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2017 Avionics News Training Exam

JANUARY

Frequently Asked Questions

1. The following are common installation errors in ADS-B Out installations.
 - A. Missing barometric pressure altitude
 - B. Air/ground determination issues
 - C. Duplicate and wrong ICAO codes
 - D. All of the above
 - E. A and B only
2. The practice of copying ADS-B Out configurations from one aircraft to the next is the best way to ensure fewer ADS-B Out installation errors.
 - A. True
 - B. False

Safety Assurance System

3. Which of the following safety attributes help form the backbone of the FAA's Safety Assurance System (SAS)?
 - A. Process measurement
 - B. Controls
 - C. Risk
 - D. All of the above
 - E. A and B only

4. Safety Assurance System is an extension of SMS and intends to improve safety in operations by defining detailed processes, implementing controls, and developing and implementing corrective actions.
 - A. True
 - B. False
5. Which of the following are true about SAS?
 - A. It is not found in any regulation
 - B. It is inspector guidance
 - C. Should still be supported as a fundamental goal of the FAA
 - D. All of the above
 - E. None of the above

Step Aside VOR; PBN is Taking Over

6. Since the dawn of aviation, pilots have flown mostly with reference to _____.
 - A. The stars
 - B. The ground
 - C. Satellites
 - D. None of the above
7. The goal of the FAA is to make _____ the primary form of air navigation in the National Airspace System (NAS).
 - A. VOR
 - B. PBN
 - C. GPS
 - D. RNAV

8. Which of the following are advantages of performance-based navigation (PBN) procedures?
 - A. Aircraft are enabled to fly more direct routes
 - B. Reduced separation between aircraft
 - C. Easier for controllers to handle in congested airspace
 - D. All of the above
 - E. A and B Only

FEBRUARY

Frequently Asked Questions

9. A repair station's test equipment calibration standards must be derived from and traceable to which of the following?
 - A. ASTM Standard F1469
 - B. National Institute of Standards and Technology
 - C. Standards set by test equipment manufacturer
 - D. A and B only
 - E. B and C only
10. The accepted industry practice for calibrations intervals is usually _____.
 - A. Six months
 - B. One year
 - C. Two years
 - D. Dependent on frequency of use

Take a Load Off

11. Most LEDs are monochromatic in their light output, meaning their light produced occurs at a single wavelength.
 - A. True
 - B. False
12. An LED's output can be set in the design and production process, resulting in visible light ranging from _____.
 - A. 500 nm – 6,000 nm
 - B. 300 nm – 800 nm
 - C. 400 nm – 700 nm
 - D. None of the above
13. Longer life, lower power consumption and high efficiency are some of the benefits of _____.
 - A. Incandescent lights
 - B. Halogen lights
 - C. Fluorescent lights
 - D. LEDs

ADS-B In

14. ADS-B In allows equipped aircraft to “see” two types of services: _____.
 - A. FIS-B and TIS-B
 - B. FIS-B and TCAS
 - C. TIS-B and NEXRAD
 - D. TIS-B and TFRs
15. Both FIS-B and TIS-B are broadcast on 978 MHz and 1090 MHz.
 - A. True
 - B. False
16. To get the most out of ADS-B In, an aircraft needs to squawk with an approved ADS-B Out system of some form.
 - A. True
 - B. False

MARCH

Frequently Asked Questions: ADS-B

17. For U.S. civil aircraft, the ICAO 24-bit address is established as a function of the _____.
 - A. ADS-B installer's discretion
 - B. Avionics manufacturer's designation
 - C. Aircraft registration or “N” number
 - D. AC 20-165B

Is Your New ADS-B Equipment Working Correctly?

18. If the transmitted ICAO code doesn't correlate to the aircraft's assigned N number, the ADS-B installation is still considered compliant with the FAA rule.
 - A. True
 - B. False

19. Ground test equipment will verify that an ICAO code is loaded, not that it is valid for the airframe.
 - A. True
 - B. False

What's Next with NextGen?

20. The technology that will enable digital, text-based communications between pilots and controllers significantly reducing pilot workload and enhancing safety is referred to as _____.
 - A. SWIM – System Wide Information Management
 - B. Data Comm – Data Communications
 - C. DSS – Decision Support Systems
 - D. TAMR – Terminal Automation Modernization Replacement

21. The NextGen system envisioned to help support the requirements for handling unmanned aircraft systems in the NAS is referred to as _____.
 - A. SWIM – System Wide Information Management
 - B. ERAM – En Route Automation Modernization
 - C. NVS – NAS Voice System
 - D. TAMR – Terminal Automation Modernization Replacement

22. In its simplest form, performance-based navigation (PBN) is a much more advanced form of RNAV with onboard monitoring and alerting capability.
 - A. True
 - B. False

APRIL

Frequently Asked Questions

23. In order for work to be considered contract maintenance, the work performed must be something the contracting repair station is rated for and is using the certificate for the approval of return to service.
 - A. True
 - B. False
24. A step or series of steps in the process of performing maintenance, preventative maintenance or alterations that may result in approving an article for return to service is considered _____.
 - A. Contracting
 - B. Maintenance function
 - C. Outsourced maintenance
 - D. Maintenance privileges
 - E. None of the above

Frequently Asked Questions: ADS-B

25. Motor gliders with factory-installed electrical systems will not require ADS-B Out to operate in rule airspace after the equipage deadline.
- A. True
 - B. False

ADS-B Airspace

26. The airspace within a 30-nautical mile radius of a Class B airport from the surface to 10,000 feet requiring aircraft to have a Mode C transponder with altitude reporting is _____.
- A. Class A airspace
 - B. Class B airspace
 - C. Mode C Veil
 - D. Class C airspace
27. For general aviation aircraft, ADS-B Out is required in Class B and C airspace as well as the Mode C Veil.
- A. True
 - B. False
28. The airspace defined by having an operational control tower, servicing by radar approach control, and a certain number of IFR operations or passenger enplanements is _____.
- A. Class A airspace
 - B. Class B airspace
 - C. Mode C Veil
 - D. Class C airspace

MAY

Frequently Asked Questions

29. A master minimum equipment list (MMEL) contains a list of equipment and instruments that may be inoperative on a specific type of aircraft, where an MEL is the document for a particular make and model by serial and registration number.
- A. True
 - B. False
30. The _____ permits operation of the aircraft under specified conditions with certain equipment inoperative.
- A. MMEL
 - B. MEL
 - C. STC
 - D. LOA

Frequently Asked Questions: ADS-B

31. Examples of ways an installed ADS-B system can accurately determine air-ground status of the aircraft may include _____.
- A. Weight on wheel (WOW) switch and GPS velocity
 - B. GPS velocity, airport database, geometric altitude
 - C. Ground speed comparison to a single threshold value
 - D. A and C only
 - E. A and B only
32. For an installed ADS-B system, it is acceptable to have a manual selection of the air-ground status of the aircraft.
- A. True
 - B. False

Radar Love

33. FIS-B weather images have aged _____ by the time they are broadcast.
- A. None, they are real-time
 - B. 1 minute
 - C. 6 minutes
 - D. 10 to 12 minutes
34. A key difference between FIS-B and airborne weather radar is FIS-B provides a nationwide view instead of just showing what's in front of the aircraft.
- A. True
 - B. False
35. Examples of airborne weather radar shortcomings include _____.
- A. Signal attenuation due to precipitation
 - B. Useful range can be limited to no more than 320 nautical miles
 - C. Limited mounting options for antenna
 - D. All of the above
 - E. None of the above

JUNE

Seeing the Invisible Light

36. Radar altimeters provide help in avoiding terrain once below _____.
- A. 1,000 feet AGL
 - B. 1,500 feet AGL
 - C. 2,500 feet AGL
 - D. 5,000 feet AGL

37. Which of the following provide CFIT alerts based on GPS position and velocity compared to detailed terrain from a database?
- Radar altimeter
 - GPWS
 - EVS
 - None of the above
38. Limitations of enhanced vision systems (EVS) include: _____.
- What it shows exists only in its database
 - Does not have real-time imagery
 - Is limited in range to what its lens can see
 - All of the above
39. SVS is immune to all forms of atmospheric contamination because it isn't seeing the world through a sensor, rather it is replaying the view from computer memory.
- True
 - False

Cybersecurity in the Sky

40. Cockpit connectivity is a more vulnerable and likely target for hackers than cabin connectivity.
- True
 - False
41. Cockpit technology and its susceptibility to cyberattacks should be considered in two separate categories: _____ and _____.
- Pilots; flight attendants
 - Installed, certificated hardware; portable devices
 - Safe charging of devices; password protection
 - Wi-Fi; Ethernet

JULY

Frequently Asked Questions: ADS-B

42. Multiple ADS-B Out systems can be installed in a single aircraft provided they meet criteria per AC 20-165B.
- True
 - False

The Sum of all Performance-Based Navigation Procedures

43. GPS and its augmentation systems constitute what is known globally as _____.
- Global Navigation Satellite System
 - Performance-based Navigation
 - Wide Area Augmentation System
 - RNAV
44. The age and capability of an aircraft's avionics have no impact on the level of PBN procedures it can fly.
- True
 - False
45. LPV provides minimums as low as _____ above the ground before a pilot has to see the runway to land.
- 50 feet
 - 100 feet
 - 200 feet
 - 500 feet

46. Which of the following provides fixed, precise paths for aircraft from takeoff to en route airspace with a minimum of level-offs to reduce fuel consumption and noise?
- LPV
 - Q-Routes
 - RNAV STARs
 - RNAV SIDs

47. Which of the following can be flown using positioning from either satellite signals or distance measuring equipment in case of a GPS outage?
- T-Routes
 - Q-Routes
 - LPV
 - RNP

AUGUST

Frequently Asked Questions

48. Repair stations are required to have certificated mechanics with inspection authorization on staff in order to return aircraft to service.
- True
 - False
49. According to 14 CFR 43.7, persons authorized to approve aircraft, airframes, aircraft engines, propellers, appliances, or component parts to service include _____.
- The holder of a mechanic certificate
 - The holder of a repair station certificate
 - The holder of a pilot certificate
 - All of the above
 - A and B only
50. The requirements of the ADS-B rule apply only to the airspace, not the operation such as VFR or IFR.
- True
 - False

Power to the Panel

51. The main-ship battery is typically an aircraft's single level of redundancy for the electrical system.
- True
 - False

52. All-electric panels help eliminate the _____, which is arguably the most failure-prone accessory that analog panels use for power.
- Main-ship battery
 - Alternator
 - Generator
 - Suction pump
53. Which of the following provide air and attitude-data sensing found in modern primary flight displays via the AHRs?
- Attitude indicator
 - Directional gyro
 - MEMS
 - Turn coordinator

SEPTEMBER

Frequently Asked Questions: ADS-B

54. A pilot-entered Flight ID in an ADS-B Out system can still be rule compliant.
- True
 - False
55. Installation of a TSO ELT in a small airplane (less than 12,500 pounds) using the methods, techniques and practices contained in AC 43.13-2B is a major alteration.
- True
 - False

What's in a Name?

56. Which of the following is not a call sign designator authorized by the FAA?
- ICAO three-letter designator
 - U.S. special call sign designator
 - Local call sign designator
 - NAS special use designator

57. Flight schools may use a _____ in order to reduce confusion and ambiguity among several similar-sounding aircraft operating in close proximity.
- NAS special use designator
 - U.S. special call sign designator
 - Local call sign designator
 - Flight ID
58. If an ADS-B Out system does not allow the aircraft identification to be changed to match a call sign, it will have to revert back to the _____.
- ATC assigned transponder code
 - Aircraft Registration (N-Number)
 - Local call sign designator
 - None of the above

OCTOBER

Frequently Asked Questions: ADS-B

59. Repair stations assume the responsibility for airworthiness of a transponder installation completed by a third party when they perform 91.413 tests and inspections.
- True
 - False
60. According to 91.413, ATC transponder checks and inspections can be performed by _____.
- Repair stations
 - Aircraft manufacturer if it installed the transponder
 - Part 121 or 135 operator
 - All of the above
 - A and B only

61. Ground testing and ADS-B Out systems cannot lead to creation of a false airborne target because ADS-B systems are equipped to know when there is weight on wheels.
- True
 - False

Real-World Avionics – ICAO avionics equipment codes

62. ICAO codes used in flight planning _____.
- Identify installed avionics equipment
 - Were originally only required for domestic flights
 - Will be required by the FAA for operators filing instrument flight plans
 - All of the above
 - A and C only
63. An aircraft with basic VHF nav/com and Mode C transponder equipment will file _____ on item 10 of the ICAO equipment code form.
- SBDFGRWZ/EB2
 - S/C
 - OV/C
 - SBGR/S

Curing the Snaps, Crackles & Pops of P-Static

64. The electrical charge on an aircraft due to atmospheric friction is known as P-Static and often occurs around _____.
- Trailing edges of wings
 - Control surface tips
 - Vertical and horizontal surfaces
 - All of the above
 - A and B only

65. Which of the following serve as an electrical conductor, preventing P-Static buildups by allowing electrons to bleed from the airframe back to the atmosphere?
- A. Bonding jumpers
 - B. Static wicks
 - C. Grounding lines
 - D. None of the above

NOVEMBER

ADS-B In Solutions

66. ADS-B In receivers are designed to only pick up one ADS-B Out frequency, either 978 MHz or 1090 MHz frequency – not both.
- A. True
 - B. False
67. The satellite weather graphics fed to ADS-B In systems should only be used for _____ flight planning, not _____ flight planning, because the image is 7 to 12 minutes old.
- A. Strategic, tactical
 - B. Tactical, strategic
 - C. IFR, strategic
 - D. Tactical, IFR
68. It is possible for an ADS-B In-equipped aircraft to receive a partial traffic picture unless another aircraft wakes up the ADS-B ground station that repeats the traffic the receiver can't pick up.
- A. True
 - B. False

The Transponder Dilemma: Replace or Augment?

69. Operators who fly internationally will have to outfit their aircraft with the _____ transponder option because it is the standard selected by ICAO.
- A. 978 MHz
 - B. 1090ES
 - C. Mode C
 - D. Any of the above
70. 978 MHz UAT technology _____.
- A. Supports traffic and weather
 - B. Has broader bandwidth than 1090ES
 - C. Is a more congested frequency than 1090ES
 - D. All of the above
 - E. A and B Only
71. The FAA allows operators the option of keeping the transponder on standby while taxiing in their ADS-B Out-equipped aircraft.
- A. True
 - B. False

DECEMBER

Frequently Asked Questions: ADS-B

72. There are no explicit requirements for a receiving inspection under the Federal Aviation Regulations.
- A. True
 - B. False
73. The foundation of any repair station's receiving inspection should include a definition of "approved parts."
- A. True
 - B. False
74. Possible sources of making a traceability determination could include _____.
- A. Shipping tickets
 - B. Invoices
 - C. Work orders
 - D. All of the above
 - E. A and B only
75. The ADS-B Out rule is an airspace rule and applies to any aircraft flying in ADS-B airspace regardless of the state of registry of the aircraft.
- A. True
 - B. False

Full Name: _____ Date: _____
(please print legibly)

Company: _____

Address: _____ City: _____ State/Province: _____ Zip/Postal Code: _____

Phone: _____ Email Address: _____

The answers to this exam are all available at your fingertips — simply refer to the 2017 back issues of *Avionics News* or go to avionicsnews.net to search the archives. Answer 85 percent of the questions correctly, and you will receive a certificate of completion to submit to your FSDO and to the AEA for training credit. AEA members can visit aea.net/training for information about applying for credit toward the 2017 Avionics Training Excellence Award. This test also can be taken and submitted online at avionicsnews.net. Or, complete this answer sheet, and then email it to info@aea.net.

Important date:

April 1, 2018

Deadline to submit application (with exams) for credit toward the AEA's 2017 Avionics Training Excellence Award.

Choose the best available answer. Work individually.

(T) (F)

1. [A] [B] [C] [D] [E]
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3. [A] [B] [C] [D] [E]
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51. [A] [B] [C] [D] [E]
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