

INSTITUTE OF INTEGRATED ELECTRICAL ENGINEERS OF THE PHILIPPINES
Albay-Legazpi Chapter
 Legazpi City

SEPTEMBER 2009 PEC 2009 REFRESHER I

Multiple Choice. *Select the correct answer for each of the following questions. Mark only one answer for each item by shading the box corresponding to the letter of your choice on the answer sheet provided.*

1. The demand load for household electric ranges, wall-mounted ovens, counter-mounted cooking units, and other household cooking appliances individually rated in excess of _____ shall be permitted to be computed in accordance with Table 2.20.2.10.
 a.) 1 kW
 b.) 1 ¼ kW
 c.) 1 ½ kW
d.) 1 ¾ kW
2. A reliable conductor used to ensure the required conductivity between metal parts which are to be electrically connected is called which of the following:
 a.) Connector
b.) Bonding jumper
 c.) Insulated conductor
 d.) Branch connector
3. 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
4. If an outlet is in an under floor raceway and is disconnected, then which of the following actions must be taken on the circuit conductors supplying the outlet:
 a.) A blank cover plate installed on the outlet box
b.) Be removed from the raceway
 c.) Be spliced and reconnected
 d.) None of the above
5. Computation of recessed fluorescent lighting fixture loads shall be based on which of the following:
 a.) The total ampere rating of the fixture
 b.) The total wattage of the lighting system
c.) The total VA of the equipment and lamps
 d.) None of the above
6. An automatic overcurrent device that protects service conductors supplying a specific load, such as an electric water heater, shall be permitted to be locked or sealed in order to prevent which of the following:
 a.) Corrosion
b.) Tampering
 c.) Derating of the conductors
 d.) Tripping
7. Conductors for festoon lighting shall be supported by messenger wire if the lighting run exceeds which of the following:
 a.) 70 pounds
b.) 40 feet
 c.) 100 volts
 d.) None of the above
8. A service mast used to support service drop conductors shall be supported by which of the following:
 a.) Glass or porcelain
b.) Braces or guys
 c.) Studs or hangers
 d.) None of the above
9. Which of the following entrances does not require a switched outlet:
 a.) An attic
b.) A drive through garage door
 c.) A walk through porch door
 d.) All of these require a switched outlet
10. Service entrance equipment includes which of the following:
 I. Panelboards II. Meter enclosures III. Service disconnecting means
 a.) I only
 b.) II & III only
c.) I & III only
 d.) II only
11. In the computation of branch-circuit, feeder and service loads, what fraction of an ampere shall be permitted to be dropped?
 a.) 0.4
 b.) 0.6
c.) 0.5 or larger
 d.) 0.5 or smaller
12. Service entrance conductors exceeding 600 V, nominal, shall not be smaller than _____ unless in multiconductor cable. Multiconductor cable shall not be smaller than _____.
 a.) 8.0 mm², 5.5 mm²
 b.) 22 mm², 14 mm²
 c.) 14 mm², 5.5 mm²
d.) 14 mm², 8.0 mm²
13. _____ is a device that, when interrupting ratings in its current limiting range, will reduce the current flowing in the faulted circuit to a magnitude substantially less than that obtainable in the same circuit if the device were replaced with a solid conductor having comparable impedance.
 a.) current-limiting over-voltage protective device
 b.) voltage-limiting overcurrent device
c.) current-limiting overcurrent protective device
 d.) ground fault circuit interrupter
14. Which of the following electrodes shall not be permitted?
 I. Rod and pipe electrodes II. Plate electrodes III. Aluminum electrodes
 a.) I and II
 b.) II and III
 c.) I and III
d.) III only
15. The rating of a silicon carbide-type surge arrester shall be not less than _____ percent of the maximum continuous phase-to-ground voltage available at the point of application.
a.) 125
 b.) 115
 c.) 100
 d.) 80
16. Outlets for heavy duty lamp holders shall be computed at a minimum of _____.
 a.) 1200 VA
 c.) 1500 VA

- b.) 600 VA d.) 180 VA
17. For an existing dwelling unit presently being served by an existing 115/230, volt-3-wire service, it shall be permissible to compute load calculations using the First 8 kVA of load at 100 % and the remainder of the load at
 a.) 35% c.) 50%
 b.) 40% d.) 60%
18. The conductor between the surge arrester and the line and the surge arrester and the grounding connection shall not be smaller than ____ copper or aluminum.
 a.) 8.0 mm² c.) 14 mm²
 b.) 22 mm² d.) 5.5 mm²
19. For devices rated 800 ampere or less, the next higher standard overcurrent device rating (above the ampacity of the conductors being protected) shall be permitted to be used, provided the following condition/s is/are met:
 I. The conductors being protected are not part of multioutlet branch circuit supplying receptacles for cord- and plug-connected portable loads.
 II. The ampacity of the conductors does not correspond with the standard ampere rating of a fuse or a circuit breaker without overload trip adjustment above its rating (but shall not be permitted to have other trip or rating adjustment).
 III. The next higher standard rating selected does not exceed 800 amperes.
 a.) III only c.) I and III
 b.) II and III d.) all of the above
20. Circuit breakers used as switches in 230-volt and 277-volt fluorescent lighting circuits shall be listed and shall be marked
 a.) SWB c.) CBS
 b.) SWD d.) CB
21. Conductors supplying only limited loads of a single branch circuit – such as polyphase power, controlled water heaters, and similar loads – shall not be smaller than ____ copper or ____ aluminum or copper-clad aluminum.
 a.) 3.5 mm², 5.5 mm² c.) 5.5 mm², 8.0 mm²
 b.) 8.0 mm², 14 mm² d.) 2.0 mm², 3.5 mm²
22. What is the permissible demand factor for computing the feeder or service load of a nine (9) units/doors apartment?
 a.) 44% c.) 43%
 b.) 41% d.) 40%
23. What will be the minimum working space if you will be working on 440-volt equipment wherein there are an exposed live parts on one side and grounded parts on the other side? Also, Concrete, brick or tile walls shall be considered as grounded.
 a.) 760 mm c.) 1100 mm
 b.) 1000 mm d.) 1300 mm
24. Electrical plans and drawings shall be drawn on sheets of the following standard sizes:
 I. 760 mm x 1000 mm II. 600 mm x 900 mm III. 500 mm x 760 mm
 a.) I and II only c.) II and III only
 b.) I and III only d.) I, II and III
25. Where the voltage exceeds 600 volts, nominal, and permanent conspicuous warning signs shall be provided, reading as follows:
 a.) DANGER – HIGH VOLTAGE c.) HIGH VOLTAGE – KEEP OUT
 b.) DANGER – KEEP OUT d.) DANGER – HIGH VOLTAGE – KEEP OUT
26. Three squirrel cage induction motors, 25-hp, 20-hp and 10-hp, all rated at 460 volts, three phase, 60 Hz are to be served by a feeder circuit. Ambient temperature does not exceed 30 °C. Determine the size of the feeder conductor.
 a.) 22 mm² TW c.) 14 mm² THW
 b.) 22 mm² THHN d.) 8.0 mm² THWN
27. In PEC 2000, Article 2.10 is
 a.) Branch Circuits c.) Conductors for General Wiring
 b.) Protection Against Lightning d.) Grounding
28. It shall be permissible to apply a demand factor of ____ to the name plate rating load of four or more appliances fastened in place, other than electric ranges, clothes dryers, space-heating equipment, or air-conditioning equipment, that are served by the same feeder or service in a one-family, two-family or multifamily dwelling.
 a.) 40% c.) 80%
 b.) 75% d.) 60%
29. A load of not less than ____ shall be included for each 2-wire laundry branch circuits installed.
 a.) 1200 VA c.) 1500 VA
 b.) 5000 VA d.) 2500 VA
30. Service conductors installed as open conductors or multiconductor cable without an overall outer jacket shall have a clearance of not less than ____ from windows that are designed to be opened, doors, porches, balconies, ladders, stairs, fire escapes, or similar locations.
 a.) 1000 mm c.) 760 mm
 b.) 1600 mm d.) 2100 mm
31. Where a main bonding jumper is a screw only, the screw shall be identified with a ____ finish that shall be visible with the screw installed.
 a.) white c.) green
 b.) gray d.) black
32. Which of the following is/are grounding electrode conductor material?
 I. copper II. aluminum III. copper-clad aluminum
 a.) I only b.) I & II only c.) II & III only d.) I, II and III

33. For 3-wire dc or single-phase ac; 4-wire, 3-phase; 3-wire 2-phase; or 5-wire, 2-phase systems, a further demand factor of 70 percent shall be permitted for that portion of the unbalanced load in excess of ____.
a.) 100 A c.) 300 A
b.) 200 A d.) 400 A
34. The load for household electric clothes dryer in a dwelling unit(s) shall be ____ or the nameplate rating.
a.) 1500 VA **c.) 5000 VA**
b.) 2500 VA d.) 1200 VA
35. An insulated grounded conductor larger than ____ shall be identified either by continuous white or natural gray outer finish or by three continuous white stripes on other than green insulation along its entire length or at the time of installation by a distinctive white marking at its termination.
a.) 8.0 mm² c.) 22 mm²
b.) 14 mm² d.) 30 mm²
36. All 125-volt and/or 250-volt single-phase, 15- and 20- ampere receptacles installed in the location specified below shall have ground-fault-circuit-interrupter protection for personnel:
a.) Bathrooms c.) a and b
b.) Rooftops d.) none of the above
37. Appliance receptacle outlets installed in a dwelling unit for specific appliances, such as laundry equipment, shall be installed within ____ of the intended location of the appliance.
a.) 760 mm **c.) 1600 mm**
b.) 1200 mm d.) 1800 mm
38. Who will accomplish Box No. 5 of the Application for Electrical Permit Form?
a.) PEE who signed and sealed plans & specification c.) Person in charge of installation
b.) Electrical Contractor **d.) Owner/Authorized Representative**
39. What is the computed load for two 4-kW mounted ovens and one 8-kw electric range?
a.) 12 kVA c.) 16 kVA
b.) 8.8 kVA d.) 12.8 kVA
40. Connector fittings shall be used on all lightning conductor at "end-to-end" "tee" or "Y" splices. They shall be attached so as to withstand a pull test of ____.
a.) 890 N c.) 89 N
b.) 980 N d.) 98 N
41. A laundry shop has five 5000 VA electric clothes dryer. What will be the total computed load?
a.) 25,000 VA c.) 17,500 VA
b.) 20,000 VA d.) 16,450 VA
42. Where buildings exceed three stories or 15 metres in height, overhead lines shall be arranged, where practicable, so that a clear space (or zone) at least ____ wide will be left either adjacent to the buildings or beginning not over ____ from them to facilitate the raising of ladders when necessary for firefighting.
a.) 1600 mm, 2500 mm **c.) 1900 mm, 2500 mm**
b.) 1900 mm, 2100 mm d.) 1600 mm, 2100 mm
43. Which of the following circuits shall not be grounded?
I. Cranes II. Health Care Facilities III. Electrolytic Cells
a.) I only c.) III only
b.) I and III only **d.) I, II and III**
44. Where the grounding electrode conductor is connected to made electrodes as permitted in section 2.50.3.1(c), that portion of the conductor that is the sole connection to the grounding electrode shall not be required to be larger than ____ copper wire.
a.) 14 mm² **c.) 22 mm²**
b.) 8.0 mm² d.) 5.5 mm²
45. What is the size of copper grounding electrode conductors for service entrance having two 80 mm² THW copper wire in parallel?
a.) 8.0 mm² c.) 22 mm² Table 2.50.3.17
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46. A certain building is being protected by a 1000 AT circuit breaker. What will be the minimum size of equipment grounding conductor for grounding the raceway?
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b.) 50 mm² d.) 80 mm²
47. Sign and outline lighting outlets shall be computed at a minimum of ____ for each required branch circuit.
a.) 600 VA c.) 180 VA
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48. For show window lighting, a load of not less than ____ shall be included for each linear metre of show window, measured horizontally along its base.
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49. Overhead spans of open conductors and open multiconductor cables of not over 600 volts above finished grade, sidewalks, or from any platform or projection from which they might be reached where the voltage does not exceed 150 volts to ground and accessible to pedestrians only.
a.) 3100 mm c.) 4600 mm
b.) 3700 mm d.) 5500 mm
50. About every 5 years new edition of PEC are issued, incorporating changes approved in the interim period. These changes are considered in the PEC by the use of
a.) Italics c.) Parenthesis
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Table 2.50.3.17

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Table 2.50.6.13

b.) 50 mm² d.) 80 mm²
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