



TEST?

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2019 Avionics News Training Exam



JANUARY

Frequently Asked Questions

1. Which of the following are required to participate in the FAA's drug and alcohol testing program?

- A. Part 121 air carrier
- B. Part 135 operator
- C. All contractors for Part 121 and Part 135 operations
- D. All of the above

2. For the purposes of aircraft maintenance and avionics maintenance, the regulations specifically list aircraft maintenance and preventative maintenance duties as ____.

- A. Performed only by those who have been drug and alcohol tested
- B. Safety-sensitive functions
- C. Safety-sensitive only when performed at a Part 121 air carrier
- D. All of the above
- E. None of the above

Theory and Practice

3. Electromotive force (EMF) ____.

- A. Can be developed statically, chemically, and mechanically
- B. Is produced in a natural form by lightning
- C. Is also called a difference of potential
- D. All of the above
- E. A and C only

4. Any material with an excess of electrons is charged ____ while a material with a lack of adequate electrons is charged ____.

- A. Negatively; positively
- B. Positively; negatively
- C. Neutrally, positively
- D. There is no charge whether there is an excess or a shortage

5. The mathematical symbol for current is ____.

- A. E
- B. R
- C. I
- D. Ω

6. Materials that completely resist current flow are called ____.

- A. Conductors
- B. Resistors
- C. Terminals
- D. Insulators

7. Ohm's law in simple terms states that there is ____.

- A. A direct relationship between current and resistance
- B. A direct relationship between EMF and current
- C. An inverse relationship between EMF and current
- D. Both A and C

8. To determine the power of something in watts, ____.

- A. Multiply the resistance by the current
- B. Divide the volts by the amps
- C. Multiply the current by the volts
- D. Divide the volts by the current



FEBRUARY

The View from Washington

9. FAR Part 65.101 (a)(5) states that to be eligible for a repairman certificate, a person must have _____.

- A. 18 months practical experience in the maintenance duties of the specific job for which they are employed
- B. Completed formal training acceptable to the administrator for the job which the applicant is to be employed
- C. Both A and B only
- D. None of the above

Theory and Practice

10. The total resistance in a series circuit is _____.

- A. Equal to the sum of the individual resistances
- B. Equal to the amount of the single highest resistance
- C. Equal to the amount of the single lowest resistance
- D. Dependent upon equal voltage drops among the resistors

11. Considering series circuits an open circuit will drop all available voltage.

- A. True
- B. False

12. In a series circuit, the larger resistor in terms of ohm value will drop the largest amount of voltage.

- A. True
- B. False

13. Series circuits are _____.

- A. More common than parallel circuits
- B. Called voltage dividers
- C. Very reliable
- D. None of the above

14. The most common type of circuit is _____.

- A. Series
- B. Parallel
- C. Complex or combination of series and parallel.
- D. Short

Legal Ease

15. The FAA is responsible for regulating the maintenance performed on U.S.-registered aircraft as well as its components no matter where this aircraft is in the world.

- A. True
- B. False



MARCH

The View from Washington

16. The recommended method of recording an ELT inspection required by 91.207(d) can be found in _____.

- A. FAR 43.11
- B. FAR 43.9
- C. AC 43.13.1b Chapter 11
- D. AC 43.13.1b Chapter 12

17. AC 43.13 defines the term electrical system as those parts of an aircraft that _____.

- A. Generate electrical energy
- B. Distribute electrical energy
- C. Use electrical energy
- D. All of the above
- E. None of the above

Simple Complexity

18. A supplemental type certificate is an FAA-approved method for changing the type design for a single type certificate.

- A. True
- B. False

19. According to the definitions in AC 23-22, an autopilot installation is more likely to be considered a ____ system when considering an STC.

- A. Simple
- B. Complex
- C. AML
- D. None of the above

Theory and Practice

20. Since current cannot flow without its associated magnetic field, a circuit consisting of inductors will show a lag between the application of voltage and the flow of current.

- A. True
- B. False

21. Current leads voltage in an inductive circuit, and voltage leads current in a capacitive circuit.

- A. True
- B. False

22. Which of the following is true about capacitors and inductors?

- A. In many ways, capacitors and inductors are opposite.
- B. Capacitors build an electric field.
- C. Inductors build electric and magnetic fields.
- D. All of the above
- E. A and B only



APRIL

Frequently Asked Questions

23. A repair station that maintains a capability list can perform a self-evaluation and add an article on the capability list without having the PMI preapprove the list of the article.

- A. True
- B. False

24. A repair station with limited ratings would maintain a capability list in order to ____.

- A. Provide regulatory flexibility
- B. Reduce the burden of frequently requesting revisions to their operations specifications
- C. Eliminate the need for PMI review
- D. All of the above
- E. A and B only

Theory and Practice

25. When a material is ionized, ____.

- A. It has too many electrons and is negatively charged
- B. It doesn't have enough electrons making it positively charged
- C. It is neutral and stable
- D. All of the above
- E. A and B only

26. The most common material used in diodes is ____.

- A. Phosphorus
- B. Aluminum
- C. Boron
- D. Silicon

27. When forward biased, a diode will drop a constant ____ across the junction.

- A. .2 volts
- B. .4 volts
- C. .6 volts
- D. There is no voltage drop

28. The two contacts of a diode are called ____ and ____.

- A. P-type and N-type
- B. Positive and Negative
- C. Cathode and Anode
- D. Junction and Depletion Zone



MAY

Frequently Asked Questions – ADS-B

29. Aircraft that operate in RVSM airspace equipped with a compliant ADS-B Out system no longer need RVSM equipment, approval and maintenance.

- A. True
- B. False

30. Operators and pilots seeking to operate in RVSM airspace under the provision of Part 91 Appendix G, Section 9 are not required to apply for authorizations.

- A. True
- B. False

Theory and Practice

31. Individual transistors are likely to be used as ____.

- A. Switching devices
- B. Regulators
- C. Power amplifiers
- D. All of the above
- E. B and C Only

32. PNP and NPN transistors are doped in the ____ manner, and current flows in the ____ direction.

- A. Same; same
- B. Opposite; opposite
- C. Same; opposite
- D. Opposite; same

33. Of the two ways to express transistor gain, which one best describes Alpha?

- A. The ratio of collector current to base current
- B. Can be as high as 200
- C. Ratio of emitter current to collector current
- D. Will always be greater than 1
- E. Both C and D

34. When a transistor is fully on (maximum current flow), it is considered to be in ____.

- A. Cutoff mode
- B. Linear mode
- C. Saturation mode
- D. Switching mode

35. When working with transistors, the base to emitter voltage should never be more than .6 volts, otherwise the junction is open and the transistor must be replaced.

- A. True
- B. False



JUNE

Theory and Practice

36. Which of the following work by rotating coils of wire within a magnetic field to produce alternating current?

- A. Transistors
- B. Semiconductors
- C. Generators
- D. Alternators

37. Household current is ____ Hertz, where aircraft AC power is ____ Hertz.

- A. 120; 400
- B. 400; 60
- C. 110; 120
- D. 60; 400

38. Frequencies between 20 Hz and 20 kHz are considered ____ frequencies.

- A. Audio
- B. Navigation
- C. Time
- D. Radio

39. Both alternators and generators can create frequencies higher than oscillators.

- A. True
- B. False

40. Time is the reciprocal of ____.

- A. Frequency
- B. Cycle
- C. Waveform
- D. Period

41. In a resistive circuit, current leads voltage by 90 degrees.

- A. True
- B. False



JULY

The View from Washington

42. Before the transition to the Federal Aviation Regulations (FAR), the regulatory structure established by the Civil Aeronautics Act of 1938 was called the ____.

- A. Air Commerce Act
- B. Civil Aviation Regulations
- C. Department of Commerce
- D. None of the above

Frequently Asked Questions

43. An FCC GROL is required to adjust, maintain or internally repair FCC licensed radiotelephone transmitters in aviation.

- A. True
- B. False

44. ADS-B Out systems require recurrent checks similar to 14 CFR 91.413 for transponders.

- A. True
- B. False

Theory and Practice

45. Frequencies above ____ are considered radio frequencies.

- A. 20 kHz
- B. 20 Hz
- C. 3 kHz
- D. 60 Hz

46. Nav and Comm frequencies are in which of the following frequency “band designations?”

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

47. The wavelength of the FM broadcast band is ____.

- A. 300,000,000 meters
- B. Approximately 3 meters
- C. 10 meters
- D. 1 meter

48. ADS-B is in which of the following frequency “band designations?”

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



AUGUST

Frequently Asked Questions – ADS-B

49. If you do not choose to utilize a preapproved means of compliance such as an advisory circular, you have the right to propose your alternate.

- A. True
- B. False

50. The FAA's policy on performance requirements for certain operations with ADS-B Out after Jan. 1, 2020, assures that it will not consider degradation in GPS performance due to conditions outside of the operator's control.

- A. True
- B. False



SEPTEMBER

Frequently Asked Questions

51. An aircraft component cannot be recorded as overhauled if it is not subjected to disassembly, repair, assembly or testing.

- A. True
- B. False

Theory and Practice

52. Forming a wire into a coil ____.

- A. Increases capacitance
- B. Decreases inductance
- C. Increases inductance
- D. Has no effect on inductive properties

53. Any time voltage is applied to an inductor, ____.

- A. Resistance increases
- B. Current flow reverses
- C. There is a lag before current flows
- D. The depletion zone shrinks

54. Inductive reactance impedes AC current flow in a similar way to resistance in a DC circuit.

- A. True
- B. False

55. When considering inductive reactance, which of the following are true?

- A. Reactance is proportional to frequency.
- B. As frequency increases, so does reactance.
- C. Similar to resistance
- D. All of the above
- E. Both A and B only

56. The best conductors at any temperature above absolute zero ____.

- A. Have zero resistance
- B. Will not be found in inductors
- C. Have some resistance
- D. Both A and B only

57. In a purely inductive circuit with resistance added, you will get which type(s) of power?

- A. True power
- B. Reactive power
- C. Apparent power
- D. All of the above



OCTOBER

Frequently Asked Questions

58. An aircraft without a compliant ADS-B Out system will not be considered airworthy and therefore unable to fly after the Jan. 1, 2020, deadline.

- A. True
- B. False

59. ADS-B is an ____ rule, not an ____ rule.

- A. Aircraft, airspace
- B. Airspace, airworthiness
- C. Airworthiness, airspace
- D. Airspace, aircraft

Theory and Practice

60. The voltage in ____ circuits is changing constantly.

- A. AC
- B. DC
- C. Both AC and DC
- D. Capacitive

61. In a DC circuit, current flows ____.

- A. Only until the capacitor is charged
- B. Only after the capacitor is charged
- C. Continuously regardless of the capacitor's charge
- D. None of the above

62. Capacitive reactance is ____.

- A. Inversely proportional to frequency
- B. Measured in Ohms
- C. Directionally proportional to frequency
- D. Both A and B
- E. Both B and C

63. Capacitors do not dissipate power, they store it.

- A. True
- B. False



NOVEMBER

The View from Washington

64. The purpose of a training program for Part 145 repair stations is to ____.

- A. Provide initial and recurrent training
- B. Satisfy customer requirements
- C. Ensure employees are capable of performing the assigned task
- D. Satisfy requirements of FAR 145.151 (b)

65. There is nothing in the repair station regulations that requires or implies that there is a calendar-based requirement for recurring training.

- A. True
- B. False

Theory & Practice

66. In high-pass filters, ____.

- A. Current must flow through a capacitor to get from the input to the output
- B. Capacitive reactance decreases as the frequency rises
- C. Low frequencies find an easy path to ground through the inductor
- D. All of the above
- E. Both A and B only

67. Which of the following uses two capacitors to pass the high frequencies and a single inductor to shunt the lower frequencies to ground?

- A. L-Type
- B. T-Type
- C. Pi-Type
- D. Capacitors are only used in low-pass filters

68. In a low-pass filter, the signal must pass through the ____ to get to the output.

- A. Inductor
- B. Capacitor
- C. The signal doesn't pass through, it goes to ground.
- D. None of the above

69. When a signal must pass from input to output through a parallel resonant circuit, the circuit can be identified as ____.

- A. Band-pass
- B. Band-rejection
- C. Low-pass
- D. High-pass

70. At a basic level, radio receivers operate as ____ to get the signal you want to use and reject those you don't.

- A. Capacitors
- B. Inductors
- C. Filters
- D. Oscillators



DECEMBER

Theory and Practice

71. The field-effect transistor (FET) is similar to a bipolar transistor in that it ____.

- A. Has three leads
- B. Is constructed of materials doped positive and negative.
- C. Is a solid-state device
- D. All of the above
- E. Both A and B only

72. FETs and bipolar transistors can be used as ____.

- A. Amplifiers
- B. Resistors
- C. Conductors
- D. Filters

73. The leads of a field-effect transistor are labeled ____.

- A. Source, gate and drain
- B. Output, input, gate
- C. Drain, output, source
- D. None of the above

74. The source and drain of a field-effect transistor are a continuous piece of material referred to as a(n) ____.

- A. Output
- B. Gate
- C. Lead
- D. Channel

75. A disadvantage of MOSFETS is ____.

- A. They cannot be designed with dual gates
- B. They are susceptible to electrostatic discharge
- C. They require an extra lead
- D. None of the above

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

Company: _____

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

Phone: _____ Email Address: _____

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Important date:

April 1, 2020

Deadline to submit application (with exams) for credit toward the AEA's 2019 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]

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

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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]

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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]