Republic of the Philippines
PROFESSIONAL REGULATION COMMISSION
Manila

BOARD OF ELECTRICAL ENGINEERING

REGISTERED MASTER ELECTRICIAN Licensure Examination

PHILIPPINE ELECTRICAL CODE

INSTRUCTION: Select the correct answer for each of the following questions. Mark only one answer for each item by shading the box corresponding on the letter of your choice on the answer sheet provided. STRICTLY, NO ERASURES ALLOWED. Use pencil No. 1 only.

MULTIPLE CHOICES

1. A factor that would affect conductor ampacity is which of the following:
   a. The conductor length **b.** Voltage
   c. Temperature **d.** Motor size

2. A protective device used for limiting surge voltages by discharging surge current and that prevents continued flow of follow current while still remaining capable of repeating these functions is considered which of the following:
   a. Circuit breaker **b.** Fuse
   c. Disconnect switch **d. Surge arrestor**

3. Alternating current may be increased or reduced by using which of the following:
   a. By-pass switch **b. A transformer**
   c. Grounding conductor **d.** None of the above

4. **7.** Which of the following conductors has one or more layers of non-conducting materials that are not considered insulation:
   a. Covered **b.** Wrapped
   c. Rubber-coated **d.** All of the above

5. Conductor sizes are listed as which of the following:
   a. stranded conductor are expressed in area in sq mm while solid conductor are expressed in Diameter in mm
   b. Area
   c. AWG or circular mils
   d. AWG or millimeters

6. The primary purpose for using thermal overload relays for polyphase induction motors is to protect against which of the following:
   a. Fire **b.** Short circuits between phases
   c. Low voltage **d. Sustained overload**

7. A multi-wire branch circuit protected by fuses may supply which of the following:
   a. Only one load **b.** Only line-to-neutral loads
   c. Both of the above **d.** Neither of the above

8. Excluding those in the mains, the maximum number of overcurrent devices permitted in a single lighting and appliance panelboard is which of the following:
   a. 12 **b.** 24 **c.** 36 **d. 42**

9. Rigid nonmetallic conduit shall be permitted to have a total number of quarter bends in one run that does not exceed which of the following:
   a. 2 **b.** 3 **c. 4** **d.** 1

10. Which of the following shall be used to connect the grounding terminal of a grounding receptacle to a grounded box:
    a. A junction box **b.** A main bonding jumper
    c. A neutral conductor **d. An equipment bonding jumper**

11. **20.** The residual voltage of a capacitor must be reduced to which of the following voltage levels within one minute after the capacitor is disconnected from the power source:
    a. 50 volts or less **b.** 60 volts or less
    c. 120 volts or less **d.** Zero volts

12. If an installation has two 2-wire branch circuits then the service disconnecting means must be rated at not less than which of the following:
    a. 15 amps **b. 30 amps**
    c. 50 volts **d.** 110 volts

13. The ampacity of a conductor must be derated where the ambient temperature exceeds which of the following:
    a. 30 degrees C **b.** 32 degrees C
    c. 26 degrees C **d.** 20 degrees C

14. **28.** The type of switch required in each location to independently control a light fixture from two different locations is which of the following:
    a. Single pole, double throw **b.** Double pole, single throw
    c. Double pole, double throw **d.** Three-way single throw

15. Which of the following means is not used to fasten equipment to concrete:
    a. Lead shield **b. Steel bushing**
    c. Expansion bolts **d.** All of the above

16. A lamp that is 1000 watt, 120-volt will use the same amount of energy as a 14.4 ohm resistor at which of the following:
    a. 1200 watts **b.** 240 volts
    c. 144 volts **d. 120 volts**

17. In electrical construction, mica is most commonly used for which of the following:
    a. In switchboard panels **b. Communicator bus separators**
    c. Conductor insulators **d.** None of the above

18. If an enclosure is supported by a suspended ceiling system, then it shall be fastened to the framing by which of the following methods:
    a. Screws **b.** Rivets
    c. Bolts **d. All of the above**

19. Which of the following shall not be used in wet or damp locations:
    a. Open wiring **b. AC armored cable**
    c. Both of the above **d.** None of the above

20. Removing which of the following from conduit threads will ensure electrical continuity between conductors:
    a. Enamel **b.** Copper ends
    c. Rubber coating **d.** All of the above

21. **57.** A panel may have from 2 to 6 disconnecting means, but which of the disconnect means listed below is permitted to be remote from the others:
    a. Elevator **b.** Hoist
    c. Water pump for fire protection **d.** Nurse Call system

22. A freestanding office partition is permitted a maximum of how many 15 amp receptacles:
    a. 15 **b. 13** **c.** 12 **d.** 10

23. If a transformer vault is not protected by an automatic sprinkler system, then it must have a minimum fire resistance and structural strength of which of the following periods of time:
    a. 2 hours **b. 3 hours**
    c. 4 hours **d.** 6 hours

24. **61.** Switches, panelboards, wireways and transformers are allowed to be mounted above or below one another if which of the following conditions exists:
    a. They don't extend more than 10 mm beyond the front of the equipment.
    b. No piece of equipment is rated over 300 volts.
    c. They are flush along the front edge.
    d. None of the above

25. Aluminum enclosures and fittings are allowed to be used with which of the following:
    a. PVC conduit **b.** Electrical nonmetallic tubing
    c. Ferrous conduits **d. Steel electrical metal tubing**

26. Any 125 volt single-phase receptacles must be protected by ground fault circuit interrupters if they are within which of the following distances from the inside wall of a hot tub:
    a. 15 **b.** 13
    c. 12 **d. None of the above**

27. The neutral conductor in an electrical installation has which of the following qualities:
    a. It carries the unbalanced current.

b. It is the white conductor.
c. It does not apply ampacity correction.
d. All of the above

28. Receptacles must be of the grounding type if they are installed on which of the following:
a. 40 amp circuit
b. 30 amp branch circuit
c. 15 and 20 amp branch circuits
d. None of the above

29. In a corroded electrical connection, high spot temperature is caused by which of the following:
a. Increase in the voltage drop across the connection
b. Absence of surge protection
c. Decrease in the resistance of the connection
d. Ampacity that is too high for the connection

30. A switch is used for which of the following purposes:
a. Making a connection
b. Breaking a connection
c. Changing a connection
d. All of the above

31. Which of the following has the highest electrical resistance:
a. Water
b. Paper
c. Iron
d. Brass

32. Which of the following is the term for the ability of a material to allow the flow of electrons:
a. Ampacity
b. Resistance
c. Current
d. Conductance

33. Although silver, gold, and copper are all excellent conductors of electricity, copper is the most commonly used for which of the following reasons:
a. Strength
b. Higher melting point
c. Its ability to bond with a wider variety of materials
d. Lower cost

34. The term “open circuit” describes which of the following conditions:
a. The circuit is carrying voltage.
b. All parts of the circuit are not in contact.
c. There is no disconnecting means applied.
d. The circuit is experiencing voltage variations or drops.

35. A machinery limit switch is used for which of the following purposes:
a. To close the circuit when the current exceeds a preset limit
b. To open the circuit when temperature reaches a preset limit
c. To open the circuit when travel reaches a preset limit
d. To limit voltage drops

36. Conduit installations should not have which of the following:
a. Conduits that run uphill
b. Low points between successive outlets

c. A high point at an outlet
d. All of the above

37. A fuse under normal load would most likely become hot because of which of the following conditions:
a. The rating of the fuse is too low for the application.
b. Insufficient pressure at the fuse clips
c. A surge in power has occurred.
d. A lightning strike

38. One receptacle on a single branch circuit must have which of the following ratings:
a. 15 amps
b. 100 percent of the branch circuit rating
c. 110 volts
d. None of the above

39. A service disconnect means shall be installed in which of the following locations:
a. At the nearest point of entrance to a structure
b. Within 3 feet of the electrical panel
c. Inside or outside of a building
d. All of the above

40. Wooden plugs shall not be used to mount electrical equipment to which of the following types of material:
a. Masonry **b.** Plaster
c. Concrete **d. All of the above**

41. All wiring must be installed so that when complete the installation:
a. Is as efficient as possible
b. Is free of shorts and unintentional grounds
c. Allows for future expansion of the electrical system or components
d. All of the above

42. A conductor must be sized in accordance with which of the following requirements:
a. No less than 100 percent of the noncontinuous load
b. No less than 100 percent of the noncontinuous load, plus 125 percent of the continuous load
c. No greater than 125 percent of the continuous load
d. No less than 125 percent of the continuous load

43. A device that establishes an electrical connection to the earth is which of the following:
a. A lightning rod **b.** A bonding jumper
c. Grounded conductor **d. Grounding electrode**

44. A premises wiring system with power derived from a source of electric energy or equipment other than a service is considered to be which of the following:
a. Low-voltage system **b.** Solar or photovoltaic system

c. A separately derived system **d.** Closed-loop system

45. Which of the following colors of insulation or markings are not allowed to identify hot phase conductors:
    a. Black and red for 120/208 volt systems
    b. Yellow or orange for 277/480 volt systems
    c. White or gray
    d. All of the above

46. In a high-leg delta arrangement on a switchboard with bus bars, phase B would have which of the following:
    a. The highest voltage to ground
    b. The lowest voltage to ground
    c. The highest ampacity
    d. The lowest ampacity

47. **A** 200 amp service entrance equipment located indoors at a single-family dwelling must meet which of the following requirements:
    a. Have 24 branch circuits
    b. Use bolt-in fuses or circuit breakers
    c. Be illuminated
    d. None of the above

48. The demand factor for three commercial kitchen loads is which of the following:
    a. 90 percent
    b. 110 percent of the maximum ampacity
    c. Based on the ambient temperature
    d. None of the above

49. The total resistance in resistors connected in series is which of the following:
    a. Equal to the largest resistor in the series
    b. Equal to the sum of all of the individual resistance values
    c. The sum of all of the resistance values divided by the number of resistors in the series
    d. None of the above

50. A fixture with a combustible material shade shall not be installed in locations where temperatures exceed which of the following:
    a. 30 degrees C **b. 90 degrees C**
    c. 10 degrees C **d.** 25 degrees C