Exam

Name_____

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question.

1) A source, a path, and a load _____. 1) _____
A) can only be an open circuit
B) do not make up a complete circuit
C) make up a basic circuit
D) will allow current to flow if the switch is open

Answer: C
Explanation: A)
B)
C)
D)

2) Which unit of charge contains 6.25×10^{18} electrons? 2) _____
A) a volt B) an ampere C) a coulomb D) a joule

Answer: C
Explanation: A)
B)
C)
D)

3) Most DMMs will measure _____ _____ and _____. 3) _____
A) voltage, frequency, resistance B) frequency, voltage, current
C) voltage, current, resistance D) voltage, current, capacitance

Answer: C
Explanation: A)
B)
C)
D)

4) What do you call a diagram that shows the electrical connections of a circuit's components? 4) _____
A) a block diagram B) a pictorial diagram
C) a schematic diagram D) an electrical diagram

Answer: C
Explanation: A)
B)
C)
D)

5) A common type of resistors are: 5) _____
A) carbon film. B) carbon-composition.
C) metal film. D) wirewound.

Answer: B
Explanation: A)
B)
C)
D)

6) On a resistor with four bands of color code, the fourth band represents: 6) _____

A) the tolerance percentage.
B) the multiplier value.
C) the wattage rating.
D) the voltage rating.

Answer: A

Explanation: A)
B)
C)
D)

7) In order to measure the current in a circuit, an ammeter must _____. 7) _____

A) be placed so the current must pass through the meter
B) be placed across the source
C) be placed across the load
D) all of these

Answer: A

Explanation: A)
B)
C)
D)

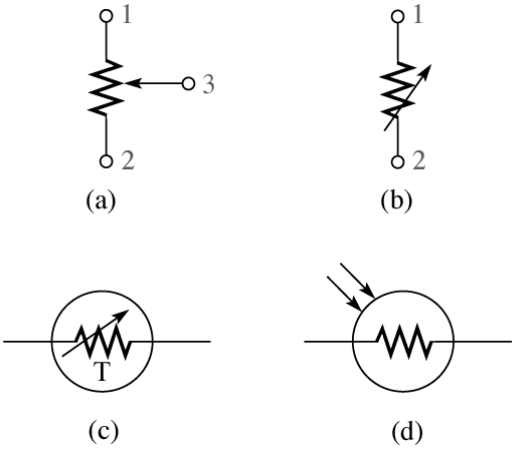

Figure 2-3

8) What does the schematic symbol (b) represent in Figure 2-3? 8) _____

A) photoconductive cell
B) rheostat
C) thermistor
D) potentiometer

Answer: B

Explanation: A)
B)
C)
D)

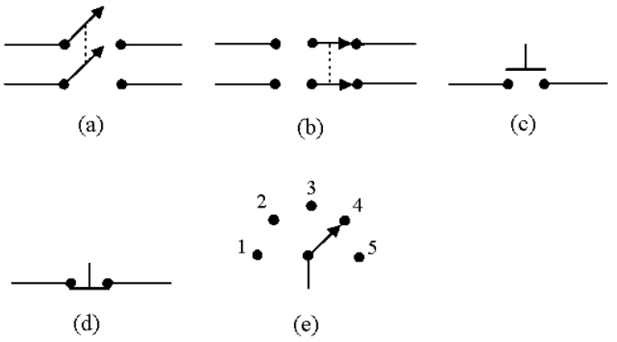

Figure 2-1

9) Which switch in Figure 2-1 could be used to simultaneously open or simultaneously close two circuits? 9) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: A

Explanation: A)
B)
C)
D)
E)

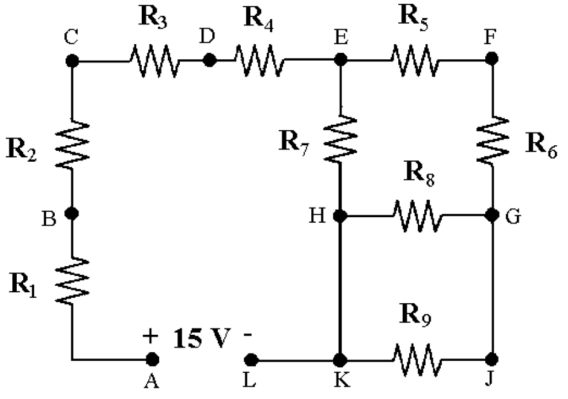

Figure 2-2

10) In Figure 2-2, the voltage V_{FG} is the same as _____. 10) _____

A) V_{R6} B) V_{R9} C) V_{R7} D) V_{R8}

Answer: A

Explanation: A)
B)
C)
D)

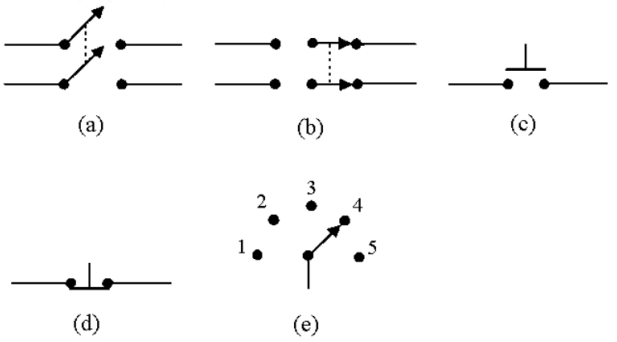

Figure 2-1

11) Identify the *Rotary* switch in Figure 2-1. 11) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: E

Explanation: A)
B)
C)
D)
E)

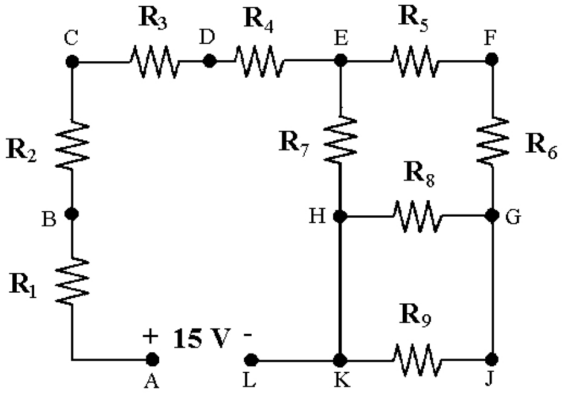

Figure 2-2

12) To measure the current that flows through R_6 in Figure 2-2, the circuit must be opened and the ammeter placed at point _____. 12) _____

A) F B) G C) E D) H

Answer: A

Explanation: A)
B)
C)
D)

13) A(n) _____ is a material that has many free electrons. 13) _____

A) insulator B) conductor C) poor conductor D) semiconductor

Answer: B

Explanation: A)
B)
C)
D)

14) If the measured circuit current is zero, it is likely that the _____. 14) _____

A) resistance is very low B) circuit voltage is very high
C) voltage is turned off D) circuit has a short

Answer: C

Explanation: A)
B)
C)
D)

15) Which of the following is not a type of variable resistor? 15) _____

A) potentiometer B) photoconductive cell
C) thermistor D) All are types of variable resistors.

Answer: D

Explanation: A)
B)
C)
D)

16) A resistor with yellow, violet, orange, and gold bands equals _____. 16) _____

A) 47 kΩ ± 10% B) 47 MΩ ± 10% C) 4.7 kΩ ± 10% D) 47 kΩ ± 5%

Answer: D

Explanation: A)
B)
C)
D)

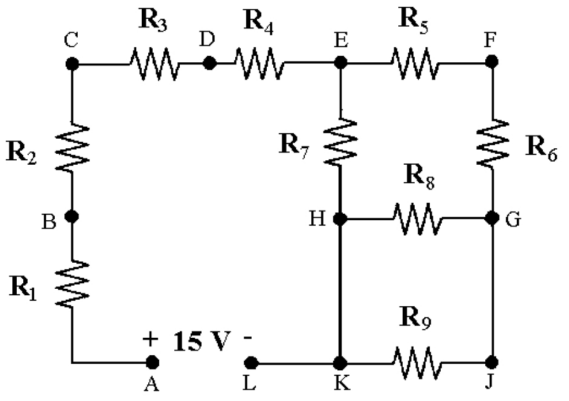

Figure 2-2

17) In Figure 2-2, if you place a voltmeter's red lead on point E and its black lead on point H, you will be measuring _____. 17) _____

A) V_{R7} B) V_{R6} C) V_{R5} D) V_{R4}

Answer: A

Explanation: A)
B)
C)
D)

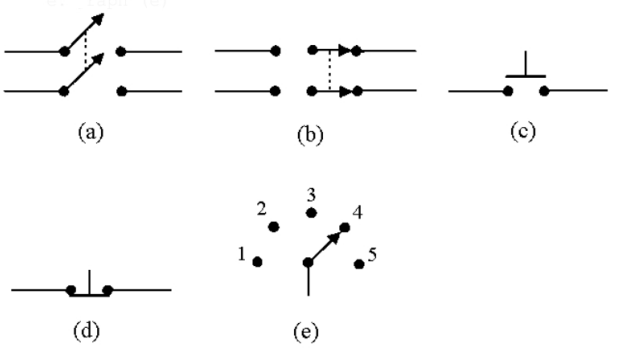

Figure 2-1

18) Identify the *DPDT* switch in Figure 2-1. 18) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: B

Explanation: A)
B)
C)
D)
E)

19) Which switch in Figure 2-1 would probably be used to control a light and a fan at the same time? 19) _____
A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: A
Explanation: A)
B)
C)
D)
E)

20) Potentiometers and rheostats differ in that: 20) _____
A) potentiometers utilize three terminals, while rheostats usually use only two terminals.
B) potentiometers are used to vary voltages, while rheostats vary currents.
C) potentiometers utilize linear and nonlinear tapers, while rheostats usually utilize only linear tapers.
D) all of these.

Answer: D
Explanation: A)
B)
C)
D)

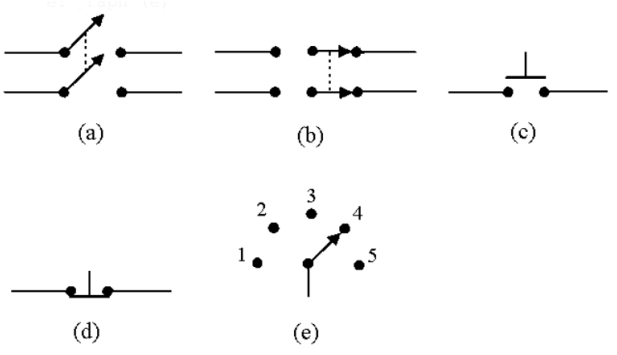

Figure 2-1

21) Identify the *DPST* switch in Figure 2-1. 21) _____
A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: A
Explanation: A)
B)
C)
D)
E)

22) A 100 kΩ ±10% resistor is color coded _____. 22) _____
A) brown, black, yellow, silver B) brown, black, yellow, gold
C) brown, green, black, gold D) black, brown, yellow, silver

Answer: A
Explanation: A)
B)
C)
D)

23) A downside of using deep-cycle batteries is 23) _____

A) they are inefficient B) they are expensive

C) they require regular maintenance D) all of the above

Answer: D

Explanation: A)

B)

C)

D)

24) On a resistor with five bands of color code, the fifth band may represent that: 24) _____

A) the tolerance in percentage of value. B) the reliability in percentage of failure.

C) the resistor is a precision resistor. D) all of these.

Answer: A

Explanation: A)

B)

C)

D)

25) Interpret the following mixed numbers and letters 3M3 on a resistor to the correct resistance of: 25) _____

A) 330 Kilohms. B) 3.3 Kilohms. C) 33 Kilohms. D) 3300 Kilohms.

Answer: D

Explanation: A)

B)

C)

D)

26) If a resistor is color coded with orange, orange, orange and silver bands, the resistance equals _____, the lower tolerance limit equals _____ and the upper tolerance limit equals _____. 26) _____

A) 33 kΩ, 29,700 Ω, 36,300 Ω B) 33 kΩ, 32,670 Ω, 33,330 Ω

C) 33 kΩ, 26,400 Ω, 39,600 Ω D) 33 kΩ, 31,350 Ω, 34,650 Ω

Answer: A

Explanation: A)

B)

C)

D)

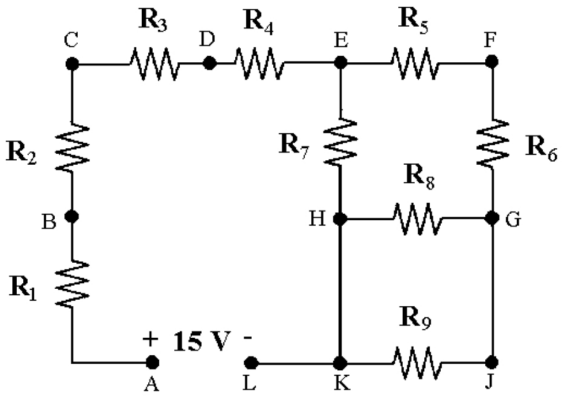

Figure 2-2

27) In Figure 2-2, a voltmeter placed across points C and D will measure _____. 27) _____

A) V_{R4} B) V_{R3} C) V_{R1} D) V_{R2}

Answer: B

Explanation: A)
B)
C)
D)

28) Voltage is _____. 28) _____

A) the opposition to the flow of current
B) the force that exists between charged particles
C) the force that causes water to flow
D) the movement of free electrons

Answer: B

Explanation: A)
B)
C)
D)

29) An ohmmeter should _____. 29) _____

A) be connected across a circuit with the power on
B) be placed across the resistor after the resistor has been disconnected from the circuit
C) have the polarity carefully checked before its use
D) be inserted into the circuit so the current flows through it

Answer: B

Explanation: A)
B)
C)
D)

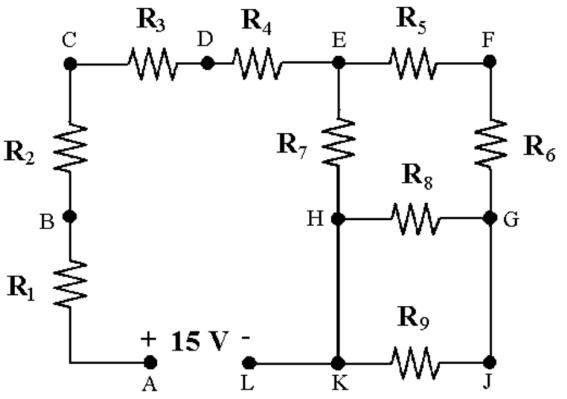

Figure 2-2

30) In Figure 2-2, the voltage V_{GH} is the same as _____. 30) _____

A) V_{R5} B) V_{R7} C) V_{R6} D) V_{R9}

Answer: D

Explanation: A)
B)
C)
D)

31) In the American Wire Gauge sizes, as the numerical value of AWG goes higher, the cross sectional area of the wire: 31) _____

A) increases. B) decreases. C) doubles. D) halves.

Answer: B

Explanation: A)
B)
C)
D)

32) Every electrical circuit must contain _____. 32) _____

A) a battery, a path and a switch B) a battery, a resistor and a capacitor
C) a source, a load and a resistor D) a source, a load and a path

Answer: D

Explanation: A)
B)
C)
D)

33) The voltage measured directly across an open switch in a circuit will be: 33) _____

A) full applied voltage. B) unpredictable.
C) half of applied voltage. D) 0 V.

Answer: A

Explanation: A)
B)
C)
D)

34) The opposition to the flow of current is called _____. 34) _____

A) capacitance B) voltage C) current D) resistance

Answer: D

Explanation: A)
B)
C)
D)

35) If a resistor equals 1.2 Ω ±5%, its color code is _____. 35) _____

A) brown, black, red, gold B) brown, red, silver, gold
C) brown, red, gold, gold D) brown, black, gold, silver

Answer: C

Explanation: A)
B)
C)
D)

36) Electrolysis 36) _____

A) can result from splicing two wires of different materials
B) can produce a high-resistance connection
C) is a chemical reaction
D) all of the above

Answer: D

Explanation: A)
B)
C)
D)

37) Which type of resistor is used for high power applications? 37) _____

A) surface mount B) wire wound
C) film D) carbon composition

Answer: B

Explanation: A)
B)
C)
D)

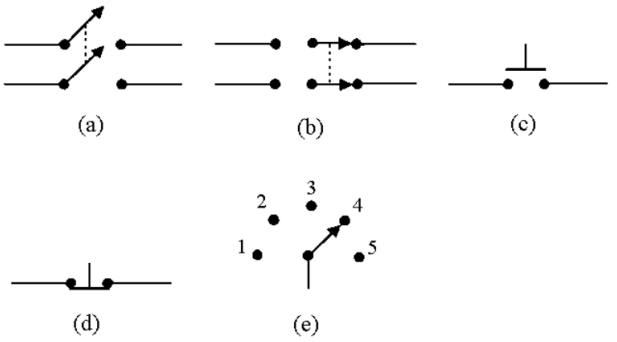

Figure 2-1

38) Which switch in Figure 2-1 is usually used to control a doorbell? 38) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: C

Explanation: A)
B)
C)
D)
E)

39) Identify the *Normally Closed Push Button* switch in Figure 2-1. 39) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: D

Explanation: A)
B)
C)
D)
E)

40) A resistor with orange, orange, red and gold bands has a value and tolerance of _____. 40) _____

A) 33 kΩ ±10% B) 3.3 kΩ ±10% C) 33 kΩ ±5% D) 3.3 kΩ ±5%

Answer: D

Explanation: A)
B)
C)
D)

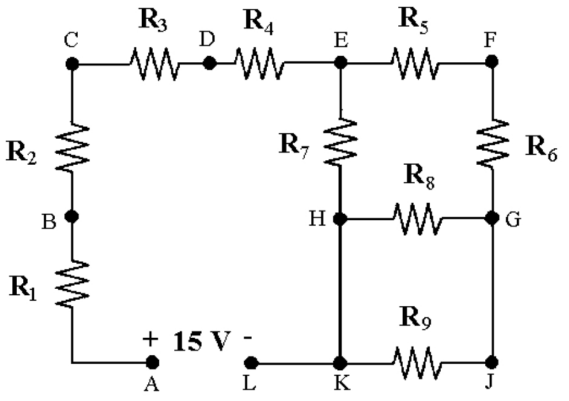

Figure 2-2

41) In Figure 2-2, the voltage V_{CE} is the same as _____. 41) _____

A) V_{R5} B) $V_{R4} + V_{R5}$ C) $V_{R3} + V_{R4}$ D) V_{R6}

Answer: C

Explanation: A)
B)
C)
D)

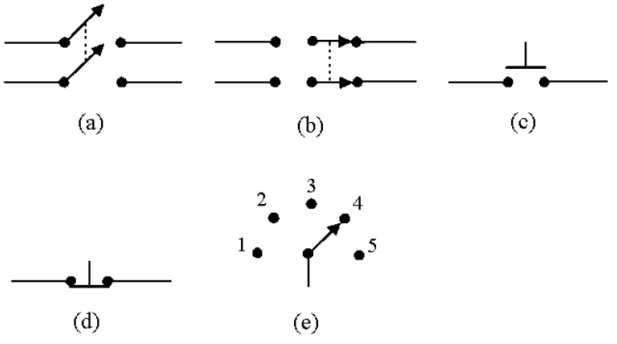

Figure 2-1

42) Which switch in Figure 2-1 could be used to open a circuit momentarily? 42) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: D

Explanation: A)
B)
C)
D)
E)

43) If a resistor is color coded with red, red, orange and silver bands, the resistance equals _____, the lower tolerance limit equals _____, and the upper tolerance limit equals _____. 43) _____

A) 22 kΩ, 21.5 kΩ, 22.4 kΩ
B) 22 kΩ, 17.6 kΩ, 26.4 kΩ
C) 22 kΩ, 19.8 kΩ, 24.2 kΩ
D) 22 kΩ, 20.9 kΩ, 23.1 kΩ

Answer: C
Explanation: A)
B)
C)
D)

44) An insulator is a material with _____. 44) _____

A) all free electrons
B) very few free electrons
C) some free electrons
D) very many free electrons

Answer: B
Explanation: A)
B)
C)
D)

45) A resistor with yellow, violet, orange and silver bands equals _____. 45) _____

A) 47 MΩ ± 10%
B) 4.7 kΩ ± 10%
C) 47 kΩ ± 5%
D) 47 kΩ ± 10%

Answer: D
Explanation: A)
B)
C)
D)

46) What is the key difference when taking voltage measurements with an analog meter versus a digital meter? 46) _____

A) proper choice of the scale on the display
B) adjustment of the scale
C) where the negative lead is placed
D) safety procedure in taking the measurement

Answer: A
Explanation: A)
B)
C)
D)

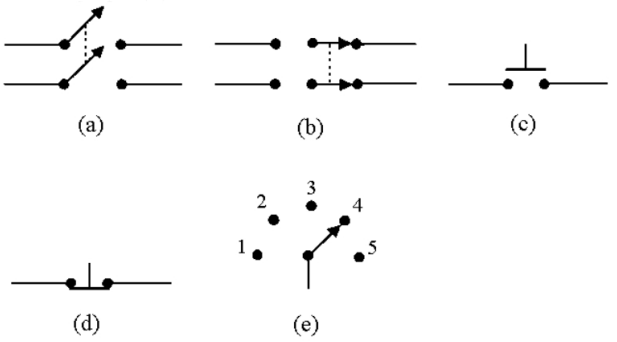

Figure 2-1

47) The *Rotary* switch in Figure 2-1 is most likely to be used as _____. 47) _____

A) a selector for different voltages in a power supply.
B) a range selector switch in an analog voltmeter.
C) an old manual TV channel selector.
D) all of the above

Answer: D
Explanation: A)
B)
C)
D)

48) Which switch in Figure 2-1 could be used to switch two inputs to different output positions? 48) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: B
Explanation: A)
B)
C)
D)
E)

49) To measure a circuit's source voltage, the voltmeter must _____. 49) _____

A) have the red lead towards the negative side of the source
B) be placed across the source
C) be placed in series in the circuit
D) have the black lead towards the positive side of the source

Answer: B
Explanation: A)
B)
C)
D)

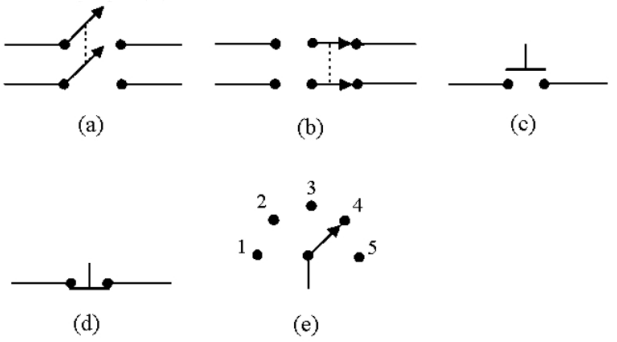

Figure 2-1

50) Identify the *Normally Open Push Button* switch in Figure 2-1. 50) _____

A) graph (a) B) graph (b) C) graph (c) D) graph (d) E) graph (e)

Answer: C

Explanation: A)
B)
C)
D)
E)

51) Interpret the following mixed numbers and letters 4R7 on a resistor to the correct resistance of: 51) _____

A) 4.7 ohms. B) 4.7 Megohms. C) 47 ohms. D) 4.7 Kilohms.

Answer: A

Explanation: A)
B)
C)
D)

52) A conductor is a material that has _____. 52) _____

A) a structure similar to semiconductors B) many free electrons
C) few free electrons D) a positive charge

Answer: B

Explanation: A)
B)
C)
D)

53) On a resistor with numbers and letters, the position of the letter in the sequence represents: 53) _____

A) the decimal point. B) the resistance value.
C) the tolerance. D) the numerical total.

Answer: A

Explanation: A)
B)
C)
D)

54) If the current in a circuit equals 0 A, it is likely that the _____. 54) _____

A) resistance is too low
B) circuit is open
C) circuit has a short
D) voltage is too high

Answer: B
Explanation: A)
B)
C)
D)

55) The basic difference between a fuse and a circuit breaker is that: 55) _____

A) a circuit breaker is reusable.
B) a circuit breaker is more reliable.
C) a fuse is reusable.
D) a fuse is faster.

Answer: A
Explanation: A)
B)
C)
D)

56) An analog meter has _____. 56) _____

A) a needle and a scale to indicate the value
B) a digital readout
C) no moving parts
D) a high degree of accuracy

Answer: A
Explanation: A)
B)
C)
D)

TRUE/FALSE. Write 'T' if the statement is true and 'F' if the statement is false.

57) A *SPST* switch is used to control one circuit. 57) _____

Answer: True False
Explanation:

58) A *Normally Open Push Button* switch can carry current when not pushed. 58) _____

Answer: True False
Explanation:

59) The *ohm* is the basic unit of resistance. 59) _____

Answer: True False
Explanation:

60) A resistor color-coded with brown, black and orange bands has a value of 10,000 Ω. 60) _____

Answer: True False
Explanation:

61) Electrons have a positive charge. 61) _____

Answer: True False
Explanation:

62) Electrons attract each other. 62) _____

Answer: True ✓ False
Explanation:

63) The movement of free electrons through a conductor is called *current*. 63) _____

Answer: ✓ True False
Explanation:

64) An element with a relatively large amount of electrons in the valence ring is considered to be a good conductor. 64) _____

Answer: True ✓ False
Explanation:

65) A resistor color coded with yellow, violet and orange bands has a value of 4.7 kΩ. 65) _____

Answer: True ✓ False
Explanation:

66) The Nickel-Metal Hydride battery is an example of a secondary battery. 66) _____

Answer: ✓ True False
Explanation:

67) Electromotive force is measured in volts. 67) _____

Answer: ✓ True False
Explanation:

68) To measure the current through a resistor, place the ammeter so the current must pass through the meter. 68) _____

Answer: ✓ True False
Explanation:

69) For electrical current to flow in a circuit, voltage must be applied to that circuit. 69) _____

Answer: ✓ True False
Explanation:

70) A generator converts electrical energy into mechanical energy. 70) _____

Answer: True ✓ False
Explanation:

71) *Resistance* is the opposition to the flow of current. 71) _____

Answer: ✓ True False
Explanation:

Answer Key
Testname: C2

1) C
2) C
3) C
4) C
5) B
6) A
7) A
8) B
9) A
10) A
11) E
12) A
13) B
14) C
15) D
16) D
17) A
18) B
19) A
20) D
21) A
22) A
23) D
24) A
25) D
26) A
27) B
28) B
29) B
30) D
31) B
32) D
33) A
34) D
35) C
36) D
37) B
38) C
39) D
40) D
41) C
42) D
43) C
44) B
45) D
46) A
47) D
48) B
49) B
50) C

Answer Key
Testname: C2

51) A
52) B
53) A
54) B
55) A
56) A
57) TRUE
58) FALSE
59) TRUE
60) TRUE
61) FALSE
62) FALSE
63) TRUE
64) FALSE
65) FALSE
66) TRUE
67) TRUE
68) TRUE
69) TRUE
70) FALSE
71) TRUE