

AVIONICS NEWS

2021 Technical
Training Exam

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JANUARY

The View from Washington

1. Safety culture can be which of the following?
 - A. Positive
 - B. Negative
 - C. Neutral
 - D. Can be positive, negative or neutral.
2. The fundamental establishment of a safety culture is set by _____.
 - A. Employees
 - B. FAA
 - C. Senior leadership
 - D. Competitors

Frequently Asked Questions

3. Service difficulty reports (SDR) must be submitted within ____ hours of discovery of any serious failure, malfunction or defect of an article.
 - A. 12 hours
 - B. 24 hours
 - C. 72 hours
 - D. 96 hours
4. 121.703 and 135.415 contain lists of what may help repair stations determine when an SDR should be submitted and include which of the following?
 - A. Aircraft component that causes smoke
 - B. Engine shutdown during flight because of flameout
 - C. Loss of brake actuation
 - D. All of the above
 - E. None of the above

Theory and Practice

5. Navigators and mariners used ____ to determine latitude and ____ to determine longitude.
 - A. Prime meridian, stars
 - B. Stars, dead reckoning
 - C. Stars, prime meridian
 - D. Time-based options, stars

6. Which of the early navigation systems measured the time delay between two signals to help aviators determine their location?
 - A. Gee system
 - B. Dead-reckoning
 - C. Decca
 - D. None of the above
7. Which early navigation system operated between the frequencies 70 kHz and 128 kHz?
 - A. Gee system
 - B. LORAN
 - C. Decca
 - D. None of the above
8. LORAN-C offered the user a range of around ____ nautical miles.
 - A. 200
 - B. 400
 - C. 1,500
 - D. 2,000
9. LORAN-C was capable of precision approaches.
 - A. True
 - B. False

10. DME and TACAN work on UHF around 1 GHz but are only line of site and cannot cover thousands of square miles like LORAN-C could.

A. True
B. False

11. The Galileo global satellite navigation system is used by ____.

A. Russia
B. China
C. Europe
D. Japan



FEBRUARY

The View from Washington

12. For repair station training programs, the FAA approves both the program and the training curricula for each repair station.

A. True
B. False

13. Per the FAA's repair station training program requirements, employee training records must be kept for a minimum of ____.

A. One year
B. Two years
C. Three years
D. Lifetime

Frequently Asked Questions

14. The production of a part as a function of maintenance was an exemption to the regulation 14 CFR 21.9 but was never modified to include repair and alterations.

A. True
B. False

15. When a repair station outsources the fabrication of instrument panels to a subcontractor, it must still control the design, manufacture and quality of the part.

A. True
B. False

A Battery of Options

16. Some advantages of lithium-ion battery technology include ____.

A. Lighter weight
B. Reduced maintenance and operational costs
C. Superior high temperature and cold weather performance
D. All of the above
E. None of the above

17. Which of the following battery types suffer from the memory effect?

A. NiCad
B. Nickel-metal hydride
C. Lead-acid wet cell
D. None of the above



MARCH

Frequently Asked Questions

18. For a Part 145 repair station, there is not an "avionics" rating.

A. True
B. False

19. Ratings for an avionics repair station typically include ____.

A. Radio
B. Instrument
C. Airframe
D. All of the above
E. A and C only

20. The 14 CFR Part 1 definition of instruments includes electronic devices for automatically controlling an aircraft in flight.

A. True
B. False

21. The repair station regulations categorize instruments into which of the following categories?

A. Mechanical
B. Electrical
C. Inertial
D. All of the above
E. A and B only

22. A cylinder head temperature gauge would be an example of ____.
- Mechanical instrument
 - Electrical instrument
 - Gyroscopic instrument
 - None of the above

23. An airspeed indicator is an example of a ____.
- Mechanical instrument
 - Electrical instrument
 - Gyroscopic instrument
 - None of the above

24. Which rating would apply to a repair station that maintains or alters in-flight entertainment systems?
- Airframe
 - Radio
 - Instrument
 - Accessory



APRIL

Dodging Avoidable Impacts

25. Controlled Flight into Terrain (CFIT), one of the top three causes of general aviation accidents, predominantly occurs ____.
- At night
 - In instrument meteorological conditions
 - In daylight
 - During takeoff
26. According to the FAA, about 41% of CFIT accidents occur during the final approach or landing phase of the flight.
- True
 - False
27. Which of the following are contributing factors to CFIT?
- Pilot error, fatigue
 - Visibility, weather
 - Distraction, disorientation
 - All of the above
 - None of the above

Theory and Practice

28. Radar works by transmitting a powerful burst of energy and starting a timer.
- True
 - False
29. When using radar, range is determined by calculating the time between pulses transmitted and received.
- True
 - False
30. Which of the following systems was developed to help British forces determine whether an aircraft was an enemy or an ally?
- Transponder
 - IFF
 - Pulse
 - Squawk
31. Squawk is a command for a pilot to set the transponder to a specific number for air traffic control.
- True
 - False
32. Transponder modes A and B are used for transmission of four-digit codes as well as altitude information.
- True
 - False
33. When an aircraft is equipped with a Mode S transponder, it receives a unique identifier code that identifies the aircraft regardless of the code the pilot sets.
- True
 - False

34. What term best describes an electronic beacon that acts like the radio equivalent of a flashing light in a Mode S transponder?

- A. Squawk
- B. Squitter
- C. SSR
- D. SPI

35. Mode S transponders report a speed range, where ADS-B reports exact speed.

- A. True
- B. False



MAY

Frequently Asked Questions

36. Parts manufacturer approval (PMA) applicability is often linked to ____.

- A. AML-STC
- B. TSO
- C. Field approval
- D. Type design

37. Neither TSO nor PMA are parts approvals; rather, they are installation approvals.

- A. True
- B. False

38. PMA is combined design and production approval for modification and replacement parts.

- A. True
- B. False

39. A PMA'd article can be installed beyond the manufacturer's applicability list with additional approval via FAA field approval or assistance from a DER.

- A. True
- B. False

Lightening the Electrical Load

40. Landing lights can draw 50 to 100 watts of power and, on many older aircraft, impose the majority of the electrical load when switched on.

- A. True
- B. False

41. Benefits of LED lights versus incandescent lights include ____.

- A. Longer lifespan
- B. Cooler operation
- C. Resistance to shock and vibration
- D. All of the above
- E. Both A and C only

42. The advantages of switching an aircraft to an alternator from a generator include ____.

- A. Greater power output
- B. Less weight
- C. Little or no modification to aircraft
- D. All of the above
- E. Both A and B only



JUNE

The View from Washington

43. Repair station manuals are written for the sole purpose of the authority's approval.

- A. True
- B. False

44. The FAA quality control system and the international quality assurance systems are synonymous with a quality management system.

- A. True
- B. False

45. The final element in a quality system is ____.

- A. Authority approval
- B. Return to service
- C. Establishing a just culture
- D. Taking corrective action on discrepancies

46. Your authority, your surveyor, your inspector reviews your manuals to determine if your business is compliant with the regulations.

- A. True
- B. False

Frequently Asked Questions

47. An electrical load analysis should be performed ____.

- A. Annually
- B. When a discrepancy requires a calculation of electrical load
- C. When installing or removing electrical equipment
- D. None of the above
- E. Both B and C only

48. Anyone performing an alteration that may have an effect on the aircraft electrical power system must determine that the system has the capacity to accommodate that change.

- A. True
- B. False



JULY

Theory and Practice

49. Aviation uses ____ modulation for voice communication on very high frequency (VHF).

- A. Digital
- B. Amplitude
- C. Frequency
- D. None of the above

50. Forms of digital modulation used in aviation today include which of the following?

- A. ACARS
- B. VHF data link (VDL)
- C. ADS-B
- D. All of the above
- E. None of the above

51. For maximum power transfer to occur, the impedance of the input must ____.

- A. Match the output
- B. Be half the output
- C. Be twice the output
- D. Impedance measurement is insignificant

52. The standard diameter for headphone jacks is ____ and for microphone jacks is ____.

- A. .21 inches; .25 inches
- B. .21 inches; .21 inches
- C. .25 inches; .21 inches
- D. .25 inches; .25 inches

53. When communication radios were designed and built with vacuum tubes, the original frequencies used were in the ____ band.

- A. Medium
- B. High
- C. Very high
- D. All of the above
- E. Both A and B only

54. The number of communication channels available today in the VHF band is ____.

- A. 360
- B. 720
- C. 760
- D. 2,280

55. A VHF comm channel selector may show the highest communication channel as 136.99, but in reality, the highest frequency used is ____.

- A. 136.975
- B. 135.95
- C. 136.99163
- D. None of the above



AUGUST

Frequently Asked Questions

56. The only two sources of approved data are field approvals and supplemental type certificates.

- A. True
- B. False

57. DARs have special authority to issue data approvals in support of major repairs or alterations.

- A. True
- B. False



SEPTEMBER

The View from Washington

58. A means of compliance is one method but not the only method to show compliance with a regulatory requirement.
- A. True
 - B. False
59. A description of how compliance will be shown is the definition of ____.
- A. Means of compliance
 - B. Method of compliance
 - C. Alternate means of compliance
 - D. None of the above
60. The only option a representative of a civil aviation authority has for rejecting an advisory circular is to show that it is not applicable or not appropriate for the intended operation.
- A. True
 - B. False

Frequently Asked Questions

61. Which of the following provides an acceptable means of showing compliance for the repair station training program requirement in Part 145.163?
- A. AC 145-9
 - B. AC 145-10
 - C. FAA Safety Assurance Data Collection Tool
 - D. None of the above
62. When developing a repair station training program, it is necessary to satisfy every requirement in the FAA Safety Assurance Data Collection Tool.
- A. True
 - B. False

Commercial Drone Operations

63. Commercial UAS operations are limited for which of the following?
- A. Night operations
 - B. Beyond visual line of sight (BVLOS)
 - C. Over people
 - D. All of the above
 - E. None of the above

64. UAS night operations are permitted under which of the following conditions?
- A. Remote PIC must complete recurrent training
 - B. The sUAS must have lighted anti-collision lights visible for 3 miles
 - C. Operations are limited to package delivery
 - D. All of the above
 - E. Both A and B only
65. For UAS, type certification and the following issuance of an airworthiness certificate is not required when operating under ____.
- A. Part 135
 - B. Part 121
 - C. Part 107
 - D. Part 91



OCTOBER

The View from Washington

66. Every business has a safety culture; be it exceptional or nearly non-existent, it is still a safety culture.
- A. True
 - B. False

67. The composite of predicted severity and likelihood of the potential effect of a hazard in its worst credible system state is the definition of ____.

- A. A hazard
- B. A risk
- C. A mitigation
- D. None of the above

68. A condition that might cause, or is a prerequisite to, an accident or incident is a ____.

- A. Hazard
- B. Risk
- C. Mitigation
- D. None of the above

69. A formal process for change management should take in account which of the following?

- A. Criticality of systems and activities
- B. Stability of systems and operational environments
- C. Safety culture
- D. All of the above
- E. Both A and B only

Frequently Asked Questions

70. The altimeter labeling requirement for an altimeter test is for when the 14 CFR 91.411 test is performed on an altimeter without the aircraft.

- A. True
- B. False

71. The test and inspection status of the article (altimeter) can be determined from aircraft records when the test is performed with the article (altimeter) installed.

- A. True
- B. False



NOVEMBER

The View from Washington

72. To be eligible for a repairman certificate, a person must have at least ____ of practical experience in the maintenance duties of the specific job for which they are employed.

- A. 6 months
- B. 12 months
- C. 18 months
- D. 30 months

73. An alternative to practical experience when pursuing a repairman certificate is the completion of formal training acceptable to the administrator.

- A. True
- B. False



DECEMBER

International News and Regulatory Updates

74. The Code of Federal Regulations requires which of the following to establish an SMS?

- A. Part 135
- B. Part 145
- C. Part 121
- D. Part 141

75. Safety Management Systems (SMS) consist of a set of processes divided into which of the following major components?

- A. Policy, promotion, risk management, assurance
- B. Hazard, mitigation, emergency action
- C. Assessment, hazard reporting, feedback
- D. Culture, reporting, analysis

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 2021 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 2021 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, 2022

Deadline to submit application (with exams) for credit toward the AEA's 2021 Avionics Training Excellence Award.

Choose the best available answer. Work individually.

(T) (F)

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

2. [A] [B] [C] [D] [E]

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

4. [A] [B] [C] [D] [E]

5. [A] [B] [C] [D] [E]

6. [A] [B] [C] [D] [E]

7. [A] [B] [C] [D] [E]

8. [A] [B] [C] [D] [E]

9. [A] [B] [C] [D] [E]

10. [A] [B] [C] [D] [E]

11. [A] [B] [C] [D] [E]

12. [A] [B] [C] [D] [E]

13. [A] [B] [C] [D] [E]

14. [A] [B] [C] [D] [E]

15. [A] [B] [C] [D] [E]

16. [A] [B] [C] [D] [E]

17. [A] [B] [C] [D] [E]

18. [A] [B] [C] [D] [E]

19. [A] [B] [C] [D] [E]

20. [A] [B] [C] [D] [E]

21. [A] [B] [C] [D] [E]

22. [A] [B] [C] [D] [E]

23. [A] [B] [C] [D] [E]

24. [A] [B] [C] [D] [E]

25. [A] [B] [C] [D] [E]

(T) (F)

26. [A] [B] [C] [D] [E]

27. [A] [B] [C] [D] [E]

28. [A] [B] [C] [D] [E]

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30. [A] [B] [C] [D] [E]

31. [A] [B] [C] [D] [E]

32. [A] [B] [C] [D] [E]

33. [A] [B] [C] [D] [E]

34. [A] [B] [C] [D] [E]

35. [A] [B] [C] [D] [E]

36. [A] [B] [C] [D] [E]

37. [A] [B] [C] [D] [E]

38. [A] [B] [C] [D] [E]

39. [A] [B] [C] [D] [E]

40. [A] [B] [C] [D] [E]

41. [A] [B] [C] [D] [E]

42. [A] [B] [C] [D] [E]

43. [A] [B] [C] [D] [E]

44. [A] [B] [C] [D] [E]

45. [A] [B] [C] [D] [E]

46. [A] [B] [C] [D] [E]

47. [A] [B] [C] [D] [E]

48. [A] [B] [C] [D] [E]

49. [A] [B] [C] [D] [E]

50. [A] [B] [C] [D] [E]

(T) (F)

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

52. [A] [B] [C] [D] [E]

53. [A] [B] [C] [D] [E]

54. [A] [B] [C] [D] [E]

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56. [A] [B] [C] [D] [E]

57. [A] [B] [C] [D] [E]

58. [A] [B] [C] [D] [E]

59. [A] [B] [C] [D] [E]

60. [A] [B] [C] [D] [E]

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62. [A] [B] [C] [D] [E]

63. [A] [B] [C] [D] [E]

64. [A] [B] [C] [D] [E]

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66. [A] [B] [C] [D] [E]

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72. [A] [B] [C] [D] [E]

73. [A] [B] [C] [D] [E]

74. [A] [B] [C] [D] [E]

75. [A] [B] [C] [D] [E]