

UNDERSTANDING AND SERVICING ALARM SYSTEMS

1. We have a 375-ohm loop with a current of 4mA, if we double the resistance but want to maintain the same current, we would _____ the voltage?

- A. Halve
- B. Double
- C. Square
- D. None of these

2. The sum of the voltage that rises around a circuit is equal to the sum of the voltage drops around the same circuit is known as _____?

- A. Ohm's Law
- B. Kirchoffs First Law
- C. Nuton's Law
- D. Kirchoffs Second Law

3. Kirchoffs second law states that the sum of all currents entering a point is equal to the sum of all currents leaving that point?

- A. True
- B. False

4. An ammeter with a built-in battery and a built-in current limiting resistor that is made adjustable to set the zero ohms reading is best known as _____?

- A. An amprobe
- B. A voltmeter
- C. An ohmmeter
- D. Wattmeter

5. The symbol of infinity on an ohmmeter indicates a _____ circuit?

- A. Closed
- B. Shorted
- C. Open
- D. Hot

6. Voltage is a measurement of _____?

- A. Electrical current
- B. Electrical power
- C. Electrical pressure
- D. None of the above

7. Shorts in _____ systems will be detected because they will cause an alarm condition

1. Open loop 2. Double loop 3. Single closed loop?

- A. 1 Only
- B. 2 Only
- C. 3 Only
- D. 1 & 2

8. An intermittent problem resulting from a variation in resistance is called a _____?

- A. Short
- B. Swinger
- C. Foreign voltage
- D. Ground

9. A(n) _____ is the simplest kind of protective loop but is not often used because there is no supervision?

- A. Open loop
- B. Single closed loop
- C. Break & cross loop
- D. Double open loop

10. A single closed loop must be closed during a non-alarm condition this system provides?

- A. A bypass when a short occurs across the loop
- B. Provides supervision
- C. Provides detection of a broken wire
- D. A single accidental ground will not affect operation
- E. All of these

11. A double closed loop circuit with an end of line battery that has an accidental short in the loop will _____. 1. Causes an alarm 2. Quickly drain battery 3. By-pass alarm?

- A. 1 Only
- B. 2 Only
- C. 3 Only
- D. 1 & 2

12. Loop resistance in a typical EOL resistor loop will have a much _____ limit?

- A. Higher
- B. Lower
- C. Similar
- D. Unsteady

13. A device used to allow a system to be armed from inside the building before leaving the premises is commonly referred to as a(n)_____?

- A. Key switch
- B. Entry/exit delay
- C. Shunt switch
- D. Shunt key device

14. The operating voltage of most alarm systems with battery backup is usually_____ or_____.
1.) 6 volts 2.) 12 volts 3.) 24 volts 4.) 30 volts?

- A. 1 or 2
- B. 3 or 4
- C. 2 or 3
- D. 2 or 4

15. A voltmeter can be used to measure voltage_____?

- A. Outputs and drops
- B. Inputs and drops
- C. A and B
- D. None of the above

16. When replacing batteries it is necessary to_____?

- A. Confirm the type of battery the system uses
- B. Replace each battery with its own kind
- C. Connect the batteries with the proper polarity
- D. All of these

17. Batteries with capacities of 30 amp-hours or more are often used for _____systems?

- A. Industrial
- B. Commercial
- C. Residential
- D. A and B

18. The use of mirrors with a photo beam should preferably be limited to_____?

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

19. A detector that transmits a high radio frequency to look for a frequency shift is known as a _____?

- A. Ultrasonic motion detector
- B. IR detector
- C. Microwave motion detector
- D. Sound detector

20. Ultrasonic, microwaves, photoelectric beams and E-field fences are examples of _____?

- A. Alarms
- B. Alarm signal
- C. Alarm systems
- D. Active detectors

21. The condition of an alarm system when it is on and ready to be tripped is said to be _____?

- A. On
- B. Armed
- C. Active
- D. None of these

22. When two or more cells are arranged to obtain a higher voltage it is called a battery?

- A. True
- B. False

23. A class _____ transformer is one that limits energy as per the NEC, and used almost universally in alarm work?

- A. 1
- B. 4
- C. 2
- D. 3

24. Continuity of a circuit is one that is not _____?

- A. Broken
- B. Open
- C. Interrupted
- D. All of these

25. _____ is the amount of electricity being used and is simply equal to the volts times the amps?

- A. Power
- B. Amps
- C. Volts
- D. None of the above

26. The first improvement made to the photo beam, was to place a(n) _____ in front of the light source?
- A. Incandescent
 - B. Laser
 - C. Retro-reflector
 - D. Infrared filter
27. Solid-state electronics have replaced most _____ devices?
- A. Electrical
 - B. Alpha-mechanical
 - C. Electromechanical
 - D. Relay-state
28. The _____ is the worst problem of all to troubleshoot?
- A. Swinger
 - B. Switch
 - C. Fuses
 - D. Power
29. A _____ loop provides supervision?
- A. Single-closed
 - B. Open & shut
 - C. Triple-closed
 - D. Open
30. The most used transmission path for silent alarms is _____?
- A. Telephone lines
 - B. Computer
 - C. Bell
 - D. All of the above
31. Fire Alarm Systems batteries typically have a capacity of _____ ampere-hours or more.
- A. 15
 - B. 20
 - C. 25
 - D. 30

32. With the McCulloh transmitter all subscribers are connected in _____ and each subscriber's alarm is transmitted by coded signals?
- A. Series
 - B. Parallel
 - C. Computers
 - D. Opposites
33. In the electrical industry VA is an abbreviation for _____?
- A. Vague alarm
 - B. Voltage-alternate
 - C. Volt-amps
 - D. Various alarms
34. The meter will be the test instrument most used by the alarm troubleshooter because of it's _____?
- A. Versatility
 - B. Sensitivity
 - C. Accuracy
 - D. All of the above
35. The Cable Reel, Foil Zapper, Exor-System and Loopstick are different _____.
- A. Alarm systems
 - B. Test devices
 - C. Installation systems
 - D. None of the above
36. _____ account for the largest percentage of wire troubles?
- A. Opens
 - B. Shorts
 - C. Grounds
 - D. Closed
37. When speaking of grounds, a _____ is generally more reliable?
- A. Single loop
 - B. Ungrounded loop
 - C. Double closed loop
 - D. AOL resistor loop
38. _____ and _____ are the cause of most resistance fault?
- A. Moisture & humidity
 - B. Heat & corrosion
 - C. Humidity & heat
 - D. Moisture & corrosion

39. _____ are time-related problems?

- A. Opens
- B. Swingers
- C. Shorts
- D. Downs

40. A double closed loop can _____?

- A. Have both conductors supervised
- B. Use two circuit conductors
- C. Employ both closed and open circuits
- D. All of the above

41. The _____ resistor loop uses a resistor at the far end to pass a limited current?

- A. End-Of-Line
- B. Variable
- C. Parallel
- D. Tractable

42. Adding an AC signal at the subscriber's premises is considered a _____ security feature?

- A. Normal
- B. Unsupervised
- C. High
- D. Low

43. This feature limits the amount of time the alarm rings?

- A. Low speed
- B. Simple control
- C. Bell timeout
- D. Ring timeout

44. With _____ delay features, it is now possible to locate the on-off Switch inside the protected premises?

- A. Entry/Exit
- B. Bell timeout
- C. On/Off
- D. Simple control

45. Because of its advantages, the _____ loop is, by far, the most popular today?
- A. End-Of-Line
 - B. Variable
 - C. Parallel
 - D. Tractable
46. Which method distinguishes between intrusion and line trouble?
- A. Simple current
 - B. McCulloh
 - C. Telephone-polarity
 - D. Polarity reversing
47. Today most alarm equipment operates from low-voltage, energy-limiting transformers, per article 725 of the NEC these are usually referred to as _____ transformers?
- A. LV
 - B. Class 2
 - C. AC/DC
 - D. Series 2
48. Wire runs between transformer and equipment are usually short and a wire is usually sufficient and for long runs _____ gauge wire would be necessary?
- A. 24 or 22 & 16 or 18
 - B. 18 or 20 & 22 or 24
 - C. 18 or 16 & 20 or 22
 - D. 20 or 22 & 18 or 16
49. Which of the following statements is NOT related to the Photoelectric Beams?
- A. Mirrors or lenses are not used
 - B. AKA photo beams, PE beams, PEs, or beams
 - C. Visible/invisible, steady/pulse
 - D. Have been around for over 50 years
50. The law, which states that the sum of all currents entering a point is less than the sum of all currents leaving that point?
- A. Kirchoffs first law
 - B. Kirchoffs second law
 - C. Part of both laws
 - D. None of the above

51. Voltage is a measurement of _____.

- A. electrical current
- B. electrical power
- C. electrical pressure
- D. none of the above

52. Loop resistance in a typical end-of-line (E-O-L) resistor loop will have a much _____ limit.

- A. higher
- B. lower
- C. similar
- D. unsteady

53. A voltmeter can be used to measure voltage _____.

- A. outputs & drops
- B. inputs & drops
- C. A and B
- D. None of the above

54. The law which states that sum of the voltage rises around a circuit is equal to the sum of the voltage drops around the same circuit is _____.

- A. Kirchoffs first law
- B. Kirchoffs second law
- C. Part of both laws
- D. None

55. Power is expressed in _____.

- A. amps
- B. watts
- C. volts
- D. all of the above

56. In the electrical industry "VA" is an abbreviation for _____.

- A. vague alarm
- B. voltage-alternate
- C. volt-amps
- D. various alarms

57. A battery in series with some sort of indicating device as known as a _____.

- A. Sonalert
- B. Continuity Tester
- C. Light-Emitting Diode
- D. All of the above

58. The meter will be the test instrument most used by the alarm troubleshooter because of its_____.

- A. versatility
- B. sensitivity
- C. accuracy
- D. all of the above

59. The cable reel, foil zapper, Exor-System and loop-sticks are different_____.

- A. alarm systems
- B. test devices
- C. installation systems
- D. none of the above

60. It is important that _____ type batteries be float-charged at the correct, constant voltage.

- A. rechargeable
- B. disposable
- C. gel
- D. dry

61. Detecting swingers when troubleshooting is also known as_____.

- A. dead batteries
- B. foreign voltages
- C. photoelectric beam
- D. intermittent

62. Solid-state electronics have replaced most _____ devices.

- A. electrical
- B. alpha-mechanical
- C. electromechanical
- D. relay-state

63. _____ account for the largest percentage of wire troubles.

- A. opens
- B. shorts
- C. grounds
- D. closed

64. _____ in an open loop, double loop and end-of-line systems will be detected because they will cause an alarm condition.

- A. opens
- B. shorts
- C. grounds
- D. voltage

65. When speaking of grounds a _____ system is generally safer.

- A. single-loop
- B. ungrounded-loop
- C. double, closed loop
- D. A-O-L resistor loop

66. _____ and _____ are the cause of most resistance fault.

- A. moisture & humidity
- B. heat & corrosion
- C. humidity & heat
- D. moisture & corrosion

67. The _____ is the worst problem of all to troubleshoot.

- A. swinger
- B. switch
- C. fuses
- D. power

68. A _____ are time-related problems.

- A. opens
- B. swingers
- C. shorts
- D. downs

69. A _____ loop has no supervision of the wiring.

- A. single-closed
- B. closed
- C. double-closed
- D. open

70. A _____ loop provides supervising.

- A. single-closed
- B. open & shut
- C. triple-closed
- D. open

71. A double-closed loop can _____.

- A. have both conductors supervised
- B. use two circuit conductors
- C. employ both closed and open circuits
- D. all of the above

72. The _____ resistor loop uses a resistor at the far end to pass a limited current.

- A. end-of-line
- B. variable
- C. parallel
- D. tractable

73. Which is by far the most popular resistor loop today?

- A. end-of-line
- B. variable
- C. parallel
- D. tractable

74. The _____ devices should not be wired into the grounded side of any loop.

- A. resistor
- B. detection
- C. quad
- D. closed circuit

75. Which of the following loops is used only on direct wire service?

- A. make-and-break
- B. open-and-short
- C. break-and-cross
- D. all of the above

76. Adding an AC signal at the subscribers premises is considered a _____ security feature.

- A. normal
- B. unsupervised
- C. high
- D. low

77. This feature limits the amount of time the alarm rings.

- A. low speed
- B. simple control
- C. bell time out
- D. ring time-out

78. With _____ delay features, it is now possible to locate the on-off switch inside the protected premises.

- A. entry-exit
- B. bell time out
- C. on-and-off
- D. simple control

79. The most used transmission path for silent alarms is _____.

- A. telephone
- B. computer
- C. bell
- D. all of the above

80. Which method distinguishes between intrusion and line trouble?

- A. simple current
- B. McCulloh
- C. Telephone-polarity
- D. Polarity-reversing

81. With the McCulloh transmitter all subscribers are connected in _____.

- A. series
- B. parallel
- C. computers
- D. opposites

82. Since the McCulloh is a party line the Underwriters' Laboratories have limited their subscribers to no more than _____.

- A. 15
- B. 20
- C. 25
- D. 30

83. Today most alarm equipment operates from low-voltage, energy-limiting transformers, per article 725 of the NEC these are usually referred to as _____ transformers.

- A. LV
- B. Class 2
- C. AC/DC
- D. Series 2

84. As a rule, sealed type lead-acid batteries might last _____; Ni-Cads 4 to 5 yrs & dry cells 1 yr.

- A. 2 to 3 years
- B. 4 to 5 years
- C. 5 to 6 years
- D. 3 to 4 years

85. Wire runs between transformer and equipment are usually short and a _____ gauge wire is usually sufficient and for long runs _____ gauge wire would be necessary.

- A. 24 or 22 & 16 or 18
- B. 18 or 20 & 22 or 24
- C. 18 or 16 & 20 or 22
- D. 20 or 22 & 18 or 16

86. Fire Alarm Systems batteries typically have a capacity of _____ ampere-hours or more.

- A. 15
- B. 20
- C. 25
- D. 30

87. Which of the following statements is NOT related to the Photoelectric Beams?

- A. mirrors or lenses are not used
- B. AKA photo beams, PE beams PE's or beams
- C. Visible/invisible, steady/pulse
- D. Have been around for over 50 years

ANSWER KEY

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