

# AVIONICS NEWS

2022 Technical  
Training Exam

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TOWARD  
IA RENEWAL**



- Based on *Avionics News* issues from 2022.
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### JANUARY

#### *The View from Washington*

1. "The way in which an organization manages the interrelated parts of its business in order to achieve its objectives" is the definition of \_\_\_\_\_.
  - A. Operational efficiency
  - B. Quality assurance
  - C. Management system
  - D. Environmental performance
2. According to ICAO, typical management systems within an aviation organization may include which of the following?
  - A. Quality management system
  - B. Security management system
  - C. Financial management system
  - D. All of the above
  - E. A and B only

3. In the case of approved maintenance organizations, every regulatory authority requires a \_\_\_\_\_.
  - A. Safety management system
  - B. Quality management system
  - C. Personnel management system
  - D. Occupational health management system
4. Which of the following is a set of internal rules that are defined by a collection of documented policies, processes, procedures and records?
  - A. Quality management system
  - B. Safety management system
  - C. Quality assurance program
  - D. Environmental management system
5. "A program for the systematic monitoring and evaluation of the various aspects of project, service or facility to ensure that standards of quality are being met" is the definition of \_\_\_\_\_.
  - A. Safety management system
  - B. Quality management system
  - C. Information management system
  - D. Quality assurance

6. Benefits of integrating various management systems as functional components into an overarching enterprise management system include \_\_\_\_\_.
  - A. Reduction of duplication and costs
  - B. Reduction of organizational risks
  - C. Increase in profitability
  - D. All of the above
  - E. None of the above



### FEBRUARY

#### *The View from Washington*

7. According to 14 CFR 145.207, the requirements for a repair station manual include which of the following?
  - A. A repair station must prepare and follow a repair station manual acceptable to the FAA.
  - B. A repair station must receive approval for manual revisions from its Flight Standards Office.
  - C. The manual must be accessible for use by repair station personnel.
  - D. All of the above
  - E. A and C only

8. The phrases "acceptable to" and "accepted by" used throughout the FAA regulations are interchangeable and mean the same thing.

A. True  
B. False

9. A requirement of a repair station's quality control system is that it must be designed to \_\_\_\_.

A. Qualify personnel  
B. Manage risk  
C. Ensure airworthiness  
D. Evaluate alterations

10. A requirement of a repair station's quality control system is that it applies to each of the repair station's contractors.

A. True  
B. False

### Frequently Asked Questions

11. "Accepted by" is a term in the regulations that means the item at issue must be submitted to the FAA for review and acceptance prior to use.

A. True  
B. False

12. The term \_\_\_\_ affirms the FAA or an FAA delegated person's assessment of the item at issue is complete and the FAA authorizes its incorporation and use.

A. Acceptable  
B. Accepted by  
C. Approved  
D. None of the above



## APRIL

### The View from Washington

13. According to the Civil Aviation Safety Authority in Australia, which of the following are specified as avionics systems?
- A. Cabin systems  
B. In-flight entertainment systems  
C. Onboard maintenance systems  
D. All of the above  
E. None of the above
14. All civil aviation operations other than scheduled air services and non-scheduled air transport operations for remuneration or hire are considered by ICAO to be general aviation.
- A. True  
B. False

### General Aviation Safety

15. Most non-commercial fixed-wing accidents occur during \_\_\_\_.
- A. Night instrument meteorological conditions  
B. Day visual meteorological conditions  
C. Night VMC  
D. Day IMC

16. According to the Nall Report's 2019 accident data, how many of the 194 accidents attributed to mechanical issues were related to instruments?

A. 132  
B. 27  
C. 15  
D. 3

### Theory & Practice

17. The AM broadcast band ends at approximately what frequency?

A. 350 kHz  
B. .2 MHz  
C. 1.6 MHz  
D. 2,500 kHz

18. The highest frequency used for glideslope is \_\_\_\_.

A. 110.3 MHz  
B. 335.3 MHz  
C. 335 MHz  
D. None of the above



## MAY

### Going International with ADS-B

19. The United States is the only nation currently offering ADS-B using the 978 MHz UAT band.

A. True  
B. False

20. Canada will employ an ADS-B system very similar to that of the United States broadcasting in both the 978 MHz and 1090 MHz bands.

- A. True
- B. False

21. In Australia, ADS-B is required for \_\_\_\_.

- A. All IFR operations
- B. All flight levels over continental Australia
- C. Aircraft with MTOW of 5,700 kg or more
- D. All of the above
- E. Both A and B only

22. ADS-B in Europe is mandated and is required for \_\_\_\_.

- A. IFR flights
- B. Aircraft with MTOW of 5,700 kg or greater
- C. Aircraft with max cruise speed greater than 250 knots
- D. All of the above
- E. Both A and B only

### Theory & Practice

23. Ailerons and spoilers are used for \_\_\_\_ control.

- A. Roll
- B. Yaw
- C. Pitch
- D. None of the above

24. Aircraft pitch around its \_\_\_\_ axis.

- A. Longitudinal
- B. Vertical
- C. Lateral
- D. None of the above

25. Which of the following are used to control yaw?

- A. Ailerons
- B. Elevators
- C. Rudder
- D. Flaps

26. Aircraft \_\_\_\_ around their longitudinal axis.

- A. Pitch
- B. Yaw
- C. Roll
- D. None of the above

27. Elevators and stabilators are used for \_\_\_\_.

- A. Yaw
- B. Pitch
- C. Roll
- D. None of the above

28. A common autopilot on small aircraft is a single-axis autopilot designed to control \_\_\_\_.

- A. Pitch
- B. Roll
- C. Yaw
- D. Altitude

29. Which part of the autopilot system takes electric or electronic signals and converts them to the physical power necessary to move the flight controls?

- A. Turn and bank indicator
- B. Computer/amplifier
- C. Inertial reference system
- D. Servo



**JUNE**

### Frequently Asked Questions

30. The installation and return to service of altitude reporting equipment and transponder systems can be performed by \_\_\_\_.

- A. An appropriately rated person
- B. An appropriately rated repair station
- C. Both A and B
- D. None of the above

31. The tests and inspections required by 14 CFR 91.411 and 91.413 require completion by \_\_\_\_.

- A. An appropriately rated person
- B. An appropriately rated repair station
- C. Both A and B
- D. None of the above

### It Takes Two to Tango on 5G

32. Radar altimeters operate in which frequency band?

- A. 3.7 to 3.98 GHz
- B. 4.2 to 4.4 GHz
- C. 3.4 to 3.8 GHz
- D. None of the above

33. The concern with 5G is that signals broadcast on frequencies that are similar (but not exact) to one another can still cause interference.

A. True  
B. False

### Theory & Practice

34. A turn and bank indicator can be used as an attitude reference for the lateral axis in an autopilot system.

A. True  
B. False

35. Whenever the pilot activates the trim system in an autopilot, which of the following should happen?

A. The autopilot should engage and the aircraft level off.  
B. The autopilot is designed to disconnect.  
C. The aircraft will roll according to desired input.  
D. The aircraft will yaw according to desired input.

36. When an aircraft is level, the reference voltage produced by the autopilot computer/amplifier is \_\_\_\_.

A. 5 V  
B. 28 V  
C. 1.0 V  
D. 0.0 V

37. Vertical guidance for an autopilot is possible due to the vertical navigation capabilities of \_\_\_\_.

A. GPS  
B. Glideslope  
C. Inertial reference system (IRS)  
D. All of the above  
E. None of the above



JULY

### Frequently Asked Questions

38. A certificated repair station may perform maintenance or alterations on any article for which it is rated and for any article it adds to its capabilities list regardless of the limitations in its operations specifications.

A. True  
B. False

39. An article may be listed on the capability list only if the article is within the scope of the ratings of the repair station's certificate.

A. True  
B. False

### Theory & Practice

40. The yaw damper prevents \_\_\_\_.

A. Pitch porpoise of the aircraft  
B. Roll oscillation  
C. Slipping or skidding in turns  
D. All of the above  
E. None of the above

41. The reference for a yaw damper is \_\_\_\_.

A. Rate gyro  
B. Rate sensor  
C. AHRS  
D. All of the above  
E. Both A and B only

42. Which of the following allow the pilot to override the autopilot before he or she reaches the disconnect switch?

A. Slip clutch  
B. Shear pin  
C. Cam and lever in a hydraulic servo  
D. All of the above  
E. Both A and B only

43. Autopilots with attitude limitations are designed to disconnect if bank or pitch angles exceed a predetermined value.

A. True  
B. False



## AUGUST

### Frequently Asked Questions

44. By FAA rule, the role of a repair station accountable manager includes the responsibility for repair station operations as well as all business operations.

- A. True
- B. False

### Theory & Practice

45. Autopilot and integrated flight control systems can rely on which of the following systems to support operation?

- A. Instrument vacuum
- B. Pitot-static
- C. Hydraulics
- D. All of the above
- E. None of the above

46. Proper tensions on control cables are important for autopilot systems because the autopilot \_\_\_\_.

- A. Will never engage
- B. Cannot compensate for loosening controls
- C. Will not disconnect when overridden by the pilot
- D. Both B and C only

47. When testing the roll capabilities of an autopilot, the expected result of the roll test for navigation is \_\_\_\_.

- A. The yoke follows CDI indications and demonstrates proper intercept angles
- B. The yoke follows pitch attitude command in both directions
- C. The yoke follows glideslope commands
- D. None of the above

48. If a technician can feel the autopilot take control when performing a roll test, the technician knows the \_\_\_\_.

- A. Autopilot is disconnected
- B. Altitude hold is working properly
- C. Servo clutch is engaged
- D. Trim is working properly

49. During an altitude hold test using a pitot-static system tester, the yoke should \_\_\_\_.

- A. Not move
- B. Follow altitude changes
- C. Follow CDI changes
- D. Follow heading or roll commands in both directions



## SEPTEMBER

### The View from Washington

50. Which of the following evaluation tools provide assurances that an organization's methods conform to its requirements and assesses the effectiveness of management controls?

- A. Quality control
- B. Indoctrination training
- C. Audit
- D. Needs assessment

51. According to AC 145-10, which of the following is core training for all repair station personnel?

- A. Human factors
- B. OSHA training
- C. Facility security
- D. Indoctrination training

### Theory & Practice

52. The transmission and reception of electromagnetic waves of radio frequency, especially those carrying sound messages, best describes which of the following?

- A. Electric field
- B. Magnetic field
- C. Radio
- D. Antenna

53. Current flow and a magnetic field are linked; one cannot have current flow without a magnetic field.

- A. True
- B. False

54. Magnetic fields radiating out from the wire are what makes radio possible.

- A. True
- B. False

55. Today, most radio-based avionics operate on frequencies above \_\_\_\_.

- A. 3 MHz
- B. 30 kHz
- C. 30 MHz
- D. 300 GHz

56. Which frequency band is useful for long-distance communication using sky waves?

- A. VLF
- B. VHF
- C. UHF
- D. HF



**OCTOBER**

*Theory & Practice*

57. With fewer than 150 characters sent per minute, slow speed is the major disadvantage for which of these forms of radio communication?

- A. Frequency Modulation (FM)
- B. Amplitude Modulation (AM)
- C. Carrier Wave (CW)
- D. Phase Shift Keying

58. Aviation VHF communication systems use \_\_\_\_ for voice communications.

- A. Amplitude Modulation (AM)
- B. Frequency Modulation (FM)
- C. Carrier Wave
- D. Frequency Shift Keying

59. If two frequencies are joined together, the result is \_\_\_\_ frequencies are present.

- A. One
- B. Two
- C. Four
- D. Six

60. The sum and difference signals are referred to as \_\_\_\_.

- A. Carrier
- B. Radio frequencies
- C. Modulation frequencies
- D. Sidebands

61. The general rule for AM and for any type of modulation is more data requires more \_\_\_\_.

- A. Synchronization
- B. Bandwidth
- C. Modulation
- D. Amplification

62. For long-distance communication, wide bandwidth signals work better than narrow bandwidth signals.

- A. True
- B. False



**NOVEMBER**

*The View from Washington*

63. 14 CFR 145.59 specifies which of these as categories of radios?

- A. Communication
- B. Navigation
- C. ADS-B
- D. All of the above
- E. Both A and B only

64. 14 CFR 145.59 specifies which of these as categories of instruments?

- A. Mechanical
- B. Electrical
- C. Gyroscopic
- D. All of the above
- E. Both A and B only

*Frequently Asked Questions*

65. The FAA requires repair stations to designate an "accountable manager," but there is no requirement to use that title versus their official title as president, general manager, etc.

- A. True
- B. False

### Theory & Practice

66. The rule of reciprocity relates to \_\_\_\_.
- A. Transmitting and receiving
  - B. Antenna size
  - C. Wavelength
  - D. Frequency bands
67. As a frequency deviates from center frequency (a specific value the antenna was designed for), the efficiency of the antenna will \_\_\_\_.
- A. Improve
  - B. Degrade
  - C. Not change
  - D. Remain unmeasurable
68. The dipole or Hertzian antennas referred to as "rabbit ears" on small airplanes are commonly used for \_\_\_\_.
- A. Glideslope
  - B. VHF navigation
  - C. GPS
  - D. Both A and B only
69. VHF communication antennas are half of a dipole and unbalanced; the \_\_\_\_ acts as the other half of the dipole.
- A. Balun
  - B. Transmission line
  - C. Airframe
  - D. None of the above
70. For maximum power transfer to occur between devices, the impedance of each device must equal the other.
- A. True
  - B. False
71. Energy traveling in the correct direction is called the \_\_\_\_, while energy traveling in the wrong direction is called the \_\_\_\_.
- A. Reflected wave, incident wave
  - B. Standing wave, transmitted wave
  - C. Incident wave, reflected wave
  - D. Transmitted wave, standing wave
72. Which of the following adjusts volume constantly as pilots fly closer to or farther from a transmitter?
- A. Filter
  - B. Amplifier
  - C. Modulation detector
  - D. Automatic gain control (AGC)
73. The most commonly used type of receiver in all radio industries is the \_\_\_\_.
- A. Direct conversion receiver
  - B. Super-regenerative receiver
  - C. Software-defined receiver
  - D. Superheterodyne receiver
74. The heterodyne action of signals occurs in the \_\_\_\_.
- A. Oscillator
  - B. Mixer
  - C. Intermediate frequency amplifier
  - D. Frequency selector
75. In aviation, an output from a microphone amplifier sent to the headset so a pilot can hear their voice is called \_\_\_\_.
- A. Transmission
  - B. Monitor
  - C. Sidetone
  - D. Signal



### DECEMBER

#### Theory & Practice

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 2022 back issues of *Avionics News* or go to [avionicsnews.net](http://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](http://aea.net/training) for information about applying for credit toward the 2022 Avionics Training Excellence Award.

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### Important date:

**Dec. 31, 2023**

Deadline to submit application (with exams) for credit toward the AEA's 2023 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]

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

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]

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

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]

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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