

Question Bank 9

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1.

1. Which of the following is **TRUE** regarding a **reverse power relay**?

A. It protects a motor from running in reverse rotation

B. It keeps amperage at safe level

C. It keeps voltage at safe level

D. It protects a generator from motorizing

2. The output of a shunt generator is 500 A at a terminal voltage of 250 V. If the shunt resistance is 50 ohms, what is the armature current?

A. 500 A

B. 495 A

C. 505 A

D. 510 A

2. The output of a shunt generator is 500 A at a terminal voltage of 250 V. If the shunt resistance is 50 ohms, what is the armature current?

A. 500 A

$$I_{sh} = V_L / R_{sh}$$

$$I_a = I_{sh} + I_L$$

B. 495 A

$$I_{sh} = 250 / 50$$

$$I_a = 5 + 500$$

C. 505 A

$$I_{sh} = 5 \text{ A}$$

$$I_a = 505 \text{ A}$$

D. 510 A

3. A motor control circuit _____.

- I. carries the electric signals to controller, and carried the main power
- II. Does not carry electric signals to the controller, but carries the main power
- III. Carries the electric signals to the controller, but does not carry main power

- A. I only
- B. II only
- C. III only
- D. Non of these

3. A **motor control circuit** _____.

- I. carries the electric signals to controller, and carried the main power
- II. Does not carry electric signals to the controller, but carries the main power
- III. Carries the electric signals to the controller, but does not carry main power

A. I only

B. II only

C. III only

D. Non of these

4.

4. Electrical instrument use to measure electric power.

A. kilowatt-hour meter

B. Wattmeter

C. Clamp ammeter

D. Galvanometer

5.

5. Three resistors are to be connected in four possible types of circuit connections, namely, series, parallel, series-parallel & parallel-series. Which type of connection will give the **least amount of equivalent** resistance?

A. Series

B. Parallel

C. Series-parallel

D. Parallel-series

6.

6. What is the size in square millimeters (mm^2) of the cable **250 CM** in size?

A. 150 mm^2

B. 135 mm^2

C. 125 mm^2

D. 145 mm^2

7.

7. A **universal motor** is a _____ motor.

A. Shunt wound

B. Series wound

C. Compound wound

D. Any of these

8.

8. Type of diode used to regulate DC power voltage supply.

A. Shockley

B. Zener

C. Tunnel

D. SCR

9.

9. To keep the terminals of a lead acid storage battery free from corrosion, it is advisable to.

A. Keep the electrolyte level low

B. Apply petroleum jelly

C. Charge the battery at frequent intervals

D. Clean the terminals frequently

10.

10. Which of the following is the **rotating part** of a large alternator?

A. Field

B. Armature

C. Yoke

D. Commutator

11.

11. A material with atoms in which the electrons **tend to stay in their orbits.**

A. Inductor

B. Conductor

C. Intrinsic

D. Insulator

12. Who shall be the executive officer of the Board of Electrical Engineering and shall also conduct the examination given by the Board, as provided in Art. II, Sec. 9 of the New Electrical Engineering Law?

- A. A member of the Board of Electrical Engineering
- B. The President of the Philippines
- C. The commissioner of the Professional Regulations Commission
- D. The chairman of the Board of the Electrical Engineering

12. Who shall be the **executive officer** of the Board of Electrical Engineering and shall also conduct the examination given by the Board, as provided in Art. II, Sec. 9 of the New Electrical Engineering Law?

- A. A member of the Board of Electrical Engineering
- B. The President of the Philippines
- C. The commissioner of the Professional Regulations Commission**
- D. The chairman of the Board of the Electrical Engineering

13.

13. A voltage regulator on a shunt wound generator varies the _____.

A. Armature current

B. Resistance of the armature circuit

C. Resistance of the field circuit

D. Resistance of the both the armature field

14.

14. A 100-W bulb is connected in series with a room heater of 750 W. What will happen if the bulb is replaced by a 60-w bulb?

A. Heater output will increase

B. Bulb will not glow

C. Heater output will decrease

D. Heater output remain unchanged

$$R = E^2 / P$$

15.

15. Which of the following unbalanced loads is the **most difficult to handle**?

A. Delta connected loads

B. 4-wire star connected load

C. 3-wire star connected load

D. All of these

16.

16. If a **split phase** induction motor **fails to start** one of the causes is.

- A. There is no voltage
- B. Faulty cut-out switch
- C. Open overload device
- D. All of these**

17. How much charge is stored in a 2 μF capacitor connected across a 50-V supply?

A. 100 μC

B. 25 μC

C. 200 μC

D. 120 μC

17. How much charge is stored in a **2 uF** capacitor connected across a **50-V** supply?

A. 100 uC

B. 25 uC

C. 200 uC

D. 120 uC

$$Q = CE$$

$$Q = (2)(50)$$

$$Q = 100 \text{ uC}$$

18.

18. A circuit that does **not provide a complete path** for the flow of the current is _____.

- A. A closed circuit
- B. A grounded circuit
- C. A series circuit
- D. An open circuit**

19.

19. **PLC** is one of the modern types of controller. What do you mean by PCL?

A. Programmable Logic Counter

B. Programmable Language Controller

C. Programmable Laboratory Controller

D. Programmable Logic Controller

20.

20. **Neutral current** is the same as.

A. no-charge current

B. Ground current

C. Eddy current

D. Normal current

21. Three 9-ohm resistor are connected in parallel across a 24-V source. The total power taken by the circuit is

A. 120 W

B. 240 W

C. 192 W

D. 190 W

21. **Three 9-ohm** resistor are connected in parallel across a **24-V** source. The total power taken by the circuit is

A. 120 W

B. 240 W

C. 192 W

D. 190 W

$$R_t = R/n$$

$$R_t = 9 / 3$$

$$R_t = 3 \text{ ohms}$$

$$P_t = E^2 / R_t$$

$$P_t = 24^2 / 3$$

$$P_t = 192 \text{ W}$$

22. What is the secondary voltage of a transformer that has a primary voltage of 100 V, primary turns of 200 and secondary turns of 40?

- A. 500 V
- B. 25 V
- C. 4 V
- D. 20 V

22. What is the secondary voltage of a transformer that has a primary voltage of 100 V, primary turns of 200 and secondary turns of 40?

A. 500 V

B. 25 V

C. 4 V

D. 20 V

$$E_1/E_2 = N_1/N_2$$

$$E_2 = E_1 [N_2 / N_1]$$

$$E_2 = 100 [40 / 200]$$

$$E_2 = 2 \text{ V}$$

23.

23. In a “**START-STOP**” motor controller using contactors, how many contactors are needed?

A. Only one

B. Two

C. Either A or B

D. Any number

24.

24. **SI** unit of **luminous flux**.

A. Lumen

B. Lux

C. Foot-candle

D. Candle

25.

25. To obtain proper short circuit protection for a service, one should use a.

A. Limiting resistor

B. Current limiting fuse

C. Time delay relay

D. Time delay breaker

26.

26. **Ratio of maximum load** to the total connected load.

- A. Diversity factor
- B. Utilization factor
- C. Power factor
- D. Demand factor**

27. Reciprocal of resistance.

A. Susceptance

B. Reluctance

C. Conductance

D. Admittance

27. Reciprocal of resistance.

A. Susceptance

B. Reluctance

C. Conductance

D. Admittance

28. A certain motor takes 350 A at 100 V and the hp output is 45. What is its efficiency?

A. 94.6 %

B. 95.9 %

C. 97.2 %

D. 93.5 %

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- A. 94.6 %
- B. 95.9 %
- C. 97.2 %
- D. 93.5 %

$$P_{in} = EI$$

$$P_{in} = (100)(350)$$

$$P_{in} = 35,000 \text{ W} \times 1\text{hp}/746 \text{ W}$$

$$P_{in} = 46.91 \text{ hp}$$

$$n = P_{out} / P_{in}$$

$$n = 45 / 46.91$$

$$n = 95.92 \%$$

29.

29. A capacitor consist of two _____.

A. Insulators separated by a conductor

B. Conductors separated by an insulator

C. Conductors

D. Insulators

30.

30. The ampere-hour capacity of the battery depends on.

A. The area of the plates

B. The distance between the plates

C. The thickness of the plates

D. The strength of the electrolytes

31. If the line to line voltage of a 3-phase grounded system is 208 volts, what is the voltage between any of the three lines and the ground?

- A. 208 V
- B. 120 V
- C. 147 V
- D. 69.3 V

31. If the line to line voltage of a **3-phase** grounded system is **208** volts, what is the voltage between any of the three lines and the ground?

A. 208 V

B. **120 V** $V = 208 / (\text{square root } 3)$

C. 147 V $V = 120$

D. 69.3 V

32. The RMS value of a sinusoidal wave is equivalent to _____ times the peak value.

A. 1.732

B. 0.577

C. 0.707

D. 1.414

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A. 1.732

B. 0.577

C. 0.707

D. 1.414

33.

33. A battery is rated 200 Ah. If it is use to supply a constant current of a 8 A, how long can the battery last until it **becomes unusable**?

A. 20 hours

B. 25 hours

C. 15 hours

D. 30 hours

34.

34. Synchronous motors are _____.

A. Self starting

B. Not self-starting

C. Either A or B

D. Neither A or B

35.

35. In automobiles, it prevents the **arcing** at the distributor points when they began to open.

A. Condenser

B. Ignition coil

C. Contact points

D. Spark plug

36.

36. A DC generator that has a voltage rise from no load to full load.

A. Differential compound

B. Under compounded

C. Flat compounded

D. Over compounded

37. Which of the following is measured by a megger?

- A. Small current
- B. Insulation resistance
- C. Small voltage
- D. Grounded voltage

37. Which of the following is **measured by a megger?**

A. Small current

B. Insulation resistance

C. Small voltage

D. Grounded voltage

38.

38. A DC motor can easily be identified by?

A. Commutator

B. Size of conductor

C. Winding

D. Yoke

39.

39. The **d' arsonval** meter is what type of a meter movement?

A. Moving iron

B. Moving coil

C. Both A & B

D. Neither A or B

40.

40. To **forward bias a diode**, its cathode is connected to the _____ terminal of the supply.

A. Negative

B. Positive

C. Either A or B

D. Neither A or B

41.

41. A tool that is used to **align conduits in multiple ducts** is a _____.

A. Hickey

B. Manometer

C. Growler

D. Mandrel

42.

42. Which of the following **motors** has **no commutator**?

- A. Shunt motors
- B. Universal motors
- C. Induction motors**
- D. Repulsion motors

43.

43. A transformer will work on what type of supply?

A. DC

B. AC

C. Either A & B

D. Neither A or B

44.

44. A bridge type **rectifier** uses **how many diodes?**

A. One

B. Two

C. Three

D. Four

45.

45. In a **radio**, **gang condenser** is a type of.

A. Air capacitor

B. Electrolytic capacitor

C. Paper capacitor

D. Variable capacitor

46.

46. A method of **stopping a polyphase** motor quickly by momentarily connecting the motor for reverse rotation.

A. Plugging

B. Jogging

C. Inching

D. Latching

47.

47. If a motor is to be **controlled from two different locations**, the START buttons are connected in.

A. Series

B. Parallel

C. Series-parallel

D. Parallel-series

48.

48. How can the **polarization index** of transformer oil be improved?

A. Filtering

B. Vacuuming

C. Heating

D. All of these

49. If the resistance of the circuit is 25 ohms, what voltage is necessary for a current flow of 4 A?

A. 6.25 V

B. 100 V

C. 0.16 V

D. 400 V

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A. 6.25 V

B. 100 V

C. 0.16 V

D. 400 V

$$E = IR$$

$$E = 4(25)$$

$$E = 100 \text{ V}$$

50.

50. What type of DC motor is **suitable for heavy duty** load applications such as in mills and crushers?

A. Series

B. Shunt

C. Cumulative compound

D. Differential compound

51. Fuses shall be plainly marked with_____.

- A. Ampere rating
- B. Voltage rating
- C. Interrupting rating
- D. All of these

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- A. Ampere rating
- B. Voltage rating
- C. Interrupting rating
- D. All of these**

52. If there will six or more 2-wire branch circuits, the service disconnecting means shall NOT be smaller than _____.

A. 100 A

B. 90 A

C. 60 A

D. 30 A

52. If there will **six or more 2-wire branch** circuits, the service disconnecting means shall **NOT** be smaller than _____.

A. 100 A

B. 90 A

C. 60 A

D. 30 A

53. Which of the following statements is NOT true about grounding electrode conductor?

A. It shall be solid or stranded

B. It must be continuous

C. Splice or joints are allowed

D. It shall be insulated, covered or bare

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D. It shall be insulated, covered or bare

54. 8.0 mm² TW copper has an ampacity equal to _____.

A. 30 A

B. 50 A

C. 40 A

D. 60 A

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B. 50 A

C. 40 A

D. 60 A

55. Sheet metal of flush and recessed fixture housings shall be protected against corrosion and shall NOT be less than _____ thick.

A. 0.65 mm

B. 0.60 mm

C. 0.64 mm

D. 0.63 mm

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B. 0.60 mm

C. 0.64 mm

D. 0.63 mm

56. Exposed energized parts of motors and controllers shall be guarded against accidental contact by elevating it _____ or more above the floor.

- A. 2,500 mm
- B. 2,300 mm
- C. 2,600 mm
- D. 2,400 mm

56. Exposed energized parts of motors and controllers shall be guarded against accidental contact by elevating it _____ or more above the floor.

- A. 2,500 mm
- B. 2,300 mm
- C. 2,600 mm
- D. 2,400 mm

57. Which of the following statements is NOT true regarding a rosette?

- A. Fusible rosette shall not be installed
- B. Rosettes installed in damp or wet locations shall be of weatherproof type
- C. Separate rosettes that may change polarity shall not be used
- D. Non of these

57. Which of the following statements is **NOT** true regarding a rosette?

- A. Fusible rosette shall not be installed
- B. Rosettes installed in damp or wet locations shall be of weatherproof type
- C. Separate rosettes that may change polarity shall not be used
- D. Non of these**

58. To improve the insulation resistance of a motor, it is first cleaned, washed, varnished then baked. Which is very economical and effective method of baking particularly the inside coils of a large motor.

- A. Putting incandescent lamps around the winding and cover
- B. Hanging resistor strips inside the core and cover
- C. Putting it inside the baking oven and control the oven temperature
- D. Connecting the terminals to a variable low voltage supply and increase the baking current gradually until the desired baking temperature is attained, making sure that the rated current is not exceed

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- C. Putting it inside the baking oven and control the oven temperature**
- D. Connecting the terminals to a variable low voltage supply and increase the baking current gradually until the desired baking temperature is attained, making sure that the rated current is not exceed

59. Ground terminals shall be

- A. Solid plate
- B. Stranded cable
- C. Solid wire or rod
- D. All of these

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- A. Solid plate
- B. Stranded cable
- C. Solid wire or rod
- D. All of these**

60. The construction of metal cabinets and cutout boxes shall be such as to secure strength and rigidity. If constructed of uncoated sheet steel, the metal thickness should NOT be less than

- A. 1.55 mm
- B. 1.75 mm
- C. 1.00 mm
- D. 1.35 mm

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- A. 1.55 mm
- B. 1.75 mm
- C. 1.00 mm
- D. 1.35 mm**

61. The floors of transformer vaults in contact with the earth shall be of concrete NOT less than _____ thick.

A. 100 mm

B. 200 mm

C. 300 mm

D. 250 mm

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A. 100 mm

B. 200 mm

C. 300 mm

D. 250 mm

62. Where raceway are exposed to widely different temperatures they shall be _____.

A. Grounded

B. Sealed

C. Isolated

D. Bonded

62. Where raceway are exposed to widely different temperatures they shall be _____.

A. Grounded

B. Sealed

C. Isolated

D. Bonded

63. Not less than _____ of free non-heating lead shall be within the junction box.

A. 100 mm

B. 150 mm

C. 175 mm

D. 200 mm

63. Not less than _____ of free non-heating lead shall be within the junction box.

A. 100 mm

B. 150 mm

C. 175 mm

D. 200 mm

64. Any switch or device normally used to start and stop motor by making and breaking the motor circuit current?

A. Controller

B. Rheostat

C. Autotransformer

D. Double pole double throw switch

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A. Controller

B. Rheostat

C. Autotransformer

D. Double pole double throw switch

65. Where installed in raceways conductors of size _____ and larger shall be stranded.

A. 5.5 mm²

B. 8.0 mm²

C. 14 mm²

D. 3.5 mm²

65. Where **installed in raceways** conductors of size _____ and larger shall be stranded.

A. 5.5 mm²

B. 8.0 mm²

C. 14 mm²

D. 3.5 mm²

66. What type letter for conductors has a trade name “MOISTURE RESISTANT THERMOPLASTIC”?

A. TW

B. THHW

C. THWN

D. THHN

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A. TW

B. THHW

C. THWN

D. THHN

67. Where no standard electrical equipment of the exact size or rating required is available, _____ maybe used.

- A. The next lower standard size
- B. Any size available
- C. The next larger standard size
- D. Non of these

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A. The next lower standard size

B. Any size available

C. The next larger standard size

D. Non of these

68. Hazardous locations, in which volatile flammable liquids or flammable gases are handled, processed or used.

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

68. Hazardous locations, in which **volatile flammable liquids** or flammable gases are handled, processed or used.

A. Class I, Division 2

B. Class II, Division 2

C. Class II, Division 1

D. Class I, Division 1

69. The permanent joining of metallic parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed.

- A. Welding
- B. Molding
- C. Bonding
- D. splicing

69. The **permanent joining of metallic** parts to form an electrically conductive path which will assure electrical continuity and the capacity to conduct safely any current likely to be imposed.

- A. Welding
- B. Molding
- C. Bonding**
- D. splicing

70. In mobile homes, if a range, clothes dryer or similar appliance is connected by metal covered cable or flexible metal conduit, a length of NOT less than _____ of free cable or conduit shall be provided to permit moving the appliance.

- A. 800 mm
- B. 700 mm
- C. 600 mm
- D. 900 mm

70. In **mobile homes**, if a range, clothes dryer or similar appliance is connected by metal covered cable or flexible metal conduit, a length of NOT less than _____ of free cable or conduit shall be provided to permit moving the appliance.

- A. 800 mm
- B. 700 mm
- C. 600 mm
- D. 900 mm**

71. The uses of non-metallic extensions are NOT allowed in all but one of the following. Which one is this?

A. As an aerial cable

B. Where exposed to corrosive vapors

C. Where subject to corrosive vapors

D. Through floors or partitions

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A. As an aerial cable

B. Where exposed to corrosive vapors

C. Where subject to corrosive vapors

D. Through floors or partitions

72. Metal fixtures, transformers and transformer enclosures on circuits operating at over _____ volts to ground shall be grounded.

A. 250

B. 100

C. 150

D. 300

72. Metal fixtures, **transformers and transformer enclosures** on circuits operating at over _____ volts to ground shall be grounded.

A. 250

B. 100

C. 150

D. 300

73. Grounding electrodes shall be installed such that at least _____ of length is in contact with the soil.

A. 2,000 mm

B. 1,500 mm

C. 2,500 mm

D. 2,400 mm

73. Grounding electrodes shall be installed such that at least _____ of length is in contact with the soil.

A. 2,000 mm

B. 1,500 mm

C. 2,500 mm

D. 2,400 mm

74. When the voltage between conductors does not exceed 300 V and the roof has a slope of not less than 100 mm in 30 mm, the clearance can be reduced to.

- A. 500 mm
- B. 800 mm
- C. 1000 mm
- D. 90 mm

74. When the voltage between conductors does not exceed 300 V and **the roof has a slope of not less than 100 mm in 30 mm**, the clearance can be reduced to.

- A. 500 mm
- B. 800 mm
- C. 1000 mm**
- D. 90 mm

75. The down conductors shall be protected for a minimum distance of _____ above grade level.

A. 1,800 mm

B. 1,600 mm

C. 1,700 mm

D. 1,500 mm

75. The **down conductors** shall be protected for a minimum distance of _____ above grade level.

A. 1,800 mm

B. 1,600 mm

C. 1,700 mm

D. 1,500 mm

76. If the trade name of the conductor is “HEAT-RESISTANT RUBBER” what type letter is it?

A. Type RH

B. Type RHW

C. Type THHW

D. Type MTH

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A. Type RH

B. Type RHW

C. Type THHW

D. Type MTH

77. A circle with the letter B stands for.

- A. Buzzer outlet
- B. Pushbutton outlet
- C. Outlet with blank cover
- D. Bell outlet

77. A circle with the letter **B** stands for.

A. Buzzer outlet

B. Pushbutton outlet

C. Outlet with blank cover

D. Bell outlet

78. Exposed energized parts of motor and controllers operating at _____ volts or more between terminals shall be guarded against accidental contact by enclosure.

A. 50

B. 30

C. 40

D. 60

78. **Exposed energized** parts of motor and controllers operating at _____ volts or more between terminals shall be **guarded against accidental contact by enclosure.**

A. 50

B. 30

C. 40

D. 60

79. The derating factors for the number of wires in a raceway shall not apply to conductors in nipples having a length NOT exceeding _____.

A. 500 mm

B. 600 mm

C. 760 mm

D. 300 mm

79. The **derating factors** for the number of wires in a raceway shall not apply to conductors in nipples having a length NOT exceeding _____.

A. 500 mm

B. 600 mm

C. 760 mm

D. 300 mm

80. Lamps installed in scene docks shall be so located and guarded and shall provide an air space of NOT less than _____ between such lamps and any combustible material.

A. 75 mm

B. 50 mm

C. 40 mm

D. 64 mm

80. Lamps installed in scene docks shall be so located and guarded and shall provide an air space of NOT less than _____ between such lamps and any combustible material.

A. 75 mm

B. 50 mm

C. 40 mm

D. 64 mm

81. Wires or cable used in dry and wet locations for over 2000 volts insulation and ozone resistant with moisture and heat resistant rubber and has a maximum operating temperature of 90°C is _____ type?

- A. MI
- B. RHW
- C. THW
- D. THHN

81. Wires or cable used in dry and wet locations for **over 2000 volts insulation and ozone resistant** with moisture and heat resistant rubber and has a maximum operating temperature of 90°C is _____ type?

A. MI

B. RHW

C. THW

D. THHN

82. Direct burial cables or conductors with a normal voltage of 660 V or less and placed under a one or two family dwelling driveways and parking areas shall have a minimum cover distance of _____.

A. 480 mm

B. 500 mm

C. 440 mm

D. 460 mm

82. Direct burial cables or conductors with a normal voltage of 660 V or less and placed under a one or two family dwelling driveways and parking areas shall have a minimum cover distance of _____.

A. 480 mm

B. 500 mm

C. 440 mm

D. 460 mm

83. A certain residential house has lighting load of 1.1 KVA and an appliance load of 10 A at 220 volts, single phase, two wires, 60 Hz. The branch circuit protection for lighting and appliance loads are _____ and _____ respectively.

A. 30 A, 60 A

B. 20 A, 30 A

C. 15 A, 30 A

D. 15 A, 20 A

83. A certain residential house has lighting load of 1.1 KVA and an appliance load of 10 A at 220 volts, single phase, two wires, 60 Hz. The branch circuit protection for lighting and appliance loads are _____ and _____ respectively.

A. 30 A, 60 A

B. 20 A, 30 A

C. 15 A, 30 A

D. 15 A, 20 A

Note: For lighting loads, as a rule the minimum branch circuit rating must 15 A

For small appliance load, as a rule the minimum branch circuit rating must be 20 A

$$I = P / E$$

$$I = 1,100 / 220$$

$$I = 5 A$$

84. What type of conductors is used for machine tool wiring in dry or wet locations?

- A. Type MTW
- B. Type RHW
- C. Type MI
- D. Type UF

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A. Type MTW

B. Type RHW

C. Type MI

D. Type UF

85. The building code (PD 1096) of the Philippines has a several referral codes. The only no referral code is.

- A. The Philippine Electrical Code
- B. Fire Code
- C. Structural Code
- D. Chemical Engineering Code

85. The building code (PD 1096) of the Philippines has a several referral codes. The only **no referral code** is.

A. The Philippine Electrical Code

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D. Chemical Engineering Code

86. Cartridge fuses and fuse holders shall have a maximum operating voltage of _____.

A. 150 V

B. 500 V

C. 300 V

D. 250 V

86. **Cartridge fuses and fuse** holders shall have a maximum operating voltage of _____.

A. 150 V

B. 500 V

C. 300 V

D. 250 V

87. At least _____ of free conductor shall be left at each outlet, junction and switch point for splices or the connection of fixtures or devices.

A. 200 mm

B. 100 mm

C. 150 mm

D. 300 mm

87. At least _____ of **free conductor shall be left at each outlet**, junction and switch point for splices or the connection of fixtures or devices.

A. 200 mm

B. 100 mm

C. 150 mm

D. 300 mm

88. An enclosure either above or below ground, with fire resistant walls, ceiling and floor exclusively built for unattended transformer and their auxiliaries.

- A. Transformer housing
- B. Transformer yard
- C. Transformer vault
- D. None of these

88. An **enclosure either above or below ground**, with fire resistant walls, ceiling and floor exclusively built for unattended transformer and their auxiliaries.

- A. Transformer housing
- B. Transformer yard
- C. Transformer vault**
- D. None of these

89. Fuses, circuit breaker or combination thereof shall NOT be connected in_____.

A. Series

B. Parallel

C. Both A & B

D. Neither A or B

89. Fuses, circuit breaker or combination thereof shall NOT be connected in_____.

A. Series

B. Parallel

C. Both A & B

D. Neither A or B

90. Which of the following cables is NOT used as an electrical cables?

- A. Flat cables
- B. Optical fiber cables
- C. Armored cables
- D. Steel cables

90. Which of the following cables is **NOT** used as an electrical cables?

- A. Flat cables
- B. Optical fiber cables
- C. Armored cables
- D. Steel cables**

91. Electrodes of pipe or conduit shall NOT be smaller than _____ trade size.

A. 20 mm

B. 15 mm

C. 25 mm

D. 32 mm

91. **Electrodes of pipe or conduit** shall NOT be smaller than _____ trade size.

A. 20 mm

B. 15 mm

C. 25 mm

D. 32 mm

92. For single phase AC or DC motors supplied by a 3-wire, single-phase AC or DC with grounded neutral, the number of overload units required shall be.

- A. one, in the grounded conductor
- B. One, in either ungrounded conductor
- C. Two, in both ungrounded conductors
- D. Three, in all conductors

92. For single phase AC or DC motors supplied by a 3-wire, single-phase AC or DC with grounded neutral, the number of overload units required shall be.

A. one, in the grounded conductor

B. One, in either undergrounded conductor

C. Two, in both ungrounded conductors

D. Three, in all conductors

93. The ampacity of branch circuit conductors and the rating or setting of overcurrent devices supplying fixed electric space heating equipment for pipelines and vessels shall be not less than _____ percent of the total load of the heaters.

- A. 120 %
- B. 110 %
- C. 115 %
- D. 125 %

93. The ampacity of branch circuit conductors and the rating or setting of overcurrent devices **supplying fixed electric space heating equipment for pipelines and vessels** shall be not less than _____ percent of the total load of the heaters.

A. 120 %

B. 110 %

C. 115 %

D. 125 %

94. For wound rotors, to determine the maximum setting of this short circuit protective device, using a fuse or an inverse time circuit breaker, a multiplying factor of _____ of its current rating shall be used.

A. 125 %

B. 150 %

C. 250 %

D. 200 %

94. For **wound rotors**, to determine the maximum setting of this short circuit protective device, using a fuse or an inverse time circuit breaker, a multiplying factor of _____ of its current rating shall be used.

A. 125 %

B. 150 %

C. 250 %

D. 200 %

95. One equipment shall in sight from another equipment not more than _____ from the other.

A. 10 m

B. 15 m

C. 20 m

D. 5 m

95. One equipment shall in **sight from another equipment** not more than _____ from the other.

A. 10 m

B. 15 m

C. 20 m

D. 5 m

96. For office buildings, a general lighting load of _____ VA/m² shall be used.

A. 12

B. 16

C. 24

D. 28

96. For **office buildings**, a general lighting load of _____ VA/m² shall be used.

A. 12

B. 16

C. 24

D. 28

97. Motors with a marked temperature rise not over 40°C shall have an overload protection equal to _____percent of the motor full load current.

A. 115 %

B. 125 %

C. 110 %

D. 110 %

97. Motors with a marked temperature rise not over 40°C shall have an overload protection equal to _____percent of the motor full load current.

A. 115 %

B. 125 %

C. 110 %

D. 110 %

98. The minimum temperature at which a given liquid gives off vapor in sufficient concentration to form an ignitable mixture.

- A. Kindling temperature
- B. Flash point
- C. Absolute temperature
- D. Heat of fusion

98. The minimum temperature at which a given liquid gives off vapor in sufficient concentration to form an **ignitable mixture**.

A. Kindling temperature

B. Flash point

C. Absolute temperature

D. Heat of fusion

99. Lamp holders installed over highly combustible material shall be located at least _____ above the floor.

- A. 2,000 mm
- B. 2,500 mm
- C. 2,400 mm
- D. 2,600 mm

99. Lamp holders installed over highly combustible material shall be located at least _____ above the floor.

A. 2,000 mm

B. 2,500 mm

C. 2,400 mm

D. 2,600 mm

100. One of the approved grounding electrode system is using the metal underground water pipe in direct contact with the earth for _____ or more.

- A. 3,000 mm
- B. 4,000 mm
- C. 2,500 mm
- D. 1,500 mm

100. One of the approved grounding electrode system is using the metal underground **water pipe in direct contact with the earth** for _____ or more.

A. 3,000 mm

B. 4,000 mm

C. 2,500 mm

D. 1,500 mm

Question Bank 10

1. Which of the following **causes an extreme vibration** in a motor?

A. Overloads

B. Too much lubrications

C. Worn bearing

D. Shaft misalignment

2.

2. A circuit has a resistance of **8 ohms**. If a voltmeter connected across its terminals reads **10 V**, how much current is flowing through the circuit?

A. 1.25 A

B. 1.50 A

C. 2.10 A

D. 0.80 A

$$I = E / R$$

$$I = 10 / 8$$

$$I = 1.25 \text{ A}$$

3.

3. **Core loss** on electrical machines is the same term as _____.

A. Copper loss

B. Iron loss

C. Windage loss

D. Exciter loss

4.

4. If a motor is to be **controlled from five different locations**, how many and what types of switches are to be used?

A. Three 4-way & Two 3-way switches

B. Two 4-way & three 3-way switches

C. One 3-way & four 4-way switches

D. Non of these

5.

5. The process of **adding impurities** to a pure semi conductor.

A. Branding

B. Charging

C. Doping

D. energizing

6.

6. **DPDT** stands for

A. Double pole duplex switch

B. Double pole double throw switch

C. Duplex switch

D. Non of these

7.

7. A **reduced current method** of starting for squirrel cage motors that have two separate stator windings connected in parallel.

A. Primary resistance type

B. Secondary resistance type

C. Autotransformer type

D. Part winding type

8.

8. The **average dry cell** gives an approximate voltage of

A. 1.5 V

B. 1.7 V

C. 1.1 V

D. 1.3 V

9.

9. A resistor that has an **infinite resistance** is a sign of resistor.

A. A shorted

B. An open

C. A grounded

D. All of these

10. The hot resistance of an incandescent lamp is 10 ohms and the rated voltage is 50 V. Find the series resistance required to operate the lamp from 80 V supply.

- A. 10 ohms
- B. 8 ohms
- C. 6 ohms
- D. 4 ohms

10. The hot resistance of an incandescent lamp is **10 ohms** and the rated voltage is **50 V**. Find the series resistance required to operate the lamp **from 80 V** supply.

A. 10 ohms

$$E_2 = E - E_1$$

$$I_t = E_1 / R_1$$

$$R_2 = E_2 / I_t$$

B. 8 ohms

$$E_2 = 80 - 50$$

$$I_t = 50 / 10$$

$$R_2 = 30 / 5$$

C. 6 ohms

$$E_2 = 30 \text{ V}$$

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

$$R_2 = 6 \Omega$$

D. 4 ohms

11.

11. If a motor is to be controlled from **two different location**, the **STOP buttons** are connected in.

A. Series

B. Parallel

C. Series-parallel

D. Parallel-series

12. A 10-pole AC generator is running at 600 rpm, what is the frequency of the generated voltage?

A. 60 Hz

B. 50 Hz

C. 70 Hz

D. 40 Hz

12. A **10-pole** AC generator is running at **600 rpm**, what is the frequency of the generated voltage?

A. 60 Hz

B. 50 Hz

C. 70 Hz

D. 40 Hz

$$f = PN / 120$$

$$f = 10(600) / 120$$

$$f = 50 \text{ Hz}$$

13.

13. Which of the following **lamps requires a cooling period** prior to restarting?

A. Incandescent

B. Fluorescent

C. Mercury

D. Non of these

14.

14. A machine used to transform mechanical energy into electrical energy.

A. Transformer

B. Electric motor

C. Generator

D. Condenser

15. When using Ohm's law, E/R would solve for _____.

A. Voltage

B. Resistance

C. Current

D. Power

15. When using Ohm's law, E/R would solve for _____.

A. Voltage

B. Resistance

C. Current

D. Power

$$I = E / R$$

16.

16. Motors most **commonly used in home** appliances such as blenders, mixers, vacuum cleaners, etc.

A. Shunt motors

B. Universal motors

C. Capacitor start & run motors

D. Squirrel cage induction motors

17. What is the frequency if an alternating voltage having an equation, $e = 311 \sin 314t$?

A. 60 Hz

B. 40 Hz

C. 50 Hz

D. 30 Hz

17. What is the frequency if an alternating voltage having an equation, $e = 311 \sin 314t$?

A. 60 Hz

B. 40 Hz

C. 50 Hz

D. 30 Hz

Note: For standard sinusoidal equation, $e = E_m \sin \omega t$

$$\omega = 2\pi f$$

$$f = \omega / 2\pi$$

$$f = 314 / 2\pi$$

$$f = 50 \text{ Hz}$$

18.

18. What should be done to **prevent moisture damage to electrical apparatus** during extended periods of idleness?

- A. Fill the motor housing with CO₂ to inert the space
- B. Place heat lamps in motor housings
- C. Cover with canvas**
- D. Strap silica gel around the commutator

19.

19. A cell which cannot be recharged.

A. Primary

B. Secondary

C. Either A or B

D. Neither A or B

20.

20. **Low power factor** in a motor will cause it to.

A. Have decreased current for its rated output

B. Have increased current for its rated output

C. Overheat excessively

D. Operate below rated voltage

21.

21. In the **flow of one cycle** of an AC current, the maximum current flow occurs how many times?

- A. Only once
- B. Four times
- C. Twice**
- D. Three times

Note: For one cycle of the current, the maximum current will be attained twice, first at positive maximum then second at negative maximum.

22.

22. Three resistors are connected in delta. If the ohmic value of each resistance is 3 ohms, what is the ohmic equivalent of each resistance in wye configuration?

A. 9 ohms

B. 3 ohms

C. 1 ohm

D. 12 ohms

$$R_y = 1/3 R_4$$

$$R_y = 1/3 (3)$$

$$R_y = 1 \text{ ohm}$$

23.

23. What type of motor is usually used in a vacuum cleaner?

- A. Synchronous motor
- B. Capacitor start motor
- C. Series AC motor
- D. Split phase motor

24. The field winding of a shunt motor has a resistance of 110 ohms and the emf applied to it is 220 V. What is the amount of power consumed in the field excitation?

A. 500 W

B. 440 W

C. 2 KW

D. 22 KW

24. The field winding of a shunt motor has a resistance of **110 ohms** and the emf applied to it is **220 V**. What is the amount of power consumed in the field excitation?

A. 500 W

B. 440 W

C. 2 KW

D. 22 KW

$$P_{sh} = V_s^2 / R_{sn}$$

$$P_{sh} = 220^2 / 110$$

$$P_{sh} = 440 \text{ W}$$

25.

25. Heating elements can be repaired by a _____ tube, which crimps the two broken elements together.

A. Aluminum / nickel

B. Aluminum

C. Wire

D. Nickel / silver

26.

26. Electrical symbol represented by a **circle with two solid lines** inside it.

A. Single convenience outlet

B. Cooking range outlet

C. Special purpose outlet

D. Antenna outlet

27.

27. What does **synchronization** means?

A. In synchrony

B. Equal speeds

C. At the same time

D. Cycle for cycle

28. Who among the following electrical practitioners has the sole authority to seal electrical plans, etc and to practice electrical engineering in its full scope as defined in RA 7920?

- A. Registered Electrical Engineer
- B. Registered Master Electrician
- C. Professional Electrical Engineer
- D. All of these

28. Who among the following electrical practitioners has the **sole authority to seal electrical plans**, etc and to practice electrical engineering in its full scope as defined in RA 7920?

A. Registered Electrical Engineer

B. Registered Master Electrician

C. Professional Electrical Engineer

D. All of these

29.

29. In a **series RL** circuit, the current _____ the voltage.

A. Is in phase with

B. Leads

C. Lags behind

D. Non of these

30.

30. During the open **circuit test** on transformers, **which side is open?**

A. Low side

B. High side

C. Either A or B

D. Both sides

31.

31. In a transformer the **purpose of the breather** is to

- A. To provide insulation to the winding
- B. Extract moisture in air**
- C. To take insulating oil from conservator
- D. To provide cooling to the winding

32.

32. What is the **purpose of reduced voltage starters?**

- A. To increase the motor torque at starting
- B. To increase the motor current at starting
- C. To reduce the losses at starting
- D. To reduce the motor line current at starting**

33.

33. Which of the following is **NOT** standard circuit?

A. 3-phase, AC

B. 3-wire, DC

C. 4-phase, 4-wire, AC

D. 3-phase, 4-wire, AC

34. How much current does a 24-ohm resistance that dissipates 600 watts need?

A. 25 A

B. 5 A

C. 0.04 A

D. 1.04 A

34. How much current does a 24-ohm resistance that dissipates 600 watts need?

A. 25 A

B. 5 A

C. 0.04 A

D. 1.04 A

$$P = I^2R$$

$$I = (\text{square root } P / R)$$

$$I = (\text{square root } 600 / 24)$$

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

35. A 6.6-KV, three-phase star connected alternator supplies 1,000 KW at 0.8 pf lagging. Calculate the line current.

A. 126 A

B. 106 A

C. 115 A

D. 109 A

35. A **6.6-KV**, three-phase star connected alternator supplies **1,000 KW** at **0.8 pf** lagging. Calculate the line current.

A. 126 A

B. 106 A

C. 115 A

D. 109 A

$$P = (\text{square root } 3) EIpf$$

$$I = P / (\text{square root } 3) E pf$$

$$I = 1000 / (\text{square root } 3) (6.6)(0.8)$$

$$I = 109 \text{ A}$$

36. If the active and reactive powers of the circuit are equal in magnitude, the power factor of the circuit is _____.

A. 0.866

B. 0.90

C. 0.50

D. 0.707

36. If the active and reactive powers of the circuit are equal in magnitude, the power factor of the circuit is _____.

P = Active power

Q = reactive power

S = apparent power

Θ = power factor angle

A. 0.866

B. 0.90

C. 0.50

D. 0.707

$$\Theta = \tan^{-1} Q/P = \tan^{-1} (1)$$

$$\Theta = 56.4^\circ$$

$$\text{Pf} = \cos \Theta = \cos 45^\circ = 0.707$$

37. A certain alternator has 8 poles. At what speed must the alternator runs in order to have a generated emf whose frequency is 40 cps?

A. 580 rpm

B. 750 rpm

C. 700 rpm

D. 600 rpm

37. A certain alternator has 8 poles. At what speed must the alternator runs in order to have a generated emf whose frequency is 40 cps?

A. 580 rpm

B. 750 rpm

C. 700 rpm

D. 600 rpm

$$N = 120f / P$$

$$N = 120 (40) / 8$$

$$N = 600 \text{ rpm}$$

38.

38. A standard **transformer type motor** starter has a several traps used for starting a large size motor. Which one is **NOT standard**?

A. 80 %

B. 63 %

C. 50 %

D. 100 %

39. Which of the following is a source of an alternating current?

- A. Rectifier
- B. Solar cell
- C. Alternator
- D. Battery

39. Which of the following is a **source of an alternating current?**

A. Rectifier

B. Solar cell

C. Alternator

D. Battery

40.

40. In a wiring diagram **where two wires come together**, it is indicated by which symbol?

A. A broken line

B. A circle

C. A dot

D. A cross

41.

41. Which type of **single-phase motors develops more starting torque** than any other types?

A. Squirrel cage induction motor

B. Split-phase capacitor start and run motor

C. Repulsion start induction run motor

D. Wound rotor induction motor

42.

42. On a distribution transformer _____ the terminal **labeled X_1 and X_2** are the _____ terminals.

- A. Ground
- B. High voltage
- C. Low voltage**
- D. Either A, B or C

43.

43. Incorrect motor end play can be corrected by.

A. Adding or removing washers

B. Replacing or lubricating bearings

C. Tightening nuts or bolts

D. Any of these

44.

44. Meter used to test the armatures and stators of electric motor, generator, and other equipment for short circuit.

A. Test lamp

B. Megohmmeter

C. VOM

D. Growler

45.

45. A **good electric conductor** is one that _____.

A. Has a few electrons

B. Produces minimum voltage drop

C. Has low conductance

D. Is always made of copper

46.

46. A **good fuse** should have _____ resistance.

A. A very high

B. Approximately no

C. Either A or B

D. Neither A or B

47.

47. In order to show that a resistor has a tolerance of $\pm 10\%$.

A. The third band must be silver

B. No color in the fourth band

C. The fourth band is gold

D. The fourth band must be silver

48. Find the cost of running a 100-W, 220-V lamp for 20 hours at P 3.00 per KW-hr.

A. P 6.00

B. P 12.00

C. P 10.00

D. P 8.00

48. Find the cost of running a 100-W, 220-V lamp for 20 hours at P 3.00 per KW-hr.

A. P 6.00

B. P 12.00

C. P 10.00

D. P 8.00

$$W = Pt$$

$$W = (100)(20)$$

$$W = 2,000 \text{ watts-hr OR } 2 \text{ KW-hr}$$

$$\text{Cost} = W \times P3$$

$$\text{Cost} = 2 \times 3$$

$$\text{Cost} = 6$$

49.

49. Relay which operates and **resets with no international time delay.**

A. inverse-time relay

B. Instantaneous-trip relay

C. Electromechanical relay

D. Delay-off relay

50.

50. Which of the following is the **best conductor of electricity**?

A. Copper

B. Aluminum

C. Silver

D. Gold

51. Conductors passing from windows, doors, porches, fire escape or similar location shall maintain a horizontal clearance of _____.

- A. 1,000 mm
- B. 1,800 mm
- C. 1,500 mm
- D. 1,200 mm

51. Conductors passing from windows, doors, porches, fire escape or similar location shall maintain a horizontal clearance of _____.

A. 1,000 mm

B. 1,800 mm

C. 1,500 mm

D. 1,200 mm

52. A man disconnecting means shall be provided where fuses are used or where more than _____ circuit breakers are employed.

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

52. A **man disconnecting means** shall be provided where fuses are used or where more than _____ circuit breakers are employed.

A. One

B. Two

C. Three

D. Four

53. Splices and taps shall be made only in_____.

- A. Pull boxes
- B. Panelboards
- C. Cut-out boxes
- D. Junction boxes

53. Splices and taps shall be made only in_____.

- A. Pull boxes
- B. Panelboards
- C. Cut-out boxes
- D. Junction boxes**

54. The horizontal distance between two adjacent supporting points of a conductor?

- A. Sag
- B. Clearance
- C. Space
- D. Span

54. The horizontal distance between two adjacent supporting points of a conductor?

- A. Sag
- B. Clearance
- C. Space
- D. Span

55. What is the temperature rating of a TW insulated conductor?

A. 60°C

B. 90°C

C. 75°C

D. 100°C

55. What is the **temperature rating** of a TW insulated conductor?

A. 60°C

B. 90°C

C. 75°C

D. 100°C

56. An assembly of two pieces of insulating materials provided with grooves for holding one or more conductors at a definite spacing from the surface wired over and from each other, and with holes for fastening in position.

A. Cleat

B. Split knob

C. Spool insulator

D. gutter

56. An assembly of two pieces of insulating materials provided **with grooves for holding one or more conductors** at a definite spacing from the surface wired over and from each other, and with holes for fastening in position.

A. Cleat

B. Split knob

C. Spool insulator

D. gutter

57. Electrical metallic tubing smaller than _____ electrical trade size shall NOT be used.

A. 12 mm

B. 16 mm

C. 10 mm

D. 15 mm

57. Electrical **metallic tubing smaller than _____**
electrical **trade size** shall NOT be used.

A. 12 mm

B. 16 mm

C. 10 mm

D. 15 mm

58. The minimum clearance of service drops over sidewalks.

A. 8 ft

B. 14 ft

C. 10 ft or 3 mts

D. 12 ft

58. The minimum clearance of service drops over sidewalks.

A. 8 ft

B. 14 ft

C. 10 ft or 3 mts

D. 12 ft

59. The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied.

- A. Service drop
- B. Service conductors
- C. Service
- D. Service laterals

59. The supply conductors that extend from the street main or from transformers to the service equipment of the premises supplied.

A. Service drop

B. Service conductors

C. Service

D. Service laterals

60. Concealed knob and tube wiring shall be supported at intervals NOT exceeding.

A. 1,200 mm

B. 1,300 mm

C. 1,500 mm

D. 1,400 mm

60. Concealed knob and tube wiring shall be supported at intervals NOT exceeding.

A. 1,200 mm

B. 1,300 mm

C. 1,500 mm

D. 1,400 mm

61. A dead end of a busway shall be

A. Open

B. Closed

C. Either A or B

D. screened

61. A **dead end of a busway** shall be

A. Open

B. Closed

C. Either A or B

D. screened

62. What is the diameter of a solid wire, which is equivalent to 5.5 mm^2 ?

A. $D = 2.26 \text{ mm}$

B. $D = 1.62 \text{ mm}$

C. $D = 1.75 \text{ mm}$

D. $D = 2.65 \text{ mm}$

62. What is the diameter of a solid wire, which is equivalent to 5.5 mm^2 ?

A. $D = 2.26 \text{ mm}$

B. $D = 1.62 \text{ mm}$

C. $D = 1.75 \text{ mm}$

D. $D = 2.65 \text{ mm}$

63. A factory assembly of one or more conductors insulated with a highly compressed refractory mineral insulation and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.

A. Type MI

B. Type NMC

C. Type NM

D. Type MV

63. A factory assembly of one or more conductors insulated with a **highly compressed refractory mineral insulation** and enclosed in a liquidtight and gastight continuous copper or alloy steel sheath.

- A. Type **MI**
- B. Type NMC
- C. Type NM
- D. Type MV

64. The combined cross-sectional area of all conductors or cables shall NOT exceed _____percent of the internal cross-sectional area of the raceway.

A. 50

B. 60

C. 40

D. 70

64. The combined cross-sectional area of all conductors or cables shall NOT exceed _____percent of the **internal cross-sectional area of the raceway.**

A. 50

B. 60

C. 40

D. 70

65. No conductors larger than _____ shall be installed in cellular metal floor raceways.

A. 100 mm²

B. 38 mm²

C. 50 mm²

D. 14 mm²

65. No conductors larger than _____ shall be installed in **cellular metal floor** raceways.

A. 100 mm²

B. 38 mm²

C. 50 mm²

D. 14 mm²

66. In mobile homes, receptacles outlets shall not be installed within _____ of a shower or bathtub space.

- A. 760 mm
- B. 600 mm
- C. 500 mm
- D. 1,000 mm

66. In mobile homes, receptacles outlets shall not be installed within _____ of a shower or bathtub space.

- A. 760 mm
- B. 600 mm
- C. 500 mm
- D. 1,000 mm

67. Rigid non metallic conduit shall be supported within _____ of each box, cabinet or other conduit termination.

- A. 900 mm
- B. 760 mm
- C. 800 mm
- D. 600 mm

67. Rigid non metallic conduit shall be supported within _____ of each box, cabinet or other **conduit termination**.

A. 900 mm

B. 760 mm

C. 800 mm

D. 600 mm

68. To cut rigid steel conduits, an electrician should.

- A. Use a hack saw and ream the ends
- B. Use a three-wheel pipe cutter
- C. Use a cold chisel and ream the ends
- D. Order it to cut to size

68. To **cut rigid steel conduits**, an electrician should.

A. Use a hack saw and ream the ends

B. Use a three-wheel pipe cutter

C. Use a cold chisel and ream the ends

D. Order it to cut to size

69. Every recreational vehicle site with electrical supply shall be equipped with at least one _____ 250-V receptacle.

A. 15 A

B. 20 A

C. 30 A

D. 10 A

69. Every **recreational vehicle** site with electrical supply shall be equipped with at least one _____ 250-V receptacle.

A. 15 A

B. 20 A

C. 30 A

D. 10 A

70. Conductors in open wiring on insulators shall be rigidly supported within _____ of a dead end connection to a rosette, lamp holed or receptacle.

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

70. Conductors in **open wiring on insulators** shall be rigidly supported within _____ of a dead end connection to a **rosette, lamp holed or receptacle**.

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

71. What is the maximum distance between open service conductor supports for a voltage of up to 300 V?

- A. 2,000 mm
- B. 1,000 mm
- C. 1,500 mm
- D. 1,300 mm

71. What is the **maximum distance between open service** conductor supports for a voltage of up to 300 V?

A. 2,000 mm

B. 1,000 mm

C. 1,500 mm

D. 1,300 mm

72. Concealed knob and tube wiring shall be permitted to be used .

A. For extension of existing installations

B. In unfinished attic and roof spaces

C. In the hollow spaces of walls and ceilings

D. All of these

72. Concealed knob and tube wiring shall be permitted to be used .

A. For extension of existing installations

B. In unfinished attic and roof spaces

C. In the hollow spaces of walls and ceilings

D. All of these

73. Flat cable assembly shall be installed for _____.

- A. Concealed work only
- B. Exposed work only
- C. Both A & B
- D. Neither A or B

73. Flat cable assembly shall be installed for _____.

A. Concealed work only

B. Exposed work only

C. Both A & B

D. Neither A or B

74. What is the smallest electrical trade size for rigid non-metallic conduit?

A. 15 mm

B. 12 mm

C. 25 mm

D. 20 mm

74. What is the **smallest electrical trade size** for rigid non-metallic conduit?

A. 15 mm

B. 12 mm

C. 25 mm

D. 20 mm

75. Type AC cable shall be secured by approved staples, straps hangers or similar fittings at intervals NOT exceeding _____.

- A. 1,300 mm
- B. 1,200 mm
- C. 1,000 mm
- D. 1,500 mm

75. Type AC cable shall be secured by approved staples, **straps hangers or similar fittings** at intervals NOT exceeding _____.

A. 1,300 mm

B. 1,200 mm

C. 1,000 mm

D. 1,500 mm

76. Where coaxial cable are attached to building, they should have a separation of at least _____ from electric light or power cables.

A. 100 mm

B. 50 mm

C. 250 mm

D. 200 mm

76. Where **coaxial cable** are attached to building, they should have a separation of at least _____ from electric light or power cables.

A. 100 mm

B. 50 mm

C. 250 mm

D. 200 mm

77. Type MC cable shall be permitted for system in excess of _____.

A. 500 V

B. 1,000 V

C. 300 V

D. 600 V

77. Type **MC cable** shall be permitted for system in excess of _____.

A. 500 V

B. 1,000 V

C. 300 V

D. 600 V

78. A phase converter is usually employed to convert single-phase to three-phase motors maybe use. For this service, the NEC specifies that the single-phase conductors shall have an ampacity of less than _____ of the full load current rating of motor or load being served where the input and the output voltage are identical.

- A. 173 %
- B. 240 %
- C. 216 %
- D. 350 %

78. A phase converter is usually employed to convert single-phase to three-phase motors maybe use. For this service, the NEC specifies that the single-phase conductors shall have an ampacity of less than _____ of the full load current rating of motor or load being served where **the input and the output voltage are identical.**

- A. 173 %
- B. 240 %
- C. 216 %**
- D. 350 %

79. For smooth sheath cables (type MC) with an external diameter of more than 38 mm, shall have a _____ times the metallic sheath of the cable.

A. 12

B. 10

C. 15

D. 8

79. For **smooth sheath cables** (type MC) with an external diameter of more than 38 mm, shall have a _____ times the metallic sheath of the cable.

A. 12

B. 10

C. 15

D. 8

80. Cables that are flame retardant and have limited smoke characteristics shall be permitted and shall be identified using what suffix?

- A. FS
- B. PS
- C. LS
- D. UL

80. Cables that are **flame retardant** and have limited smoke characteristics shall be permitted and shall be identified using what **suffix**?

- A. FS
- B. PS
- C. LS**
- D. UL

81. In wiring using rigid metal conduits, conduit smaller than _____ shall not be used.

A. 15 mm

B. 32 mm

C. 10 mm

D. 25 mm

81. In wiring using rigid metal conduits, conduit smaller than _____ shall not be used.

A. 15 mm

B. 32 mm

C. 10 mm

D. 25 mm

82. Operation for alternate intervals.

A. Periodic duty

B. Short time duty

C. Varying duty

D. Intermittent duty

82. Operation for alternate intervals.

- A. Periodic duty
- B. Short time duty
- C. Varying duty
- D. Intermittent duty**

83. The overall covering of type NM (non-metallic sheathed) cable shall be

- A. Flame retardant and moisture resistant
- B. Flame retardant and fungus resistant
- C. Flame retardant and corrosion resistant
- D. All of these

83. The overall covering of type **NM** (**non-metallic sheathed**) cable shall be

A. Flame retardant and moisture resistant

B. Flame retardant and fungus resistant

C. Flame retardant and corrosion resistant

D. All of these

84. Whose signatures are needed in the application form for an electrical permit?

- A. Owner or authorized representative
- B. PEE who signed and sealed the electrical plan
- C. Electrical practitioner in charge of the installation
- D. All of these

84. Whose signatures are needed in the application form for an electrical permit?

- A. Owner or authorized representative
- B. PEE who signed and sealed the electrical plan
- C. Electrical practitioner in charge of the installation
- D. All of these**

85. Type TC (power and control tray) cable shall be permitted to be used in any of the following EXCEPT one. Which one is this?

A. In raceway

B. In cable trays in hazardous (classified) locations

C. For power, lighting, control, signal and communication circuits

D. Where exposed to direct rays of the sun

85. Type TC (power and control tray) cable shall be permitted to be used in any of the following **EXCEPT** one. Which one is this?

A. In raceway

B. In cable trays in hazardous (classified) locations

C. For power, lighting, control, signal and communication circuits

D. Where exposed to direct rays of the sun

86. Nails where used as a fastening means, shall be permitted to pass through the interior of the enclosure if located within _____ of the back or ends of the enclosure.

- A. 6.4 mm
- B. 8.0 mm
- C. 6.0 mm
- D. 7.5 mm

86. Nails where used as a fastening means, shall be permitted to pass through the interior of the enclosure if located within _____ of the back or ends of the enclosure.

A. 6.4 mm

B. 8.0 mm

C. 6.0 mm

D. 7.5 mm

87. What is the minimum insulation resistance of a building's electrical wiring for circuits using 2.0 mm² or 3.5 mm² conductors.

- A. 500,000 ohms
- B. 250,000 ohms
- C. 1,000,000 ohms
- D. 750,000 ohms

87. What is the minimum insulation resistance of a building's electrical wiring for circuits using 2.0 mm² or 3.5 mm² conductors.

- A. 500,000 ohms
- B. 250,000 ohms
- C. 1,000,000 ohms
- D. 750,000 ohms

88. For non-insulated busbars, the minimum spacing between it and the bottom of the enclosure shall be _____.

A. 255 mm

B. 250 mm

C. 240 mm

D. 205 mm

88. For non-insulated busbars, the minimum spacing between it and the bottom of the enclosure shall be _____.

A. 255 mm

B. 250 mm

C. 240 mm

D. 205 mm

89. The size of conductors in cablebus system shall be in no case smaller than which of the following?

- A. 30 mm²
- B. 50 mm²
- C. 60 mm²
- D. 100 mm²

89. The **size of conductors in cablebus system** shall be in **no case smaller than** which of the following?

- A. 30 mm²
- B. 50 mm²**
- C. 60 mm²
- D. 100 mm²

90. Electrical non-metallic tubing shall be firmly fastened within _____ of each outlet box, junction box, cabinet or fittings.

- A. 300 mm
- B. 600 mm
- C. 900 mm
- D. 1,000 mm

90. Electrical non-metallic tubing shall be **firmly fastened** within _____ of each outlet box, junction box, cabinet or fittings.

- A. 300 mm
- B. 600 mm
- C. 900 mm**
- D. 1,000 mm

91. A form of air switch in which the moving elements is a hinged blade wedge between stationary contact blades when closed.

- A. Snap
- B. Knife
- C. Safety
- D. Toggle

91. A **form of air switch** in which the moving element is a hinged blade wedge between stationary contact blades when closed.

A. Snap

B. Knife

C. Safety

D. Toggle

92. Where flexible metal conduit is installed as a fixed raceway, it shall be secured within _____ on each side of every outlet box.

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

92. Where flexible metal conduit is installed as a **fixed raceway**, it shall be secured within _____ on each side of every outlet box.

A. 300 mm

B. 150 mm

C. 200 mm

D. 100 mm

93. In the installation of power resistors, a thermal barrier shall be required if the space between the resistor and any combustible material is less than _____ mm. What is this minimum clearance?

- A. 150 mm
- B. 300 mm
- C. 200 mm
- D. 250 mm

93. In the installation of power resistors, a **thermal barrier** shall be required if the space between the resistor and any combustible material is less than _____ mm. What is this **minimum clearance**?

- A. 150 mm
- B. 300 mm**
- C. 200 mm
- D. 250 mm

94. Open conductors passing over residential driveways and those commercial areas not subject to truck traffic where the voltage is limited to 300 V to ground shall maintain a vertical distance of _____.

- A. 3,100 mm
- B. 4,600 mm
- C. 3,700 mm
- D. 5,500 mm

94. Open conductors **passing over residential driveways** and those commercial areas not subject to truck traffic where the voltage is limited to 300 V to ground shall maintain a vertical distance of _____.

- A. 3,100 mm
- B. 4,600 mm
- C. 3,700 mm**
- D. 5,500 mm

95. In estimating the loading of a branch circuit, what loading shall be used for each receptacles?

- A. 160 volt-ampere
- B. 120 volt-ampere
- C. 180 volt-ampere
- D. 150 volt-ampere

95. In **estimating the loading** of a branch circuit, what loading shall be used for each receptacles?

- A. 160 volt-ampere
- B. 120 volt-ampere
- C. 180 volt-ampere**
- D. 150 volt-ampere

96. The conductors including splices and taps shall NOT fill the auxiliary gutter to more than _____ of its area.

A. 70 %

B. 80 %

C. 75 %

D. 60 %

96. The conductors including splices and taps shall **NOT** fill the auxiliary gutter to more than _____ of its area.

A. 70 %

B. 80 %

C. 75 %

D. 60 %

97. What is maximum number of overcurrent devices of a lighting and appliance branch circuit panelboard shall be installed in any cabinet or cutout box?

- A. 42
- B. 50
- C. 45
- D. 48

97. What is maximum number of overcurrent devices of a lighting and appliance branch circuit panelboard shall be installed in any cabinet or cutout box?

- A. 42
- B. 50
- C. 45
- D. 48

98. A space of _____ or more shall be provided between the top of any switchboard and any combustible ceiling.

A. 1,500 mm

B. 1,000 mm

C. 1,200 mm

D. 1,800 mm

98. A **space** of _____ or more shall be provided between the **top of any switchboard and any combustible ceiling.**

A. 1,500 mm

B. 1,000 mm

C. 1,200 mm

D. 1,800 mm

99. Festoon lighting is a string is a string of outdoor lights suspended between two point more than _____ apart.

A. 4,000 mm

B. 3,800 mm

C. 4,500 mm

D. 1,800 mm

99. **Festoon lighting** is a string is a string of outdoor lights suspended between two point more than _____ apart.

A. 4,000 mm

B. 3,800 mm

C. 4,500 mm

D. 1,800 mm

100. From signs, chimneys, radio and television antennas or similar, clearance through vertical, diagonal and horizontal shall be NOT less than _____.

- A. 1,0000 mm
- B. 1,100 mm
- C. 1,200 mm
- D. 900 mm

100. From signs, chimneys, radio and television antennas or similar, clearance through vertical, diagonal and horizontal shall be NOT less than _____.

A. 1,0000 mm

B. 1,100 mm

C. 1,200 mm

D. 900 mm