

Question Bank 1

AR. ANGEL B. MANLAPAO, UAP, RMP

1. Which of the following is a unit of electrical pressure?

A. Watt

B. Ampere

C. Ohm

D. Volt

1. Which of the following is a unit of **electrical pressure**?

A. Watt

B. Ampere

C. Ohm

D. **Volt**

2. In resistance color coding, red color is assigned to what value?

A. 3

B. 0

C. 2

D. 1

2. In resistance color coding, **red color** is assigned to what value?

A. 3

B. 0

C. **2**

D. 1

3. What is another name for secondary cell?

A. Wet cell

B. Storage cell

C. Dry cell

D. Disposable cell

3. What is another name for **secondary cell**?

A. Wet cell

B. **Storage cell**

C. Dry cell

D. Disposable cell

4. How is a voltmeter connected in a circuit?

A. Connect in short circuit across the load

B. Connect in shunt across the load

C. Connect in series across the load

D. Connect in open circuit with the load

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B. **Connect in shunt across the load**

C. Connect in series across the load

D. Connect in open circuit with the load

5. In the American Wire Gauge, as the number of gauge wire increase the wire diameter

A. Increases

B. Decreases

C. Does not change

D. Does changes

5. In the American Wire Gauge, as the number of gauge wire increase the wire diameter

A. Increases

B. **Decreases**

C. Does not change

D. Does changes

6. A generator may lost residual magnetism because of?

A. Vibration

B. Over-excitation

C. Heating

D. Varying loads

6. A generator may **lost residual magnetism** because of?

A. Vibration

B. Over-excitation

C. **Heating**

D. Varying loads

7. A meter whose needle is at the center ?

A. Dynamometer

B. Iron vane meter

C. Galvanometer

D. voltmeter

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A. Dynamometer

B. Iron vane meter

C. Galvanometer

D. voltmeter

8. A universal motor can be operated on which of the following supply currents?

A. DC current only

B. AC or DC currents

C. 3-phase AC current only

D. AC current only

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A. DC current only

B. **AC or DC currents**

C. 3-phase AC current only

D. AC current only

9. A 6-volt lead acid battery has an internal resistance of 0.01 ohm. How much current will flow if the battery has a short circuit?

- A. 60 A
- B. 600 A
- C. Infinity
- D. Zero

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- B. 600 A
- C. Infinity
- D. Zero

$$I = E / R$$

$$I = 6 / 0.01$$

$$I = 600 \text{ A}$$

10. Automatic device that operates at preset values is know as _____?

A. Relay

B. Mercury switch

C. Contactor

D. Fuse

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B. Mercury switch

C. Contactor

D. Fuse

11. What is another name for full voltage starting?

A. Reduce voltage starting

B. Full load starting

C. Direct on line

D. Starting without a contactor

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A. Reduce voltage starting

B. Full load starting

C. **Direct on line**

D. Starting without a contactor

12. What is the resistance reading of a shorted capacitor?

- A. High resistance
- B. Zero resistance
- C. Infinite resistance
- D. 10 ohm

12. What is the resistance reading of a **shorted capacitor**?

- A. High resistance
- B. **Zero resistance**
- C. Infinite resistance
- D. 10 ohm

13. A wire has a diameter of 0.125 inch
.What is its cross sectional area in
circuit mils?

A. 12,500

B. 22,500

C. 15,625

D. 10,800

13. A wire has a diameter of 0.125 inch
.What is its cross sectional area in
circuit mils?

A. 12,500

$$A=0.125'' \times 1000\text{mils}/1''$$

B. 22,500

$$A= 125$$

C. 15,625

$$A= (125)^2$$

D. 10,800

$$A= 15,625 \text{ cir. mils}$$

14. In metric standard, what is the unit of conductor sizes?

A. AWG

B. Circular mils

C. MM^2

D. CM^2

14. In **metric standard**, what is the **unit** of conductor sizes?

A. AWG

B. Circular mils

C. **MM²**

D. CM²

15. Multimeters consist of a _____?

- A. Voltmeter, current meter and an ohmmeter
- B. Voltmeter and an ammeter
- C. Current meter and an ohmmeter
- D. Voltmeter and current meter

15. **Multimeters** consist of a _____?

- A. **Voltmeter, current meter and an ohmmeter**
- B. Voltmeter and an ammeter
- C. Current meter and an ohmmeter
- D. Voltmeter and current meter

16. What component of an atom that doesn't have any electrical charge?

A. Electron

B. Proton

C. Neutron

D. Ion

16. What component of an **atom** that **doesn't have any electrical charge**?

A. Electron

B. Proton

C. **Neutron**

D. Ion

17. Excitation current is used in which of the following motors?

- A. Synchronous motors
- B. Wound rotor motors
- C. Induction motors
- D. squirrel cage motors

17. **Excitation current** is used in which of the following motors?

- A. **Synchronous motors**
- B. Wound rotor motors
- C. Induction motors
- D. squirrel cage motors

18. A simple ohmmeter consist of a meter movement in series with?

A. An inductor

B. A spring

C. A capacitor

D. A battery

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A. An inductor

B. A spring

C. A capacitor

D. **A battery**

19. What is the former name of the American Wire Gauge?

A. NEMA

B. Westinghouse

C. Brown and Sharpe

D. IEEE

19. What is the **former** name of the **American Wire Gauge**?

A. NEMA

B. Westinghouse

C. **Brown and Sharpe**

D. IEEE

20. What resistance must be connected across a 4 ohm resistance in order to give an equivalent resistance of 3 ohms?

- A. 10 ohms
- B. 8 ohms
- C. 12 ohms
- D. 9 ohms

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- A. 10 ohms
- B. 8 ohms
- C. **12 ohms**
- D. 9 ohms

$$1/R_t = 1/R_1 + 1/R_2$$

$$1/3 = 1/4 + 1/X$$

$$X = 12$$

21. When using ohms law E divided by I would solve for _____?

A. Watts

B. Amperes

C. Voltage

D. Resistance

21. When using ohms law **E** divided by **I** would solve for_____?

A. Watts

B. Amperes

C. Voltage

D. **Resistance**

$$R = E/I$$

22. Modern contact surfaces are made from what alloys?

A. Copper

B. Silver

C. Aluminum

D. Manganin

22. **Modern contact surfaces** are made from what alloys?

A. Copper

B. **Silver**

C. Aluminum

D. Manganin

23. On a simple ohmmeter, the zero ohm mark is _____ of the scale?

- A. In the right
- B. Far left
- C. Non of these
- D. Far right

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- A. In the right
- B. Far left
- C. Non of these
- D. **Far right**

24. Two resistance of 8 & 10 ohms respectively are connected in parallel and take a total current of 9 A. What is the current flowing in the 8-ohm resistance?

A. 5 A

B. 4 A

C. 6 A

D. 3 A

24. Two resistance of 8 & 10 ohms respectively are connected in parallel and take a total current of 9 A. What is the current flowing in the 8-ohm resistance?

A. 5 A

$$I = I_t(R_2) / (R_1 + R_2)$$

B. 4 A

$$I = 9(10) / (8 + 10)$$

C. 6 A

$$I = 5A$$

D. 3 A

25. How do you call a diagram showing the physical location of the components such as coils, contacts, motors & the like in their actual positions?

- A. Ladder diagram
- B. Schematic diagram
- C. Wiring diagram
- D. Power flow diagram

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- A. Ladder diagram
- B. Schematic diagram
- C. **Wiring diagram**
- D. Power flow diagram

26. An electrical iron takes $3\frac{1}{2}$ A. If the heating element has a resistance of 40 ohms, what is its power consumption?

A. 0.45 KW

B. 0.49 KW

C. 0.35 KW

D. 0.51 KW

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A. 0.45 KW

B. 0.49 KW

C. 0.35 KW

D. 0.51 KW

$$P = I^2 (R)$$

$$P = (3.5)^2(40)$$

$$P = 490 \text{ W}$$

$$P = 490/1000$$

$$P = 0.490 \text{ KW}$$

27. What is the purpose of constructing a lead acid cell into a multiple plate cell?

A. To increase the emf of the cell

B. To increase the capacity of the cell

C. To increase the internal resistance of the cell

D. All of these

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A. To increase the emf of the cell

B. **To increase the capacity of the cell**

C. To increase the internal resistance of the cell

D. All of these

28. The continuity of a winding coil maybe determined by measuring the resistance of the coil. If the resistance reading is infinite the winding is_____?

- A. Open
- B. In perfect condition
- C. Partially shorted
- D. Totally shorted

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- A. **Open**
- B. In perfect condition
- C. Partially shorted
- D. Totally shorted

29. An instrument used to measure the state of electrical charge in a storage battery?

- A. Amprobe
- B. Tachometer
- C. Hydrometer
- D. Calorie meter

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A. Amprobe

B. Tachometer

C. **Hydrometer**

D. Calorie meter

30. Determine the reactance of a 50 *uf* capacitor at 60 Hz.?

- A. 18.85 ohms
- B. 0.0188 ohms
- C. 55.25 ohms
- D. 53.05 ohms

30. Determine the reactance of a 50 μf capacitor at 60 Hz.?

- A. 18.85 ohms
- B. 0.0188 ohms
- C. 55.25 ohms
- D. 53.05 ohms

$$X_C = 1/2\pi fc$$

$$X_C = 1/2\pi(60)(50 \times 10^{-6})$$

$$X_C = 53.05 \text{ ohms}$$

31. In a large alternator, which of the following is normally negligible?

- A. Reactance of winding
- B. Resistance of winding
- C. Impedance of winding
- D. Current of winding

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- A. Reactance of winding
- B. **Resistance of winding**
- C. Impedance of winding
- D. Current of winding

32. If the two leads of DC series motor are reversed, which of the following events will happen?

A. It becomes a generator

B. It runs in the same direction as before

C. It will not run

D. It will run in the reverse direction

32. If the two leads of **DC series motor are reversed**, which of the following events will happen?

A. It becomes a generator

B. It runs in the same direction as before

C. It will not run

D. **It will run in the reverse direction**

33. Find the amperage of a 5 KVA load on a 220-V three-phase branch circuit?

A. 13.12 A

B. 8.66 A

C. 12.7 A

D. 22 A

33. Find the amperage of a 5 KVA load on a 220-V three-phase branch circuit?

A. 13.12 A

B. 8.66 A

C. 12.7 A

D. 22 A

$$S = (\text{square root } 3) \times E \times I$$

$$5000 = (\text{square root } 3) \times 220 \times I$$

$$I = 13.12 \text{ A}$$

34. What will happen to the resistance of a conductor when its temperature is increased?

A. It will increase

B. It will remain constant

C. It varies

D. It will decrease

34. What will happen to the **resistance of a conductor when its temperature is increased?**

A. **It will increase**

B. It will remain constant

C. It varies

D. It will decrease

35. How do you call the electrons in the last orbit of atom?

- A. Bound electrons
- B. Free electrons
- C. Valence electrons
- D. Charged electrons

35. How do you call the **electrons in the last orbit of atom?**

- A. Bound electrons
- B. Free electrons
- C. **Valence electrons**
- D. Charged electrons

36. A high resistance connected in parallel with a potential relay across a 120-V battery will?

- A. Increase the current through the relay
- B. Increase the voltage across the relay
- C. Have no effect on the relay
- D. Make the relay inoperative

36. A high resistance connected in parallel with a potential relay across a 120-V battery will?

- A. Increase the current through the relay
- B. Increase the voltage across the relay
- C. Have no effect on the relay
- D. Make the relay inoperative

37. A phenomenon on a series AC circuit where in maximum current will flow

- A. Avalanche
- B. Resonance
- C. Break-even
- D. Break down

37. A phenomenon on a **series AC circuit where in maximum current will flow**

A. Avalanche

B. **Resonance**

C. Break-even

D. Break down

38. Which of the following connections would be most likely to injure the instruments attached?

- A. An ammeter in series in the circuit
- B. A voltmeter connected across the line
- C. An ammeter connected across the line
- D. A voltmeter in series with the line

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- A. An ammeter in series in the circuit
- B. A voltmeter connected across the line
- C. An ammeter connected across the line
- D. A voltmeter in series with the line

39. The rotating part of a DC motor is known as _____?

A. Pole

B. Stator

C. Carbon brush

D. Armature

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A. Pole

B. Stator

C. Carbon brush

D. Armature

40. The member of the Board shall hold office for a term of _____ years from date of appointment.

A. 4

B. 3

C. 2

D. 1

40. The **member of the Board** shall hold office for a term of _____ years from date of appointment.

A. 4

B. **3**

C. 2

D. 1

41. In an automatic FORWARD-REVERSE-STOP star-delta motor controller, how many electrical timers are needed?

- A. At least one
- B. Only one
- C. Two
- D. No timer is needed

41. In an automatic **FORWARD-REVERSE-STOP** star-delta motor controller, how many electrical timers are needed?

- A. At least one
- B. **Only one**
- C. Two
- D. No timer is needed

42. Two resistors of resistance 5 ohms & 7 ohms are connected in series across a 60-volt source. What is the power absorbed in the 5 ohms resistor?

- A. 50 watts
- B. 25 watts
- C. 125 watts
- D. 100 watts

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A. 50 watts

B. 25 watts

C. **125 watts**

D. 100 watts

$$I = E / R_1 + R_2$$

$$I = 60 / 5 + 7$$

$$I = 5 \text{ A}$$

$$P_i = I^2 R_1$$

$$P_i = (5)^2 (5)$$

$$P_i = 125 \text{ watts}$$

43. A measuring instrument used to measure the diameter of circular wires in mils.?

- A. Micrometer
- B. Millimeter
- C. Wire gauge
- D. Milliammeter

43. A measuring instrument used to measure the diameter of circular wires in mils.?

- A. **Micrometer**
- B. Millimeter
- C. Wire gauge
- D. Milliammeter

44. A secondary cell is charged with a constant current of 10 A for 10 hours. How much charge is accumulated?

- A. 100 coulombs
- B. 360,000 coulombs
- C. 100,1000 coulombs
- D. 60,000 coulombs

44. A secondary cell is charged with a constant current of 10 A for 10 hours. How much charge is accumulated?

A. 100 coulombs

B. **360,000 coulombs**

C. 100,1000 coulombs

D. 60,000 coulombs

$$t = 10 \text{ hr} \times 3600 \text{ s/hr}$$

$$t = 36,000 \text{ s}$$

$$Q = It$$

$$Q = (10)(36,000)$$

$$Q = 360,000 \text{ coulombs}$$

45. At starting the motor current is high due to _____?

- A. Counter emf is high
- B. Counter emf is zero
- C. Supply voltage is high
- D. Armature circuit resistance is open

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- A. Counter emf is high
- B. **Counter emf is zero**
- C. Supply voltage is high
- D. Armature circuit resistance is open

46. A cell whose emf is 1.45 V has an internal resistance of 4 ohms. What current will flow if this cell is connected across a 1-ohm resistor

- A. 0.4 A
- B. 0.2 A
- C. 0.5 A
- D. 0.3 A

46. A cell whose emf is 1.45 V has an internal resistance of 4 ohms. What current will flow if this cell is connected across a 1-ohm resistor

A. 0.4 A

B. 0.2 A

C. 0.5 A

D. 0.3 A

$$I = E / r + R$$

$$I = 1.45 / 4 + 1$$

$$I = 0.3 \text{ A}$$

47. A voltage source of 20 V is applied across the terminals of a 2.5 ohm rheostat. Calculate the power dissipated in the rheostat?

- A. 160 W
- B. 100 W
- C. 150 W
- D. 180 W

47. A voltage source of 20 V is applied across the terminals of a 2.5 ohm rheostat. Calculate the power dissipated in the rheostat?

A. 160 W

B. 100 W

C. 150 W

D. 180 W

$$P = E^2/R$$

$$P = (20)^2/2.5$$

$$P = 160 \text{ W}$$

48. What would be the advantage of 240 volts rather than 120 volts on the load with same wattage?

- A. Less power used and less voltage drop
- B. Less power used
- C. Greater voltage drop
- D. Less voltage drop

48. What would be the advantage of 240 volts rather than 120 volts on the load with same wattage?

- A. Less power used and less voltage drop
- B. Less power used
- C. Greater voltage drop
- D. Less voltage drop

49. What is the amperage of 120 volt, single-phase circuit that supplies a load of 3.125 KVA?

A. 26 A

B. 30 A

C. 22 A

D. 15 A

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A. 26 A

B. 30 A

C. 22 A

D. 15 A

$$S = E \times I$$

$$3125 = 120 \times I$$

$$I = 26 \text{ A}$$

50. During the short circuit test on transformer, which side is short circuited?

- A. High side
- B. Low side
- C. Either sides
- D. Both sides

50. During the short circuit test on transformer, which side is short circuited?

A. High side

B. **Low side**

C. Either sides

D. Both sides

51. Which of the following conductor sizes has the highest resistance?

A. 3.5 mm²

B. 8.0 mm²

C. 2.0 mm²

D. 5.5 mm²

51. Which of the following conductor sizes has the **highest resistance**?

A. 3.5 mm²

B. 8.0 mm²

C. **2.0 mm²**

D. 5.5 mm²

52. A device or equipment which is suspended from overhead either by means of a flexible cord carrying the current, or otherwise

A. Rosette

B. Pendant

C. Fixture

D. Air terminal

52. A device or equipment which is suspended from overhead either by means of a flexible cord carrying the current, or otherwise

A. Rosette

B. Pendant

C. Fixture

D. Air terminal

53. In the schedule of loads for motor circuits, which of the following is NOT included?

- A. Type of motor
- B. Manufacturer of motor
- C. Motor as numbered in the power layout
- D. Number of phase

53. In the **schedule of loads for motor circuits**, which of the following is **NOT included**?

A. Type of motor

B. Manufacturer of motor

C. Motor as numbered in the power layout

D. Number of phase

54. What is the allowable ampacity of THW insulated copper conductor with an area of 8.0 mm^2 and exposed to an ambient temperature of 30 deg. Celsius

A. 45 A

B. 20 A

C. 30 A

D. 60 A

54. What is the allowable ampacity of **THW** insulated copper conductor with an area of 8.0 mm^2 and **exposed to an ambient temperature** of 30 deg. Celsius

A. 45 A

B. 20 A

C. 30 A

D. 60 A

55. Which one is standard rating of an inverse time CB?

A. 140 A

B. 130 A

C. 120 A

D. 110 A

55. Which one is **standard rating of an inverse time CB?**

A. 140 A

B. 130 A

C. 120 A

D. 110 A

56. The term ampere-hour is associated with which of the following?

- A. Converters
- B. Transformer
- C. Electromagnets
- D. Storage cells

56. The term **ampere-hour** is associated with which of the following?

- A. Converters
- B. Transformer
- C. Electromagnets
- D. Storage cells**

57. Electrical equipment may best be mounted on a concrete wall by using one of the following. Which one is this?

- A. Wooden plug
- B. Expansion bolt
- C. Load plug
- D. Plastic plug

57. Electrical equipment may **best be mounted on a concrete wall** by using one of the following. Which one is this?

- A. Wooden plug
- B. Expansion bolt**
- C. Load plug
- D. Plastic plug

58. Before starting any installation work, alteration, repair or extension on any electrical system, what type of permit is needed?

- A. Building permit
- B. Working permit
- C. Electrical permit
- D. Mayor's permit

58. Before starting any installation work, alteration, repair or extension on any electrical system, what type of permit is needed?

- A. Building permit
- B. Working permit
- C. Electrical permit**
- D. Mayor's permit

59. Above ground tanks containing liquids at atmospheric pressure are considered to be protected against lightning if the following requirements are met. Which one?

- A. The metal roof shall have a minimum thickness of 4.8mm
- B. The roof shall be welded, bolted or riveted to the shell
- C. All pipes entering the tank shall be metallicly connected to the tank at the point of entrance
- D. All of the above

59. Above ground tanks containing liquids at atmospheric pressure are considered to be protected against lightning if the following requirements are met. Which one?

- A. The metal roof shall have a minimum thickness of 4.8mm
- B. The roof shall be welded, bolted or riveted to the shell
- C. All pipes entering the tank shall be metallicly connected to the tank at the point of entrance
- D. All of the above**

60. When computing the service load, more than three fixed appliances are computed with a demand factor of _____ of the nameplate rating.

- A. 80 %
- B. 65 %
- C. 70 %
- D. 75 %

60. When computing the service load, more than **three fixed appliances** are computed with a demand factor of _____ of the **nameplate rating**.

- A. 80 %
- B. 65 %
- C. 70 %
- D. 75 %**

61. If the project is extensive and requires more time for checking and for computations of fees, the issuance of the electrical permit need not be issued immediately. However, the delay shall not be longer than how many working days?

A. 7

B. 6

C. 5

D. 8

61. If the project is extensive and requires more time for checking and for computations of fees, the issuance of the electrical permit need not be issued immediately. However, the delay shall not be longer than how many working days?

A. 7

B. 6

C. 5

D. 8

62. Splices in ground conductors shall be as few as practicable and shall be attached so as to withstand a pull test of _____?

- A. 900 N
- B. 880 N
- C. 800 N
- D. 890 N

62. Splices in ground conductors shall be as few as practicable and shall be attached so as to withstand a pull test of _____?

- A. 900 N
- B. 880 N
- C. 800 N
- D. 890 N

63. Location which are hazardous because of the presence of combustible dust.

- A. Class I
- B. Class II
- C. Class III
- D. Class IV

63. Location which are hazardous because of the presence of combustible dust.

A. Class I

B. Class II

C. Class III

D. Class IV

64. If there are three wires of 150mm^2 connected to one terminal entering a cabinet of a switchboard, the bending space at each terminal shall NOT be less than_____, provided the conductors do not enter or leave the enclosure through the wall opposite its terminals

- A. 200 mm
- B. 300 mm
- C. 400 mm
- D. 250 mm

64. If there are **three wires of 150mm²** connected to one terminal entering a cabinet of a switchboard, the bending space at each terminal shall NOT be less than_____, provided the conductors do not enter or leave the enclosure through the wall opposite its terminals

A. 200 mm

B. 300 mm

C. 400 mm

D. 250 mm

65. For an ambient temperature of 30°C , a THW insulated copper conductor with cross sectional area of 3.5 mm^2 and buried underground has the following ampacity. Which one is correct?

- A. 20 A
- B. 40 A
- C. 15 A
- D. 30 A

65. For an ambient temperature of 30°C , a THW insulated copper conductor with cross sectional area of 3.5 mm^2 and buried underground has the following ampacity. Which one is correct?

- A. 20 A
- B. 40 A
- C. 15 A
- D. 30 A

66. All extended parts located within _____ of the lightning protection system shall be bonded thereto.

- A. 1,500 mm
- B. 1,600 mm
- C. 1,800 mm
- D. 2,000 mm

66. All **extended parts** located within _____ of the **lighting protection system** shall be bonded thereto.

A. 1,500 mm

B. 1,600 mm

C. 1,800 mm

D. 2,000 mm

67. Operation at substantially constant load for an indefinitely long time.

- A. Continuous duty
- B. Intermittent duty
- C. Periodic duty
- D. Short time duty

67. Operation at substantially constant load for an **indefinitely long time**.

A. Continuous duty

B. Intermittent duty

C. Periodic duty

D. Short time duty

68. Transformer exceeding 112.5 KVA, shall not be located within _____ from combustible materials of the building.

- A. 400 mm
- B. 300 mm
- C. 200 mm
- D. 500 mm

68. Transformer exceeding 112.5 KVA, shall not be located within _____ from **combustible materials** of the building.

A. 400 mm

B. 300 mm

C. 200 mm

D. 500 mm

69. Electrode of iron or steel plates shall be at least _____ in thickness.

A. 6.4 mm

B. 5.8 mm

C. 6.0 mm

D. 6.2 mm

69. Electrode of iron or steel plates shall be at least _____ in thickness.

A. 6.4 mm

B. 5.8 mm

C. 6.0 mm

D. 6.2 mm

70. Advisory rules in the PEC are characterized by the use of what word?

A. Will

B. Would

C. Shall

D. Should

70. Advisory rules in the PEC are characterized by the use of what word?

A. Will

B. Would

C. Shall

D. Should

71. The frame of the vehicle-mounted generator shall be permitted to served as the grounding electrode for a system supplied by a generator located on the vehicle under which of the following condition?

- A. The vehicle of the generator is bonded to the vehicle fame
- B. The generator supplies only equipment located on the vehicle
- C. The non-current carrying metal parts of equipment and the equipment located grounding conductor terminals of the generator frame
- D. All of these

71. The **frame of the vehicle-mounted generator** shall be permitted to served as the grounding electrode for a system supplied by a generator located on the vehicle under which of the following condition?

- A. The vehicle of the generator is bonded to the vehicle fame
- B. The generator supplies only equipment located on the vehicle
- C. The non-current carrying metal parts of equipment and the equipment located grounding conductor terminals of the generator frame
- D. All of these**

72. What is the minimum insulation level(in volts) for the neutral conductors of a solidly grounded system?

A. 600 V

B. 300 V

C. 500 V

D. 1,000 V

72. What is the **minimum insulation level (in volts)** for the neutral conductors of a solidly grounded system?

A. 600 V

B. 300 V

C. 500 V

D. 1,000 V

73. No boxes shall have an internal depth of less than how many millimeters?

A. 15 mm

B. 10 mm

C. 12 mm

D. 14 mm

73. **No boxes** shall have an internal depth of **less than how many millimeters?**

A. 15 mm

B. 10 mm

C. 12 mm

D. 14 mm

74. Branch circuits are classified according to which of the following?

- A. Voltage across it
- B. Load being served
- C. Power consumed
- D. Setting of the overcurrent device

74. **Branch circuits are classified** according to which of the following?

A. Voltage across it

B. Load being served

C. Power consumed

D. Setting of the overcurrent device

75. The following copper conductors have the same cross sectional area but are made up of different numbers of strands. Which one has the least resistance to AC current?

- A. 19-strand conductor
- B. Single solid conductor
- C. 7-strand conductor
- D. 37-strand conductor

75. The following copper conductors have the same cross sectional area but are made up of different numbers of strands. Which one has the **least resistance to AC current?**

- A. 19-strand conductor
- B. Single solid conductor**
- C. 7-strand conductor
- D. 37-strand conductor

76. An appliance, which is fastened or otherwise, secured at a specific location?

- A. Permanent appliance
- B. Stationary appliance
- C. Portable appliance
- D. Fixed appliance

76. An appliance, which is fastened or otherwise, secured at a specific location?

- A. Permanent appliance
- B. Stationary appliance
- C. Portable appliance
- D. Fixed appliance

77. What is the minimum insulation resistance required for circuits rated from 201 to 400 A?

- A. 25,000 ohms
- B. 50,000 ohms
- C. 100,000 ohms
- D. 12,500 ohms

77. What is the **minimum insulation** resistance required for circuits rated from **201 to 400 A**?

- A. **25,000 ohms**
- B. 50,000 ohms
- C. 100,000 ohms
- D. 12,500 ohms

78. A device capable to drawing lightning discharge to it in preference to vulnerable parts of the protected area.

- A. Air terminal
- B. Lighting trap
- C. Ground mat
- D. Ground terminal

78. A device capable to drawing lightning discharge to it in preference to vulnerable parts of the protected area.

A. Air terminal

B. Lighting trap

C. Ground mat

D. Ground terminal

79. Light fixtures suspended from the ceiling by chains should be wired so that the _____

- A. Chain is grounded
- B. Wires help support the fixture
- C. Wires will not touch the chain
- D. Wires do not support the fixture

79. Light fixtures suspended from the ceiling by chains should be wired so that the _____

- A. Chain is grounded
- B. Wires help support the fixture
- C. Wires will not touch the chain
- D. Wires do not support the fixture

80. Which of the following Republic Act Number refers to the new Electrical Engineering Law?

A. RA 7920

B. RA 8450

C. RA 8710

D. RA 1840

80. Which of the following Republic Act Number refers to the new Electrical Engineering Law?

A. RA 7920

B. RA 8450

C. RA 8710

D. RA 1840

81. Cable tray shall NOT be used in which of the following applications?

A. Hoistways

B. Dry location

C. Industrial establishment

D. All of these

81. **Cable tray** shall **NOT** be used in which of the following applications?

A. Hoistways

B. Dry location

C. Industrial establishment

D. All of these

82. A heavy duty lamp holder shall have a rating no less than how many watts?

- A. 450 W
- B. 500 W
- C. 600 W
- D. 660 W

82. A **heavy duty lamp holder** shall have a rating no less than how many watts?

A. 450 W

B. 500 W

C. 600 W

D. 660 W

83. In rigid metal conduit wiring, conduits shall be supported at least every?

- A. 2,500 mm
- B. 3,500 mm
- C. 3,000 mm
- D. 2,000 mm

83. In rigid metal conduit wiring, conduits shall be supported at least every?

A. 2,500 mm

B. 3,500 mm

C. 3,000 mm

D. 2,000 mm

84. Conductors used in open wiring method within _____ from the floor shall be considered exposed to physical damage.

- A. 3,000 mm
- B. 2,500 mm
- C. 2,000 mm
- D. 1,800 mm

84. Conductors used in **open wiring** method within _____ from the floor shall be **considered exposed to physical damage.**

A. 3,000 mm

B. 2,500 mm

C. 2,000 mm

D. 1,800 mm

85. Conductors normally used to carry current shall be made of _____ unless otherwise provided in the PEC.

A. Aluminum

B. Copper

C. Steel

D. Silver

85. **Conductors** normally **used to carry current** shall be made of _____ unless otherwise provided in the PEC.

A. Aluminum

B. Copper

C. Steel

D. Silver

86. What is the maximum electrical trade size of intermediate conduit?

A. 150 mm

B. 125 mm

C. 200 mm

D. 100 mm

86. What is the **maximum electrical trade size of intermediate conduit?**

A. 150 mm

B. 125 mm

C. 200 mm

D. 100 mm

87. The Philippines Electrical Code is intended for what type of application by government bodies exercising legal jurisdiction over electrical installation?

- A. Advisory
- B. Mandatory
- C. Optional
- D. Professional

87. The Philippines Electrical Code is intended for what type of application by government bodies exercising legal jurisdiction over electrical installation?

A. Advisory

B. Mandatory

C. Optional

D. Professional

88. Individual branch circuits using type FCC (flat conductor cable) shall have ratings not exceeding how much amperes?

A. 20 A

B. 30 A

C. 15 A

D. 40 A

88. Individual branch circuits using type **FCC** (flat conductor cable) shall have ratings not exceeding how much amperes?

A. 20 A

B. 30 A

C. 15 A

D. 40 A

89. Equipment for installation in hazardous location must be tested and approved for use according to the classification of the hazards involved. These are divided into _____ groups.

- A. 4
- B. 3
- C. 7
- D. 6

89. Equipment for installation in hazardous location must be tested and approved for use according to the classification of the hazards involved. These are divided into _____ groups.

A. 4

B. 3

C. 7

D. 6

90. Aerial cable under non-metallic extensions shall have a clearance of not less than how much from steel structure members of other conductive materials?

A. 60 mm

B. 30 mm

C. 50 mm

D. 40 mm

90. **Aerial cable under non-metallic extensions** shall have a clearance of not less than how much from steel structure members of other conductive materials?

A. 60 mm

B. 30 mm

C. 50 mm

D. 40 mm

91. For all land-based electrical installation under the scope of the Philippine Electrical Code, where should an electrical permit be filed?

- A. Department of energy
- B. Office of the city engineer
- C. Office of the mayor
- D. Local building office

91. For all **land-based electrical installation** under the scope of the Philippine Electrical Code, where should an electrical permit be filed?

- A. Department of energy
- B. Office of the city engineer
- C. Office of the mayor
- D. Local building office**

92. Compliance with the provisions of the PEC will result in _____

I. Freedom from hazed

II. Good electrical service

III. An efficient system

A. I, II & III

B. I & II

C. II only

D. I only

92. Compliance with the provisions of the PEC will result in _____

- I. Freedom from hazed
- II. Good electrical service
- III. An efficient system

A. I, II & III

B. I & II

C. II only

D. I only

93. In a auxiliary gutter, how much is the minimum clearance required between bare current carrying metal parts and any metal surface of the gutter?

- A. 26 mm
- B. 24 mm
- C. 13 mm
- D. 12 mm

93. In a **auxiliary gutter**, how much is the **minimum clearance** required between bare current carrying metal parts and any metal surface of the gutter?

A. 26 mm

B. 24 mm

C. 13 mm

D. 12 mm

94. Heating elements of cables shall be separated at least by how much from the edge of outlet boxes and junction boxes?

- A. 200 mm
- B. 100 mm
- C. 150 mm
- D. 300 mm

94. Heating elements of cables shall be **separated** at least by how much from the edge of outlet boxes and junction boxes?

A. 200 mm

B. 100 mm

C. 150 mm

D. 300 mm

95. Auxiliary gutters shall not contain more than _____ current carrying conductors at any cross section.

A. 36

B. 32

C. 30

D. 24

95. Auxiliary gutters shall not contain more than _____ current carrying conductors at any cross section.

A. 36

B. 32

C. 30

D. 24

96. As a rule, no overcurrent device shall be connected in series with any conductors that is _____

- A. Stranded
- B. Current carrying
- C. Closed
- D. Intentionally grounded

96. As a rule, **no overcurrent device** shall be connected in series with any conductors that is _____

- A. Stranded
- B. Current carrying
- C. Closed
- D. Intentionally grounded**

97. Which of the following wires is applicable for underground service entrance conductors?

- A. Type THWN
- B. Type UF
- C. Type MI
- D. Type USE

97. Which of the following wires is applicable for underground service entrance conductors?

A. Type THWN

B. Type UF

C. Type MI

D. Type USE

98. For the purpose of lightning protection, a high rise building with a height over how much?

A. 23 m

B. 50 m

C. 20 m

D. 15 m

98. For the purpose of lightning protection, a high rise building with a height over how much?

A. 23 m

B. 50 m

C. 20 m

D. 15 m

99. What type of electrical conductors has a trade name, moisture resistant thermoplastic?

A. TW

B. THW

C. THWN

D. All of these

99. What type of **electrical conductors** has a trade name, **moisture resistant thermoplastic**?

A. TW

B. THW

C. THWN

D. All of these

100. A device used for the purpose of minimizing irregularities in the flow of welding currents

- A. Rheostat box
- B. Grounding transformer
- C. Reactor
- D. Inverter

100. A **device** used for the purpose of **minimizing irregularities in the flow of welding currents**

A. Rheostat box

B. Grounding transformer

C. Reactor

D. Inverter

Question Bank 2

1. A small lamp used to indicate that a circuit is energized.

A. Pilot lamp

B. Electric sign lamp

C. Control lamp

D. Test lamp

1. A **small lamp** used to indicate that a circuit is energized.

A. Pilot lamp

B. Electric sign lamp

C. Control lamp

D. Test lamp

2. A battery is charged at 15 A for 10 hours. If the charging voltage is 120 V, what is the charging cost at 1.00 pesos per kw-hr?

- A. 15 pesos
- B. 18 pesos
- C. 12 pesos
- D. 20 pesos

2. A battery is charged at 15 A for 10 hours. If the charging voltage is 120 V, what is the charging cost at 1.00 pesos per kw-hr?

A. 15 pesos

B. 18 pesos

C. 12 pesos

D. 20 pesos

$$P=EI$$

$$P= 120(15)$$

$$P= 1800 \text{ W or } 1.8 \text{ KW}$$

$$W=Pt$$

$$W=1.8 (10)$$

$$W= 18 \text{ kw}$$

$$\text{Cost} = 18(1)$$

$$\text{Cost} = 18 \text{ pesos}$$

3. What is the diameter of a copper wire having a cross sectional area of 3,969 cm?

- A. 1.6 mm
- B. 7.9 mils
- C. 0.16 inch
- D. 6.3 mm

3. What is the diameter of a copper wire having a cross sectional area of 3,969 cm?

A. 1.6 mm

B. 7.9 mils

C. 0.16 inch

D. 6.3 mm

$$A=d^2$$

$$d= \text{sqrt. } A$$

$$d= \text{sqrt. } 3969$$

$$d = 63 \text{ mils}$$

$$63 \text{ mils} \times 1 \text{ inch}/1000 \text{ mils} \times 2.54 \text{ cm}/1 \text{ inch} \times 10\text{mm}/1\text{cm}$$
$$d= 1.6 \text{ mm}$$

4. An applicant for Registered Master Electricians Examination must at least be a graduate of _____ year electrician course of instruction and has at least _____ years of apprenticeship after completion of the course

A. Two, two

B. One, one

C. One, two

D. Two, three

4. An applicant for Registered Master Electricians Examination must at least be a graduate of _____ year electrician course of instruction and has at least _____ years of apprenticeship after completion of the course

A. Two, two

B. One, one

C. One, two

D. Two, three

5. In DC circuits, the power is expressed as the product of which of the following?

A. Coulombs

B. Amperes

C. Amperes & volts

D. Coulombs & volts

5. In DC circuits, the **power is expressed** as the product of which of the following?

A. Coulombs

B. Amperes

C. Amperes & volts

D. Coulombs & volts

6. The unit of magnetic flux in SI?

A. Tesla

B. Volt-ampere

C. Maxwell

D. Weber

6. The unit of **magnetic flux** in SI?

A. Tesla

B. Volt-ampere

C. Maxwell

D. Weber

7.If the series field is connected in series with the armature, and the shunt field is connected across the combination, what type of DC generator is this?

- A. Shunt
- B. Series
- C. Long shunt compound
- D. Short shunt compound

7. If the series field is connected in series with the armature, and the **shunt field is connected across the combination**, what type of DC generator is this?

- A. Shunt
- B. Series
- C. Long shunt compound**
- D. Short shunt compound

8. An instrument that measures the electrical pressure in a circuit.

A. Ammeter

B. Megger

C. Galvanometer

D. Voltmeter

8. An instrument that **measures the electrical pressure** in a circuit.

A. Ammeter

B. Megger

C. Galvanometer

D. Voltmeter

9. A lubricant to make pulling of wires or cables through the conduit easier.

A. Grease

B. Resin

C. Talc

D. Iron filings

9. A lubricant to make pulling of wires or cables through the conduit easier.

A. Grease

B. Resin

C. Talc

D. Iron filings

10. Give an example of an electrical conductor

A. Brass

B. Asbestos

C. Slate

D. Latex

10. Give an **example** of an electrical conductor

A. Brass

B. Asbestos

C. Slate

D. Latex

11. The start winding of a split-phase induction motor is switched out of the circuit by what device?

- A. Magnetic contactor
- B. Zero speed switch
- C. Centrifugal switch
- D. Proximity switch

11. The **start winding of a split-phase induction motor** is switched out of the circuit by what device?

- A. Magnetic contactor
- B. Zero speed switch
- C. Centrifugal switch**
- D. Proximity switch

12. When a circuit breaker is selected, which of the following is the most important factor to consider?

A. Voltage rating

B. Interrupting rating

C. Momentary rating

D. Continuous current rating

12. When a **circuit breaker** is selected, which of the following is the **most important factor** to consider?

A. Voltage rating

B. Interrupting rating

C. Momentary rating

D. Continuous current rating

13. If 18 resistance, each of a value of 36 ohms, are connected in parallel, then the actual total resistance is _____?

A. 36 ohms

B. 2 ohms

C. 648 ohms

D. 54 ohms

13. If 18 resistance, each of a value of 36 ohms, are connected in parallel, then the actual total resistance is _____?

A. 36 ohms

B. 2 ohms

C. 648 ohms

D. 54 ohms

$$R_t = R/n$$

$$R_t = 36/18$$

$$R_t = 2 \text{ ohms}$$

14. A small light bulb with a resistance of 1000 ohms is connected across a 120-V line. What is the current through the bulb?

A. 1.2 A

B. 0.12 A

C. 0.012 A

D. 12 A

14. A small light bulb with a resistance of 1000 ohms is connected across a 120-V line. What is the current through the bulb?

A. 1.2 A

B. 0.12 A

C. 0.012 A

D. 12 A

$$I = E/R$$

$$I = 120/1000$$

$$I = 0.12 \text{ A}$$

15. What type of energy is stored in an electrolytic cell?

- A. Electrical
- B. Magnetic
- C. Mechanical
- D. Chemical

15. What type of energy is stored in an electrolytic cell?

- A. Electrical
- B. Magnetic
- C. Mechanical
- D. Chemical

16. A 200-V lamp has a hot resistance of 400 ohms. What is its power rating in watts?

A. 100 W

B. 200 W

C. 600 W

D. 250 W

16. A 200-V lamp has a hot resistance of 400 ohms. What is its power rating in watts?

A. 100 W

B. 200 W

C. 600 W

D. 250 W

$$P = E^2/R$$

$$P = (200)^2/400$$

$$P = 100 \text{ W}$$

17. A 25-W incandescent bulb rated at 120 V and operated on a 120 V line has burnt out and has to be replaced as soon as possible. There are several lamps available but not of the same rating. Which of the bulbs below should be used to approximate the power consumption of the busted bulb?

- A. 20 watts , 110 volts
- B. 100 watts , 240 volts
- C. 50 watts , 240 volts
- D. 75 watts, 220 volts

17. A 25-W incandescent bulb rated at 120 V and operated on a 120 V line has burnt out and has to be replaced as soon as possible. There are several lamps available but not of the same rating. Which of the bulbs below should be used to approximate the power consumption of the busted bulb?

A. 20 watts , 110 volts

B. 100 watts , 240 volts

C. 50 watts , 240 volts

D. 75 watts, 220 volts

18. What is the resistance reading of a good capacitor?

A. Negligible

B. Negative

C. Infinity

D. 1 ohm

18. What is the **resistance reading of a good capacitor?**

A. Negligible

B. Negative

C. Infinity

D. 1 ohm

19. An Inductor has a reactance of 10,000 ohms at 10 KHz, what is its reactance at 2 KHz?

- A. 20,000 ohms
- B. 500 ohms
- C. 2,000 ohms
- D. 32,000 ohms

19. An Inductor has a reactance of 10,000 ohms at 10 KHz, what is its reactance at 2 KHz?

A. 20,000 Ω

B. 500 Ω

C. 2,000 Ω

D. 32,000 Ω

$$X_L = 2\pi fL$$

$$L = X_L / 2\pi f$$

$$L = 10,000 / 2\pi (10,000)$$

$$L = 0.15915 \text{ H}$$

$$X_L = 2\pi fL$$

$$X_L = 2\pi (2,000)(0.15915)$$

$$X_L = 2000 \text{ ohms}$$

20. All batteries have a nominal rating based on how many hours of standard rate of discharge?

A. 8

B. 24

C. 16

D. 12

20. All batteries have a nominal rating based on how many hours of standard rate of discharge?

A. 8

B. 24

C. 16

D. 12

21. The property that opposes any change in current.

- A. Impedance
- B. Resistance
- C. Inductance
- D. Capacitance

21. The property that opposes any change in current.

A. Impedance

B. Resistance

C. Inductance

D. Capacitance

22. Which of the following is an integrating instrument?

- A. Ammeter
- B. Voltmeter
- C. Wattmeter
- D. Thermometer

22. Which of the following is an **integrating instrument**?

- A. Ammeter
- B. Voltmeter
- C. Wattmeter**
- D. Thermometer

23. Which of the following breaks down rubber insulation?

A. Water

B. Oil

C. Acid

D. Non of these

23. Which of the following **breaks down rubber insulation?**

A. Water

B. Oil

C. Acid

D. Non of these

24. For current to flow, a circuit must be _____?

- A. Isolated
- B. Insulated
- C. Complete
- D. Protected

24. For **current to flow**, a circuit must be _____?

- A. Isolated
- B. Insulated
- C. Complete**
- D. Protected

25. Electrical symbol represent by rectangle with letter PB inside.

- A. Push button
- B. Pull box
- C. Battery panel
- D. Box panel board

25. Electrical symbol represent by rectangle with letter **PB** inside.

A. Push button

B. Pull box

C. Battery panel

D. Box panel board

26. When the speed of the prime mover of an alternator is increased, what parameter in the alternator is affected?

A. Frequency

B. Voltage

C. Both frequency & voltage

D. Voltage & current

26. When the speed of the prime mover of an alternator is increased, what parameter in the alternator is affected?

A. Frequency

B. Voltage

C. Both frequency & voltage

D. Voltage & current

27. The current carrying capacity of the fuse material depends on

- A. Cross-sectional area
- B. Length
- C. Material
- D. All of these

27. The current carrying capacity of the fuse material depends on

A. Cross-sectional area

B. Length

C. Material

D. All of these

28. The resistance of a material is inversely proportional to its _____?

A. Length

B. Temperature

C. Cross-sectional area

D. All of these

28. The **resistance** of a material is **inversely proportional** to its _____?

A. Length

B. Temperature

C. Cross-sectional area

D. All of these

29. A $0.4 \text{ }\mu\text{F}$ capacitor has a charge of $20 \text{ }\mu\text{C}$. How much is the voltage across it?

A. 0.02 V

B. 8 V

C. 50 V

D. 0.8 V

29. A **0.4 uF** capacitor has a charge of **20 uC**. How much is the voltage across it?

A. 0.02 V

B. 8 V

C. 50 V

D. 0.8 V

$$E = Q/C$$

$$E = 20/0.4$$

$$E = 50 \text{ V}$$

30. A resistor of 3 ohms is connected in parallel with one of 2-ohm resistance. If the combination is connected in series with a 4-ohm resistor, what is the equivalent resistance of the whole combination of three resistor?

- A. 6.4 ohms
- B. 5.8 ohms
- C. 4.5 ohms
- D. 5.2 ohms

30. A resistor of 3 ohms is connected in parallel with one of 2-ohm resistance. If the combination is connected in series with a 4-ohm resistor, what is the equivalent resistance of the whole combination of three resistor?

- A. 6.4 ohms
- B. 5.8 ohms
- C. 4.5 ohms
- D. 5.2 ohms**

$$R_t = 3(2)/3+2 + 4$$

$$R_t = 5.2 \text{ ohms}$$

31. How much current is produced by a 60-V source connected across a 12 ohms resistance?

A. 5 A

B. 7.2 A

C. 20 mA

D. 5 mA

31. How much current is produced by a 60-V source connected across a 12 ohms resistance?

A. 5 A

$$I = E/R$$

B. 7.2 A

$$I = 60/12,000$$

C. 20 mA

$$I = 0.005 \text{ A or } 5 \text{ mA}$$

D. 5 mA

32. In a circuit breaker, the current which exist at the instant of contact separation is known as

- A. Recovery current
- B. Surge current
- C. Interrupting current
- D. Restriking current

32. In a circuit breaker, the **current which exist at the instant of contact separation** is known as

- A. Recovery current
- B. Surge current
- C. Interrupting current**
- D. Restriking current

33. When the EMFS in the two windings of the transformer are opposite in direction, the polarity of the winding is?

A. Additive

B. Subtractive

C. Either A or B

D. Neither A or B

33. When the **EMFS** in the two windings of the transformer are **opposite in direction**, the polarity of the winding is?

A. Additive

B. Subtractive

C. Either A or B

D. Neither A or B

34. Which of the following is used to improve or correct low power factor?

- A. Capacitor
- B. Synchronous motors
- C. Synchronous condensers
- D. All of these

34. Which of the following is used to improve or correct low power factor?

A. Capacitor

B. Synchronous motors

C. Synchronous condensers

D. All of these

35. Expired licenses shall be renewed only after complying the required CPE units. What does CPE stands for?

- A. Credit Professional Expenses
- B. Certificate of Practice & Experience
- C. Course of professional ethics
- D. Continuing Professional Education

35. Expired licenses shall be renewed only after complying the required CPE units. What does **CPE** stands for?

- A. Credit Professional Expenses
- B. Certificate of Practice & Experience
- C. Course of professional ethics
- D. Continuing Professional Education**

36. An electric iron draws 15 A at 220 V. It is desired to reduced the current to 12 A by connecting a series rheostat. What is the resistance of the rheostat?

- A. 3.67 ohms
- B. 4.55 ohms
- C. 5.12 ohms
- D. 1.86 ohms

36. An electric iron draws 15 A at 220 V. It is desired to reduced the current to 12 A by connecting a series rheostat. What is the resistance of the rheostat?

- A. 3.67 ohms
- B. 4.55 ohms
- C. 5.12 ohms
- D. 1.86 ohms

$$R_{\text{iron}} = E/I$$

$$R_{\text{iron}} =$$

$$220/15$$

$$R_{\text{iron}} =$$

$$14.667$$

$$\text{ohms}$$

$$I = E/R_{\text{iron}} + R$$

$$R = E/I - R_{\text{iron}}$$

$$R = 220/12 - 14.667$$

$$R = 3.67 \text{ ohms}$$

37. Commercial unit of electric energy

A. Joule

B. Watt-hour

C. Megawatt

D. Kilowatt-hour

37. Commercial unit of electric energy

A. Joule

B. Watt-hour

C. Megawatt

D. Kilowatt-hour

38. What resistance must be connected in parallel with 1.0 ohm resistance to give an equivalent resistance of 0.2 ohm?

A. 0.75 ohm

B. 0.25 ohm

C. 1.20 ohm

D. 0.50 ohm

38. What **resistance** must be connected in parallel with **1.0** ohm resistance to give an equivalent resistance of **0.2** ohm?

A. 0.75 ohm

B. 0.25 ohm

C. 1.20 ohm

D. 0.50 ohm

$$1/R_t = 1/R_1 + 1/R_2$$

$$1/0.2 = 1/1 = 1/R_2$$

$$R_2 = 0.25 \text{ ohm}$$

39. An ammeter should be connected in _____ with the load.

A. Series

B. Parallel

C. Series-parallel

D. Delta-wye

39. An ammeter should be connected in _____ with the load.

A. Series

B. Parallel

C. Series-parallel

D. Delta-wye

40. Three 120-ohms resistor are connected in parallel-series. What is the equivalent resistance of the combination?

- A. 360 ohms
- B. 80 ohms
- C. 180 ohms
- D. 40 ohms

40. **Three 120-ohms** resistor are connected in parallel-series. What is the equivalent resistance of the combination?

A. 360 ohms

B. 80 ohms $R_t = 120(120+120)/120+(120+120)$

C. 180 ohms $R_t = 80 \text{ ohms}$

D. 40 ohms

41. What are the two primary parts of the three-phase induction motor?

- A. Rotor & stator
- B. Stator and field
- C. Slip ring and brushes
- D. Rotor and armature

41. What are the two **primary parts** of the three-phase induction motor?

- A. **Rotor & stator**
- B. Stator and field
- C. Slip ring and brushes
- D. Rotor and armature

42. The ability of a conductor to allow current flow

A. Resistance

B. Coefficient of resistance

C. Conductance

D. Permeability

42. The **ability of a conductor** to allow current flow

A. Resistance

B. Coefficient of resistance

C. Conductance

D. Permeability

43. What is the most common usage of resistor in electronic circuits?

A. Limit current

B. Introduce a voltage drop

C. Generate heat

D. All of these

43. What is the **most common usage** of resistor in **electronic circuits**?

A. Limit current

B. Introduce a voltage drop

C. Generate heat

D. All of these

44. For a ceiling fan, which of the single-phase motor is used?

- A. Split-phase type
- B. Capacitor start & run type
- C. Permanent capacitor type
- D. Capacitor start type

44. For a **ceiling fan**, which of the **single-phase motor** is used?

A. Split-phase type

B. Capacitor start & run type

C. Permanent capacitor type

D. Capacitor start type

45. Blue is assigned to what digit value in the resistance color code?

A. 5

B. 6

C. 7

D. 4

45. **Blue** is assigned to what digit value in the resistance color code?

A. 5

B. 6

C. 7

D. 4

46. Watt-hour is equivalent to how many joules?

A. 4,186

B. 3,600

C. 44,760

D. 3,415

46. **Watt-hour** is equivalent to how many **joules**?

A. 4,186

B. 3,600

C. 44,760

D. 3,415

47. If the number of valence electrons is exactly four, how do you classify the materials?

- A. Conductor
- B. Semi-conductor
- C. Insulator
- D. Superconductor

47. If the number of **valence electrons is exactly four**, how do you classify the materials?

A. Conductor

B. Semi-conductor

C. Insulator

D. Superconductor

48. A half wave rectifier uses how many diodes?

A. At least two diodes

B. Only one diode

C. Only two diodes

D. One or more diodes depending on designer

48. A **half wave rectifier** uses how many diodes?

A. At least two diodes

B. Only one diode

C. Only two diodes

D. One or more diodes depending on designer

49. A water heater takes 2.5 A at 230 V.
What is its hot resistance?

- A. 82 ohms
- B. 74 ohms
- C. 92 ohms
- D. 70 ohms

49. A water heater takes 2.5 A at 230 V.
What is its hot resistance?

A. 82 ohms

B. 74 ohms

C. 92 ohms

D. 70 ohms

$$R = E/I$$

$$R = 230/2.5$$

$$R = 92 \text{ ohms}$$

50. SI unit of potential difference

A. Coulomb

B. Ampere

C. Siemens

D. Volt

50. SI unit of potential difference

A. Coulomb

B. Ampere

C. Siemens

D. Volt

51. Hazardous locations where combustible dust is not normally in the air in quantities sufficient to provide explosive or ignitable mixtures, and dust accumulations are normally insufficient with the normal operation of electrical equipment.

- A. Class II, Division 1
- B. Class II, Division 2
- C. Class III, Division 1
- D. Class III, Division 2

51. Hazardous locations where combustible dust is not normally in the air in quantities sufficient to provide explosive or ignitable mixtures, and dust accumulations are normally insufficient with the normal operation of electrical equipment.

- A. Class II, Division 1
- B. Class II, Division 2**
- C. Class III, Division 1
- D. Class III, Division 2

52. In hazardous location, the use of non-metallic conduit shall be permitted provided it is buried NOT less than _____ below the earth level.

A. 400 mm

B. 600 mm

C. 1,000 mm

D. 500 mm

52. In **hazardous location**, the use of non-metallic conduit shall be permitted provided it is **buried NOT less than** _____ below the earth level.

A. 400 mm

B. 600 mm

C. 1,000 mm

D. 500 mm

53. Service entrance cables shall be supported by straps or other approved methods within _____ of every service head.

A. 300 mm

B. 500 mm

C. 600 mm

D. 400 mm

53. **Service entrance cables** shall be supported by straps or other approved methods within _____ of **every service head**.

A. 300 mm

B. 500 mm

C. 600 mm

D. 400 mm

54. Hazardous location in which easily ignitable fibers or materials producing combustible flying's are handled, manufactured or used.

- A. Class III, Division 1
- B. Class IV, Division 2
- C. Class I, Division 1
- D. Class I, Division 2

54. Hazardous location in which easily ignitable fibers or materials producing combustible flying's are handled, manufactured or used.

- A. Class III, Division 1
- B. Class IV, Division 2
- C. Class I, Division 1
- D. Class I, Division 2

55. Type MC cable shall be supported and secured at intervals NOT exceeding_____.

- A. 2,000 mm
- B. 1,800 mm
- C. 3,000 mm
- D. 2,600 mm

55. Type **MC** cable shall be supported and secured at intervals **NOT exceeding**_____.

- A. 2,000 mm
- B. 1,800 mm**
- C. 3,000 mm
- D. 2,600 mm

57. There are situations where deviations from the code requirements are necessary. Before such deviations are made, there must be a written permission from one of the following entities. Which one is this?

- A. Board of Electrical Eng'g.
- B. Code enforcing Authority
- C. IIEE Code committee
- D. Philippine regulation Board

57. There are situations **where deviations from the code** requirements are necessary. Before such deviations are made, there must be a written permission from one of the following entities. Which one is this?

- A. Board of Electrical Eng'g.**
- B. Code enforcing Authority
- C. IIEE Code committee
- D. Philippine regulation Board

58. An attachment plug and receptacle shall be permitted to serve as the disconnecting means for single phase room air conditioner rated 250 V or less if the manual controls of the room air conditioner is readily accessible and located within a certain distance from the floor. What is this distance?

- A. 2,000 mm
- B. 1,800 mm
- C. 1,900 mm
- D. 1,700 mm

58. An **attachment plug and receptacle** shall be permitted to serve as the disconnecting means for single phase room air conditioner rated 250 V or less if the manual controls of the room air conditioner is readily accessible and located within a certain distance from the floor. What is this distance?

A. 2,000 mm

B. 1,800 mm

C. 1,900 mm

D. 1,700 mm

59. A point in a wiring system at which current is taken to be used in some equipment.

- A. Grounded
- B. Conductor
- C. Service entrance
- D. Outlet

59. A **point** in a wiring system at which **current is taken** to be used in some equipment.

- A. Grounded
- B. Conductor
- C. Service entrance
- D. Outlet**

60. Sheet metal boxes over 1640 cm³ in size shall be made from steel NOT less than _____ thick uncoated.

A. 1.25 mm

B. 1.35 mm

C. 1.6 mm

D. 1.8 mm

60. Sheet metal boxes over **1640 cm³** in size shall be made from steel **NOT less than** _____ thick uncoated.

A. 1.25 mm

B. 1.35 mm

C. 1.6 mm

D. 1.8 mm

61. Live vegetation or tress _____ used for support of overhead conductor spans.

A. Shall be

B. Should be

C. Shall not be

D. Should not be

61. Live vegetation or tress _____ used for support of overhead conductor spans.

A. Shall be

B. Should be

C. Shall not be

D. Should not be

62. Circuits with rigid non-metallic conduit approved for direct burial and placed under streets, hi-way, roads, alleys, driveways and parking lots shall have a minimum cover distance of _____?

- A. 760 mm
- B. 900 mm
- C. 1,000 mm
- D. 600 mm

62. Circuits with rigid non-metallic conduit **approved for direct burial and placed under streets**, hi-way, roads, alleys, driveways and parking lots shall have a minimum cover distance of _____?

- A. 760 mm
- B. 900 mm
- C. 1,000 mm
- D. 600 mm**

63. A conductor having no covering or electrical insulation.

- A. Bare conductor
- B. Concealed conductor
- C. Encased conductor
- D. Exposed conductor

63. A **conductor having no covering** or electrical insulation.

A. Bare conductor

B. Concealed conductor

C. Encased conductor

D. Exposed conductor

64. Conductors used in lightning protection system maybe coursed through air without support for a distance of _____ or less.

A. 1,000 mm

B. 900 mm

C. 760 mm

D. 800 mm

64. Conductors used in lightning protection system maybe coursed through air without support for a distance of _____ or less.

A. 1,000 mm

B. 900 mm

C. 760 mm

D. 800 mm

65. Type FC cable shall have the temperature rating durability marked on the surfaced at intervals NOT exceeding _____

- A. 600 mm
- B. 550 mm
- C. 800 mm
- D. 760 mm

65. Type **FC cable** shall have the temperature rating durability marked on the surfaced at intervals **NOT exceeding** _____

A. 600 mm

B. 550 mm

C. 800 mm

D. 760 mm

66. The computed load for the branch circuit installed to supply exterior signs and outline lighting shall be computed at a minimum of how much volt-amperes?

A. 1,200

B. 1,500

C. 1,800

D. 1,000

66. The computed load for the branch circuit installed to supply **exterior signs and outline lighting** shall be computed at a minimum of how much volt-amperes?

A. 1,200

B. 1,500

C. 1,800

D. 1,000

67. The powers of the members of the board are vested in them by who's authority?

- A. President of the Philippines
- B. Commissioner of PRC
- C. Under 7920
- D. National President of IIEE

67. The powers of the members of the board are vested in them by who's authority?

- A. President of the Philippines
- B. Commissioner of PRC
- C. Under 7920
- D. National President of IIEE

68. Energized parts of generators operated at more than _____ to ground shall not be exposed to accidental contact where accessible to unqualified persons

- A. 75 V
- B. 50 V
- C. 100 V
- D. 40 V

68. Energized parts of generators operated at more than _____ to ground shall not be exposed to accidental contact where accessible to unqualified persons

- A. 75 V
- B. 50 V**
- C. 100 V
- D. 40 V

69. A building or other structure serve shall be supplied by only one service drop EXCEPT for

- A. Multiple occupancy building
- B. Fire pumps
- C. Emergency electrical system
- D. All of these

69. A building or other structure serve shall be supplied by only one service drop EXCEPT for

- A. Multiple occupancy building
- B. Fire pumps
- C. Emergency electrical system
- D. All of these**

70. Which of the following circuits shall NOT be grounded?

- A. 2-wire DC systems
- B. Vehicle mounted generators
- C. Health care facilities
- D. All of these

70. Which of the following **circuits shall NOT be grounded?**

A. 2-wire DC systems

B. Vehicle mounted generators

C. Health care facilities

D. All of these

71. The current carrying conductors in cablebus shall have insulation rating of _____ or more.

A. 40° C

B. 50° C

C. 70° C

D. 60° C

71. The **current carrying conductors in cablebus** shall have insulation rating of _____ or more.

A. 40° C

B. 50° C

C. 70° C

D. 60° C

72. Air terminals exceeding 600 mm in height shall be supported at a point NOT less than _____ of its height

A. Three-fourth

B. Two-fifth

C. One-half

D. One-third

72. Air terminals exceeding 600 mm in height shall be supported at a point NOT less than _____ of its height

A. Three-fourth

B. Two-fifth

C. One-half

D. One-third

73. At least how many entrances shall be provided to give access to the working space about electrical equipment?

A. Two

B. One

C. Three

D. Not specified in the code

73. At least **how many entrances** shall be provided to give **access** to the working space about electrical equipment?

A. Two

B. One

C. Three

D. Not specified in the code

74. Non-metallic boxes shall be permitted only with_____.

- A. Concealed knob and tube wiring
- B. Non-metallic sheathed cable
- C. Open-wiring on insulators
- D. All of these

74. **Non-metallic boxes** shall be permitted only with_____.

- A. Concealed knob and tube wiring
- B. Non-metallic sheathed cable
- C. Open-wiring on insulators
- D. All of these**

75. For straight pulls, the length of the pull box shall NOT be less than ____ times the outside diameter over sheath of the largest shielded or lead covered conductor of cable entering the box.

A. 48

B. 42

C. 36

D. 38

75. For **straight pulls**, the length of the pull box shall **NOT** be less than ____ times the outside diameter over sheath of the largest shielded or lead covered conductor of cable entering the box.

A. 48

B. 42

C. 36

D. 38

76. This type of cable is a fabricated assembly of insulated conductors enclosed in a flexible metal sheath.

- A. Ground wire
- B. Integrated gas spacer cable
- C. Medium voltage cable
- D. Armored cable

76. This type of cable is a fabricated assembly of insulated conductors **enclosed in a flexible metal sheath.**

A. Ground wire

B. Integrated gas spacer cable

C. Medium voltage cable

D. Armored cable

77. So constructed or protected that exposure to a beating rain will not result in the entrance of water under specified test conditions.

A. Raindrip

B. Raintight

C. Rainproof

D. Rainsealed

77. So constructed or protected that **exposure to a beating rain** will not result in the entrance of water under specified test conditions.

A. Raindrip

B. Raintight

C. Rainproof

D. Rainsealed

78. The cross section area in square millimeters of a conductor shall be durably marked in the surface repeated at intervals NOT exceeding _____.

A. 600 mm

B. 900 mm

C. 1,000 mm

D. 760 mm

78. The **cross section area** in square millimeters of a conductor shall be durably marked in the surface repeated at intervals **NOT** exceeding _____.

A. **600 mm**

B. 900 mm

C. 1,000 mm

D. 760 mm

79. The following are common splicing rules EXCEPT one. Which one is this.?

- A. A splice must be provided a path for the current to pass through
- B. A joint must be mechanically as strong as the wire itself
- C. All splice must be mechanically and electrically secured by means of a solder
- D. Wires of the same size should be spliced together in line

79. The following are **common splicing rules EXCEPT one**. Which one is this.?

- A. A splice must be provided a path for the current to pass through
- B. A joint must be mechanically as strong as the wire itself
- C. All splice must be mechanically and electrically secured by means of a solder
- D. Wires of the same size should be spliced together in line**

80. Roofs with series of parallel ridges shall have air terminals along the end ridge at intervals NOT exceeding _____.

- A. 7,600 mm
- B. 8,000 mm
- C. 6,000 mm
- D. 9,000 mm

80. Roofs with series of parallel ridges shall have **air terminals** along the end ridge at intervals **NOT** exceeding _____.

A. 7,600 mm

B. 8,000 mm

C. 6,000 mm

D. 9,000 mm

81. Communication wires and cables shall be separated at LEAST a certain minimum distance from service drops of electric light and power conductors, which are installed in a raceway or in cable. What is this minimum distance?

A. 150 mm

B. 175 mm

C. 300 mm

D. 200 mm

81. **Communication wires and cables shall be separated at LEAST** a certain minimum distance from service drops of electric light and power conductors, which are installed in a raceway or in cable. What is this minimum distance?

A. 150 mm

B. 175 mm

C. 300 mm

D. 200 mm

82. A _____ branch circuit shall be permitted to supply cooking appliances that are fastened in place in any occupancy.

A. 30 or 40 A

B. 20 or 30 A

C. 50 or 60 A

D. 40 or 50 A

82. A _____ branch circuit shall be permitted to supply cooking appliances that are fastened in place in any occupancy.

A. 30 or 40 A

B. 20 or 30 A

C. 50 or 60 A

D. 40 or 50 A

83. Reconnection by the supplier of electrical energy in case where service has been cut-off due to non-payment of bills shall not require a new certificate of inspection provided the period of cut-off is NOT more than _____.

A. One and one-half years

B. Two years

C. Half a year

D. One year

83. **Reconnection** by the supplier of electrical energy in case where service has been **cut-off** due to non-payment of bills shall not require a new certificate of inspection provided the period of cut-off is NOT more than _____.

A. One and one-half years

B. Two years

C. Half a year

D. One year

84. An overcurrent device shall be connected at the point where the conductors to be protected _____.

- A. Receives its supply
- B. Is being terminated
- C. Receives its load
- D. None of these

84. An **overcurrent device** shall be connected at the point where the conductors to be protected _____.

A. Receives its supply

B. Is being terminated

C. Receives its load

D. None of these

85. A run of type IGS cable between pull box or terminations shall NOT contain more than the equivalent of _____ quarter bend.

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

85. A run of **type IGS cable** between pull box or terminations shall NOT contain more than the equivalent of _____ quarter bend.

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

86. Overhead conductors used in festoon lighting shall NOT be less than _____

A. 0.75 mm²

B. 3.5 mm²

C. 2.0 mm²

D. 5.5 mm²

86. Overhead conductors used in festoon lighting shall NOT be less than _____

A. 0.75 mm²

B. 3.5 mm²

C. 2.0 mm²

D. 5.5 mm²

87. Fixed electric space heating loads shall be computed at _____ of the total computed load.

- A. 80 %
- B. 90 %
- C. 100 %
- D. 125 %

87. **Fixed electric space** heating loads shall be computed at _____ of the **total computed load**.

A. 80 %

B. 90 %

C. 100 %

D. 125 %

88. When a circuit breakers are installed in enclosed switchboards, they are usually derated to a certain percentage. What is this percentage?

- A. 60 %
- B. 80 %
- C. 50 %
- D. 70 %

88. When a circuit breakers are installed in **enclosed switchboards**, they are usually derated to a certain percentage. What is this percentage?

- A. 60 %
- B. 80 %**
- C. 50 %
- D. 70 %

89. Open conductors shall be separated from open conductors of other circuits by NOT less than a certain distance. What is this distance?

- A. 200 mm
- B. 100 mm
- C. 150 mm
- D. 120 mm

89. **Open conductors** shall be separated from open conductors of other circuits by **NOT** less than a certain distance. What is this distance?

- A. 200 mm
- B. 100 mm**
- C. 150 mm
- D. 120 mm

90. Motor circuit switches shall _____
permitted to be of the knife switch type.

A. Not be

B. Be

C. Be or not be

D. None of these

90. Motor circuit switches shall _____
permitted to be of the **knife switch type**.

A. Not be

B. Be

C. Be or not be

D. None of these

91. Branch circuits larger than _____ shall supply only non-lighting outlet loads.

A. 30 A

B. 40 A

C. 50 A

D. 60 A

91. Branch circuits larger than _____ shall supply only **non-lighting outlet loads**.

A. 30 A

B. 40 A

C. 50 A

D. 60 A

92. For optional calculation in dwelling units, the first 10 KW shall be computed at 100% while the remainder is at _____.

A. 65%

B. 60%

C. 50%

D. 40%

92. For optional calculation in dwelling units, the first 10 KW shall be computed at 100% while the **remainder** is at _____.

A. 65%

B. 60%

C. 50%

D. 40%

93. The clearance from the top a switchboard to a ceiling which is combustible shall NOT be less than _____.

- A. 1,000 mm
- B. 800 mm
- C. 900 mm
- D. 1,250 mm

93. The clearance from the top a switchboard to a ceiling which is combustible shall NOT be less than _____.

A. 1,000 mm

B. 800 mm

C. 900 mm

D. 1,250 mm

94. Which of the following statement is NOT true?

- A. Electrical equipment and wiring not mentioned in the code shall require a special permission prior to installation
- B. Extended use of temporary installation shall not require a new approved electrical permit
- C. An application of inspection shall be filed with the government agency concerned before a preliminary and or final inspection is done
- D. A copy of the electrical permit shall be posted or kept at the job site at all times until the approval of the work have been made.

94. Which of the following statement is **NOT true**?

- A. Electrical equipment and wiring not mentioned in the code shall require a special permission prior to installation
- B. Extended use of temporary installation shall not require a new approved electrical permit**
- C. An application of inspection shall be filed with the government agency concerned before a preliminary and or final inspection is done
- D. A copy of the electrical permit shall be posted or kept at the job site at all times until the approval of the work have been made.

95. The rating of the overcurrent device shall not be less than the noncontinuous load plus a percentage of the continuous load.

- A. 125%
- B. 80%
- C. 100%
- D. 140%

95. The rating of the overcurrent device shall not be less than the **noncontionous load plus a percentage of the continuous load.**

A. 125%

B. 80%

C. 100%

D. 140%

96. Operation of equipment in excess of normal, full load rating or of a conductor in excess of rated ampacity.

- A. Overload
- B. Overtvoltage
- C. Overcurrent
- D. surge

96. Operation of equipment in excess of normal, full load rating or of a conductor in excess of rated ampacity.

A. Overload

B. Overtvoltage

C. Overcurrent

D. surge

97. For watercrafts, where should the said electrical permit be filed?

A. Local building office

B. Maritime Industry Authority

C. Office of the Philippine Ports Authority

D. Office of the Philippines Coast Guard

97. For **watercrafts**, where should the said electrical **permit be filed**?

A. Local building office

B. Maritime Industry Authority

C. Office of the Philippine Ports Authority

D. Office of the Philippines Coast Guard

98. In concealed knob and tube wiring, the clearance to be maintained between conductors is _____.

A. 55 mm

B. 45 mm

C. 76 mm

D. 50 mm

98. In **concealed knob and tube wiring**, the clearance to be maintained between conductors is _____.

A. 55 mm

B. 45 mm

C. 76 mm

D. 50 mm

99. Liquidtight flexible nonmetallic conduit shall NOT be used where the voltage of the contained conductors is in excess of _____.

A. 600 V

B. 300 V

C. 250 V

D. 1000 V

99. Liquidtight flexible nonmetallic conduit shall **NOT** be used where the voltage of the contained conductors is in excess of _____.

A. 600 V

B. 300 V

C. 250 V

D. 1000 V

100. Service entrance using copper conductors shall have sufficient capacity and shall NOT be smaller than _____.

A. 5.5 mm²

B. 3.5 mm²

C. 14.0 mm²

D. 8.0 mm²

100. **Service entrance** using copper conductors shall have sufficient capacity and shall **NOT be smaller than** _____.

A. 5.5 mm²

B. 3.5 mm²

C. 14.0 mm²

D. 8.0 mm²