JOURNEYMAN

CLOSED BOOK

EXAM # 1

JOURNEYMAN CLOSED BOOK EXAM # 1

1. _____ can be generated.

I. Electricity II. Electrical Energy

a. I only b. II only c. Both I & II d. Neither I nor II

2. The phenomenon whereby a circuit stores electrical energy is called _____.

a. Inductance b. Capacitance c. Resistance d. Susceptance

3. A general term including material, fittings, devices, appliances, fixtures, apparatus, and the like used as a part of, or in connection with, an electrical installation is _____.

a. Premises wiring (system) b. Service equipment
c. Utilization equipment d. Equipment

4. A switch intended for use in general distribution and branch circuits. It is rated in amperes, and it is capable of interrupting its rated current at its rated voltage, is a _____ switch.

a. Bypass isolation b. General use c. Isolating d. Transfer

5. The permanent joining of metallic parts to form an electrically conductive path that will ensure electrical continuity and the capacity to conduct safely any current likely to be imposed is known as _____.

a. Ordinary tap joint b. Scarf joint c. Britannia joint d. Bonding

6. An instrument that is used to measure the diameter of a wire or cable to thousandths of an inch is a _____.

a. Galvanometer b. Micrometer c. Hydrometer d. Ruler

7. A squirrel cage motor can be started at full voltage.

I. Design A II. Design B III. Design C IV. Design D

a. I only b. I &II only c. III & IV only d. I, II, III & IV

8. A _____ is a braking system for an electric motor.

I. Friction braking II. Plugging III. Dynamic braking

a. I only b. III only c. I & III only d. I, II, & III

9. Rigid metal conduit is permitted for wiring in hazardous locations if the conduit is threaded and made up wrench tight with at least _____ full threads.

a. 4 b. 5 c. 7 d. 9

10. A circuit breaker that has purposely introduced a delay in the tripping action and which delay decreases as the magnitude of the current increases is a _____ circuit breaker.

a. Inverse time b. Adjustable c. Control vented d. Vented power

11. It is the intent of this Code that factory installed internal wiring or the construction of equipment need not be inspected at the time of installation of the equipment, except to _____.

I. Detect alteration II. Detect damage III. Detect insulation type

a. I only b. II only c. I & II only d. I, II, & III

12. A premises wiring system whose power is derived from a source such as a transformer that has no direct connection to the supply conductors originating in another system is a/an _____ system.

a. Integrated b. separately derived c. Interactive d. Isolated

13. Listed or labelled equipment shall be installed, used, or both, in accordance with any instructions included _____.

I. By the foreman II. In the listing or labelling III. With the equipment from the manufacturer

a. I only b. II only c. II & III only d. I, II, & III

14. Where conductors with an ampacity higher than the ampere rating or setting of the overcurrent device are used, the _____ shall determine the circuit rating.

a. Conductor ampacity b.Overcurrent device c. Combined rating d. Deratedampacity

15. _____ are permitted to protect motor branch circuit conductors from overload.

I. Thermal relay II. Inverse time circuit breakers III. Time delay fuses

a. I only b. II only c. II & III only d. I, II & III

16. The power factor of an incandescent light bulb would be _____.

a. Unity b. 0.7 leading c. 0.7 lagging d. zero

17. _____ is a pliable raceway.

I. EMT II. ENT III. PVC

a. I only b. II only c. I & III only d. I, II, & III

18. Flexible cords and cables shall be protected by _____ where passing through holes in covers, outlet boxes, or similar enclosures.

I. Fittings II. Bushings III. Tie wraps

a. I only b. II only c. II & III only d. I & II only

19. A transformer would most likely have _____ efficiency.

a. 60 % b. 70 % c. 80 % d. 90 %

20. When alternating current flows through a conductor, there is an inductive action that causes the current in the conductor to be forced toward the outer surface. The current is greater at the surface than at the center of the conductor, this _____ will cause the resistance in the conductor to increase due to the increased heating of the conductor.

a. Capacitive effect b. Skin effect c. Conductive effect d. Outer effect

21. A value assigned to a circuit or system for the purpose of conveniently designating its voltage class is _____.

a. Nominal voltage b. Voltage to ground c. Voltage (of a circuit) d. Voltage^2

22. A type of AC motor that runs at a constant speed and is used for such purposes as an electric clock motor is a _____ motor.

a. AC squirrel cage b. AC induction c. Wound-rotor induction d. Synchronous

23. _____ is the resistance at the point of contact of two conductors or one conductor and another surface.

a. Conductor resistance b. Contact resistance c. Resistance per M/ft d. Resistance per K/ft

24. _____ is/are classified as a conduit body.

I. LB fittings II. FS fittings III. LR fittings

a. I & II only b. II only c. II & III only d. I & III only

25. _____ raceways are not suitable to enclose conductors that are subject to physical damage.

a. Rigid metal conduit b. Intermediate metal conduit c.PVC schedule 40 d. PVC schedule 80

26. A low power factor in an industrial plant is most likely caused by _____.

a. Insufficient resistive loads b. Insufficient inductive loads
c. Excessive resistive loads d. Lack of synchronous condenser

27. Where lighting outlets are installed in interior stairways, there shall be a wall switch at each floor level to control the lighting where the difference between floor levels is _____ steps or more.

a. Two b. Four c. Six d. Eight

28. A voltage or current that is reversed at regular intervals is called _____ voltage or current.

I. Direct II. Steady state III. Sinusoidal

a. I only b. II only c. III only d. None of these

29. Of the following _____ is a false statement.

a. The term kilowatt indicates the measure of power which is all available for work.
b. The term kilovolt-amperes indicate the apparent power made up of an energy component and a wattless or induction component.
c. In an industrial plant, lower power factor is usually due to underloaded induction motors.
d. The power factor of a motor is much greater at partial loads than at full loads.

30. It is generally not good practice to supply lights and motors from the same circuit because _____.

a. Lamps for satisfactory service must operate within closer voltage limits than motors.
b. Overloads and short circuits are more common on motor circuits.
c. When motors are started, the large starting current causes a voltage drop on the circuit and the lights will blink or burn dim.
d. All of these

31. In general, motors are designed to operate in a maximum ambient temperature of _____ unless specifically designed for a higher temperature.

a. 60 ^{0}C b. 50 ^{0}C c. 45 ^{0}C d. 40 ^{0}C

32. A type of single phase motor that can be operated on either AC or DC is a _____ motor.

a. Multispeed b. Capacitor-start c. Universal d. Repulsion-induction

33. For screw shell devices with attached leads, the conductor attached to the screw shell shall be _____ in color.

a. White or gray b. Orange c. Green d. Black

34. Brach circuit conductors shall have an ampacity not less than _____.

a. The load increased 125 %
b. 100% of the load to be served
c. 80% of the load to be served
d. 125% of the continuous load plus 80% of the noncontinuous load

35. A switch when intended for isolating an electric circuit from the source of power that has no interrupting rating, and it is intended to be operated only after the circuit has been opened by some other means is a/an _____.

a. Isolating switch b. Bypass isolation switch c. General use switch d. Transfer switch

36. Raceways or cable trays containing electric conductors shall not contain _____.

I. Pipe for steam II. Tube for air III. Pipe for water

a. I only b. II only c. III only d. I, II, & III

37. Not readily accessible to persons unless special means for access are used is _____.

a. Elevated b. Guarded c. Isolated d. Listed

38. After cutting conduit, to remove the rough edges on both ends, the conduit ends should be _____.

a. Sanded b. Shaped c. Burnished d. Ground

39. The instrument used to indicate phase relation between current and voltage is the _____.

a. Megger b. Power factor meter c. Voltmeter d. Galvanometer

40. To calculate the va, one needs to know the _____.

a. Voltage & current
b. Impedance &conductance
c. Resistance & impedance
d. Ohms & resistance

41. You have an adjustable trip coil rated at 5 amps on a 200-amp switch. If you want to switch to trip at 120 amps, the trip coil should be set at _____.

a. 2 amps b. 3 amps c. 4 amps d. 5 amps

42. When an ammeter is disconnected from an in-service current transformer, the secondary terminals of the current transformer must be _____.

a. Shorted b. Open c. Disconnected d. Grounded

43. Reactance will cause the current in a circuit to vary only when _____.

a. AC current flows b. DC current flows
c. There is no resistance in the circuit d. There is a resistance in the circuit

44. Motors 1/3, ¼, and 1/8hp are connected parallel. Those motors deliver a total of _____.

a. 1 hp b. 7/8 hp c. 17/24 hp d. 0.07 hp

45. Flexible cords and cables shall not be used _____.

a. For wiring of cranes and hoists b. For prevention of the transmission of noise or vibration
c. To run through holes in floors c. Simply to facilitate frequent interchange

46. A fixture that weighs more than _____ shall be supported independently of the outlet box.

a. 25 pounds b. 30 pounds c. 50 pounds d. 75 pounds

47. The force which moves electrons from atom to atom through a closed conducting path is called _____.

a. Flux b. Resistance c. Admittance d. EMF

48. An advantage of a 240-volt system compared with a 120-volt system of the same wattage is _____.

a. Reduced voltage drop
b. Reduced power used
c. Large currents
d. Lower electrical pressure

49. A resistor has an indicated tolerance error of 10%. With a value of 1000 ohms, the minimum resistance the resistor may have is _____.

a. 1,100 ohms b. 990 ohms c. 910 ohms d. 900 ohms

50. A transformer has a primary voltage of 120 volts and a secondary voltage of 480 volts. If there are 40 turns on the primary, the secondary contains _____.

a. 10 turns b. 40 turns c. 120 turns d. 160 turns

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ANSWER

1. B. II only
2. B. Capacitance
3. D. Equipment DEF 100
4. B. General use DEF 100
5. D. Bonding DEF 100
6. B. Micrometer
7. D. I, II, III & IV
8. D. I, II & III
9. B. 5 full threads 501-4a1
10. A. Inverse time DEF 100
11. C. I & II only 90-7
12. B. Separately derived DEF 100
13. C. II & III only 110-3b
14. B. Overcurrent devices 210-3
15. D. I, II & III 240-8 430-51
16. A. Unity 1.0
17. B. II only ENT
18. D. I & II only 400-14
19. D. 90% efficiency for transformer
20. B. Skin Effect
21. A. Nominal voltage DEF 100
22. D. Synchronous
23. B. Contact resistance
24. D. I & III only DEF 100
25. C. PVC schedule 40 300-5d
26. A. Insufficient resistance loads
27. C. 6 steps 210-70a
28. C. III only sinusoidal voltage
29. D. Greater is false
30. D. All of these
31. D. 40°C
32. C. Universal motor
33. A. White or gray
34. B. 100% 210-19a
35. A. Isolating switch DEF 100
36. D. I, II & III 300-8
37. C. Isolated DEF 100
38. C. Burnished
39. B. Power factor meter
40. A. Voltage & current
41. B. 3 Amps 200/5 = 40 ratio 120/40 = 3 amps
42. A. Shorted
43. A. AC current flows
44. C. 17/24 1/3 + ¼ + 1/8
45. C. Not through holes 400-8
46. C. 50 pounds 410-16a
47. D. EMF (electromotive force)
48. A. Reduced voltage drop
49. D. 900 ohms
50. D. 160 turns 120/480 = ¼
    ratio = 40/60

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EXAM # 2

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1. Frequency is measured in _____.

a. Hertz b. Voltage c. RPM d. Foot pounds

2. Which of the following would cause the most power to be dissipated in the form of heat?

a. X_L b. X_C c. Resonance d. Resistance

3. _____ is the combined opposition to current by resistance and reactance.

a. Q b. Z c. X_C d. I^2R

4. An electrician in the industry would first check the _____ to correct a low power factor.

a. Resistance b. Hysteresis c. Inductive load d. Reluctance

5. Single conductor cable runs within building are generally more common than multicable runs because _____.

a. Of conduit fill
b. Of the temperature
c. The splicing is easier
d. The weight is evenly distributed

6. _____ has the highest electrical breakdown strength and longest life over all other materials used for insulation.

a. Rubber insulation
b. Woven cloth
c. Impregnated paper
d. Thermoplastic

7. Voltage in a generator is produced by _____.

a. Resonance b. Pressures c. Cutting lines of force d. Chemical

8. To adjust the voltage generated by a constant speed DC generator, you would change the _____.

a. Stator b. Pressure c. Brushes d. Field current

9. The generator which is best suited for electroplating power is a _____ generator.

a. Split-phase b. Six pole c. Separately excited d. Compound

10. To change the rotation of a DC motor you would _____.

a. Reverse capacitor leads
b. Reverse A1 & A2
c. Reverse commutator
d. Reverse F1 & F2

11. Frequency is determined by the _____ of an alternator.

I. Size
II. Number of poles
III. Voltage
IV. Rotation speed of armature

a. II only b. II & III only c. II & IV only d. I, II & IV only

12. An example of a "made" electrode would be _____.

a. Metallic water pipe b. Metal frame of a building
c. Concrete-encased d. Ground rod

13. Illumination is measured in _____.

a. Luminous flux b. Lumens c. Temperature d. Foot candles

14. A motor enclosure designed and constructed to contain sparks or flashes that may ignite surrounding gas or vapour is called _____.

a. Non-ventilated b. Encapsulated
c. Explosion proof d. Water cooled

15. The output of a 3Ø transformer is measured in units called _____.

a. Watts b. Volt-amps c. Impedance d. Turns-ratio

16. Three horsepower is equivalent to _____.

a. 764 b. 2292 c. 2238 d. None of these

17. Sometimes copper conductors are coated (tinned) to help prevent _____.

a. Higher resistance b. Mechanical Damage
c. Capacitive reactance d. Chemical reaction

18. A wheatstone bridge is used to measure _____ resistance.

I. Low II. Medium III. High

a. I only b. II & III only c. III only d. II only

19. To check voltage to ground, you would check from _____.

a. The breaker to the cabinet b. Hot to neutral
c. The breaker to the grounding terminal d. All of these

20. The inductive action that causes current to flow on the outside surface of a conductor is known as the _____.

a. Corona effect b. Skin effect
c. Electrolytic effect d. DC reactance

21. Electrical continuity is required by the electrical code for metallic conduit _____.

a. To ensure equipment grounding b. To reduce static electricity
c. To reduce inductive heat d. To trace electrical wiring

22. The resistance of an open circuit is equal to _____.

a. Less than one ohm b. Zero c. Infinity d. None of these

23. An electrical timer switch for lighting is normally connected in _____ with the lighting circuit being controlled.

a. Series b. Parallel c. Sequence d. Tandem

24. The definition of ampacity is _____.

a. The current-carrying capacity of conductors expressed in volt-amps
b. The current-carrying capacity expressed in amperes
c. The current-carrying capacity of conductors expressed in wattage
d. The current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating

25. The grounded conductor would connect to the _____ of a lampholder.

a. Screw shell b. Filament c. Base contact d. Lead in wire

26. A three-phase, 6-pole AC alternator 34 kva, on a Y-connected system. During one complete mechanical rotation (360^0) will have _____ electrical rotations.

a. 1 b. 1 ½ c. 3 d. 12

27. The voltage per turn of the primary of a transformer is _____ the voltage per turn of the secondary.

a. More than b. The same as c. Less than d. None of these

28. A single concrete-encased electrode shall be augmented by one additional electrode if it does not have a resistance to ground of _____.

a. 25 ohms b. 30 ohms c. 50 ohms d. Not a code requirement

29. Which of the following is not true about alternating current?

a. Develops eddy current b. It can be transformed
c. Is suitable for charging batteries d. Interferes with communication lines

30. On a 120v 1Ø circuit, ground fault protection for personnel operates on the principal of unbalanced current between _____.

a. The grounded and ungrounded conductor
b. The ungrounded conductor
c. The grounding conductor and the neutral conductor
d. The service disconnect and the branch circuit

31. In a 3Ø circuit, how many electrical degrees separate each phase?

a. 360 b. 180 c. 120 d. 90

32. _____ duty is a type of service where both the load and the time intervals may have wide variations.

a. Continuous b. Periodic c. Intermittent d. Varying

33. The definition of ambient temperature is _____.

a. The temperature of the conductor
b. The insulation rating of the conductor
c. The temperature of the area surrounding the conductor
d. The maximum heat the insulation can be used within

34. As the power factor of a circuit is increased _____.

a. Reactive power is decreased
b. Active power is decreased
c. Reactive power is increased
d. Both active and reactive power are increased

35. Tinning rubber insulated twisted cable is done to _____.

a. Make the strands stronger
b. Prevent chemical reactions between the copper and the rubber
c. Increase the resistance
d. Meet NEMA requirements

36. A negatively charged body has _____.

a. Excess of electrons
b. Excess of neutrons
c. Deficit of electrons
d. Deficit of neutrons

37. A fluorescent light that blinks "on" and "off" repeatly may in time _____.

a. Cause the fuse to blow
b. Cause the switch to wear out
c. Cause the wire to melt
d. Result in damage to the ballast

38. Electrical appliances are connected in parallel because it _____.

a. Makes the operation of appliances independent of each other
b. Results in reduced power loss
c. Is a simple circuit
d. Draws less current

39. What relationship determines the efficiency of electrical equipment?

a. The power input divided by the output
b. The volt-amps x the wattage
c. The va divided by the pf
d. The power output divided by the input

40. What is the formula to find watt hours?

a. E x T x 1000
b. E x I x T
c. I x E x T/1000
d. E x T x 1000

41. Of the six ways of producing emf, which method is used the least?

a. Pressure
b. Solar
c. Chemical reaction
d. Friction

42. The voltage produced by electromagnetic induction is controlled by _____.

a. The number of lines of flux cut per second
b. Eddy currents
c. The size of the magnet
d. The number of turns

43. As the power factor of a circuit is increased _____.

a. Reactive power is decreased
b. Active power is decreased
c. Reactive power is increased
d. Both active and reactive power are increased

44. The breakdown voltage of an insulation depends upon _____ value of AC voltage.

a. RMS b. Effective c. Peak d. 1.732 peak

45. The AC system is preferred to the DC system because _____.

a. DC voltage cannot be used for domestic appliances
b. DC motors do not have speed control
c. AC voltages can be easily changed in magnitude
d. High-voltage AC transmission is less efficient

46. DC series motors are used in applications where _____ is required.

a. Constant speed b. High starting torque
c. Low no-load speed d. None of these

47. Basically all electric motors operate on the principle of repulsion or _____.

a. Magnetism b. Induction
c. Resistance d. Capacitance

48. A capacitor opposes _____.

a. Both a change in voltage & current b. Change in current
c. Change in voltage d. None of these

49. The armature current drawn by any DC motor is proportional to the _____.

a. Motor speed b. Voltage applied c. Flux required d. Torque applied

50. The greater voltage drop in a circuit will occur when the _____ the current flow through that part of the circuit.

a. Greater b. Slower c. Faster d. Lower

JOURNEYMAN CLOSED BOOK EXAM #2

ANSWER

1. A. Hertz
2. D. Resistance
3. B. Z is impedance
4. C. Inductive load
5. C. The splicing is easier
6. C. Impregnated paper
7. C. Cutting the lines of force
8. D. Field current
9. C. Separately excited
10. D. Reverse F1 & F2
11. C. II & IV only
12. D. Ground rod 250-52c
13. D. Foot candles
14. C. Explosion proof
15. B. Volt amps
16. C. 2238 watts 746 x 3 hp = 2238
17. D. Chemical reaction
18. B. II & III only
19. D. All of these
20. B. Skin effect
21. A. To assure equipment ground 300-10
22. C. Infinity
23. A. Series
24. D. Carry continuously
25. A. Screw shell 410-23
26. C. 3 Electrical rotations
27. B. Same as volt per turn
28. D. Not a Code requirement 250-56
29. C. Is suitable for charging batteries
30. A. Between white and black wire
31. C. 120^{o} separate each phase
32. D. Varying duty DEF 100
33. C. Surrounding the conductor DEF 100
34. A. Reactive power is decreased
35. B. Prevent chemical reaction
36. A. Excess of electrons
37. D. Result in damage to the ballast
38. A. Operation independent
39. D. Efficiency = output divided by input
40. B. E x I x Time
41. D. Friction
42. A. Lines cut per second
43. A. Reactive power is decreased
44. C. Peak
45. C. AC can be changed with transformer
46. B. High starting torque
47. B. Induction
48. C. Change in voltage
49. B. Voltage applied
50. A. Greater the current flow

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EXAM # 3

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1. The electromotive force required to cause a current to flow may be obtained _____.

I. Thermally II. Mechanically III. Chemically

a. I only b. I & III only c. II & III only d. I, II, & III

2. Which of the following is not true?

a. A fluorescent fixture is more efficient than an incandescent fixture.
b. Room temperature has an effect on the operation of a fluorescent lamp .
c. Fluorescent fixtures have good power factor with the current leading the voltage.
d. The life of a fluorescent bulb is affected by starting and stopping.

3. Resistance opposes the flow of current in a circuit and is measured in _____.

a. Farads b. Joules c. Ohms d. Henrys

4. Which of the following is true?

a. Wooden plugs may be used for mounting electrical equipment in concrete.
b. The high-leg conductor of a 4-wire delta is identified blue in color.
c. The minimum size service permitted by the Code for a residence is 100 amps.
d. The ungrounded conductor is connected to the screw shell of a lampholder.

5. Mulitple start buttons in a motor control circuit are connected in _____.

a. Series b. Parallel c. Series-parallel d. None of these

6. Which of the following is not true?

a. Feeder demand factors are applicable to household electric ranges.
b. A green colored conductor can be used as an ungrounded circuit conductor.
c. Insulated conductors #6 or smaller shall be white or gray, no marking tape permitted.
d. All joints or splices must be electrically and mechanically secure before soldering.

7. Special permission is _____.

a. Granted by the electrical foreman on the job.
b. Verbal permission by the inspector.
c. Given only once on one blueprint change request.
d. The written consent of the authority having jurisdiction.

8. One million volts can also expressed as _____.

a. 1 millivolt b. 1 kilovolt c. 1 megavolt d. 1 microvolt

9. Resistance in a circuit may be _____.

I. Resistance of the conductors II. Resistance due to imperfect contact

a. I only b. II only c. Both I & II d. Neither I nor II

10. Which of the following is not true?

a. All receptacles on 15 and 20 amp branch circuits must be of the grounding type.
b. Splices and joints shall be covered with an insulation equivalent to the conductor insulation.
c. The size of the conductor determines the rating of the circuit.
d. All 15 and 20 amp receptacle installed in a dwelling bathroom shall have GFCI protection.

11. A magnetic field is created around a conductor _____.

a. Whenever current flows in the wire, provided the wire is made of magnetic materials.
b. Only when the wire carries a large current.
c. Whenever current flows in the conductor.
d. Only if the conductor is formed in a loop.

12. A universal motor has brushes that ride on the _____.

a. Commutator b. Stator c. Inter-pole d. Field

13. How many kw hours are consumed by 25-60 watt light bulbs burning 5 hours in a 120v circuit?

a. 1.5 b. 180 c. 7.5 d. 75

14. A dynamo is _____.

a. A pole line insulator.
b. A tool used to test dielectric strength.
c. A meter used for checking the R.P.M of a motor.
d. A machine for converting mechanical energy into electrical energy.

15. Which of the following is/are generally used for field magnets?

I. Copper II. Steel III. Wrought iron

a. I & II only b. I & III only c. II & III only d. I, II, & III

16. The difference between a neutral and a grounded circuit conductors is _____.

a. Only a neutral will have equal potential to the ungrounded conductor.
b. Only a neutrals outer covering is white or natural gray.
c. Only a neutral carries unbalanced current.
d. There is no difference.

17. The normal rotation of an induction motor is _____ facing the front of the motor (The front of a motor is the end opposite the shaft).

a. Clockwise b. Counter clockwise

18. A function of a relay is to _____.

a. Turn on another circuit
b. Produce thermal electricity
c. Limit the flow of electrons
d. Create a resistance in the field winding

19. Which of the following is not true?

a. It is an electrical impossibility to have a circuit with only inductive reactance because the metallic wire has a resistance.
b. The voltage of a circuit is the greatest effective difference of potential that exists between any two conductors of a circuit.
c. The current is said to lag the voltage in a circuit that has only capacitive reactance.
d. Power factor is the phase displacement of current and voltage in an AC circuit.

20. Unity power factor, which means that the current is in phase with the voltage, would be _____.

a. 0.50 b. 0.80 c. 0.10 d. 1.0

21. Rheostats and potentiometers are types of _____ resistors.

a. Film b. Variable c. Fixed d. Wirewound

22. A laminated pole is _____.

a. One built up of layers or iron sheets, stamped from sheet metal and insulated.
b. Used in transmission lines over 100kv.
c. A pole soaked in creosote.
d. Found in the western part of the U.S.A.

23. Which of the following is true?

a. Conductors of different systems may not occupy the same enclosure.
b. Knife switches should be mounted in a horizontal position.
c. 75 amps is a standard size fuse.
d. Circuits are grounded to limit excess voltage to ground, which might occur from lightning or exposure to other higher voltage sources.

24. Electrical power is measure of _____.

a. Work wasted b. Voltage
c. Rate at which work is performed d. Total work performed

25. What percentage of the maximum (peak) voltage is the effective (R.M.S.) voltage?

a.100% b. 70.7% c. 63.7% d. 57.7%

26. A low power factor is commonly caused by _____.

I. Induction motors II. Synchronous motors III. Fluorescent lights

a. III only b. II & III only c. I & III only d. I, II& III

27. Which of the following is not true?

a. Conduit painted with enamel cannot be used outdoors.
b. All AC phase wires, neutral and equipment grounding conductors if used, must be installed in the same raceway.
c. PVC shall have a minimum burial depth of 24 “.
d. EMT raceway can be installed in an air conditioning-space heating duct.

28. Which of the following is not true?

a. Equal currents flow in the branches of parallel circuits.
b. The total resistance of a parallel circuit is less than the smallest resistor in the circuit.
c. The total current in a parallel circuit is the sum of the branch currents.
d. In a parallel circuit, there is more than one path for the current flow.

29. Hysteresis is _____.

a. The tool used to read the specific gravity of a battery.
b. The lagging of magnetism, in a magnetic metal, behind the magnetizing flux which produces it.
c. The opposite of impedance.
d. None of these

30. The electric pressure of a circuit would be the _____.

a. Voltage b. Amperage c. Resistance d. Wattage

31. Permeability is _____.

a. The opposite of conductance.
b. A measure of the ease with which magnetism passes through any substance.
c. The total resistance to current flow.
d. The liquid substance in a battery.

32. The Wheatstone bridge method is used for accurate measurements of _____.

a. Voltage b. Amperage c. Resistance d. Wattage

33. When a circuit breaker is in the open position _____.

I. You have a short in the ungrounded conductor.
II. You have a short in the grounded conductor.

a. I only b. II only c. Either I or II d. both I & II

34. In solving series-parallel circuits, generally you would _____.

a. Treat it as a series circuit b. Reduce it to its simplest form
c. Assume that all loads are equal d. Treat it as a parallel circuit.

35. A commutator is _____.

a. A ditching machine
b. The inter-poles of a generator
c. A device for causing the alternating currents generated in the armature to flow in the same direction in the external circuit.
d. A transformer with a common conductor.

36. Which of the following is true?

a. EMT may be treaded
b. The "white" colored conductor connected to the silver colored post on a duplex receptacle on a 120v two-wire branch circuit is called the "neutral" conductor.
c. Plastic water pipe is approved to be used for electrical conduit.
d. The screw shell of a lampholder may support a fixture weighing 6 pounds.

37. To fasten a box to a terra cotta wall you would use which of the following?

a. Wooden plugs b. Lag bolt c. Expansion bolt d. Toggle bolt/rawl plugs

38. If a 240-volt heater is used on 120 volts, the amount of heat produced will be _____.

a. Twice as great b. Four times as great c. ¼ as much d. The same

39. Which of the following about a strap wrench is/are true?

I. You can turn pipe using one hand
II. Use in a tight corner
III. Use on different sizes of pipe

a. I only b. II only c. III only d. I, II & III

40. When soldering a joint, the flux is used to _____.

a. Keep the wire cool
b. Keep the surface clean
c. Lubricate the joint
d. Maintain a tight connection

41. The transferring of electrons from one material to another would be _____.

a. Electrochemistry b. Static electricity c. Solar electricity d. Piezoelectricity

42. A minimum thickness of _____ inch/inches of concrete over conduits and raceways should be used to prevent cracking.

a. 1 b. 2 c. 3 d. 4

43. Wire Connectors are generally classified as _____ type(s).

I. Thermal II. Pressure

a. I only b. II only c. both I & II d. neither I nor II

44. One of the disadvantages of indenter or crimp connectors is _____.

a. They must be re-crimped at each annual maintenance inspection.
b. That special tools are required to make the joint.
c. Eventually they will loosen.
d. They can only be used for copper conductors.

45. The usual service conditions under which a transformer should be able to carry its rated load are _____.

I. At rated secondary voltage or not in excess of 105% of the rated value.
II. At rated frequency.
III. Temperature of the surrounding cooling air at no time exceeding 40^0C (104^0F) and average temperature of the surrounding cooling air during any 24-hour period not exceeding 30^0C (86^0F).

a. I only b. II only c. III only d. I,II& III

46. Which of the following is not true?

a. An autotransformer may be used as part of the ballast for lighting circuits.
b. A branch circuit can never be supplied through an autotransformer.
c. The losses of the autotransformer are less than those of a two-coil transformer.
d. Autotransformers may be used as starting compensators for AC motors.

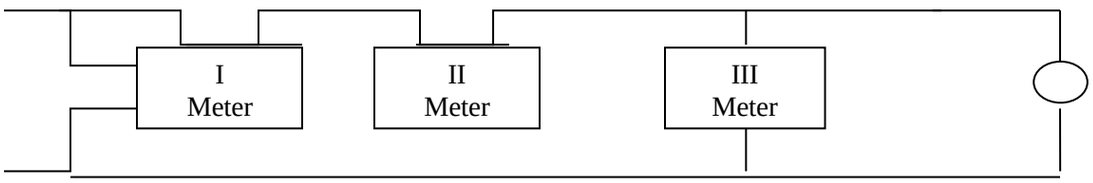
47. Conductors supplying two or more motors shall have an ampacity equal to that sum of the following current rating of all the motors plus _____ % of the highest rated motor in the group.

a. 25 b. 80 c. 100 d. 125

48. The symbol for a wye connection is _____.

a. Σ b. Δ c. ϕ d.γ

49. Which of the following meters is a wattmeter?



a. I only b. II only c. III only d. I, II & III

50. The voltage of a circuit is best defined as _____.

a. The potential between two conductors.
b. The greatest difference of potential between two conductors.
c. The effective difference of potential between two conductors.
d. The average RMS difference of potential between any two conductors.

JOURNEYMAN CLOSED BOOK EXAM #3
ANSWER

1. D. I, II & III
2. C. Good pf **not** true
3. C. Ohms
4. C. 100 amps
5. B. Parallel
6. B. Green as hot, **not** true
7. D. Written consent DEF 100
8. C. 1 megavolt
9. C. Both
10. C. Not true 210-3
11. C. Whenever current flows in the conductor
12. A. Commutator
13. C. 7.5 25 x 60 = 1,500 x 5 = 7500/1000 = 7.5
14. D. Machine
15. D. I, II & III
16. C. Neutral carries unbalanced
17. B. Counterclockwise
18. A. Turn on another circuit
19. C. Current lag voltage, **not** true
20. D. 1.0 Unity
21. B. Variable
22. A. Layers of iron sheet
23. D. Limit excess voltage
24. C. Rate of work performed
25. B. 70.7%
26. C. I & III only
27. C. PVC 24", **not** true T. 300-5
28. A. Equal currents in parallel
29. B. Lagging of magnetism
30. A. Voltage
31. B. Measure of ease of magnetism
32. C. Resistance
33. C. Either I or II
34. B. Reduce to simplest form
35. C. Causing AC to be generated
36. D. 410 – 15a
37. D. Toggle bolt
38. C. ¼ as much
39. D. I, II & III
40. B. Keep the surface clean
41. B. Static electricity
42. A. 1" of concrete
43. C. Both
44. B. Special tools to make the joint
45. D. I, II & III
46. B. Not true, 210-9 ex. 1, 2
47. A. 125% 430-24a
48. D. Y
49. A. I only wattmeter is series-parallel
50. C. Effective difference DEF 100

JOURNEYMAN

CLOSED BOOK

EXAM # 4

JOURNEYMAN CLOSED BOOK EXAM # 4

1. Electrical current is measured in terms of _____.

a. Electron pressure
b. Electron passing a point per second
c. Watts
d. Resistance

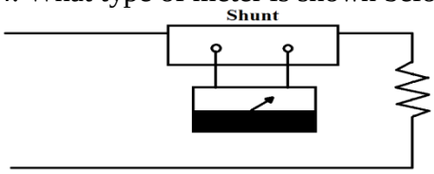
2. A stop switch is wired _____ in a motor circuit.

a. Series
b. Series-shunt
c. Series-parallel
d. Parallel

3. An autotransformer has _____.

a. One coil
b. Two coil
c. Three coil
d. Four coil

4. What type of meter is shown below?



a. Wattmeter
b. Ammeter
c. Ohmmeter
d. Voltmeter

5. Concrete, brick or tile are considered as being _____.

a. Isolated
b. Insulators
c. Grounded
d. Dry locations

6.  is the symbol for a _____ panel.

a. Power
b. Wall-mounted
c. Lighting
d. Surface-mounted

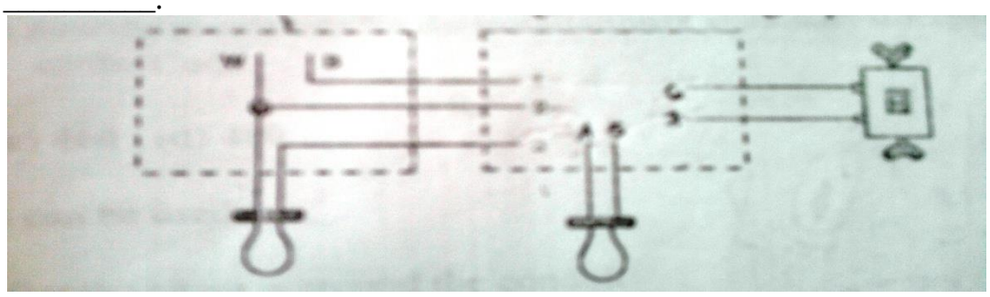
7. A corroded electrical connection _____.

a. Decreases the voltage drop
b. Decreases the resistance of the connection
c. Increases the resistance of the connection
d. Increases the ampacity at the connection

8. An AC ammeter or voltmeter is calibrated to read RMS values; this means the meter is reading the _____ value.

a. Maximum
b. Peak
c. Average
d. Effective

9. The correct connection for the two 120 volt lights to the single-pole switch would be _____.



a. 1-4 2-6 3-5-7
b. 1-6 2-5 3-4-7
c. 1-7 2-5-6 3-4
d. 1-5 2-6-7 3-4

10. The location of a wall receptacle outlet in the bathroom of a dwelling shall be installed _____.

a. The Code does not specify the location
b. Adjacent to the toilet
c. Within 36" of outside edge of basin
d. Across from the shower

11. On a delta three-phase four-wire secondary, how many hot wires may use the common neutral?

a. 1 b. 2 c. 3 d. 4

12. It shall be permissible to apply a demand factor of _____ to the nameplate-rating load of four or more appliances fastened in place served by the same feeder in a dwelling.

a. 70% b. 75 % c. 60% d. 80%

13. Insulated nonmetallic boxes are made of _____.

I. Polyninyl chloride II. Bakelite III. Bower-Barff lacquer

a. I only b. II only c. I & II only d. I, II & III

14. Tungsten-filament lamps can be used on _____ circuits.

a. AC b. DC c. AC and DC d. None of these

15. An overcurrent protective device with a circuit opening fusible part that is heated and severed by the passage of overcurrent through it is called a _____.

a. Current-limiter b. Fuse c. Circuit breaker d. Thermal overload

16. The service conductors between the terminals of the service equipment and a point usually outside the building, clear of building walls, where joined by a tap or splice to the service drop is called the _____.

a. Service drop
b. Service-entrance conductors
c. Service equipment
d. None of these

17. If you needed to know the provisions for the installation of stationary storage batteries, you would refer to the Article _____ of the Code.

a. 225 b. 445 c. 460 d. 480

18. A chain wrench can be used _____.

I. With one hand only II. In confined places & close to walls III. For all sizes of conduit.

a. I & II only b. I & III only c. II & III only d. I, II & III

19. To cut rigid conduit you should _____.

a. Use 3-wheel pipe cutter
b. Use cold chisel and ream the ends
c. Use hacksaw and ream the ends
d. Order it to cut size

20. A fixture that weighs more than _____ pounds shall be supported independently of the outlet box.

a. 25 b. 30 c. 35 d. 50

21. Is it permissible to install direct current and alternating current conductors in the same outlet box?

a. Yes, if insulated for the maximum voltage of any conductor
b. No, never
c. Yes, if the ampacity is the same for both conductors
d. Yes, in dry locations

22. Electrical equipment shall be installed _____.

a. Better than the minimum Code allows.
b. According to the Local Code when more stringent than the N.E.C.
c. According to the N.E.C regardless of Local Code
d. According to the Local Code when less stringent than the N.E.C.

23. Voltage drop in a wire is _____.

a. The wire resistance times the voltage
b. The percentage of the applied voltage
c. A function of insulation
d. Part of the load voltage

24. Conductors shall not be installed in locations where the operating temperature will exceed that specified for the type of _____ used.

a. Connectors b. Protection c. Insulation d. Wiring

25. Galvanized conduit has a finish exterior and interior of _____.

a. Lead b. Copper c. Nickel d. Zinc

26. Which of the following is the best type of saw to use to cut a 3" diameter hole through ½" plywood?

a. Circular Saw b. Saber saw c. Hack saw d. Cross-cut saw

27. Which of the following machine screws has the smallest diameter?

a. 6-32 x 1" b. 10-32 x ¾" c. 8-32 x ½" d. 10-24 x 3/8"

28. Which of the following is the most important factor contributing to an electricians safety on the job?

a. Work at slow pace
b. Always wear leather gloves
c. Be alert at all times
d. Never be late for break

29. A one-quarter bend in a raceway is equivalent to an angle of _____ degrees.

a. 90 b. 45 c. 25 d. 180

30. A 3Ω, a 6Ω, a 9Ω and a 12Ω resistor are connected in parallel. Which resistor will consume the most power?

a. 3Ω b. 6Ω c. 9Ω d. 12Ω

31. Listed ceiling (paddle) fans that do not exceed _____ pounds in weight, with or without accessories, shall be permitted to be supported by outlet boxes identified for such use.

a. 35 b. 45 c. 50 d. 60

32. The best way to lay out a 40 foot long straight line on a floor is to _____.

a. Use a steel measuring tape with dark crayon
b. Use a plumb bob with long string
c. Use a long 2 x 4 and a lead pencil
d. Use a chalk line

33. Silver is used on electrical contacts to _____.

a. Avoid corrosion
b. Improve efficiency
c. Improve continuity
d. Improve appearance

34. Electricians should be familiar with the rules and regulations of their job mainly to _____.

a. Eliminate overtime
b. Increase wages
c. Perform their duties properly
d. Save time

35. To determine if the raceway is truly vertical an electrician would use a _____.

a. Plumb bob b. Transmit level c. Square d. Level

36. In order to prevent a safety hazard an electrician should never _____.

a. Strike a hardened steel surface with a hardened steel hammer.
b. Use a soft brass hammer to strike a soft brass surface.
c. Strike a soft iron surface with a hardened steel hammer.
d. Use a soft iron hammer to strike a hardened steel surface.

37. Service drop conductors not in excess of 600 volts shall have a minimum clearance of _____ feet over residential property and driveways, and those commercial areas not subject to truck traffic.

a. 10 b. 12 c. 15 d. 18

38. When conduit or tubing nipples having a maximum length not to exceed 24" arc installed between boxes they shall be permitted to be filled _____ percent of its total cross-sectional area.

a. 31 b. 40 c. 53 d. 60

39. Before using rubber gloves when working on high voltage equipment in the gloves should be _____.

a. Cleaned inside & out
b. Tested to withstand the high voltage
c. Oiled inside & out
c. Brand new

40. Stranded wire should be _____ before being placed under a screw head.

a. Tinned
b. Twisted together tightly
c. Coated with an inhibitor
d. Sanded

41. A 3Ω, a 6Ω, a 9Ω and a 12Ω resistor are connected in series. The resistor will consume the most power is the _____ ohm.

a. 3Ω b. 6Ω c. 9Ω d. 12Ω

42. What Article of the NEC refers to grounding?

a. 230 b. 240 c. 250 d. 300

43. The total of the following numbers 8 5/8”, 6 ¼”, 7 3/16”, and 5 ¼” is _____.

a. 27 5/16” b. 26 1/8” c. 28 7/8” d. none of these

44. A fusestat is different from the ordinary plug fuse because a fusestat _____.

a. Doesn’t have threads
b. Has left-hand threads
c. Has different size threads
d. Has an aluminum screw shell

45. The symbol  usually indicates a (an) _____.

a. A switch b. Receptacle c. Ceiling outlet d. Exhaust fan

46. A fuse on a 20 amp branch circuit has blown. The fuse is replaced with a 20 amp fuse and the fuse blows when the switch is turned on. The electrician should _____.

a. Check the ground rod connection first
b. Change to a circuit breaker
c. Install a 30 amp fuse
d. Check the circuit for a problem

47. To sharpen an electrician’s knife, you would use a _____ stone.

a. Rubber b. Carborundum c. Rosin d. Bakelite

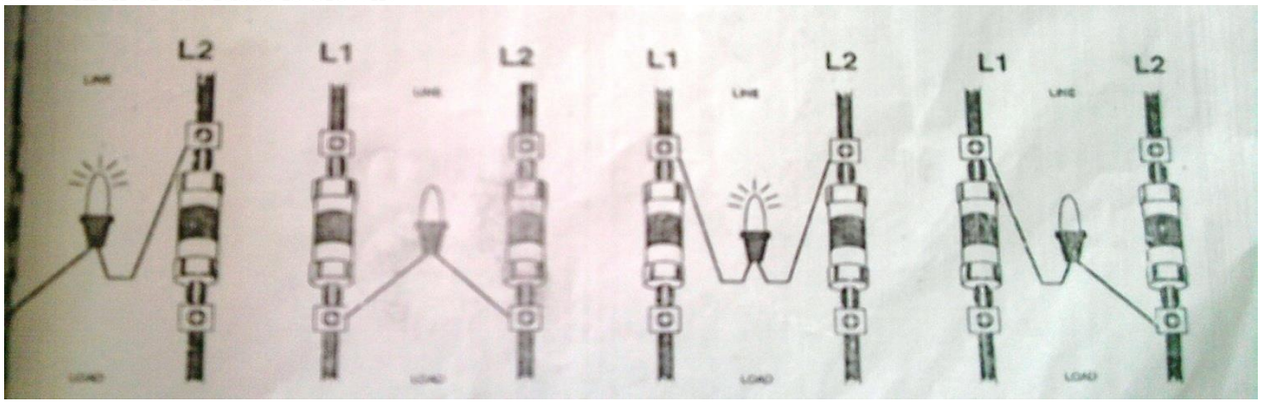
48. The decimal equivalent of 3/16” is _____.

a. 0.125 b. 0.1875 c. 5.33 d. None of these

49. When drilling into a steel I-beam, the most likely cause for breaking a drill bit would be _____.

a. The drill bit is too dull
b. Too slow a drill speed
c. Too much pressure on the bit
d. Too much cutting oil on bit

50. Which of the fuses is blown?



a. L1 fuse is blown
b. L2 fuse is blown
c. Both fuses are blown
d. Neither fuse is blown

JOURNEYMAN CLOSED BOOK EXAM #4

ANSWER

1. B. Electrons passing a point
2. A. Series
3. A. One coil
4. B. Ammeter
5. C. Grounded T. 110-26a Condition 2
6. C. Lighting
7. C. Increases the resistance
8. D. Effective value
9. B. 1-6 2-5-3 4-7
10. C. 36” edge of basin 210-52d
11. B. 2 hot wires use neutral
12. B. 75% 220-17
13. C. I & II PVC or Bakelite
14. C. AC & DC tungsten 380-14b
15. B. Fuse DEF 100 over 600v
16. B. Service-entrance conductors DEF 100
17. D. Article 480
18. D. I, II & III Chain wrench
19. C. Hacksaw and ream
20. D. 50 pounds Fixture 410-16a
21. A. Yes 300-3c1
22. B. Local Code when more stringent
23. B. VD is a percentage
24. C. Insulation 310-10
25. D. Zinc finish
26. B. Saber saw
27. A. 6-32 x 1”
28. C. Be alert at all times
29. A. 90 degrees
30. A. 3 ohms will consume the most power
31. A. 35 pounds ceiling fans 422
32. D. Use a chalk line
33. C. Silver improves continuity
34. C. Perform their duties properly
35. D. Level
36. A. Hardened steel surface
37. C. 15 feet over driveways 230-24b
38. D. 60% Nipple fill Chapter 9, note 4
39. B. Tested to withstand high-voltage
40. B. Twisted together tightly
41. D. 12 ohms consume the most power
42. C. Article 250
43. A. 27 5/16 Total sum
44. C. Fusestat has different size threads
45. C. Symbol for ceiling outlet
46. D. Check circuit for a problem
47. B. Carborundum
48. B. 0.1875 is the decimal equivalent of 3/16”
49. C. To much pressure on the drill bit
50. B. L2 fuse is blown

JOURNEYMAN

CLOSED BOOK

EXAM # 5

JOURNEYMAN CLOSED BOOK EXAM # 5

1. Locknuts are sometimes used in making electrical connections on studs. In these cases the purpose of the locknuts is to _____.

a. Be able to connect several wires to one stud
b. Make it difficult to tamper with the connection
c. Make a tighter connection
d. Prevent the connection from loosening under vibration

2. To cut rigid conduit you should _____.

a. Use a 3-wheel pipe cutter
b. Use a cold chisel and ream the ends
c. Use a hacksaw and ream the ends
d. Order it to cut size

3. In the course of normal operation the instrument which will be least effective in indicating that a generator may overheat because it is overloaded, is _____.

a. A wattmeter b. A voltmeter c. An ammeter d. A stator thermocouple

4. Two switches in one box under one face-plate is called a _____.

a. Double-pole switch b. Two-gang switch c.2-way switch d. Mistake

5. A conduit body is _____.

a. A cast fitting such as an FD or FS box
b. A standard 10foot length of conduit
c. A sealtight enclosure
d. A “LB” or “T”, or similar fitting

6. A dwelling unit is _____.

a. One unit of an apartment.
b. One or more rooms used by one or more persons.
c. One or more rooms with space for eating, living and sleeping
d. One or more rooms used as a housekeeping unit and having permanent cooking and sanitation provisions.

7. Enclosed means, surrounded by a _____ which will prevent persons from accidentally contacting energized parts.

I. Wall II. Fenced III. Housing or case

a. I only b. II only c. III only d. I, II & III

8. Where the conductor material is not specified in the Code, the conductors are assumed to be _____.

a. Bus bars b. Aluminum c. Copper-clad aluminum d. Copper

9. The voltage lost across a portion of a circuit is called the _____.

a. Power loss b. Current c. Voltage drop d. Wattage

10. In a series circuit _____ is common.

a. Resistance b. Current c. Voltage d. Wattage

11. Batteries supply _____ current.

a. Positive b. Negative c. Direct d. Alternating

12. Electron flow produced by means of applying pressure to a material is called _____.

a. Photo conduction
b. Electrochemistry
c. Piezoelectricity
d. Thermoelectricity

13. Raceways shall be provided with _____ to compensate for thermal expansion and contraction.

a. According joints
b. Thermal fittings
c. Expansion joints
d. Control-expansion

14. An alternation is _____.

a. One-half cycle b. One hertz c. One alternator d. Two cycles

15. What is the function of a neon glow tester?

I. Determines if circuit is alive
II. Determines the polarity of DC circuits
III. Determines if circuits is AC or DC

a. I only b. II only c. III only d. I, II & III

16. What Chapter in the Code is Mobile Homes referred to?

a. Chapter 3 b. Chapter 5 c. Chapter 6 d. Chapter 8

17. Never approach a victim of an electrical injury until you _____.

a. Find a witness
b. Are sure the power is turned off
c. Have a first-aid kit
d. Contact the supervisor

18. A wattmeter indicates _____.

I. Real power
II. Apparent power if PF is not in unity
III. Power factor

a. I only b. II only c. III only d. I, II & III

19. The connection of a ground clamp to a grounding electrode shall be _____.

a. Accessible b. Visible c. Readily accessible d. In sight

20. The current will lead the voltage when _____.

a. Inductive reactance exceeds the capacitive reactance in the circuit.
b. Reactance exceeds the resistance in the circuit.
c. Resistance exceeds the reactance in the circuit.
d. Capacitive reactance exceeds the inductive reactance in the circuit.

21. Mandatory rules of the Code are identified by the use of the word _____.

a. Should b. Shall c. Must d. Could

22. Which of the following is not one of the considerations that must be evaluated in judging equipment?

a. Wire-bending and connection space
b. Arcing effects
c. Longevity
d. Electrical insulation

23. To increase the range of an AC ammeter which one the following is most commonly used?

a. A current transformer
b. A condenser
c. An inductance
d. A straight shunt (not U-shaped)

24. If a test lamp light, when placed in series with a condenser and a suitable source of DC, it is a good indication that the condenser is _____.

a. Fully-charged b. Short-circuited c. Open-circuited d. Fully discharged

25. To transmit power economically over considerable distances, it is necessary that the voltages be high. High voltages are readily obtainable with _____ currents.

a. Rectified b. AC c. DC d. Carrier

26. Two 500 watt lamps connected in series across a 110 volt line draws 2amperes. The total power consumed is _____ watts.

a. 50 b. 150 c. 220 d. 1000

27. The resistance of a copper wire to the flow of electricity_____.

a. Decreases as the length of the wire increases.
b. Decreases as the diameter of the wire decreases.
c. Increases as the diameter of the wire increases.
d. Increases as the length of the wire increases.

28. Enclosed knife switches that require the switch to be open before the housing door can be opened, called _____ switches.

a. Release b. Air-break c. Safety d. Service

29. A type of cable protected by a spiral metal cover is called _____ in the field.

a. BX b. Greenfield c. Sealtight d. Romex

30. The resistance of a circuit may vary due to _____.

a. A loose Connection
b. Change in voltage
c. Change in current
d. Induction

31. Grounding conductors running with circuit conductors may be _____.

I. Uninsulated
II. A continuous green if covered
III. Continuous green with yellow stripe, if covered

a. I only b. II only c. III only d. I,II & III

32. For voltage and current to be in phase, _____.

I. The circuit impedance has only resistance.
II. The voltage and current appear at their zero and peak values at the same time.

a. I only b. II only c. both I & II d. neither I nor II

33. The definition of ampacity is _____.

a. The current-carrying capacity of conductors expressed in volt-amps.
b. The current-carrying capacity expressed in amperes.
c. The current-carrying capacity of conductor expressed in wattage.
d. The current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating.

34. Continuous duty is _____.

a. A load where the maximum current is expected to continue for three hours or more.
b. A load where the maximum current is expected to continue for one hour or more.
c. Intermittent operation in which the load conditions are regularly recurrent.
d. Operation at a substantially constant load for an indefinitely long time.

35. A location classified as dry may be temporarily subject to _____.

I. Wet II. Dampness

a. I only b. II only c. both I & II d. neither I nor II

36. A _____ is an enclosure designed either for surface or flush mounting and provided with a frame, mat or trim in which a swinging door or doors are or may be hung.

a. Cabinet b. Panelboard c. Cutout box d. Switchboard

37. A 15 ohm resistance carrying 20 amperes of current uses _____ watts of power.

a. 300 b. 3000 c. 6000 d. None of these

38. When using a #14-2 with ground Romex, the ground _____ carry current under normal operation.

a. Will b. Will not c. Will sometimes d. None of these

39. As compared with solid wire, stranded wire of the same gauge size is _____.

a. Better for higher voltage b. Given a higher ampacity
c. Easier to skin d. Larger in total diameter

40. The type of AC system commonly used to supply both commercial light and power is the _____.

a. 3-phase, 3-wire b. 3-phase, 4-wire c. 2-phase, 3-wire d. Single-phase, 2-wire

41. To make a good soldered connection between two stranded wires, it is least important to _____.

a. Use enough heat to make the solder to flow freely.
b. Clean the wires carefully.
c. Twist the wires together before soldering.
d. Apply solder to each strand before twisting the two wires together.

42. The most important reason for using a conduit-type fitting in preference to making a bend in a one-inch conduit is to _____.

a. Avoid the possible flattening of the conduit when making the bend.
b. Cut down the amount of the conduit.
c. Make a neater job.
d. Make wire pulling easier.

43. When skinning a small wire, the insulation should be "penciled down" rather than cut square to _____.

a. Allow more room for the splice
b. Save time in making the splice
c. Decrease the danger of nicking the wire
d. Prevent the brand from fraying

44. Rubber insulation on an electrical conductor would quickly be damaged by continuous contact with _____.

a. Water b. Acid c. Oil d. Alkali

45. A tester using an ordinary light bulb is commonly used to test _____.

a. Whether a circuit is AC or DC
b. For polarity of a DC circuit
c. An overload circuit
d. For grounds on 120volt circuit

46. Pigtails are used on brushes to _____.

a. Compensate for wear
b. Supply the proper brush tension
c. Make a good electrical connection
d. Hold the brush in the holder

47. With respect to fluorescent lamps it is correct to state _____.

a. The filaments seldom burn out
b. The starter and tubes must be replaced at the same time.
c. They are easier to install than the incandescent light bulbs.
d. Their efficiency is less than the efficiency of incandescent light bulbs.

48. A _____ stores energy in much the same manner as a spring stores mechanical energy.

a. Resistor b. Coil c. Condenser d. None of these

49. An overcurrent trip unit of a circuit shall be connected in series with each _____.

a. Transformer
b. Grounded conducto
c. Overcurrent device
d. Ungrounded Conductor

50. _____ lighting is a string of outdoor lights suspended between two points.

a. Pole b. Festoon c. Equipment d. Outline

JOURNEYMAN CLOSED BOOK EXAM #5

ANSWER

1. D. Prevent loosening
2. C. Saw and ream ends
3. B Voltmeter
4. B. Two-gang switch
5. D. LB or T
6. D. Housekeeping DEF 100
7. D. I, II &III DEF 100
8. D. Copper 110-5
9. C. Voltage drop
10. B. Current
11. C. Direct current
12. C. Piezoelectricity
13. C. Expansion joints
14. A. One-half cycle
15. D. I, II & III
16. B. Chapter 5
17. B. Are sure the power is turned off
18. A. Real power
19. A. Accessible 250-68
20. D. Capacitance exceeds inductance
21. B. Shall 90-5
22. C. Longevity
23. A. Current transformer
24. B. Short-circuited
25. B. AC
26. C. 220 W=E x I
27. D. Increases as length of wire increases
28. C. Safety
29. A. BX
30. A. Loose connection
31. D. I, II & III 250-119
32. C. Both
33. D. Continuously DEF 100
34. D. Operation DEF 100
35. C. Both DEF 100
36. A. Cabinet DEF 100
37. C. 6000 $W= I^2 x R$
38. B. Will not
39. D. Larger in total diameter
40. B. 3Ø, 4-wire
41. D. Apply solder to each strand
42. D. Make wire pulling easier
43. C. Decrease nicking of wire
44. C. Oil
45. D. For grounds on 120v circuits
46. C. Make a good electrical connection
47. A. Filament seldom burns out
48. C. Condenser
49. D. Ungrounded conductor 240-20a
50. B. Festoon 225-6b

JOURNEYMAN

CLOSED BOOK

EXAM # 6

JOURNEYMAN CLOSED BOOK EXAM # 6

1. Something that would affect the ampacity of a conductor would be _____.

I. Voltage II. Amperage III. Length IV. Temperature

a. I only b. II only c. III only d. IV only

2. Alternating currents may be increased or decreased by means of a _____.

a. Motor b. Transformer c. Dynamo d. Megger

3. Fixtures supported by the framing members of suspended ceiling systems shall be securely fastened to the ceiling framing member by mechanical means such as _____.

I. Bolts or screws II. Rivets III. Clips identified for this use.

a. I only b. II only c. III only d. I, II & III

4. Which has the highest electrical resistance?

a. Brass b. Iron c. Water d. Paper

5. Conductor sizes are expressed _____.

a. Only in circular mils b. In AWG or in circular mils
c. In diameter or area d. In AWG or millimeters

6. Of the following, which is not a type of file?

a. Half-round b. Bastard c. Tubular d. Mill

7. Oil is used in many large transformers to _____.

a. Prevent breakdown due to friction b. Lubricate the core
c. Cool and insulate the transformer d. Lubricate the coils

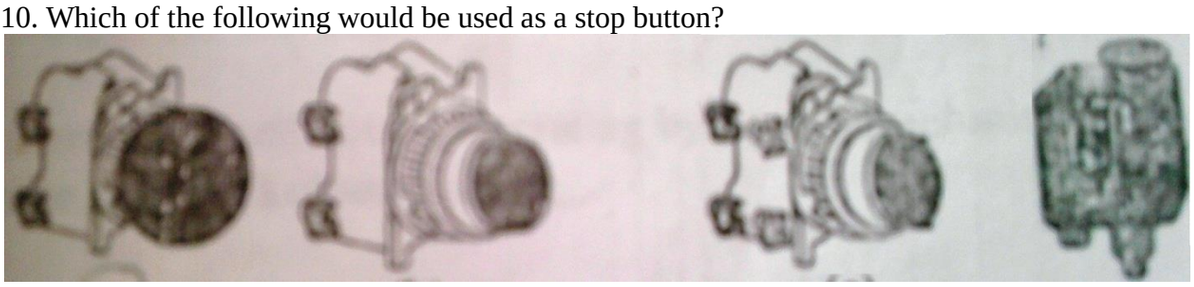
8. Fractional horsepower universal motors have brushes usually made of _____.

a. Copper strands b. Mica c. Carbon d. Thin wire rings

9. When administering first aid to a worker suffering from fright as a result of falling from a ladder, the most important thing to do is _____.

a. Position the person to a sitting position.
b. Cover the person and keep the person warm.
c. Apply artificial respiratory immediately.
d. Check the rungs of the ladder.

10. Which of the following would be used as a stop button?



a. b. c. d.

11. If a co-worker is burned by acid from a storage battery, the proper first aid treatment is to wash with _____.

a. Iodine and leave it open to the air
b. Vinegar and apply a wet dressing
c. Water and apply Vaseline
d. Lye and apply a dry bandage

12. A type of motor that will not operate on DC is the _____.

a. Series b. Short shunt c. Long shunt compound d. Squirrel cage

13. Receptacles installed on ____ ampere branch circuits shall be of the grounding type.

a. 15 and 20 b. 25 c. 30 d. 40

14. Where conductors carrying alternating current are installed in metal enclosures or metal raceways, they shall be so arranged as to avoid heating the surrounding metal by induction, to accomplish this _____ shall be grouped together.

I. All phase conductors II. Where used the neutral III. All equipment grounding conductors

a. I only b. I & II only c. I & III only d. I, II & III

15. A (an) _____ changes AC to DC.

a. Battery b. Capacitor c. Alternator d. Rectifier

16. A steel measuring tape is undesirable for use around electrical equipment. The least important reason is the _____.

a. Danger of entanglement in rotating machines
b. Shock hazard
c. Short circuit hazard
d. Magnetic effect

17. _____ is the ability of a material to permit the flow of electrons.

a. Voltage b. Current c. Resistance d. Conductance

18. Automatically is self-acting, operating by its own mechanism when actuated by some impersonal influence, such as change in _____.

I. Temperature II. Pressure III. Current strength

a. I only b. I & II only c. II only d. I, II & III

19. A fitting is _____.

a. Part of a wiring system that is intended primarily to perform an electrical function.
b. Pulling cable into a confined area.
c. To be suitable or proper for.
d. Part of a wiring system that is intended primarily to perform mechanical function.

20. The neutral conductor _____.

a. Is always the “white” grounded conductor.
b. Has 70% applied for household clothes dryer for a branch circuit.
c. Never apply ampacity corrections.
d. Carries the unbalanced current.

21. An appliance that is not easily moved from one place to another in normal use is a ____ appliance.

a. Fastened in place b. Dwelling-unit c. Fixed d. Stationary

22. All wiring must be installed so that when completed_____.

a. It meets the current-carrying requirements of the load.
b. It is free of shorts and unintentional grounds.
c. It is acceptable to Code compliance authorities.
d. It will withstand a hy-pot test.

23. Rosin is preferable to acid as a flux for soldering wire because rosin is _____.

a. A powder dry b. A better conductor c. A nonconductor d. Noncorrosive

24. Utilization equipment is equipment which utilizes ____ energy for mechanical, chemical, heating, lighting or similar purposes.

I. Chemical II. Electric III. Heat

a. I only b. II only c. III only d. I, II & III

25. The main purpose of using a cutting fluid when threading conduit is to _____.

a. Prevent the formation of rust b. Wash away the metal chips
c. Improve the finish of the thread d. Prevent the formation of electrolytic pockets.

26. Of the following, the best indication of the condition of the charge of the lead acid battery is the ___.

a. Temperature of the electrolyte b. Level of the electrolyte
c. Open circuit cell voltage d. Specific gravity

27. In general, the most important point to watch in the operation of transformers is the _____.

a. Core loss b. Exciting current c. Temperature d. Primary voltage

28. When mounting electrical equipment, wooden plugs driven into holes in ____ shall not be used.

I. Masonry II. Concrete III. Plaster

a. I only b. II only c. III only d. I, II & III

29. Mica is commonly used in electrical construction for _____.

a. Commutator bar separators b. Heater cord insulator
c. Strain insulators d. Switchboard panels

30. If a fuse becomes hot under normal load, a probable cause is _____.

a. Excessive tension in the fuse clips b. Rating of the fuse is too low
c. Insufficient pressure at the fuse clips d. Rating of the fuse is too high

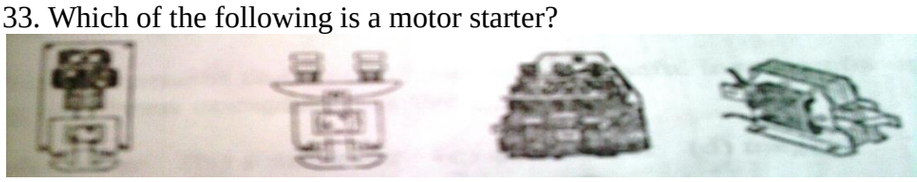
31. For the maximum safety the magnetic contactors used for reversing the direction of rotation of a motor should be _____.

a. Operated from independent sources b. Electrically interlocked
c. Mechanically interlocked d. Electrically and mechanically interlocked

32. Large squirrel cage induction motors are usually started at a voltage considerably lower than the line voltage to _____.

a. Allow the rotor current to build up gradually b. Permit starting under full load
c. Avoid excessive starting current d. Obtain a low starting speed

33. Which of the following is a motor starter?



a. b. c. d.

34. If the voltage on a light bulb is increased 10%, the bulb will _____.

a. Fail by insulation breakdown b. Have a longer life
c. Burn more brightly d. Consume less power

35. All edges that are invisible should be represented in a drawing by lines that are _____.

a. Dotted b. Curved c. Solid d. Broken

36. A light bulb usually contains _____.

a. Air b. Neon c. H2O d. Either a vacuum or gas

37. The service disconnecting means shall be installed _____.

I. Outside a building II. Inside a building III. At the meter

a. I only b. II only c. III only d. either I or II

38. Critical burns are potentially _____.

a. Life-threatening b. Disfiguring c. Disabling d. All of these

39. A set of lights switched from three different places can be controlled by _____ switches.

a. Two 3-way and one 4-way b. Two 3-way and one 2-way
c. 2 single-pole d. Four pole

40. A fellow electrician is not breathing after receiving an electrical shock, but is no longer in contact with the electricity; the most important thing for you to do is _____.

a. Start artificial respiratory immediately b. Cover the person and keep warm
c. Move the person to a window d. Remove the persons shoes

41. A wrench you would not use to connect rigid metal conduit is a ____ wrench.

a. Box end b. Chain c. Strap d. Stillson

42. The instrument that would prove least useful in testing for opens, grounds, and shorts after the wiring has been completed is the _____.

a. Voltmeter b. Ammeter c. Ohmmeter d. Megger

43. A stranded wire is given the same size designation as a solid wire if it has the same _____.

a. Weight per foot b. Overall diameter c. Strength d. Cross-sectional area

44. A lighting fixture is to be controlled independently from two different locations. The type of switch required in each of the two locations is a _____.

a. Double-pole, double-throw
b. Double-throw, single-pole
c. Single-throw, double-pole
d. Single-throw, single-pole

45. The rating "1000 ohms, 10 watts" would generally apply to a _____.

a. Transformer b. Relay c. Resistor d. Heater

46. The open circuit test on a transformer is a test for measuring its _____.

a. Insulation resistor
b. Copper losses
c. Iron losses
d. Equivalent resistance of the transformer

47. The proper way to open a knife switch carrying a heavy load is to _____.

a. Open it with care, to avoid damage to the auxiliary blade by the arc.
b. Open it slowly so that there will not be a flashover at the contacts.
c. Tie a 5 foot rope on the switch handle and stand clear of the switch.
d. Open it with a jerk so as to quickly break any arc.

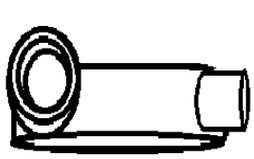
48. When the thermal overload relays are used for the protection of polyphase induction motors, their primary purpose is to protect the motors in case of _____.

a. Short circuit between phase
b. Low line voltages
c. Reversal of phases in the supply
d. Sustained overload

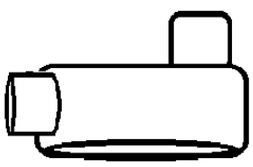
49. The National Electrical Code is sponsored by the _____.

a. Underwriters Lab
b. National Safety Council
c. National Electrical Manufacturers Association
d. National Fire Protection Association

50. Which of the following is an LB conduit body?



a.



b.

c.

d.

JOURNEYMAN CLOSED BOOK EXAM #6

ANSWER

1. D. Temperature
2. B. Transformer
3. D. I, II & III 410-16c
4. D. Paper
5. B. AWG or CM 110-6
6. C. Tubular
7. C. Cool and insulate transformer
8. C. Carbon
9. B. Cover keep person warm
10. A. Stop button
11. C. Water and apply vaseline
12. D. Squirrel cage
13. A. 15 & 20 210-7a
14. D. I, II & III 300-20a
15. D. Rectifier
16. D. Magnetic effect
17. D. Conductance
18. D. I, II & III DEF 100
19. D. Mechanical function DEF 100
20. D. Carries the unbalanced 310-15b4a
21. D. Stationary 550-2 DEF
22. B. Free of shorts and grounds 110-7
23. D. Noncorrosive
24. B. II only DEF 100
25. C. Improve finish of threads
26. D. Specific gravity
27. C. Temperature
28. D. I, II & III 110-13a
29. A. Commutator bar separators
30. C. Insufficient pressure at fuse clips
31. D. Electrically & mechanically interlocked
32. C. Avoid excessive starting current
33. C. Motor starter
34. C. Burn more brightly
35. D. Broken
36. D. Either vacuum or gas
37. D. Either I or II 230-70a
38. D. All of these
39. A. Two 3-way or one 4-way
40. A. Artificial respiration
41. A. Box end wrench
42. B. Ammeter
43. D. CSA
44. C. Single-pole, Double-throw
45. C. Resistor
46. C. Iron losses
47. D. Jerk quickly break any arc
48. D. Sustained overload
49. D. NFPA
50. B. LB conduit body

JOURNEYMAN

CLOSED BOOK

EXAM # 7

JOURNEYMAN CLOSED BOOK EXAM # 7

1. An advantage that rubber insulation has is that _____.

a. Is not damage by oil
b. Is a good for extreme temperatures
c. Does not absorb much moisture
d. Will not deteriorate with age

2. The advantage of using a storage battery rather than a dry cell is the storage battery _____.

a. Is portable b. Is less expensive c. Can be recharged d. Is easier to use

3. The least desirable device for measuring an electrical cabinet containing live equipment is a ____.

a. 6' wooden ruler b. Plastic ruler c. Wood yardstick d. 12' steel pipe

4. The relationship of a transformer primary winding to the secondary winding is expressed in ____.

a. Wattage b. Turns-ratio c. Current d. Voltage

5. When the size #12 of a stranded wire is referred to, this number specifies the _____.

a. Strength of the wire b. Cross-sectional area of the wire
c. Square inch area of the insulation d. The pounds per square inch

6. The purpose of a clip clamp is to _____.

I. Ensure good contact between the fuse terminals of cartridge fuses and the fuse clips
II. Make it possible to use cartridge fuses of a smaller size than that for which the fuse clips are intended
III. Prevent the accidental removal of the fuse due to vibration

a. I, II & III b. I only c. II only d. I & II only

7. To increase the life of an incandescent light bulb you would _____.

a. Use at a higher than rated voltage b. Use at a lower than rated voltage
c. Turn off when not in use d. Use at a higher wattage

8. Which of the following statements about mounting single-throw knife switches in a vertical position is (are) correct?

I. The switch shall be mounted so that the blade hinge is at the bottom
II. The supply side of the circuit shall be connected to the bottom of the switch

a. I only b. II only d. Both I & II d. Neither I & II

9. When re-routing conduit, it may be necessary to increase the wire size, if the distance is greater, in order to _____.

a. Account for current drop b. Allow for possible resistance drop
c. Compensate for voltage drop d. Account for ampacity drop

10. One megohm is the equivalent of _____.

a. 100 ohms b. 1000 ohms c. 100,000 ohms d. 1,000,000 ohms

11. On smaller gauges of wire, they are pencil-stripped to prevent _____.

a. Over stripping b. loosening of the wire nut c. Nicks the wire d. Other

12. Galvanized conduit is made of _____.

a. Iron b. Zinc c. Nickle d. Lead

13. The frame of a motor is usually positively grounded to _____.

a. Protect against shock b. Remove the static currents
c. Provide 115 volts d. Protect from lightning

14. When wrapping a splice with both rubber and friction tape, the main purpose of the friction tape is to _____.

a. Provide extra insulation b. Build up the insulation to the minimum thickness required
c. Protect the rubber tape d. Provide a waterproof seal

15. An electrician should not wear shoes that have sponge rubber soles while working mainly because they _____.

a. Wear out too quickly b. Are not waterproof
c. Are not insulated d. Are easily punctured when stepping on a nail

16. The transformer output is measured by _____.

a. Volts b. Amps c. Volt-amps d. Watts

17. Which of the following hacksaw blades should be used for the best results in cutting EMT?

a. 12 teeth per inch b. 18 teeth per inch c. 24 teeth per inch d. 32 teeth per inch

18. So constructed or protected that exposure to the weather will not interfere with successful operation is _____.

I. Weather proof II. Raintight III. Watertight

a. I only b. II only c. I & II only d. I, II & III

19. The rating of the largest size regular plug fuse is ____ amperes.

a. 15 b. 20 c. 30 d. 60

20. A hacksaw with fine teeth used to cut raceways is commonly called a _____.

a. Tube saw b. Keyhole saw c. Sabre saw d. Crosscut saw

21. You shouldn't use a file without a handle because _____.

a. The file is hard to hold b. The user may be injured
c. The file will cut too deep d. Improper filling stroke

22. The brightness of an incandescent lamp is rated in _____.

a. Watts b. Foot candle c. Volt-amps d. Lumens

23. If the primary winding of a 10 to 1 step down transformer has 20,000 turns, the secondary winding should have _____ turns.

a. 200,000 b. 2000 c. 200 d. 20

24. An electron is _____.

a. A neutron
b. An orbiting particle
c. A proton
d. The smallest part of an atom with a negative charge

25. The signals of electrical injury may include _____.

I. Unconsciousness II. Weak, irregular, or absent pulse III. Dazed, confused behaviour

a. I only b. II only c. III only d. I, II & III

26. This CODE is intended to be suitable for mandatory application by governmental bodies exercising legal jurisdiction over _____.

I. Electrical installation II. And for use by insurance inspectors

a. Both I & II b. Neither I nor II c. I only d. II only

27. The name of the tool common used for bending small size conduit is a _____.

a. Growler b. Mandrel c. Hickey d. Henry

28. When cutting holes in masonry which of the following tools is most commonly used?

a. Auger bit b. Router bit c. Star drill d. Reamer

29. Electrician's diagonal lineman pliers should not be used to cut _____.

a. Aluminum wire b. Copper wire c. Steel wire d. Copper-clad wire

30. One of the following is the first thing to do when a person gets an electric shock and is still in contact with the supply.

a. Remove the victim from contact by using a dry stick or dry rope
b. Treat for burns
c. Start artificial respiration immediately
d. Shut off power within 10 minutes

31. A "mil" measures _____.

a. 1/8" b. 0.000001" c. 0.001" d. 0.00010"

32. The term "hertz" means _____.

a. Car rental company b. Frequency c. Degrees d. Phase angle

33. The difference of electrical potential between two conductors of a circuit is the _____.

a. Resistance b. Amperage c. Voltage d. Wattage

34. The letters DPDT are used to identify a type of _____.

a. Insulation b. Fuse c. Motor d. Switch

35. The term “ampere-hour” is associated with _____.

a. Motors b. Transformers c. Electromagnets d. Storage batteries

36. Which of the following would improve the resistance to earth?

I. Use multiple ground rods II. Treat the soil III. Lengthen the ground rod

a. I only b. II & III only c. I & III only d. I, II & III

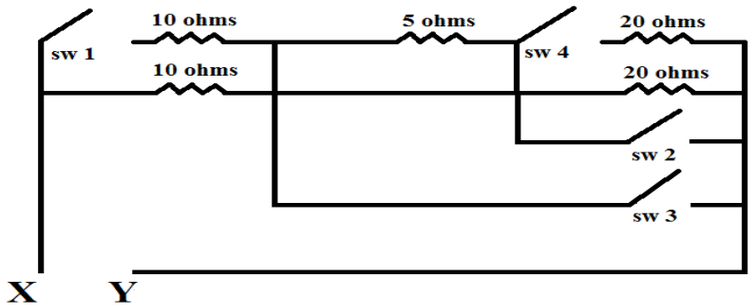
37. A tap tool is a tool used to _____.

a. Cut external threads b. Remove broken bolts
c. Ream raceways d. Cut internal threads

38. When cutting a metal conduit with a hacksaw, the pressure applied to the hacksaw should be on _____.

a. The return stroke only b. The forward stroke only
c. Both the forward and return stroke equally d. None of these

39. The switches to be closed in order to obtain a combined resistance of 5 ohms are _____.



a. 1 & 3 b. 2 & 3 c. 1 & 2 d.1 & 4

40. When the term “10-32” in connection with machine screws commonly used in lighting work, the number 32 refers to _____.

a. Screw length b. Screw thickness c. Diameter of hole d. Threads per inch

41. To fasten a box to a terra cotta wall you would use _____.

a. Lag bolts b. Expansion bolts c. Wooden plugs d. Rawl plugs

42. The output winding of a transformer is called the _____.

a. Primary b. Output c. Secondary d. Both a and b

43. The flux commonly used for the soldering of electrical conductors is _____.

a. Zinc chloride b. Rosin c. Borax d. None of these

44. A shunt is sometimes used to increase the range of an electrical measuring instrument. The shunt is normally used when measuring _____.

a. AC voltage b. DC voltage c. DC amperes d. AC amperes

45. A battery operates in the principle of _____.

a. Photo emission b. Triboelectric effect
c. Electrochemistry d. Voltaic conductivity

46. When an electric current is forced through a wire that has considerable resistance, the _____.

I. Ampacity will decrease II. Voltage will drop III. Wire will heat up

a. III only b. I & II only c. II & III only d. I & III only

47. The continuity of an electrical circuit can be determined in the field by the means of _____.

a. An ammeter b. Wheatstone bridge c. Bell & battery set d. Wattmeter

48. A wattmeter is connected in _____ in the circuit.

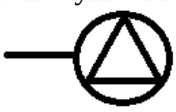
a. Series b. Parallel c. Series-parallel d. Wattage

49. A shunt is used to measure _____.

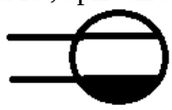
a. Resistance b. Capacitance c. Current d. Wattage

50. Which of the following is the symbol for a duplex outlet, split circuit?

a.



b.



c.

d.

JOURNEYMAN CLOSED BOOK EXAM #7

ANSWER

1. C. Does not absorb much moisture
2. C. Can be recharged
3. D. 12’ steel tape
4. B. Turns-ratio
5. B. CSA of the wire
6. B. I only
7. B. Use at lower rated voltage
8. A. I only
9. C. Compensate for voltage drop
10. D. 1,000,000 ohms
11. D. Nicks in the wire
12. C. Iron
13. A. Protect against shock
14. A. Protect the rubber tape
15. C. Stepping on a nail
16. C. Volt-amps
17. D. 32 teeth per inch
18. D. I, II & III DEF 100
19. C. 30 240-51a
20. A. Tube saw
21. B. The user may be injured
22. D. Lumens
23. B. 2000
24. D. Atom negative charge
25. D. I, II or III
26. A. Both I & II 90-4
27. C. Hickey
28. C. Star drill
29. C. Steel wire
30. A. Dry stick or dry rope
31. C. 0.001”
32. B. Frequency
33. C. Voltage
34. D. Switch
35. D. Storage batteries
36. D. I, II & III Earth resistance
37. D. Cut internal thread
38. B. Forward stroke only
39. A. Switches 1 & 3
40. D. Threads per inch
41. D. Rawl plugs
42. C. Secondary
43. B. Rosin
44. C. DC amperes
45. C. Electro chemistry
46. C. II & III only
47. C. Bell and battery set
48. C. Series-parallel Wattmeter
49. C. Current
50. C. Split duplex

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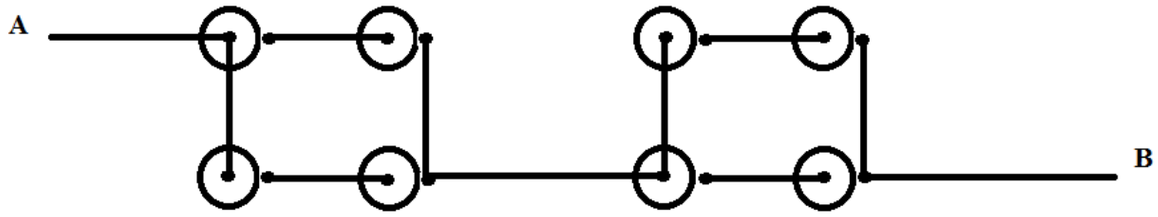
CLOSED BOOK

EXAM # 8

JOURNEYMAN CLOSED BOOK EXAM # 8

1. Using 1.5 volt dry cell, the voltage between A and B would be _____.



a. 1.5 b. 4 c. 6 12

2. A rigid conduit connecting to an outlet box should have a _____.

a. Bushing and locknut on the outside
b. Bushing on the outside and a locknut on the inside
c. Locknut and bushing on the inside
d. Locknut on the outside and a bushing on the inside

3. Identified, as used in the Code in reference to a conductor or its terminal, means that such a conductor or terminal is to be recognized as _____.

a. Grounded b. Bonded c. Colored d. Marked

4. A toaster will produce less heat on low voltage because _____.

a. Its total watt output decreases b. The current will decrease
c. The resistance has not changed d. All of these

5. If the current flow through a conductor is increased, the magnetic field around the conductor _____.

a. Is changed b. Becomes stronger c. Collapses d. Becomes weaker

6. Comparing a #6 to a #10 conductor of equal lengths, the #6 will have lower _____.

a. Cost b. Weight c. Resistance d. Strength

7. The definition of ambient temperature is _____.

a. The temperature of the conductor b. The insulation rating of the conductor
c. The temperature of the area surrounding the conductor d. The different temperature

8. The primary reason for using a hacksaw blade with fine teeth rather than coarse teeth when cutting large stranded conductors is _____.

a. A coarse blade would overheat the conductor b. A coarse blade breaks too easily
c. To avoid snagging or pulling strands d. A fine blade will bend easier

9. The stranded residential service is a 3-wire, 240 volt single-phase system. The maximum voltage to ground in this system would be _____ volts.

a. 115 b. 120 c. 199 d. 208

10. When working on a motor, the electrician should ____ to prevent accidental starting of the motor.

a. Remove the fuses b. Ground the motor c. Shut off the switch d. Remove the belts

11. It is the responsibility of the electrician to make sure his tools are in good condition because ___.

a. Defective tool can cause accidents
b. The boss may want to use them
c. The company will pay for only one set of tools
d. A good job requires perfect tools

12. Continually overloading a conductor is a poor practice because it causes _____.

a. The conductor to melt
b. The insulation to deteriorate
c. The conductor to shrink
d. Damage the raceway

13. For better illumination you would _____.

a. Random spacing of lights
b. Even spacing, numerous lights
c. Evenly spaced, higher ceilings
d. Cluster lights

14. A junction box above a lay-in ceiling is considered _____.

a. Concealed b. Accessible c. Readily accessible d. Recessed

15. Which of the following metals is most commonly used in the filament of a bulb?

a. Aluminum b. Mercury c. Tungsten d. Platinum

16. Electrical equipment can be defined as _____.

I. Fittings II. Appliances III. Devices IV. Fixtures

a. I only b. I & IV only c. I,III & IV only d. All of these

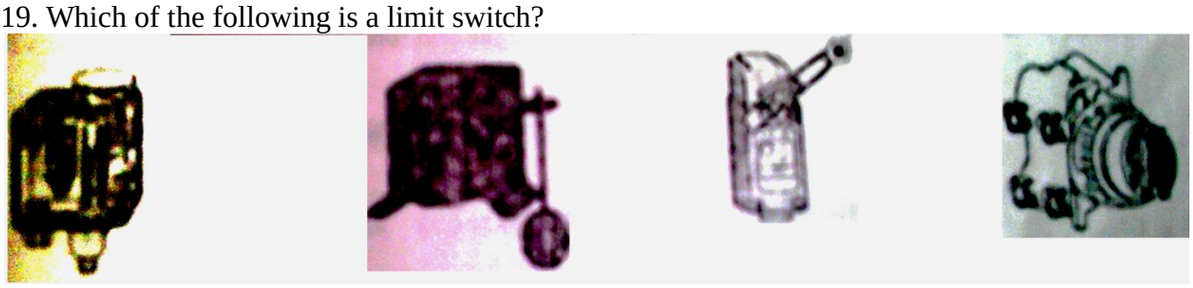
17. If two equal resistance conductors are connected in parallel, the resistance of the two conductors is equal to _____.

a. The resistance of one conductor
b. Twice the resistance of one conductor
c. One-half the resistance of one conductor
d. The resistance of both conductors

18. Wire connections should encircle binding posts in the _____ manner the nut turns to tighten.

a. Opposite b. Same c. Reverse d. Different

19. Which of the following is a limit switch?



a. b. c. d.

20. The primary and secondary windings of a transformer always have _____.

a. A common magnetic circuit
b. The same size
c. Separate magnetic circuits
d. The same number of turns

21. Which of the following is not the force which moves electron?

a. EMF b. Voltage c. Potential d. Current

22. A motor with a wide speed range is a _____.

a. DC motor b. AC motor c. Synchronous motor d. Induction motor

23. The “stator” of an AC generator is another name for the _____.

a. Rotating portion b. Slip rings c. Stationary portion d. Housing

24. Where galvanized conduit is used, the main purpose of the galvanizing is _____.

a. Slow down rust b. Provide better continuity
c. Provide better strength d. Provide a better surface for painting

25. To lubricate a motor sleeve bearing you would use _____.

a. Grease b. Vaseline c. Oil d. Graphite

26. When soldering conductors, flux is used _____.

a. To heat the conductors quicker b. To keep the surfaces clean
c. To prevent loss of heat d. To bond the conductors

27. _____ means so constructed or protected that exposure to the weather will not interfere with successful operation.

a. Weatherproof b. Weather tight c. Weather resistant d. All weather

28. The current used for charging storage batteries is _____.

a. Square-wave b. Direct c. Alternating d. Variable

29. You should close a knife switch firmly and rapidly as there will be less _____.

a. Likelihood of arcing b. Wear on the contacts
c. Danger of shock d. Energy used

30. If one complete cycle occurs in 1/30 of a second, the frequency is _____.

a. 30 hertz b. 60 Cycle c. 115 cycle d. 60 hertz

31. An instrument that measures electrical energy is called the _____.

a. Galvanometer b. Wattmeter c. Dynamometer d. Watt-hour meter

32. In electrical wiring, “wire nuts” are used to _____.

a. Connect wires to terminals b. Join wires and insulate the joints
c. Connect the electrode d. Tighten the panel studs

33. Which of the following would be the best metal for a magnet?

a. Steel b. Aluminum c. Lead d. Tin

34. An electrician may use a megger _____.

a. To determine the RPM of a motor b. To determine the output of a motor
c. To check the wattage d. To test a lighting circuit for a ground.

35. The least important thing in soldering two conductors together is to _____.

a. Use plenty of solder b. Use sufficient heat c. Clean the conductors d. Use the proper flux

36. The property of a circuit tending to prevent the flow of current and at the same time causing energy to be converted into heat is referred to as _____.

a. The inductance b. The resistance c. The capacitance d. The reluctance

37. Rigid conduit is generally secured to outlet boxes by _____.

a. Beam clamps b. Locknuts and bushings c. Set screw d. Offsets

38. Which one of the following is not a safe practice when lifting heavy items?

a. Use the arm and leg muscles b. Keep your back as upright as possible
c. Keep lifting a heavy object until you get help d. Keep your feet spread apart

39. A thermocouple will transform _____ into electricity.

a. Current b. Heat c. Work d. Watts

40. In a residence the wall switch controlling the ceiling light is usually _____.

a. Connected across both lines b. A double pole switch
c. Connected in one line only d. A 4-way switch

41. A switch which opens automatically when the current exceeds a predetermined limit would be called a _____.

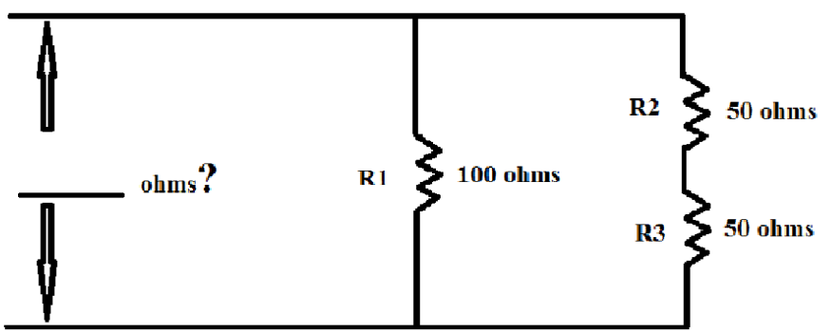
a. Limit switch b. Circuit breaker c. DT disconnect d. Contactor

42. A wattmeter is a combination of which two of the following meters?

I. Ammeter II. Ohmmeter III. Phase meter IV. Volt meter V. Power factor meter

a. II & III b. I & V c. I & IV d. II & V

43. What would the ohmmeter read?



a. 100 ohms b. 200 ohms c. 125 ohms d. 50 ohms

44. Acid is not considered a good flux when soldering conductors because it _____.

a. Smells bad b. Is corrosive c. Is non-conductive d. Costs too much

45. If the spring tension on a cartridge fuse clip is weak, the result most likely would be _____.

a. The fuse would blow immediately
b. The fuse clips would become warm
c. The voltage to the load would increase
d. The supply voltage would increase

46. The branch circuit loads specified by the Code for lighting and receptacles are considered ____.

a. Minimum loads b. Maximum loads c. Loads to be served d. Peak loads

47. The conductor with the highest insulation temperature rating is _____.

a. RH b. TW c. THWN d. THHN

48. After cutting a conduit, to remove the rough edges on both ends, the conduit ends should be ____.

a. Reamed b. Filed c. Sanded d. Ground

49. To fasten a raceway to a solid concrete ceiling, you would use _____.

a. Toggle bolts b. Expansion bolts c. Wooden plugs d. Rawl plugs

50. A commutator of a generator should be cleaned with which of the following?

a. Emery cloth b. Graphite c. A smooth file d. Fine sandpaper

JOURNEYMAN CLOSED BOOK EXAM #8

ANSWER

1. C. 6 volts Series-parallel
2. D. Locknut outside, Bushing inside
3. A. Grounded 200-1
4. D. All of these
5. B. Becomes stronger
6. C. Resistance
7. C. Temperature surrounding
8. C. Avoid snagging or pulling
9. B. 120v
10. A. Remove the fuses
11. A. Defective tools cause accidents
12. B. insulation to deteriorate
13. B. Even spacing, numerous lights
14. B. Accessible
15. C. Tungsten
16. D. All of these DEF 100
17. C. ½ the R of one conductor
18. B. Same
19. C. Limit switch
20. A. Common magnetic circuit
21. D. Current
22. A. DC Motor
23. C. Stationary portion
24. A. Slow down rust
25. C. Oil
26. B. To keep surfaces clean
27. A. Weatherproof DEF 100
28. B. Direct
29. A. Likelihood of arcing
30. A. 30 hertz
31. D. Watthour meter
32. B. Join wires and insulate the joint
33. A. Steel
34. D. Test lighting circuit for a ground
35. A. Use plenty of solder
36. B. The resistance
37. B. Locknuts and bushings
38. C. Not a safe practice
39. B. Heat
40. C. Connected in one line only
41. B. Circuit breaker
42. C. I & IV
43. D. 50 ohms
44. B. Corrosive
45. B. Fuse clips would become warm
46. A. Minimum loads 220-3b
47. D. THHN T. 310-13
48. A. Reamed
49. B. Expansion bolts
50. D. Fine sandpaper

JOURNEYMAN

CLOSED BOOK

EXAM # 9

JOURNEYMAN CLOSED BOOK EXAM # 9

1. To control a ceiling light from five different locations it requires which of the following?

a. Four 3-way switches and one 4-way switches
b. Three 4-way switches and two 3-way switches
c. Three 3-way switches and two 4-way switches
d. Four 4-way switches and one 3-way switches

2. The advantage of AC over DC includes which of the following?

a. Better speed control b. Lower resistance at higher current
c. Ease of voltage variation d. Impedance is greater

3. Which of the following is considered the best electrical conductor?

a. Iron wire b. Copper wire c. Aluminum wire d. Tin wire

4. The liquid in a battery is called the _____.

a. Askarel b. Festoon c. Hermetic d. Electrolyte

5. A color coded is used in multiple-conductor cables. For 3-conductor cable the colors would be _____.

a. One black, one red and one white b. Two black and one red
c. One white, one black and one blue d. Two red and one black

6. Explanatory material in the Code is characterized by _____.

a. The word "shall" b. FPN c. The word "may" d. The word "could"

7. The identified grounded conductor of a lighting circuit is always connected to the screw of a light socket to _____.

a. Reduce the possibility of accidental shock b. Ground the light fixture
c. Improve the efficiency of the lamp d. Provide the easiest place to connect the wire

8. A ___ box may be waterproof.

a. Watertight b. Rainproof c. Raintight d. All of these

9. The Code requires that all AC phase conductors where used, the neural and all equipment grounding conductors be grouped together when using metal enclosures or raceways. The principal reason for this is _____.

a. Currents would circulate through individual raceways
b. Less expensive to install a single raceway
c. Less labor hours for pulling wires in a single raceway
d. Conductors are easier to pull in a single raceway

10. Installing more than three current carrying conductors in the same conduit requires _____.

a. A larger conduit b. High heat rated conductors
c. Derating of ampacity d. Continuous loading

11. A _____ helps prevent arcing in movable contacts.

a. Spring b. Condenser c. Resistor d. Hydrometer

12. The ____ circuit is that portion of a wiring system prior to the final overcurrent protective device protecting the circuit.

a. Service b. Feeder c. Power d. Branch

13. When tightening a screw on a terminal, the end of the conductor should wrap around the screw in the same direction that you are turning the screw so that _____.

a. When you pull on the conductor it will tighten
b. The screw will not become loose
c. The conductor will act as a locking nut
d. The conductor will not turn off

14. Determining a positive wire on a single-phase circuit is _____.

a. Possible with a wattmeter b. Possible with a voltmeter
c. Possible with an ammeter d. An impossibility

15. A_____ is used for testing specific gravity.

a. Thermocouple b. Megger c. Hydrometer d. Galvanometer

16. An autotransformer differs from each other types of transformers in that _____.

a. Its primary winding is always largest than its easier secondary winding
b. It can be used only in automobiles
c. Its primary and secondary winding are common to each other
d. It must be wound with heavier wire

17. Where the _____ is likely to be high, asbestos insulation on the conductor would be a good choice.

a. Temperature b. Humidity c. Voltage d. Amperage

18. If the end of a cartridge fuse becomes warmer than normal, you should _____.

a. Tighten the fuse clips b. Lower the voltage on the circuit
c. Notify the utility company d. Change the fuse

19. Which of the following is the poorest conductor of electricity?

a. Mercury b. Aluminum c. Carbon d. Silver

20. The primary winding of a loaded step-down transformer has ____compared to the secondary winding.

a. Lower voltage and current b. Higher voltage and current
c. Higher voltage and lower the current d. Lower voltage and higher current

21. Copper is used for the tip of a soldering iron because _____.

a. Copper will not melt b. Copper is very good conductor of heat
c. Solder will not stick to other alloys d. Copper is less expensive

22. The sum of the voltage drop around a circuit is equal to the source voltage is _____.

a. Kirchhoff's Law b. Ohm's Law c. Nevin's Law d. Faraday's Law

23. Piezoelectric is caused by crystals or binding _____.

a. Chemical b. Battery c. Pressure d. Heat

24. Heavy duty lampholders include _____.

a. Admediumlampholders rated at 660 watts
b. Lampholders used oncircuits larger than 20 amperes
c. Lampholders rated at not less than 750 watts
d. All of the above

25. The reason for installing electrical conductors in a conduit is _____.

a. To provide a ground b. To increase the ampacity of the conductors
c. To protect the conductors from damage d. To avoid derating for continuous load of conductors

26. Discoloring of one end of a fuse normally indicates _____.

a. Increased current b. Excessive voltage c. Low resistance d. Poor contact

27. Wing nuts are useful on equipment where _____.

a. Cotter pins are used b. The nuts must be removed frequently
c. A wrench cannot be used d. Screws cannot be used

28. When resistors are connected in series, the total resistance is _____.

a. The sum of the individual resistance values b. The equivalent of the smallest resistance value
c. The equivalent of the largest resistance value d. Less than the value of the smallest resistance

29. If a value 120 volt incandescent light bulb is operating at a voltage of 125 volts, the result will be _____.

a. It may be enough to blow a fuse b. The bulb won't be as bright
c. Shorter life of the bulb d. The wattage will be less than rated

30. Laminations are used in transformers to prevent _____.

a. Copper loss b. Weight c. Eddy current loss d. Counter EMF

31. The Code requires which of the following colors for the equipment grounding conductor?

a. White or gray b. Green or green with yellow stripes
c. Yellow d. Blue with a yellow stripes

32. Sometimes mercury toggle switches are used in place of a regular toggle switch because they ____.

a. Are easier to connect b. Do not wear out as quickly
c. Are less expensive d. They glow in the dark

33. The assigned color for the high-leg conductor of a three-phase, 4-wire delta secondary is _____.

a. Red b. Black c. Blue d. Orange

34. The Code rule for maximum 90 degree bends in a conduit between two boxes is four, the most likely reason for the total 360 degree limitation is _____.

a. It is safe
b. It makes pulling the conductors through the conduit too difficult
c. You can damage the galvanized coating on the conduit
d. Too many bends require extra wire to be pulled

35. The correct word to define wiring which is not concealed is _____.

a. Open b. Uncovered c. Exposed d. Bare

36. A solenoid is a _____.

a. Relay b. Permanent magnet c. Dynamo d. Electromagnet

37. An electrician should always consider the circuit to be "hot" unless he definitely knows otherwise. The main reason is to avoid _____.

a. Personal injury b. Having to find the panel
c. Saving time d. Shutting off the wrong circuit

38. The best thing to cut PVC conduit within a tight area is _____.

a. A short hacksaw b. A nylon string c. A knife d. A pipe cutter

39. If a live conductor is contacted accidentally, the severity of the electrical shock is determined primarily by _____.

a. The size of the conductor b. Whether the current is DC or AC
c. The current in the conductor d. The contact resistance

40. Ohm's Law is _____.

a. An equation for determining power
b. The relationship between voltage, current and power
c. The relationship between voltage, current and resistance
d. A measurement of wattage losses

41. What is the normal taper on a standard conduit thread-cutting die?

a. ½" per foot b. ¼" per foot c. 3/8" per foot d. ¾" per foot

42. In an AC circuit the ratio of the power in watts to the total volt-amps is called the _____.

a. Demand factor b. Power factor c. Turns-ratio d. Diversity factor

43. The total load on any overcurrent device located in a panelboard shall not exceed _____ of its rating where the normal operation the load will continue for three hours or more.

a. 80% b. 125% c. 70% d. 50%

44. Four heaters, each having a resistance of 30 ohms, are connected in series across a 600-volt train circuit. The current is _____ amperes.

a. 5 b. 17 c. 20 d. 80

45. A ladder which is painted is a safety hazard mainly because the paint _____.

a. May conceal weak spots in the rails or rungs
b. Is slippery after drying
c. Causes the wood to crack more quickly
d. Peels and the sharp edges of the paint may cut the hands

46. The chemical used as the agent in fire extinguishers to fight electrical fires is _____.

a. CO_2 b. K_OH c. H_2O d. L_O6

47. A location classified as _____ may be temporarily subject to dampness and wetness.

a. Dry b. Damp c. Moist d. Wet

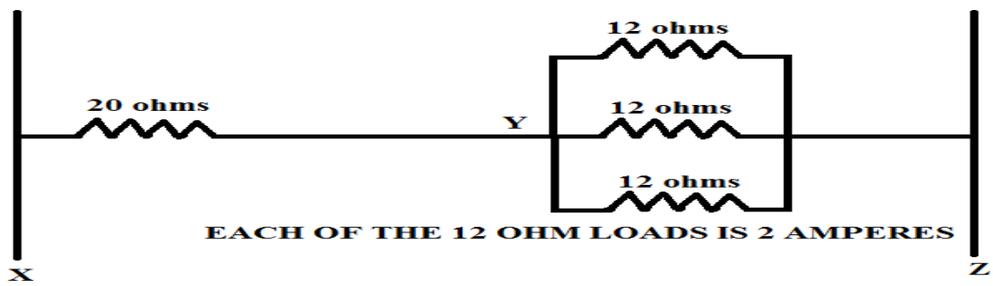
48. The average dry cell battery gives an approximate voltage of _____.

a. 1.5 b. 1.2 c. 1.7 d. 2.0

49. The _____ circuit is that portion of a wiring system beyond the final overcurrent protection.

a. Lighting b. Feeder c. Signal d. Branch

50. What is the voltage between points Y and Z?



a. 72 volt b. 120 volts c. 24 volts d. 144 volts

JOURNEYMAN CLOSED BOOK EXAM #9 ANSWER

1. B. Three 4-way & two 3-way
2. C. Ease of variation
3. B. Copper wire
4. D. Electrolyte
5. A. Black, red white
6. B. FPN 90-5
7. A. Reduce shock
8. D. All of these
9. A. Currents would circulate
10. C. Derating of ampacity
11. B. Condenser
12. B. Feeder DEF 100
13. D. Conductor will not turn off
14. D. An impossibility
15. C. Hydrometer
16. C. Windings are common
17. A. Temperature
18. A. Tighten the clips
19. C. Carbon
20. C. Higher voltage and lower current
21. B. Copper good conductor
22. A. Kirchhoff's Law
23. C. Pressure
24. D. All of the above 210-21a
25. C. Protect from damage
26. D. Poor contact
27. B. Nuts removed frequency
28. A. Sum of individual resistances
29. C. Shorter life of bulb
30. C. Eddy current loss
31. B. Green or green with yellow stripes
32. B. Do not wear out as quickly
33. D. Orange 215-8 230-56 384-3e
34. B. Makes pulling too difficult
35. C. Exposed
36. D. Electromagnet
37. A. Personal injury
38. B. Nylon string
39. D. The contact resistance
40. C. Relationship between E, I & R
41. D. ¾" per foot 346-8 345-8
42. B. power factor
43. A. 80% 384-16d.
44. A. 5 Amps I = E/R 600/120 = 5amps
45. A. May conceal weak spots
46. A. CO2
47. A. Dry DEF 100
48. A. 1.5
49. D. Branch DEF 100
50. C. 24 volts

JOURNEYMAN

CLOSED BOOK

EXAM # 10

JOURNEYMAN CLOSED BOOK EXAM # 10

1. The neutral conductor shall not be _____.

a. Stranded b. Solid c. Insulated d. Fused

2. The voltage drop in a line can be decreased by_____.

I. Increasing the wire size II. Increasing the current III. Decreasing the load

a. I only b. I and II only c. I, II and III d. I and III only

3. In a residence, no point along the floor line in any wall space may be more than ___ feet from an outlet.

a. 6 b. 6 ½ c. 12 d. 10

4. Insulating safety grips on tools _____.

a. Are enough b. Are not meant for that purpose
c. Should be used with other insulating equipment d. Are not enough

5. The rating of any one portable appliance shall not exceed ___ percent of the branch circuit rating.

a. 40 b. 50 c. 70 d. 80

6. A generic term for a group of non-flammable synthetic chlorinated hydrocarbons used as electrical insulating media.

a. Askarel b. Acid c. Chloragorm d. Solder

7. The part of an electrical system that performs a mechanical function rather than an electrical function is called a (an) _____.

a. Receptacle b. Device c. Fitting d. Outlet

8. An electrical condenser is best defined as _____.

a. A coil of wire
b. A wrapping of layers of metal foil
c. A coil of wire with layers of metal foil
d. A wrapping of many layers of metal foil set apart by waxed paper

9. Solid wire is preferred instead of stranded wire in panel wiring because _____.

a. Costs less than stranded b. Solid will carry more current
c. Can be “shaped” better d. No derating required for solid

10. Which one of the following is not an insulator?

a. Bakelite b. Oil c. Air d. Salt water

11. The definition of accessible (wire):

a. Admitting close approach b. Not guarded by locked doors, elevation, etc
c. Not permanently closed in by the building or structure d. All of the above

12. The Code is designed for safety regardless of _____.

I. Cost II. Time III. Maintenance IV. Efficiency V. Future structure

a. I & II b. III & IV c. I through IV d. I through V

13. When voltage and current appear at their zero and peak values at the same time, they are in ____.

a. Motion b. Group c. Phase d. Balanced

14. What is meant by "traveler wires"?

a. Wiring to a split receptacle
b. Two-wires between 3-way switches
c. Wiring to a door bell
d. Out of state electrician

15. On a #4 drill bit, the #4 is determined by _____.

a. Hardness b. Size c. Strength d. Length

16. Wiring systems in wet locations should be _____.

a. Placed so a permanent air space separates them from the supporting surface.
b. Separated by insulated bushings
c. Separated by non-combustible tubing
d. Protected by a guard strip

17. The best type of fire extinguisher for an electrical fire is a _____.

a. Dry chemical extinguisher
b. Soda-acid extinguisher
c. Foam extinguisher
d. Carbon monoxide extinguisher

18. "Thermally protected" appearing on the nameplate of a motor indicates that the motor is provided with a _____.

a. Fuse b. Switch c. Breaker d. Heat sensing element

19. A capacitor is a device that _____ energy.

a. Produces b. Stores c. Opposes d. Increases

20. When working near acid storage batteries, extreme care should be taken to guard against sparks essentially to avoid _____.

a. Overheating the electrolyte b. An electric shock c. A short circuit d. An explosion

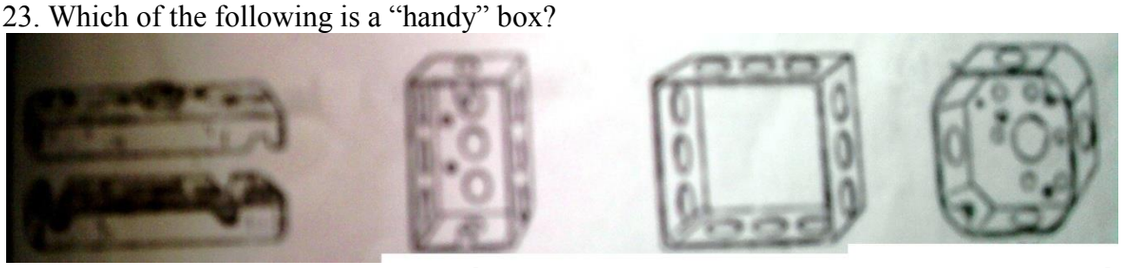
21. Which of the following statements is incorrect?

a. Current flowing through a conductor causes heat
b. The conduit of an electrical system should be grounded
c. Volt meters are connected in parallel in a circuit
d. Rectifiers change DC to AC

22. When installing raceway systems, it is essential that they be _____.

a. Rigidly supported as required
b. Exposed
c. Concealed in walls
d. Readily accessible

23. Which of the following is a “handy” box?



a. b. c. d.

24. The reason for grounding the frame of a portable electric hand tool is to _____.

a. Prevent the frame of the total tool from becoming alive to ground
b. Prevent overheating of the tool
c. Prevent shorts
d. Reduce the voltage drop

25. Two metals of different materials shall not be joined together in order to avoid the _____ action.

a. Rusting b. Galvanic c. Reverse d. Corrosion

26. A ___ device which serves to govern in some predetermined manner the electric power delivered to the apparatus to which it’s connected.

a. Switch b. Feeder b. Service d. Controller

27. The ungrounded conductor can be identified by the color _____.

a. White or gray b. Green or bare c. Pink flamingo d. None of these

28. What is the maximum number of overcurrent devices allowed in a lighting and appliance panelboard?

a. 24 b. 30 c. 36 d. 42

29. A _____ is a certain type cartridge fuse that can be readily replaced.

a. Time-lag fuse b. Permanent fuse c. One-time fuse d. Renewable fuse

30. The purpose of a Western Union splice is _____.

a. For the use of the utility companies only b. For the purpose of strengthening a splice
c. For use on the west coast only d. None of these

31. Electricity may be produced by means of _____ forces.

a. Mechanical b. Thermal c. Chemical d. All of these

32. Copper-clad aluminum conductors have an ampacity _____.

a. Lower than copper but higher than aluminum b. Equal to copper
c. Rating of their own d. Equal to aluminum

33. The heating element in a toaster has a _____.

a. Low resistance b. High resistance c. High conductivity d. None of these

34. The total resistance of four 10 ohm resistors in parallel is _____.

a. 10 ohms b. 2.5 ohms c. 5 ohms d. 4 ohms

35. To mark a point on the floor directly beneath a point on the ceiling, it is best to use a _____.

a. Transit rod b. Plumb bob c. Square d. 12' tape

36. Openings around electrical penetrations through fire-resistant rated walls, partitions, floors or ceilings shall be _____.

a. Bushed b. Sleeved c. Firestopped d. Isolated

37. A generator exciter uses _____ current.

a. Alternating b. Direct c. Neither alternating nor direct d. either alternating or direct

38. When installing an instrument meter on a panel, to obtain accurate mounting _____.

a. Use the meter and drill through the holes b. Drill oversize holes
c. Use a template d. Drill from back of panel

39. The advantage of cutting a metal rigid conduit with a hacksaw rather than pipe cutter is _____.

a. You do not need a vice b. Less energy required in cutting
c. Less reaming is required d. Threading oil is not required

40. You would use an approved _____ to protect conductors from abrasion where they enter a box.

a. Locknut b. Bushing c. All thread d. Hickey

41. To reverse the rotation of a three-phase motor you would _____.

a. Reverse all the leads b. Reverse two of the four leads
c. Turn it around d. Reverse any two of the three leads

42. The output rating of a one horsepower motor is _____.

a. 1840 watts b. 746 watts c. 1500 watts d. 1000 watts

43. In other than residential calculations, an ordinary outlet shall be calculated at _____.

a. 200 va b. 600 watts c. 300 watts d. 180 va

44. Impedance is present in the following type of circuit:

a. Resistance b. DC only c. AC only d. Both AC and DC

45. On an insulated conductor the type letter "TW" indicates _____.

a. Tie wire b. Thermoplastic-moisture resistance
c. Thermoplastic-waterproof d. Thermal-with nylon

46. A load is considered as continuous if it is expected to continue for _____.

a. ½ hour b. 1 hour c. 2 hours d. 3 hours

47. The standard classification of branch circuits applied only to those circuits with _____ outlets.

a. Two or more b. More than two c. More than three d. Three or more

48. If the primary of the transformer is 480 and secondary is 240/120v, the wire on the _____ is larger.

a. Tertiary b. Secondary c. Primary d. windings

49. The important function of a type S fuse is _____.

a. Non-interchangeable b. Slow burner c. Motor protection
d. Fast acting

50. If the voltage is doubled the ampacity of a conductor _____.

a. Increases b. Decrease c. Doubles d. Remains the same

JOURNEYMAN CLOSED BOOK EXAM #10 ANSWER

1. D. Fused 240-20 380-2b
2. D. I & III only
3. A. 6 feet 210-52a1
4. C. Used with other
5. D. 80% 210-23a
6. A. Askarel DEF 100
7. C. Fitting DEF 100
8. D. Many layers can be set apart
9. C. Can be “shaped” better
10. D. Salt water
11. C. Not closed DEF 100
12. D. 1 Through V 90-1b
13. C. Phase
14. B. Two wire between 3-way
15. B. Size
16. A. Permanent air space
17. A. Dry chemical
18. D. Heat sensing element DEF 100 FPN
19. B. Stores
20. D. An explosion
21. D. Change DC to AC
22. A. Rigidly supported
23. B. Handy box
24. A. Prevent the frame
25. B. Galvanic 34b-3a
26. D. Controller DEF 100
27. C. Pink flamingo
28. D. 42 384-15
29. D. Renewable fuse
30. B. Strengthening the splice
31. D. All of these
32. D. Equal to aluminum T. 310-16
33. B. High resistance
34. B. 2.5 Ohms 10ohms/4 = 2.5
35. B. Plumb bob
36. C. Firestopped
37. B. Direct current
38. C. Use a template
39. C. Less reaming is required
40. B. Bushings 370-17b
41. D. Reverse any two of the three leads
42. B. 746 watts
43. D. 180va 220-3b9
44. C. AC only
45. B. Thermoplastic Moisture resistant
46. D. 3 hours DEF 100
47. A. Two or more 210-3
48. B. Secondary
49. A. Non-interchangeable
50. D. Ampacity remains the same

JOURNEYMAN

CLOSED BOOK

EXAM # 11

JOURNEYMAN CLOSED BOOK EXAM # 11

1. A ____ is a protective device for limiting surge voltages by discharging or bypassing surge current, and it also prevents continued flow of follow current while remaining capable of repeating these functions.

a. Surge arrester b. Automatic fuse c. Fuse d. Circuit breaker

2. A _____ conductor is one having one or more layers of non-conducting materials that are not recognized as insulation.

a. Bare b. Covered c. Insulated d. Wrapped

3. In a DC circuit, the ratio of watts to voltamperes is _____.

a. Unity b. Greater than one c. Less than one d. Cannot tell what it might be

4. A current limiting overcurrent protective device is a device which will ___ the current flowing in the faulted circuit.

a. Reduce b. Increase c. Maintain d. None of these

5. The horsepower rating of a motor _____.

a. Is a measure of motor efficiency b. Is the input to the motor
c. Cannot be changed to watts d. Is the output of the motor

6. A common fuse and circuit breaker works on the principal that _____.

a. Voltage develops heat b. Voltage breaks down insulation
c. Current develops heat d. Current expands a wire

7. The voltage will lead the current when the _____ in the circuit.

a. Inductive reactance exceeds the capacitive reactance
b. Reactance exceeds the resistance in the circuit
c. Resistance exceeds the reactance
d. Capacitive reactance exceeds the inductive reactance

8. Which of the following is an Allen head bolt?

a. **b.** **c.** **d.**

9. _____ is a self-acting, operating by its own mechanism when actuated by some impersonal influence, as for example, a change in current strength, pressure, temperature, or mechanical configuration.

a. Remote-control b. Automatic c. Semi-automatic d. Controller

10. A 1000 watt, 120 volt lamp uses electrical energy at the same rate as a 14.4 ohm resistor on _____.

a. 120 volts b. 115 volts c. 208 volts d. 240 volts

11. When using compressed air to clean electrical equipment the air pressure should not exceed 50 pounds. The main reason is higher pressures _____.

a. May loosen insulating tape
b. May blow dust to surrounding equipment
c. Introduce a personal hazard to the user
d. May rupture the air hose

12. Which of the following is not used to fasten equipment to concrete?

a. Expansion bolt b. Lead sheath c. Rawl plug d. Steel bushing

13. A single-pole switch to operate a light will have the wiring connected in the ____ conductor.

a. Grounded b. Identified c. Ungrounded d. Neutral

14. The decimal equivalent of 9/16 is _____.

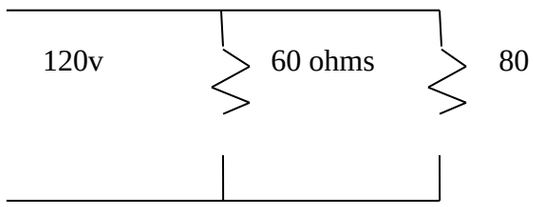
a. 0.5625 b. 0.675 c. 0.875 d. None of these

15. The information most useful in preventing the recurrence of a similar type accident when making out an accident report would be _____.

a. The nature of the injury
b. The cause of the accident
c. The weather conditions at the time
d. The age of the person involved

16. What is the total wattage of this circuit?

a. 3.5 b. 420
c. 16,800 ohms d. 140



17. Artificial respiration after a severe electrical shock is necessary when the shock results in _____.

a. Broken limbs b. Bleeding c. Stoppage of breathing d. Unconsciousness

18. If the circuit voltage is increased, all else remains the same, only the _____ will change.

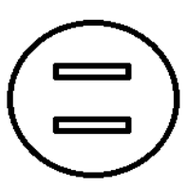
a. Resistance b. Current c. Ampacity d. Conductivity

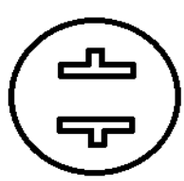
19. The two methods of making joints or connections for insulated cables are soldered connections and by means of solderless connection devices (wirenuts). The advantage (s) of a solderless connection is/are ____.

I. Will not fail under short circuit due to melting of solder
II. Mechanical strength as great as solder
III. Reduces the time required to make a splice

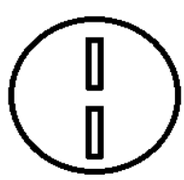
a. I only b. I & II only c. II & III only d. I, II & III

20. Which of the following plugs is a polarized plug?


a.


b.


c.


d.

21. When accidentally splashing a chemical into the eyes the best immediate first aid solution is to ____.

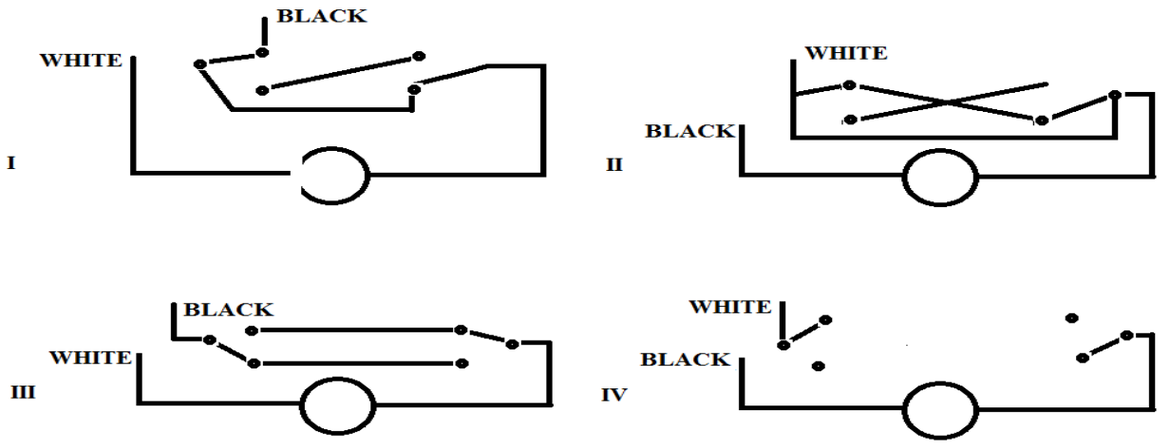
a. Look directly into the sun
b. Rub the eyes with dry cloth
c. Flush eyes with clean water
d. Close eyes quickly

22. It is generally not good practice to supply lamps and motors from the same circuit because _____.

I. It is more economical to operate motors on a higher voltage than that of a lighting circuit
II. Overloads and short circuits are more common on motor circuits and would put the lights out
III. When a motor is started it would cause the lights to dim or blink

a. I only b. II only c. III only d. I, II & III

23. Which of the following is the correct wiring to a light controlled by two 3-way switches?



a. I only b. II only c. III only d. IV only

24. The Code considers low voltage to be _____.

a. 480 volts or less b. 600 volts or less c. 24 volts d. 12 volts

25. The cross-sectional area of the bus bar is _____ square inch.

a. 0.125 b. 1.34375 c. 11.5
d. None of these

26. A high spot temperature in a corroded electrical connection is caused by a (an) _____.

a. Increase in the flow of current through the connection
b. Decrease in the voltage drop across the connection
c. Increase in the voltage drop across the connection
d. Decrease in the effective resistance of the connection

27. _____ is the symbol used for the delta connection.

a. Ω b. Σ c. ϕ d.γ

28. Because aluminum is not a magnetic metal, there will be _____ present when aluminum conductors are grouped in a raceway.

a. No heat due to voltage
b. No heating due to hysteresis
c. No induced currents
d. None of these

29. A switch is a device for _____.

I. Making or braking connections
II. Changing connections
III. Interruption of circuit under short-circuit conditions

a. I only b. I & II only c. II & III only d. I, II & III

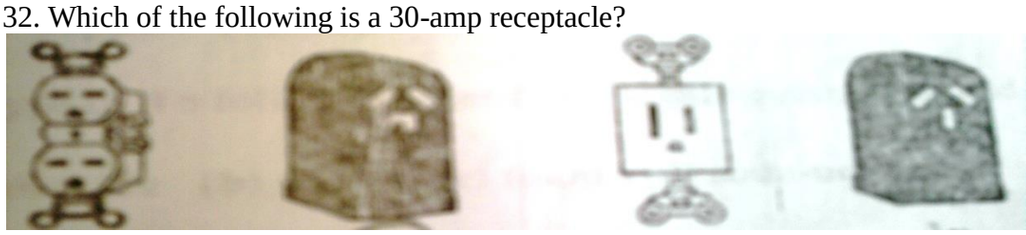
30. At least two persons are required to be present during a high-voltage test because _____.

a. One person can cover while the one is on break b. High voltage is too heavy for one
c. If one is hurt the other person can help d. It eliminates overtime

31. One of the essential functions of any switch is to maintain a _____.

a. Good high-resistance contact in the closed position
b. Good low-resistance contact in the closed position
c. Good low-resistance contact in the open position
d. Good high-resistance contact in the open position

32. Which of the following is a 30-amp receptacle?



a. b. c. d.

33. When the ground resistance exceeds the allowable value of 25 ohms, the resistance can be reduced by _____.

I. Paralleling ground rods II. Using a longer ground rod
III. Using a larger diameter ground rod IV. Chemical treatment of the soil

a. II & III only b. I, II & III only c. II, III & IV only d. I, II, III & IV

34. Silver and gold are better conductors of electricity than copper; however, the main reason copper is used is its _____.

a. Weight b. Strength c. Melting point d. Cost is less

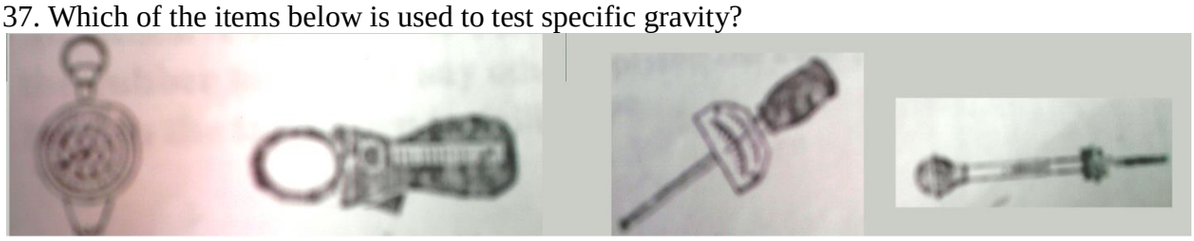
35. Standard lengths of conduit are in 10 foot lengths. A required feeder raceway is 18 yards in length, how many lengths of 10 foot conduit would you need?

a. 4 b. 5 c. 6 d. None of these

36. The term “open circuit” means _____.

a. The wiring is in an open area b. The wiring is exposed on a building
c. All parts of the circuit are not in contact d. The circuit has one end exposed

37. Which of the items below is used to test specific gravity?



a. b. c. d.

38. Conduit should be installed as to prevent the collection of water in it between outlets. The conduit should not have _____.

a. Low point at an outlet
b. High point at an outlet
c. High point between successive outlets
d. Low point between successive outlets

39. Brass is an alloy of _____.

a. Zinc and copper b. Lead and copper c. Tin and lead d. Lead and tin

40. Which type of the following portable fire extinguishers should be used on a live electrical fire?

a. Carbon dioxide b. Water c. Foam d. Soda-acid

41. Enclosed knife switches that require the switch to be open before the housing door can be opened, are called _____ switches.

a. Release b. Air-break c. Safety d. Service

42. Which of the following is a solenoid?

a. b. c. d.

43. What Article of the Code addresses high-voltage (over 600 volts)?

a. 450 b. 230 c. 680 d. 490

44. A close nipple _____.

a. Is always ½" or less in length
b. Has no threads
c. Has only internal threads
d. Has threads over its entire length

45. When applying rubber tape to an electrical splice, it would be necessary to _____.

a. Stretch the tape properly during the application
b. Apply an adhesive to the splice before applying the tape
c. Apply the rubber tape after any other tape
d. Apply heat to the tape when installing

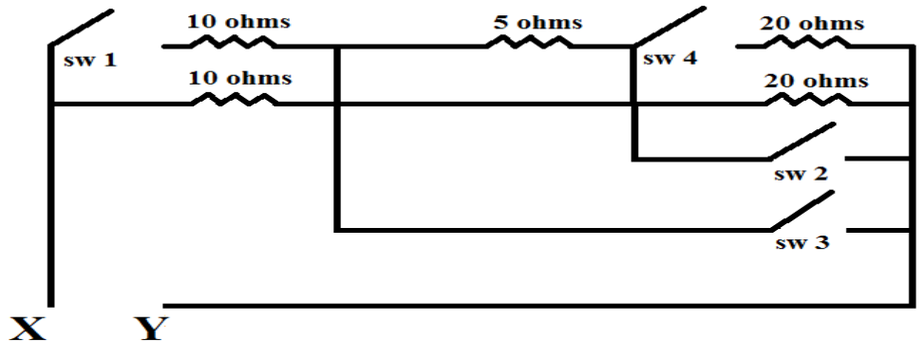
46. A stranded wire with the same AWG as a solid wire _____.

a. Is used for higher voltages
b. Has a higher ampacity
c. Is larger in total diameter
d. Has the same resistance

47. A limit switch is used on a piece of machinery to open the circuit when the _____.

a. Current exceeds a preset limit b. Travel reaches a preset limit
c. Pressure exceeds a preset limit d. Temperature reaches a preset limit

48. With switches 1 and 2 closed the combined resistance of the circuit is _____ ohms.



a. 30 b. 25 c. 10 d. 3

49. When rigid metal conduits are buried the minimum cover required by the Code is _____.

a. 6” b. 12” c. 18” d. 24”

50. A fixture that weighs more than _____ pounds shall not be supported by the screw shell of a lampholder.

a. 2 b. 3 c. 4 d. 6

JOURNEYMAN CLOSED BOOK EXAM #11 ANSWER

1. A. Surge arrester 208-2
2. B. Covered DEF 100
3. A. Unity
4. A. Reduce the current 240-11
5. D. HP is the output
6. C. Current develops heat
7. A. Inductive exceeds capacitive
8. A. Allen head bolt
9. B. Automatic DEF 100
10. A. 120 volts $W=E^2/R$
11. A. May loosen the insulating tape
12. D. Steel bushing not used
13. C. Ungrounded conductor for switch 380-2b
14. A. 0.5625 is the decimal for 9/16”
15. B. The cause of accident
16. B. 420 watts total
17. C. Stoppage of breathing
18. B. Only the current will change
19. D. Solderless connections
20. C. Polarized plug
21. C. Flush eyes with clean water
22. D. I, II & III lamps & motors
23. C. III only 3-way switch connection
24. B. 600 volts or less 490-2
25. A. 0.125 csa of bus bar
26. C. Increase VD across the connection
27. D. Δ Delta symbol
28. B. Hysteresis 300-20 FPN
29. B. I & II only switch
30. C. If one person is hurt
31. B. Low resistance in closed position
32. B. 30 Amp Receptacle
33. D. I, II, III & IV ground resistance
34. D. Cost is less for copper
35. C. Six lengths of conduit
36. C. All parts of the circuit not in contact
37. D. Hydrometer
38. D. Low point
39. A. Zinc & copper
40. A. Carbon dioxide
41. C. Safety switch
42. B. Solenoid
43. D. Article 490
44. D. Threads over entire length
45. A. Stretch the rubber tape
46. C. Larger in total diameter
47. B. Travel reaches a preset limit
48. C. 10 ohms
49. A. 6 “ Table 300-5
50. D. 6 pounds 410-15a

JOURNEYMAN

CLOSED BOOK

EXAM # 12

JOURNEYMAN CLOSED BOOK EXAM # 12

1. Your foreman asked you to measure the insulation resistance of some conductors. To do this you would use a _____.

a. Hydrometer b. Megger c. Belt tester d. Wattmeter

2. The main difference between a pipe thread and a machine thread is that the pipe thread is _____.

a. Finer b. Longer c. Uneven d. Tapered

3. Receptacles in residential wiring are regularly connected in _____.

a. Parallel b. Perpendicular c. Series d. Diagonal

4. A foreman in charge of a crew in men preparing to work on a low voltage tension circuit should caution them to _____.

a. Work only when the load is zero b. Consider the circuit hot at all times
c. Never work on any circuit alone d. Wait until the circuit has been killed

5. The term pneumatic refers to _____.

a. Electricity b. Steam c. Air d. Oil

6. What type of fastener would you use to mount a box to a hollow tile wall?

a. Expansion bolts b. Toggle bolts
c. Rawl plugs d. Bolts with backing plates

7. If a low resistance is connected in parallel with a higher resistance, the combined resistance is ____.

a. Higher or lower than the resistance depending on the size of the higher resistance
b. Always less than the low resistance
c. Always more than the higher resistance
d. The total would be the low and high added together

8. The lubricant used to make pulling wires through a conduit easier is _____.

a. Grease b. Powdered pumice c. Vaseline d. powdered soapstone

9. The instrument by which electric power is measured is a _____.

a. Ammeter b. Rectifier c. Voltmeter d. Wattmeter

10. The connection between the grounded circuit conductor and the equipment grounding conductor at the service is called the _____ bonding jumper.

a. Circuit b. Equipment c. Main d. Appliance

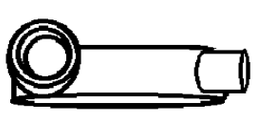
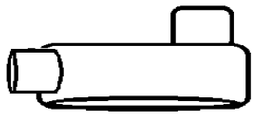
11. The larger the conductor, the _____.

a. Higher the resistance b. Lower the ampacity c. Higher the voltage d. Lower the resistance

12. A hook on the end of a fish tape is not to _____.

a. Keep it from catching on joints and bends
b. Tie a swab to
c. Tie the wires, to be pulled
d. Protect the end of the wire

13. Which of the following is a LL conduit body?

a. b. c. d.

14. When soldering two copper conductors together, they are kept clean while heating by _____.

a. the use of flux
b. Applying the solder quickly
c. Rubbing often with emery cloth
d. Not permitting the open flame to touch them

15. Metal cabinets used for lighting circuits are grounded to _____.

a. Reduce shock hazard
b. Eliminate electrolysis
c. Assure that the fuse will blow in defective circuit
d. Simplify the wiring

16. In sockets, extension cord is protected by means of the _____ knot.

a. Underwriters'
b. Clove hitch
c. Sheepshank
d. Western union

17. A branch circuit that supplies a number of outlets for lighting and appliances is a _____.

a. Individual
b. Multi-purpose
c. General purpose
d. Utility

18. When three equal resistors are connected in parallel, the total resistance is _____.

a. Equal to the resistance of each
b. Less than anyone resistor
c. Greater than any one resistor
d. None of these

19. The efficiency of the motor is a measured of _____.

a. The natural speed of the motor
b. The torque the motor produces
c. How well it converts electrical energy into mechanical energy
d. The power output of the motor in horsepower

20. When stripping insulation from an aluminum conductor _____.

I. Remove insulation as you would sharpen a pencil
II. Ring the conductor and slip the insulation of the conductor
III. Peel the insulation back and then cut outwards

a. I, II & III
b. I & II only
c. I & III only
d. II & III only

21. The _____ angle is the angle between the real power and the apparent power.

a. Lag
b. Power factor
c. Voltage-current
d. Watt

22. The most heat is created when current flows through which of the following?

a. A 10 ohm condenser
b. A 10 ohm inductance coil
c. A 10 ohm resistor
d. Heat would be equal

23. 60 cycle frequency travels 180 degrees in how many seconds?

a. 1/60 b. 1/120 c. 1/180 d. 1/30

24. The current carrying capacity of conductors expressed in amperes is _____.

a. Demand b. Pressure c. Ampacity d. Duty-cycle

25. The electrician's tapered reamer is used for _____.

a. Reaming the threads on couplings
b. Reaming the holes in bushings
c. Reaming the ends of rigid conduit after it is cut
d. Making holes in boxes

26. Electricity is sold by the kilowatt which is _____ watts.

a. 10,000 b. 1000 c. 100 d. 100,000

27. Three-way switching does not use the following conductor:

a. Ungrounded b. Traveler c. Grounded d. Switch leg

28. The greater the number of free electrons the better the _____ of a metal.

a. Insulation wire b. Resistance c. Voltage drop d. Conductivity

29. To cut Wiremold you would _____.

a. Use a chisel
b. Use an approved cutter like an M.M. cutter
c. Use a pair of tin snips
d. Use a hacksaw and remove the burr with a file

30. Electrical contacts are opened or closed when the electrical current energizes the coils of a device called a _____.

a. Thermostat b. Reactor c. Condenser d. Relay

31. A clamp-on ammeter will measure _____.

a. Voltage when clamped on a single conductor
b. current when clamped on a multi-conductor cable
c. Accurately only when parallel to cable
d. Accurately only when clamped perpendicular to a conductor

32. When current leaves its intended path and returns to the source, by passing the load, the circuit is _____.

a. Open b. Shorted c. Incomplete d. Broken

33. The electric pressure or electromotive force is measured by the _____.

a. Volt b. Electric meter c. Watt d. Kilowatt

34. Conduit installed in a concrete slab is considered a _____.

a. Damp location b. Moist location c. Wet location d. Dry location

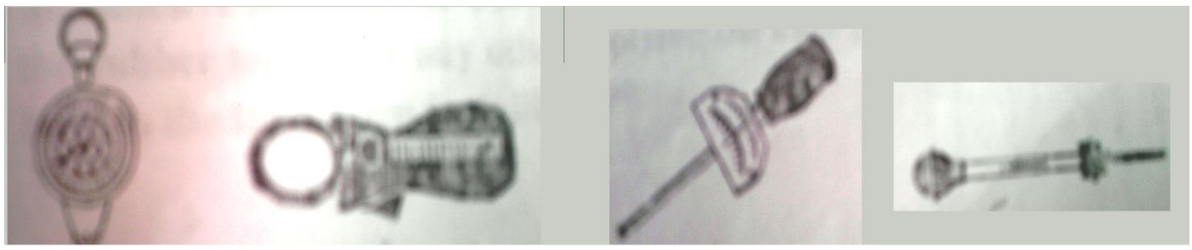
35. It is best as a safety measure, not to use water to extinguish electrical equipment fires. The main reason is that water _____.

a. May transmit shock to the user
b. Will turn to steam
c. Will not put the fire out
d. May damage the wiring

36. The total opposition to current flow in an AC circuit is expressed in ohms and is called _____.

a. Impedance
b. Conductance
c. Reluctance
d. Resistance

37. Which of the items below is a rotometer?



a. b. c. d.

38. When a person is burned the basic care steps are _____.

a. Cover and cool the burned area
b. Prevent infection
c. Care for shock
d. All of these

39. A multimeter is a combination of _____.

a. Ammeter, ohmmeter and wattmeter
b. Voltmeter, ohmmeter and ammeter
c. Voltmeter, ammeter and megger
d. Voltmeter, wattmeter and ammeter

40. A good magnetic material is _____.

a. Brass
b. Copper
c. Iron
d. Aluminum

41. Since fuses are rated by an amperage and voltage a fuse will work on _____.

a. AC only
b. AC or DC
c. DC only
d. Any voltage

42. A fuse puller is used in replacing _____.

a. Cartridge fuses
b. Plug fuses
c. Link fuses
d. Ribbon fuses

43. A pendant fixture is a _____.

a. Hanging fixture
b. Recessed fixture
c. Bracket fixture
d. None of these

44. To fasten an outlet box between the studs in a wall constructed of metal lath and plaster, you would use _____.

a. Cement or mortar
b. iron wire
c. Nylon lath twine
d. An approved box hanger

45. The unit of measurement for electrical resistance to current is the _____.

a. Watt
b. Ohm
c. Volt
d. Amp

46. A low energy power circuit _____.

a. Is a remote-control circuit
b. Is a signal circuit
c. Has its power supplied by transformers and batteries
d. None of these

47. To convert AC to DC you will use _____.

a. Generator
b. Rectifier
c. Vibrator
d. Auto-transformer

48. S_3 is a symbol used on a drawing to indicate a _____ switch.

a. Flush
b. Single-pole
c. Four-way
d. Three-way

49. Action requiring personal intervention for its control:

a. Controller
b. Automatic
c. Periodic duty
d. Non-automatic

50. A voltmeter is connected in _____ with the load.

a. Series
b. Parallel
c. Series-parallel
d. Series-shunt

JOURNEYMAN CLOSED BOOK EXAM #12 ANSWER

1. B. Megger
2. D. Tapered thread
3. A. Parallel
4. B. Consider circuit hot
5. C. Air
6. B. Toggle bolts
7. B. Less than the low resistance
8. D. Powdered soapstone
9. D. Wattmeter
10. C. Main DEF 100
11. D. Lower the resistance
12. D. Protect end of wire
13. A. LL conduit body
14. A. The use of flux
15. A. Reduce shock hazard
16. A. Underwriters'
17. C. General purpose DEF 100
18. B. Less than any one resistor
19. C. Converts into mechanical
20. C. I & III only
21. B. Power factor
22. C. 10 ohm resistor
23. B. 1/120
24. C. Ampacity
25. C. Reaming the ends
26. B. 1000
27. C. Grounded 380-2a
28. D. Conductivity
29. D. Hacksaw and file
30. D. Relay
31. D. Clamped perpendicular
32. B. Shorted
33. A. Volt
34. C. Wet location
35. A. May transmit shock to user
36. A. Impedance
37. A. Rotometer
38. D. All of these
39. B. Voltmeter, ohmmeter, ammeter
40. C. Iron
41. B. AC or DC
42. A. Cartridge fuses
43. A. Hanging fixture
44. D. An approved box hanger
45. B. Ohm
46. C. Supplied by transformers and batteries
47. B. Rectifier
48. D. Three-way
49. D. Non-automatic
50. B. Parallel