruction HLT is classed as:

- * (a) a control instruction
- (b) a data transfer instruction
- (c) a logical instruction.

369. The VME b s standard uses:

- (a) a single 32-way DIN 41612 connector
- * (b) two 32-way DIN 41612 connectors
- (c) a 100-way PCB edge connector.

370. What type of memory uses the principle of charge storage?

- (a) bipolar static RAM
- (b) MOS static memory
- * (c) MOS dynamic memory.

371. How many 16K × 4 bit DRAM devices will be required to provide 32 K bytes of storage?

- (a) 2
- * (b) 4
- (c) 8.

372. A memory device has a pin marked CAS. The function of this pin is:

- (a) chip active select
- (b) control address signal
- * (c) column address select.

373. A semiconductor memory consists of 256 rows and 256 columns. The capacity of this memory will be:

- (a) 256 bits
- (b) 512 bits
- * (c) 64K bits.

374. In the assembly language instruction MOV AX,07FEh the operation code is:

- * (a) MOV
- (b) AX
- (c) 07FE.

375. A bus arbitration system based on the physical location of cards is referred to as:

* **(a) serial arbitration**
(b) parallel arbitration
(c) sequential arbitration.

376. The stack is used for:

(a) permanent storage of data
* **(b) temporary storage of data**
(c) temporary storage of program .

377. The stack is a structure located:

(a) in the ALU
b) in the general purpose register
* **(c) in external read/ rite memory.**

378. A byte of data is to be inverted. This task is performed by:

* **(a) the ALU**
(b) the instruction register
(c) the instruction decoder.

379. Data can be transferred from one bus to another by mean of:

(a) a bus cycle
(b) a bus buffer
* **(c) a bus bridge.**

380. The output of the instruction pointer appear on:

* **(a) the address bus**
(b) the data bus
(c) the control bus .

381. The CPU data bus buffer i :

(a) unidirectional
* **(b) bidirectional**
(c) omni-directional.

382. Another way to describe the CPU register that act as an instruction pointer is :

* **(a) the program counter**
(b) the stack pointer
(c) the instruction register.

383. In which cycle is an instruction fetched and decoded:

(a) M0
* **(b) M1**
(c) M2.

384. If a microprocessor clock runs at 50 MHz, an instruction requiring 11 T- state will execute in a time of:

* **a) 220 n**
(b) 440 n
(c) 2.2 m

385. An external device can gain the attention of the CPU by generating a ignal on the:

(a) R/W line
(b) RESET line
* **(c) IRQ line.**

386. When executing the assembly language instruction MOV AX,07FEh the operation code will be transferred to:

(a) the accumulator
* **(b) the instruction register**
(c) the instruction pointer.

387. After executing the assembly language instruction MOV AX,07FEh the binary data in the AL register will be:

(a) 11101111
(b) 00000111
* **(c) 11111110.**

388. The advantage of pipelining is :

(a) easier programming
* **(b) faster execution time**
(c) more reliable operation.

389. Segmentation is used with x86 process or in-order to:

(a) increase the speed of processing
(b) set up an instruction pipeline
* **(c) extend the addressing range.**

390. A standard logic gate is a typical example of:

* **(a) an SSI device**
(b) an LSI device
(c) a VLSI device.

391. Which one of the following scales of integration is the largest?

(a) SSI
* **(b) LSI**
(c) MSI.

392. A microprocessor is an example of::

(a) SSI technology
(b) MSI technology
* **(c) VLSI technology.**

393. When compared with DIP packaging, PLCC offers:

* **(a) more pins**
(b) larger size
(c) greater reliability.

394. Which one of the following integrated circuit packaging technologies requires that the chip should always be soldered in place?

(a) DIL
* **(b) SOIC**
(c) PGA.

395. The connections from the pads on an integrated circuit die are:

(a) soldered to the internal wire links
(b) crimped to the internal wire links
* **(c) welded to the internal wire links.**

396. An integrated circuit bus transceiver contains 64 logic gates and buffers. This chip is an example of:

(a) SSI
* **(b) MSI**
c) LSI.

397. Production tests are performed on an integrated circuit wafer:

* **(a) before cutting it into individual hips**
(b) after cutting it into individual hips
(c) only when the hips are finally mounted.

398. Each individual integrated circuit produced from a wafer is known as a:

(a) blank
* **(b) die**
(c) gate.

399. A standard TTL logic gate has a fan-out of:

(a) 1
(b) 5
* **(c) 10.**

400. Another name for a multiplexer is:

* **(a) a data selector**
(b) a bus transceiver
(c) a shift register.

401. A four to one multiplexer has:

(a) one select input
* **(b) Two select inputs**
(c) four select input s.

402. Additional enable input s and output s are provided in some encoders in order to permit :

(a) inverting
*** (b) cascading**
(c) error detection.

403. The peak wavelength of light emitted from a red LED is typically:

(a) 475 nm
b) 525 nm
*** (c) 635 nm.**

404. The spectral response of the human eye peaks at around:

(a) 450 nm
*** (b) 550 nm**
(c) 650 nm.

405. Adjacent phosphors of blue and green are illuminated on the screen of a CRT. The resultant color produced will be:

*** (a) Cyan**
(b) white
(c) magenta.

406. The human eye is most sensitive to:

*** (a) red light**
(b) blue light
(c) green light.

407. A seven segment LED display has segments a, b, c , d, and g illuminated. The character displayed will be:

(a) 2
*** (b) 3**
(c) 5.

408. The BCD input to a seven segment display decoder is 1001. The digit displayed will be:

(a) 7
(b) 8
*** (c) 9.**

409. The potential at the gird of a CRT is:

(a) the same as the cathode
*** (b) negative with respect to the cathode**
(c) positive with respect to the cathode.

410. The function of the final anode of a CRT is:

*** (a) accelerating the electron beam**
(b) deflecting the electron beam
(c) controlling the brightness of the display.

411. Electromagnetic deflection of a CRT uses:
- **(a) oils inside the CRT**
- **(b) X- and Y-plates inside the CRT**
- *** (c) oils around the neck of the CRT.**

412. The three beams in a color CRT are associated with the colors:
- **(a) red, yellow and blue**
- *** (b) red, green and blue**
- **(c) green, blue and yellow.**

413. When compared with CRT displays, AMLC displays have:
- **(a) larger volume and lower reliability**
- **(b) larger volume and greater reliability**
- *** (c) smaller volume and greater reliability.**

414. The final anode of a CRT display requires:
- **(a) a low voltage AC supply**
- **(b) a high voltage AC supply**
- *** (c) a high voltage C supply.**

415. The deflecting waveform supplied to the plates of an electrostatic CRT will be:
- **(a) a sine wave**
- *** (b) a ramp wave**
- **(c) a square wave.**

416. The typical value of maximum forward current for an LED indicator is:
- *** (a) 0.03 A**
- **(b) 0.3 A**
- **(c) 3 A.**

417. The patterns required to display alphanumeric character in a CRT controller are stored in:
- **(a) static RAM**
- **(b) dynamic RAM**
- *** (c) character generator ROM.**

418. When compared with passive matrix LCD , AMLCD are:
- *** (a) faster and sharper**
- **(b) faster and less sharp**
- **(c) slower and less sharp.**