

**Republic of the Philippines**  
**PROFESSIONAL REGULATION COMMISSION**  
**Manila**

**BOARD OF ELECTRICAL ENGINEERING**

**REGISTERED MASTER ELECTRICIAN Licensure Examination**

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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 reliable conductor used to ensure the required conductivity between metal parts which are to be electrically connected is called which of the following:  

<b>a. Connector</b>	<b>b. Bonding jumper</b>
<b>c. Insulated conductor</b>	<b>d. Branch connector</b>
  
2. The current measured in amperes which a conductor can carry continuously under standard conditions without exceeding the conductor's maximum temperature rating is called:  

<b>a. Maximum current</b>	<b>b. Conductor current</b>
<b>c. Ampacity</b>	<b>d. Convection amps</b>
  
3. Limiting the total quantity of circuits in any given enclosure does which of the following:  

<b>a. Minimizes the effects of a short circuit in one circuit</b>
<b>b. Eliminates over-expansion in the future</b>
<b>c. Provides easy access to qualified workers</b>
<b>d. Provides a standard for the Authority Having Jurisdiction</b>
  
4. Items in the Code that identify actions that are specifically required or prohibited are considered which of the following:  

<b>a. Permissive rules</b>
<b>b. Mandatory rules</b>
<b>c. Guidelines for examination of installation</b>
<b>d. Permitted use</b>
  
5. Two or more ungrounded conductors with equal voltage running between them and a grounded conductor is considered which of the following:  

<b>a. Control circuit</b>	<b>b. Feeder</b>
<b>c. Branch circuit</b>	<b>d. Loop feed</b>

6. A device that de-energizes a circuit or a portion of a circuit within an established time frame when a current to ground exceeds the values determined for a Class A device is which of the following:
- a. Circuit breaker
  - b. Fuse
  - c. **Ground-fault interrupter**
  - d. Voltage regulator switch
7. A device that protects a motor against overheating and is an integral part of that motor is considered which of the following:
- a. Integral fuse
  - b. Ground-fault protector
  - c. **Thermal protector**
  - d. Shunt trip switch
8. An assembly of two or more single-pole fuses is which of the following:
- a. **Multiple fuse**
  - b. Multi-tap connector
  - c. Switching device
  - d. Panel-board
9. A continuous load is one in which one of the following types of current is expected to run non-stop for three hours or more:
- a. Continuous
  - b. Normal
  - c. **Maximum**
  - d. Limited
10. A branch circuit where two or more ungrounded conductors, with a potential difference between them, and a grounded conductor with equal potential difference between it and each ungrounded conductor is referred to as which of the following:
- a. Continuous loop feed system
  - b. **Multi-wire**
  - c. General purpose circuit
  - d. Regulated branch circuit
11. The purpose of the Philippine Electrical Code is to provide which of the following:
- a. A standard by which professionals may design installations
  - b. Efficient electrical installations
  - c. Cost-effective installations
  - d. **Safe electrical installations**
12. Circuit voltage is best defined as which of the following:
- a. Average potential between two conductors
  - b. Maximum potential difference between two conductors
  - c. **Effective difference of potential between two conductors**
  - d. Total amperes produced between two conductors
13. The connection device installed at an outlet to allow for two or more contact devices at the same yoke is which of the following:
- a. Duplex outlet
  - b. **Multiple receptacle**
  - c. Slice connector
  - d. None of the above
14. A large single panel assembly of panels containing mounted switches, overcurrent and protection devices and buses is considered which of the following:
- a. Panelboard
  - b. **Switchboard**
  - c. Automatic transfer switch
  - d. Service panel
15. A switching device utilized to isolate a circuit or equipment from an established power source is determined to be which of the following:

- a. Interrupter switch
  - b. Circuit breaker
  - c. Cutout
  - d. **Disconnection Switch**
16. A compartment to which one or more air ducts are connected to form part of an air distribution system is called which of the following:
- a. **Plenum chamber**
  - b. Ventilation duct
  - c. Air-flow box
  - d. Circulation cavity
17. Which of the following installations are covered by the Electrical Code:
- a. Power wiring for a large industrial machine
  - b. Computer wiring in an office building
  - c. Telephone cable in a flexible duct
  - d. **All the above**
18. Chose the answer below that is not an approved means of mounting electrical equipment to a masonry wall:
- a. **Using screws that are driven into wooden plugs in the wall**
  - b. Using bolts that are supported by metal plates on the back side
  - c. Using molly bolts through holes drilled completely through the wall
  - d. Using lag bolts screwed into lead masonry anchors
19. The clear work space on one side of equipment with exposed live parts, which operates at 600 volts nominal or less to ground, and which will require examination, adjustment or maintenance shall be at least which of the following:
- a. 600 mm wide
  - b. 1000 mm wide
  - c. **760 mm wide**
  - d. 2 times the width of the panel
20. The floor of a vault for electrical equipment with either a vacant space or additional floors below it shall have a minimum fire resistance of which of the following:
- a. 1 hour
  - b. **3 hours**
  - c. 6 hours
  - d. 12 hours
21. Circuits with 100 amperes or less, or with 2.0 sq mm to 50 sq mm conductors, can only be used for conductors rated at which of the following:
- a. 55 degrees C (131 degrees F)
  - b. **60 degrees C (140 degrees F)**
  - c. 75 degrees C (167 degrees F)
  - d. 80 degrees C (176 degrees F)
22. Voltage to ground of 0-150, with exposed live parts on one side of the work space and no live or grounded parts on the other side, must have a minimum clear distance of which of the following:
- a. 900 mm
  - b. 1500 mm
  - c. **1000 mm**
  - d. 1900 mm
23. The work space for equipment must allow \_\_\_\_\_ opening of any equipment doors or hinged panels.
- a. **90-degree**
  - b. 60-degree
  - c. 180-degree
  - d. 45-degree
24. The minimum clear headroom for work space around service equipment, switchboards, panelboards, or motor control centers must be which of the following:
- a. 2900 mm
  - b. 2500 mm
  - c. **2000 mm**
  - d. 1900 mm

25. High-voltage conductor tunnel installations require metal conduit or metal raceways and which of the following:
- a. Type MC cable**
  - b. Aluminum conductors
  - c. Copper-clad aluminum conductors
  - d. EMT cable
26. Unused raceway or cable openings in boxes and conduits must be closed so that the protection provided is which of the following:
- a. At least equal to the protection provided by the wall of the box or conduit**
  - b. Equal to the depth of the wall framing
  - c. Greater than the protection provided by the box or conduit alone
  - d. Adequate to act as a fire stop
27. The fire rating for walls, floors and doors containing equipment over 600 volts nominal shall be a minimum of which of the following:
- a. 1 hour
  - b. 2 hours
  - c. 3 hours**
  - d. 6 hours
28. Often, equipment and terminations are labeled with which of the following:
- a. The initials of the installer
  - b. Service tag
  - c. Tightening torque**
  - d. Wiring designations
29. Ventilation system electrical controls shall be installed in manner in which the airflow can be managed in which of the following ways:
- a. Vented to the outside
  - b. Reversed**
  - c. Limited upon demand
  - d. Prevented
30. In order to be electrically secure prior to soldering, splices must be which of the following:
- a. Sanded
  - b. Joined mechanically**
  - c. Free of rough edges
  - d. Coated with flux
31. Unless otherwise specified, live parts for electrical equipment operating at \_\_\_\_\_ volts or more shall be guarded.
- a. 50**
  - b. 100
  - c. 150
  - d. 200
32. Voltage to ground of 150-600 with exposed live parts on both sides of the working space must have a clear distance not less than which of the following:
- a. 2900 mm
  - b. 2500 mm
  - c. 2000 mm**
  - d. 2800 mm
33. Concrete and brick walls are considered which of the following:
- a. Dry locations
  - b. Insulators
  - c. Wet locations
  - d. Grounded**
34. If a conductor material is not specified in a particular Article or Section, the material shall be assumed to be which of the following:
- a. Copper**
  - b. Aluminum
  - c. Copper-clad aluminum
  - d. No assumptions shall be made
35. A high-leg conductor in a three-phase, 4-wire delta secondary shall be which of the following colors:

- a. White                      b. **Orange**                      c. Green                      d. Black

36. Conductor sizes are listed in which of the following:  
a. Circular mils                      b. Diameter or thickness  
c. AWG or millimeters                      d. **AWG or circular mils**
37. A single-family dwelling has three bathrooms each with the following: a lighting fixture, a fan, and one receptacle outlet. In one of the bathrooms, the lighting fixture, fan, and receptacle outlet are installed on a dedicated 20 ampere circuit. For this dwelling, the minimum number of 20 ampere circuits required to serve the bathrooms is which of the following:  
a. **Two**                      b. Three                      c. Four                      d. Five
38. One building is supplied power from another building on a non-industrial property with a single owner. The underground feeder is protected by a 100 ampere circuit breaker in the first building. Qualified persons are not always available to service the installation; therefore, the disconnecting means for the second building must be which of the following:  
a. Located inside the second building, and is not required to be located near the point where the conductors enter the building  
b. **At the closest practical point where the conductors enter the building, and may be located either inside or outside of the building**  
c. The circuit breaker in the first building  
d. Located on the outside of the building, near the point where the conductors enter the building
39. In a single-phase, 3-wire electrical system, the middle conductor must be which of the following:  
a. Hot                      b. **Grounded**  
c. Ungrounded                      d. Out-of-phase
40. In a 3-wire, single phase electrical system, the nominal voltage must be 120 volts between the ungrounded conductor and the neutral, and the volts between the two ungrounded conductors must be which of the following:  
a. 120 volts                      b. **240 volts**                      c. 288 volts                      d. 600 volts
41. In a single-phase, 3-wire electrical system, the hot conductors are referred to as which of the following:  
a. Neutral conductors                      b. Grounded conductors  
c. Nominal conductors                      d. **Ungrounded conductors**
42. The current flowing through the neutral of a 120/240 volt 3-wire, single-phase electrical system is calculated as which of the following?  
a. **The difference between the current of the two ungrounded conductors**  
b. The sum of the current flowing on the two ungrounded conductors  
c. The current of the first ungrounded conductor divided by the current of the second ungrounded conductor  
d. 240 volts divided by 120 volts
43. The exposed non-current carrying metal parts of a hand-held cord-and-plug drill must be grounded in which of the following scenarios:

- a. The power source is greater than 150 volts to ground
  - b. The drill is for residential use
  - c. The drill is being used in a hazardous location
  - d. **All of the above**
44. If a rod electrode is required for grounding purposes and a layer of rock restricts the rod from being driven into the ground, which of the following alternate methods of installation shall be used:
- a. Connect to the nearest steel section of the building
  - b. Connect to the metal water main
  - c. **Bury the rod in a trench which is a minimum of 1500 mm deep**
  - d. Bury the rod in steel conduit with a minimum of 150 mm of cover
45. Terminals connected to a grounded conductor shall be identified in which of the following ways:
- a. **Identification shall be substantially white in color**
  - b. Connection must use a terminal screw that is not readily removable and is green in color
  - c. Identification must include an engraved metal tag
  - d. None of the above
46. The receptacle example listed below which may be connected to a small appliance branch circuit is which of the following:
- a. Garage ceiling receptacle for an automatic garage door opener
  - b. Any receptacle which is within 3600 mm of the kitchen
  - c. **An electric clock plugged in at the dining room**
  - d. An electric hair dryer
47. The service disconnection means in a building shall not have more than how many switches or circuit breakers:
- a. **6**
  - b. 8
  - c. 10
  - d. 20
48. The total number of underground conductors for an outside lighting circuit on a single common neutral conductor is which of the following:
- a. 6
  - b. 8
  - c. **There is no limit specified**
  - d. Underground conductors specified in this example are prohibited
49. When protected solely by enamel, which of the following shall not be installed in outdoor or wet locations:
- a. Ferrous raceways
  - b. Fittings
  - c. Boxes
  - d. **All of the above**
50. The total number of quarter bends allowed in a single run of rigid nonmetallic conduit shall not exceed which of the following:
- a. 1
  - b. 2
  - c. **4**
  - d. 8