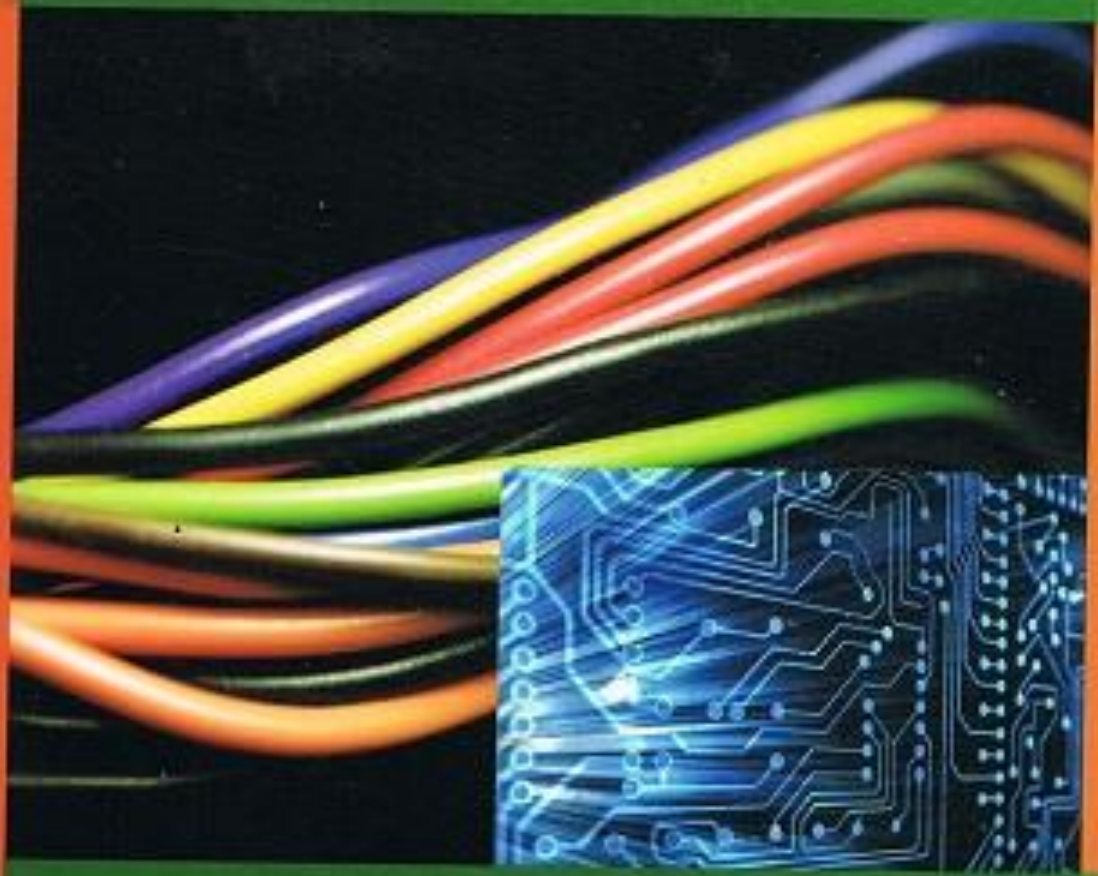
VALENZONA



MASTER ELECTRICIAN REVIEWER

2. _____ means that equipment is not readily accessible to persons unless special means for access are used.
   (A) Isolated
   B. Guarded
   C. Elevated
   D. Concealed

3. A piece of electrical equipment that is designed to operated at alternate intervals of (1) load and no load; or (2) load and rest; or (3) load, no load, and rest is called _____ duty.
   A. short time
   (B) intermittent
   C. periodic
   D. varying

4. An electrical outlet constructed so that moisture will not enter the enclosure is classified as being _____
   A. waterproof
   (C) watertight
   B. rainproof
   D. weatherproof

5. The _____ is the current in amperes a conductor can carry continuously under the conditions of use without exceeding its temperature rating.
   A. load
   C. connected load
   B. demand
   (D) ampacity

6. Encased with a material or composition or thickness that is not recognized by the code as electrical insulation is defined as a covered
   A. cable
   C. wire
   B. conduit
   (D) conductor

7. Covered, shielded, fenced or enclosed by means of suitable covers, casings, barriers, rails, screens, mats or platforms is the definition of
   (A) guarded
   C. isolated
   B. protected
   D. enclosed

8. The overload service conductors from the last pole or other aerial support to and including the splices, if any, connecting to the service entrance conductors at the building or other structure is the
   A. service load
   (C) service drop
   B. service lateral
   D. service supply

Answers: 1.(A), 2.(A), 3.(B), 4.(C), 5.(D), 6.(D), 7.(A), 8.(C)

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 a mechanical function

11. Without live parts exposed to a person on the operating side of the equipment is called
(A) dead front
B. isolated
C. externally operable
D. interrupted

12. A conductor encased within material of composition or thickness not recognized by the code is a _____ conductor.
A. coated
B. semi
(C) covered
D. fiber optic

13. _____ 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. Weather-sealed

14. The definition of automatic of self-acting, operating by its own mechanism when actuated by some impersonal influence such as
A. a change in current strength
B. temperature
C. mechanical configuration
(D) all of these

15. Only wiring methods recognized as _____ are included in the code.
A. approved
(B) suitable
C. listed
D. identified

16. An accessible conductor is
(A) not permanently enclosed by a structure
B. admitting close approach
C. not guarded by locked doors, elevation or other methods
D. being reached without use of a ladder

Answers: 9.(B), 10.(D), 11.(A), 12.(C), 13.(A), 14.(D), 15.(B), 16.(A)

B. bare

19. The definition of a dry location
A. not normally subjected to dam
B. not normally subjected to wetn
C. may be temporarily subjected t
(D) all of the above

20. _____ duty is a type of service may have wide variations.
A. Continuous
B. Periodic

21. A requirement of service that de load and no load; or (2) load and _____ duty.
A. variable
(B) intermittent

22. Continuous load is _____.
(A) a load where the maximum cu or more
B. a load where the maximum cu more
C. intermittent operation in which
D. operation at a substantially co

23. Concealed is _____.
A. not readily visible
(B) made inaccessible by the struc
C. surrounded by walls
D. attached to the surface

24. _____ is a system or circuit cond
A. Grounding conductor
(B) Grounded conductor

Answers: 17.(C), 18.(C), 19.(D), 20.(D),

A. fail safe
B. emergency
C. alarm
D. service safe

27. An isolating which is one that is _____.
A. intended for cutting off an electrical circuit from its source of power
B. required to have a padlock
C. primarily used with an insulation transformer
D. used only for heavy motor overloads

28. In an electric mixer intended for traveling in and out of an open mixing tank shall be considered _____ utilization equipment.
A. fixed
B. stationary
C. portable
D. mobile

29. An assembly that has concealed parts from process of manufacturing and cannot be inspected before being installed at a building site without disassembly, damage, or destruction, is a definition of _____.
A. enclosed
B. guarded
C. closed construction
D. inaccessible

30. A/an _____ is a unitized segment of an industrial wiring system in which orderly shutdown is necessary to ensure safe operation.
A. emergency standby electrical system
B. selective load pick-up electrical system
C. critical branch electrical system
D. integrated electrical system

31. _____ is the distance measured along the enclosure wall from the axis of the centerline of the terminal to a line passing through the opening in the enclosure.
A. offset
B. Radius
C. center point
D. none of these

32. The definition of a bathroom is an area including a _____ with one or more of the following; a toilet, a tub, or a shower.
A. water heater
B. sliding glass door
C. spa
D. basin

Answers: 25.(B), 26.(B), 27.(A), 28.(C), 29.(C), 30.(D), 31.(A), 32.(B)

A. relay
B. controller
C. in
D. g

GENERAL REQUIREMENTS

35. Electrical plans and drawings shal
standard sizes, except
A. 760mm × 1000mm
B. 600mm × 900mm
C. 76
D. 5

36. Connection by means of wine bi
upturned lugs or equivalent shall
conductors.
A. 6.0mm²
B. 6.5mm²
C. 5.
D. 5.

37. For floor/deck and riser/profile plans
A. 1:100
B. 1:50
C. 1:
D. 1:

38. Title block or nameplate of plans a
_____ mm high.
A. 25
B. 40
C. 50
D. 3

39. If potentials exceeding _____ volts
shall be displayed in conspicuous
energized equipment or circuit.
A. 300
B. 500
C. 5
D. 6

40. At least _____ entrance of sufficien
the working space about electrical e
A. 1
B. 2
C. 3
D. 4

Answers: 33.(B), 34.(C), 35.(C), 36.(C), 37.(

(A) 1
B. 2
C. 3
D. 4

43. In all cases where there are energized parts normally exposed on the front of switchboards, or motor control centers, the working space in front of such equipment shall not be less than _____ mm.
A. 250
B. 500
C. 750
(D) 1000

44. The minimum headroom of working spaces about service equipment, switchboard, panelboard, or motor control circuits shall be _____ mm.
A. 1200
B. 1600
(C) 1900
D. 2100

45. For circuits of 2.0mm^2 or 3.5mm conductors, the insulation resistance is
(A) 500000
B. 350000
C. 250000
D. 100000

46. A wall, screen or fence less than _____ mm in height shall not be considered as preventing access.
A. 2000
B. 2200
(C) 2500
D. 3000

47. Where rear access is required to work on deenergized parts on the back of enclosed equipment, a minimum working space of _____ horizontally shall be provided.
A. 500
(B) 800
C. 1000
D. 1200

48. Illumination shall be provided for all working spaces about service equipment, switchboards, etc. installed indoors except service equipments, or panelboards in dwelling units that do not exceed _____ amperes.
A. 100
B. 150
C. 175
(D) 200

Answers: *41.(B), 42.(A), 43.(D), 44.(C), 45.(A), 46.(C), 47.(B), 48.(D)*

B. 1.5
D.

51. In all cases the workspace about least a _____ degree opening of d
A. 45°
B. 60°
C.
D.

52. The entrances to all buildings, energized parts or exposed condu be _____.
A. cloud
B. elevated
C.
D.

53. The elevation of unguarded en nominal voltage between phases i
A. 2600mm
(B) 2800mm
C.
D.

54. Equipment is required to be in instructions.
A. listed or published
B. labeled or designed
C.
D.

55. All wiring shall be installed so th _____.
A. short circuits
B. grounds
C.
D.

56. Electrical equipments that depend surfaces shall be installed so t prevented by walls or by adjacent
A. refrigeration
B. natural circular of air and conve
(C) artificial cooling and circulation
D. air conditioning

Answers: *49.(C), 50.(A), 51.(C), 52.(D), 5*

contact with live parts or to bring _____ into contact with them.
A. dust
B. conducting objects
C. wires
D. contaminating parts

59. Openings in ventilated dry type _____ or similar opening in other equipments over 600V shall be designed so that foreign objects inserted through this openings will be deflected from energized parts.
A. lamp holders
B. motors
C. fuse holder
D. transformers

60. Entrance to rooms and other guarded locations containing live parts marked with conspicuous _____ forbidding unqualified persons to enter.
A. warning signs
B. blue
C. red
D. yellow

61. When normally enclosed live parts are exposed for inspection or servicing, a passageway in general open space shall be suitably _____.
A. shielded
B. guarded
C. covered
D. enclosed

62. Concrete, brick, or tile wall shall be considered as _____ as it applies to working space requirements.
A. insulated
B. covered
C. grounded
D. shielded

63. Working space shall be measured from the _____ of equipment or apparatus if such are enclosed.
A. front
B. opening
C. A or B
D. none of these

64. Warning sign for over 600 volts shall read
A. "Warning – High voltage"
B. "High – voltage – Keep out"
C. "Danger – High voltage – Keep out"
D. "Warning – Danger – High voltage"

Answers: 57.(D), 58.(B), 59.(D), 60.(A), 61.(B), 62.(D), 63.(C), 64.(C)

67. Entrances to rooms and other guard
shall be marked with _____ warnin
enter.
A. yellow
B. blue
C. co
D. or

BRANCH CIRCUITS

68. Circuits not exceeding 230 volts,
permitted to supply the following
I. Auxiliary equipment of electric
II. Cord and plug connected utili
III. listed electric discharge lumi
IV. listed incandescent luminaire
A. I only
B. I and II only
C. I a
D. I,

69. Circuits exceeding 230 volts, nomina
277 volts, nominal, to ground shall b
I. listed electric discharge lumina
II. listed incandescent luminaires
III. Auxiliary equipment of electr
IV. cord-and-plug connected util
A. I and II only
B. II and IV only
C. I,
D. I,

70. All 125-volt and/or 250-volts, sing
installed in the following locations ot
fault circuit-interrupter protection for
I. Bathrooms
II. Commercial and institutional
III. Rooftops
IV. Outdoor in public spaces
A. I and III only
B. I and IV only
C. I,
D. I,

Answers: 65.(A), 66.(C), 67.(C), 68.(B), 69.(D

72. It is a device intended to provide protection from the effects of arc faults by recognizing the characteristics unique to arcing and by functioning to de-energize the circuit when an arc fault is detected.
A. arc fault circuit breaker
B. arc fault arrester
(C) arc fault circuit interrupter
D. arc fault de-energizer

73. All 115-volt and/or 230-volt, single-phase, 15 – and 20 – ampere branch circuits supplying outlets installed in dwelling bedrooms shall be protected by a listed arc-fault circuit interrupter, combination type installed to provide protection of the branch circuit. This requirement shall become effective Jan 1, _____.
A. 2012
B. 2013
(C) 2014
D. 2015

74. For ranges of 8 ¾ kW or more rating, the minimum branch circuit rating shall be _____ amperes.
A. 30
(B) 40
C. 50
D. 60

75. Where a branch circuit supplies continuous load or any combination of continuous and noncontinuous load, the minimum branch circuit conductors size before the application of any adjustment or correction shall have an allowable ampacity not less than the noncontinuous load plus _____ percent of the continuous load.
A. 110
B. 115
C. 120
(D) 125

76. Where connected to a branch circuit having a rating in excess of _____ amperes, lampholders shall be of heavy-duty type
A. 15
(B) 20
C. 30
D. 40

77. A heavy duty lampholder shall not have a rating of not less than _____ watts if of the admedium type or not less than _____ watts if of any other type.
A. 600, 700
(B) 660, 750
C. 650, 700
D. 600, 750

Answers: 71.(C), 72.(C), 73.(C), 74.(B), 75.(D), 76.(B), 77.(B)

fastened in place or both are also su
(A) 50
B. 75
C. 80
D. 10

80. Branch circuit larger than _____ am
loads
A. 30
B. 40
(C) 50
D. 6

81. Appliance receptacle outlets insta
appliances such as laundry equipme
the intended location of the appliance
A. 1000
B. 1500
(C) 1
D. 2

82. In kitchens and dining areas of d
installed at each corner space wider
A. 250
B. 80
(C) 3
D. 3

83. Receptacles connected to circuits
type of current on the same pre
attachment plugs used on these cir
A. movable
B. replaceable
C. r
(D) i

84. Loads that are unlikely to be use sim
A. unsymmetrical load
3. incurrence load
(C) r
D. r

85. For a dwelling unit having a floor
shall be permitted to have single 2
total load shall not exceed _____ v
A. 3200
B. 3415
(C) 3
D. 4

Answers: 78.(D), 79.(A), 80.(C), 81.(C), 82

a continuous _____ color.
A. yellow
(B) green
C. gray
D. white

88. The unit lighting load for dwelling unit, expressed in volt-amperes per square meter shall be
A. 16
B. 28
(C) 24
D. 8

89. For show window lighting, a load of not less than _____ volt-amperes shall be included for each meter of show window measured horizontally along its base.
A. 500
B. 450
(C) 600
D. 400

90. In each dwelling unit, the unit feeder load shall be computed at _____ volt-amperes for each 2–wire small appliance branch circuit.
(A) 1500
B. 1800
C. 1200
D. 2000

91. When using optional calculation method for a dwelling unit service, all other load above the initial 10 kW is to be assessed at _____ %.
(A) 40
B. 50
C. 60
D. 75

92. Conduits bodies enclosing 14mm² conductors or smaller shall have a cross-sectional area _____ the cross-sectional area of the largest conduit to which it is attached.
A. equal
(B) not less than twice
C. 125 percent
D. 150 percent

93. The grounded conductor of a branch circuit shall be identified by a continuous _____ color.
A. gray
B. yellow
C. white
(D) white or gray

94. At least one receptacle outlet shall be installed directly above a show window for each _____ linear meters or major fraction thereof of show window area measured horizontally at its maximum width.
A. 1
B. 2
(C) 3
D. 4

97. In dwelling unit and guest rooms of shall not exceed _____ volts between lampholders.
A. 120
B. 220
(C) 250
D. 300

98. Ground – Fault Circuit Interrupter (GFC for all 125-V or 250-V single-phase, 15
A. garage
B. bathroom
C. craw
(D) all of

99. For receptacle outlets, each single or shall be considered at not less than ___
A. 150
(B) 180
C. 200
D. 250

100. At least one receptacle outlet shall be i
A. bathroom
B. laundry area
C. base
(D) all of

101. In the optional calculation for additiona factor for the first 8 kVA of all the loads other loads is _____ percent
(A) 40
B. 50
C. 60
D. 75

102. For hallways of _____ mm or more i shall be required.
(A) 3000
B. 3200
C. 3300
D. 3500

103. The receptacle shall be located on the heating, air conditioning and refrigerati
A. 7200
(B) 7600
C. 7800
D. 8000

Answers: 95.(B), 96.(B), 97.(C), 98.(D), 99.(B),

91.(A), 92.(B), 93.(D), 94.(C)

88. The unit lighting load for dwelling unit, expressed in volt-amperes per square meter shall be
A. 16
B. 28
C. 24
D. 8

89. For show window lighting, a load of not less than _____ volt-amperes shall be included for each meter of show window measured horizontally along its base.
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B. 450
C. 600
D. 400

90. In each dwelling unit, the unit feeder load shall be computed at _____ volt-amperes for each 2–wire small appliance branch circuit.
A. 1500
B. 1800
C. 1200
D. 2000

91. When using optional calculation method for a dwelling unit service, all other load above the initial 10 kW is to be assessed at _____ %.
A. 40
B. 50
C. 60
D. 75

92. Conduits bodies enclosing 14mm^2 conductors or smaller shall have a cross-sectional area _____ the cross-sectional area of the largest conduit to which it is attached.
A. equal
B. not less than twice
C. 125 percent
D. 150 percent

93. The grounded conductor of a branch circuit shall be identified by a continuous _____ color.
A. gray
B. yellow
C. white
D. white or gray

94. At least one receptacle outlet shall be installed directly above a show window for each _____ linear meters or major fraction thereof of show window area measured horizontally at its maximum width.
A. 1
B. 2
C. 3
D. 4

Answers: 86.(D), 87.(B), 88.(C), 89.(C), 90.(A), 91.(A), 92.(B), 93.(D), 94.(C)

97. In dwelling unit and guest rooms of h
shall not exceed _____ volts between c
lampholders.
A. 120
B. 220
C. 250
D. 300

98. Ground – Fault Circuit Interrupter (GFCI
for all 125-V or 250-V single-phase, 15 c
A. garage
B. bathroom
C. crawl
D. all of

99. For receptacle outlets, each single or
shall be considered at not less than _____
A. 150
B. 180
C. 200
D. 250

100. At least one receptacle outlet shall be in
A. bathroom
B. laundry area
C. baser
D. all of

101. In the optional calculation for additiona
factor for the first 8 kVA of all the loads
other loads is _____ percent
A. 40
B. 50
C. 60
D. 75

102. For hallways of _____ mm or more in
shall be required.
A. 3000
B. 3200
C. 3300
D. 3500

103. The receptacle shall be located on the s
heating, air conditioning and refrigeratio
A. 7200
B. 7600
C. 7800
D. 8000

Answers: 95.(B), 96.(B), 97.(C), 98.(D), 99.(B),

24, except
A. dwelling units
B. schools
C. hospitals
D. stores

106. An outlet for heavy duty lampholders shall be considered as a load of not less than _____ volt-amperes based on nominal branch circuit voltage.
A. 180
B. 300
C. 500
D. 600

107. Using the optional calculation for additional loads in existing dwelling unit, the demand factor the first 8 kVA of load shall be 100 percent and the remainder of load at _____ percent.
A. 60
B. 50
C. 40
D. 35

108. For hospitals, the demand factor to be applied for the first 50000 volt-ampere load is _____ percent.
A. 60
B. 50
C. 40
D. 30

109. For non-dwelling receptacle loads the demand factor to be applied for the first 10 kVA or less is 100% while for the remainder over 10 kVA at
A. 80
B. 75
C. 50
D. 40

110. In dwelling units, the voltage between conductors shall not exceed 120 volts nominal between conductors that supply the terminals of
A. lighting fixtures
B. cord-and-plug connected loads of less than 1440 VA nominal
C. cord-and-plug connected loads of more than 1440 VA nominal
D. A and B

111. For space heating units, the demand factor applied for four or more separately controlled units shall be _____ percent.
A. 100
B. 80
C. 65
D. 40

Answers: 104.(A), 105.(C), 106.(D), 107.(C), 108.(C), 109.(C), 110.(D), 111.(D)

114. Overhead conductors for festoon
mm^2.
A. 2.0
B. 5.5
C. 8
D. 3

115. In spans exceeding 12 meters,
messenger wire; the messenger
insulator.
A. pin
B. strain
C. s
D. s

116. Conductors or messenger wires sha
A. fire escape
B. downspout
C. p
D. a

117. Circuits exceeding _____ volts no
volts nominal, between conductors
equipment of electric discharge lam
A. 120
B. 208
C. 2
D. 3

118. Within _____ mm of any building o
shall be insulated or covered.
A. 3300
B. 3000
C. 2
D. 3

119. Up to 600 volts nominal or less,
_____ mm^2 copper, or _____ mm^2
A. 5, 5
B. 8, 8
C. 5
D. 8

120. Up to 600 volts nominal, open indi
_____ mm^2 copper or _____ mm^2
A. 8, 14
B. 14, 22
C. 1
D. 2

Answers: 112.(C), 113.(B), 114.(D), 115.(B

123. Open conductors shall be separated from open conductors of other circuits or systems by not less than _____ mm.
A. 200
B. 150
C. 100
D. 80

124. Conductors supported on poles shall provide a horizontal climbing space not less than _____ mm for power conductors, below communication conductors.
A. 730
B. 760
C. 780
D. 800

125. Conductors shall have a vertical clearance of not less than _____ mm from the roof surface.
A. 1800
B. 2000
C. 2500
D. 3000

126. The vertical clearance from the roof shall be maintained for a distance of not less than _____ mm on all direction from the edge of the roof.
A. 500
B. 800
C. 900
D. 1000

127. When replacing an ungrounded receptacle in a bedroom of a dwelling unit, if a grounding means does not exist in the receptacle enclosure, you must use a _____.
A. non-grounding receptacle
B. GFCI-type receptacle
C. grounding receptacle
D. A or C

128. Ground-fault circuit interrupter (GFCI) protection for personnel is required for all 125-V, single phase, 15 and 20 ampere receptacles installed in a dwelling unit _____.
A. attic
B. garage
C. laundry
D. all of these

129. All branch circuits that supply 125-volt. 15 and 20-ampere receptacles in dwelling unit bedrooms shall be _____ protected.
A. AFCI
B. GFCI
C. any of these
D. none of these

Answers: *121.(B), 122.(A), 123.(C), 124.(B), 125.(C), 126.(D), 127.(D), 128.(B), 129.(A)*

A. 125
B. 100
C. 75
D. 50

132. A one-family or two-family dwelling
receptacle/s located outdoors.
A. four
B. one
C. tw
D. th

133. Using standard load calculations, the
clothes dryers is _____ percent.
A. 70
B. 80
C. 85
D. 75

134. For over 600 volts nominal, where
mm^2 copper or _____ mm^2 aluminum
A. 8, 14
B. 14, 22
C. 14
D. 22

135. There shall be no reduction in the si
lighting loads.
A. dwelling unit
B. hospital
C. no
D. m

136. Each system _____ conductor, wh
separate color coding, marking ta
means. This only applies to multiwir
one system voltage in a building.
A. grounded
B. ungrounded
C. gr
D. all

137. The recommended maximum total
branch circuits is _____ percent.
A. 3.5
B. 2.5
C. 5
D. 6

Answers: *130.(C), 131.(D), 132.(C), 133.(B),*

terminals effectively _____.
A. grounded
B. bonded
C. welded
D. bolted

140. Grade-level portions of _____ accessory buildings used for storage or work areas shall have ground-fault circuit interrupter protection for all 15 and 20 ampere, 125-volt receptacles.
A. finished
B. unfinished
C. A or B
D. none of these

141. A single receptacle installed on an individual branch circuit must be rated at least _____ percent of the rating of the circuit.
A. 70
B. 80
C. 95
D. 100

142. A branch circuit rated 20 amperes serves four receptacles. The rating of the receptacles must not be less than _____ amperes.
A. 10
B. 15
C. 20
D. 30

143. In dwelling units, when determining the spacing of general use receptacles, on exterior walls are not considered wall space.
A. fixed panels
B. fixed glass
C. sliding panels
D. all of these

144. At least _____ wall switch-controlled lighting outlet/s shall be installed in every dwelling-unit habitable room and bathroom.
A. one
B. three
C. two
D. none of these

145. Which rooms in a dwelling unit must have a switch-controlled lighting outlet?
A. every habitable room
B. hallways and stairways
C. bathrooms
D. all of these

146. The service or feeder capacity necessary to provide for six ¾-kW household electric clothes dryer is
A. 30500 kW
B. 28500 kW
C. 27500 kW
D. 25000 kW

Answers: 138.(A), 139.(A), 140.(C), 141.(D), 142.(B), 143.(C), 144.(A), 145.(D), 146.(C)

B. 150

149. What is the demand load for a 4-
A. 4 kw
B. 3.5 kW

150. All 125-V or 250-V single-phase
mm of a kitchen sinks to serve
circuit-interrupter protection for
A. 1800
B. 2000

151. In each dwelling unit, the feede
for each two-wire small appliar
A. 1500
B. 1000

152. The load for household electri
___ volt-amperes or the name
served.
A. 4000
B. 3000

153. For branch circuit rated less t
ampacity not less than ___ ar
A. 40
B. 30

154. For ranges of 8.75 kW or mor
amperes.
A. 30
B. 40

155. Direct grade level access is d
above the grade level and be
A. 1800
B. 2000

Answers: 147.(B), 148.(A), 149.(C),

percent of the continuous load.

A. 100
B. 110
C. 120
D. 125

158. For a dwelling unit having a floor area of more than 150 square meters, the feeder and service loads with _____ % demand factor on the air-conditioning load and lighting load.

A. 75
B. 80
C. 90
D. 100

159. Overhead conductors for festoon lighting shall not be smaller than _____ mm^2.

A. 2.0
B. 3.5
C. 5.5
D. 8.0

160. Appliance outlets installed in a dwelling unit for specific appliances, such as laundry equipment's, shall be installed within _____ mm of the intended location of the appliance.

A. 1200
B. 1500
C. 1800
D. 2000

161. On constructing sites a box shall not be required for splices or junction connections where the circuit conductor are

A. multiconductor cord
B. cable assemblies
C. open conductors
D. any of these

162. For the kitchen small appliance load in dwelling occupancies the code requires no less than

A. two 20 – amp circuits
B. one 15 – amp circuits
C. two 15 - amp circuits
D. one 20 – amp circuits

163. For hallways, of 3000 mm or more in length at least _____ receptacle is required

A. 1
B. 2
C. 3
D. 4

Answers: 156.(A), 157.(D), 158.(D), 159.(B), 160.(C), 161.(D), 162.(D), 163.(A)

B. containing a switch
D.

166. When sizing a feeder, the appli
demand factor of 75 percent o
appliances fastened in place on the
A. six
B. three
C. f
D. f

167. On multi-wire, three-wire branch-c
neutral conductor at anytime would
A. the neutral is disconnected
B. both circuits are fully loaded
C. one hot leg is shunt off
D. both circuits are open

168. Feeder conductors for new restau
ampacity than the service entrance
A. greater
B. lesser
C. e
D.

169. Something that would effect the am
I. voltage II. Amperage III.
A. I only
B. II only
C.
D.

170. A branch-circuit that supplies a nur
known as a _____ branch-circuit.
A. general purpose
B. multi-purpose
C.
D.

171. An outlet where one or more recep
A. multi-outlet assembly
B. receptacle outlet
C.
D.

172. In an elevator machine room, at le
A. one duplex
B. two duplex
C.
D.

Answers: 164.(A), 165.(D), 166.(C), 167.(C

175. Which of the following is not a standard classification for a branch circuit supplying several loads?
A. 20 amp
C. 30 amp
B. 25 amp
D. 50 amp

176. If a protective device rating is marked on an appliance, the branch circuit overcurrent device rating shall not exceed _____ the protective device rating marked on the appliance.
A. at all
C. 80 %
B. more than 50%
D. 125%

177. The neutral feeder conductor must be capable of carrying the maximum _____ load.
A. connected
C. demand
B. unbalanced
D. grounded

178. Tap conductors for household cooking equipment supplied from a 50 amp branch circuit shall have an ampacity of not less than _____ amps.
A. 15
C. 20
B. 25
D. 30

179. A multi-wire branch circuit may supply _____.
I. only one utilization equipment
II. ungrounded conductors that are opened simultaneously
A. I only
C. both I & II
B. II only
D. neither I nor II

180. The branch circuit conductors to one or more units of a data processing system shall have an ampacity of percent of the total connected load?
A. 110
C. 125
B. 100
D. 150

181. For general lighting and receptacle load for dwelling units the demand factor applied for a total load of more than 120000 shall be
A. 50%
C. 35%
B. 45%
D. 25%

Answers: 173.(A), 174.(A), 175.(B), 176.(A), 177.(B), 178.(C), 179.(C), 180.(C), 181.(D)

B. GFCI

184. For a feeder supplying household
minimum unbalanced load on t
_____ percent of the load on the
A. 50
B. 75

185. The size of branch-circuit condu
electrode-type boilers shall be ca
total load (motor not included).
A. 115
B. 110

186. In a dwelling the code requires a
I. one 20 amp circuits for th
II. one 20 amp circuit for lau
III. one 20 amp circuit for th
A. I only
B. I and II only

187. The feeder for six 20 amp r
calculated at _____ percent of th
A. 75
B. 80

188. When determining the load on
floor area shall be computed fro
A. inside
B. outside

189. Branch circuits for heating and
elevator car shall not have a circ
A. 500
B. 240

Answers: 182.(B), 183.(C), 184.(C), 18

192. Where two or more single-phase ranges are supplied by a 3-phase, 4-wire feeder, the total load shall be computed on the basis of _____ maximum number connected between any two phases.
(A) twice the
B. three times the
C. half the
D. four times the

193. A separate branch circuit shall supply the _____ receptacles, auxiliary power source, and ventilation on each elevator car.
A. motor
(B) car lights
C. emergency exits
D. all of these

194. Branch circuit conductors shall have an ampacity not less than _____.
A. the load increased 110%
(B) 100% of the load to be served
C. 80% of the load to be served
D. 90% load served

195. For an installation consisting of not more than two 2-wire branch circuits, the service disconnecting means shall have a rating of not less than ____ amperes
A. 20
(B) 30
C. 50
D. 60

196. To qualify as a lighting and appliance branch circuit panelboard, the number of circuits rated 30 amperes or less with neutrals must be _____.
(A) more than 10%
B. 40 or less
C. 20 or more
D. 10% exactly

197. Which of the following is not a standard classification for a branch circuit supplying several loads?
A. 20 amp
(B) 35 amp
C. 30 amp
D. 50 amp

198. Branch circuit larger than _____ amperes shall supply non-lighting outlet loads.
A. 40
B. 45
(C) 50
D. 60

Answers: 190.(D), 191.(C), 192.(A), 193.(B), 194.(B), 195.(B), 196.(A), 197.(B), 198.(C)

admedium type and not less than
A. 400, 730
(B) 660, 750
C.
D.

201. Appliance receptacle outlets sha
intended location of the appliance.
A. 1300
(B) 1800
C.
D.

202. A wall space shall include any
unbroken along the floorline by do
(A) 600
B. 700
C.
D.

203. Receptacle outlets in floors shall
number of receptacle outlets unles
A. 250
B. 300
C.
(D)

204. A receptacle outlet shall be install
mm or wider.
(A) 300
B. 400
C.
D.

205. At least one receptacle outlet sha
with a long dimension of _____
_____ mm or greater.
A. 200, 200
B. 400, 200
(C)
D.

206. Receptacle outlets shall be locat
above the countertop.
A. 250
(B) 450
C.
D.

Answers: 199.(C), 200.(B), 201.(B), 202.(A

the dwelling

(A) 2000
B. 3000
C. 4000
D. 5000

209. In dwelling units hallways of _____ mm or more in length shall have at least one receptacle outlet.
A. 1000
(B) 3000
C. 4000
D. 5000

210. Heating, air-conditioning, and refrigeration equipment receptacle outlet shall be installed and located on the same level and within _____ mm of the equipment
A. 3000
B. 4600
C. 5500
(D) 7600

211. The feeder conductor ampacity shall not be less than that of the service entrance conductor where the feeder conductors carry the total load supplied by the service entrance conduction with an ampacity of _____ or less
A. 50 A
(B) 55 A
C. 60 A
D. 75 A

212. Where computations in branch circuit, feeder, and service calculations result in a fraction of an ampere _____ or larger such fractions shall be permitted to be dropped.
A. 0.15
B. 0.25
(C) 0.50
D. 0.75

213. Outlets for heavy-duty lampholders shall be computed at a minimum of _____ volt-amperes
A. 300
B. 500
(C) 600
D. 1000

214. In dwelling units, for lighting load over 120000 volt-amperes the demand factor applied should be _____ percent.
(A) 25
B. 30
C. 35
D. 40

Answers: 207.(C), 208.(A), 209.(B), 210.(D), 211.(B), 212.(C), 213.(C), 214.(A)

217. In dwelling units, for the first ___ demand factor applied should be
A. 5000
B. 8000
C.
(D)

218. For nondwelling receptacle loads first 10 kVA or less and _____ for
(A) 50
B. 40
C.
D.

219. Fixed electric heating space heat total connected load.
A. 60
B. 70
C.
(D)

220. In each dwelling unit small applia volt-amperes for each 2-wire sma
A. 2000
(B) 1500
C.
D.

221. For appliance load in dwelling un factor for _____ percent to the fastened in places.
A. 70
(B) 75
C.
D

222. For six electric clothes dryer total
A. 80%
(B) 70%
C.
D

SERVICES

223. Services using copper conductors be smaller than
A. 5.5 mm²
(B) 8.0 mm²
C.
D

Answers: 215.(B), 216.(A), 217.(D), 218.

C. for air conditioner and water heaters
D. for multiple occupancy building

226. _____ of service entrance conductors are taps from the main service conductors run to service equipments
A. overhead feeders
C. branch service drop
B. subset
D. tie service drop

227. Two or more services shall be permitted where the capacity are in excess of _____ amperes at a supply voltage of 600 volts or less.
A. 2000
C. 1500
B. 2500
D. 3000

228. The underground service conductors between the street main and the first point of connection to the service entrance conductor in a terminal box
A. service entrance conductor
C. service drop
B. service lateral
D. service raceway

229. Underground sets of conductors, size _____mm^2 or larger running to the same location and connected together at their supply end but not connected together at their load end shall be considered to be one service lateral.
A. 50
C. 38
B. 60
D. 80

230. For services not over 600 volts nominal service conductors shall have a vertical clearance of _____ mm from the roof surface.
A. 2000
C. 2500
B. 3000
D. 2200

231. Where the voltage between conductors does not exceed 300 volts, and the roof has a slope of not less than 00 mm in 300 mm, a reduction of clearance to ___mm shall be permitted
A. 2000
C. 1500
B. 2200
D. 1000

Answers: *224.(D), 225.(C), 226.(B), 227.(A), 228.(C), 229.(A), 230.(C), 231.(D)*

B

B. 2500
D. 3

234. Service drop conductors where not i
vertical clearance of _____mm a
and those commercial areas not subj
A. 4600
C. 50
B. 4200
D. 55

235. Service drop conductors where volta
have a vertical clearance of ___
driveways and those commercial area
A. 3700
C. 43
B. 4200
D. 46

236. Service drop conductors where not
a vertical clearance of ____mm ove
traffic, and driveway on other than r
A. 4600
C. 50
B. 5500
D. 53

237. A column pole or narrow base str
supporting overhead conductors by
A. over head
C. cle
B. mast
D. ex

238. The minimum size of undergrou
_____mm^2 copper of _____mm^2 al
A. 8.0 ,14
C. 3.
B. 5.5 ,8.0
D. 5.

239. Service entrance cables that are not
building shall be mounted on i
exceeding ____mm and in such a
over which they pass.
A. 4500, 50
C. 42
B. 4000, 100
D. 40

Answers: *232.(D), 233.(C), 234.(A), 235.(A),*

B. 80
D. 150

242. For installations to supply only limited loads of a single branch circuit, the service disconnecting means shall have a rating not less than_____ amperes
(A) 15
B. 20
C. 30
D. 50

243. Service entrance cables shall be supported by traps and other approved means within ____mm of every service head, gooseneck, or connection to a raceway or enclosure at intervals not exceeding ____mm.
A. 350, 700
B. 350, 760
(C) 360, 760
D. 360, 700

244. For installations consisting of not more than two 2 –wire branch circuits, the service disconnecting means shall have a rating of not less than _____ amperes
A. 15
B. 20
(C) 30
D. 50

245. For a one-family dwelling the service disconnecting means shall have a rating of not less than _____amperes
A. 60
B. 50
C. 40
(D) 100

246. Where individual open conductors enter a building or other structure through tubes. _____ shall be formed on the conductors before they enter the tubes.
A. drop loops
B. knots
(C) drip loops
D. none of these

247. The service disconnecting means shall be _____.
A. accessible
(B) readily accessible
C. outdoors
D. indoors

248. For services, exceeding 600 volts nominal service entrance conductors in cable shall not be smaller than _____mm^2.
(A) 5.5
B. 8.0
C. 14
D. 22

Answers: 240.(B), 241.(C), 242.(A), 243.(C), 244.(C), 245.(D), 246.(C), 247.(B), 248.(A)

B. service conductors
(D) s

251. Where raceway-type service mast
_____ for use with service masts.
(A) identified
B. approved
C. st
D. li

252. _____shall not be installed beneat
moved. Such as openings in farm a
installed where they will obstruct en
A. Overcurrent protection devices
(B) Overhead service conductors
C. grounding conductors
D. Wiring system

253. Where two to six service disconnec
at one location and supply separa
____ set(s) of service-entrance con
or several such service equipment e
(A) one
B. two
C. t
D. s

254. Wiring methods permitted for servic
A. mineral-insulated cable
(B) electrical metallic tubing
C. liquidtight nonmetallic conduit
D. all of these

255. Service-drop conductors and servic
that _____ will not enter service ra
A. moisture
B. condensation
(C) w
D. a

256. Each service disconnecting means s
A. hazardous locations
B. disconnecting the service
C. p
(D) t

Answers: 249.(C), 250.(D), 251.(A), 252.(B

disconnecting means for normal service to minimize the possibility of _____ interruption of supply.

A. accidental
B. intermittent
C. simultaneous
D. prolonged

259. Where the service disconnecting means is a power–operated circuit breaker it shall be able to be opened by hand in the event of a _____.

A. ground-fault
B. short–circuit
C. power surge
D. blackout

260. Service heads must be located _____.

A. above the point of attachment
B. below the point of attachment
C. within 900 mm from the point of attachment
D. none of these

261. Where the service disconnecting means consists of more than one switch or circuit breaker, the combined ratings of all the switches or circuit breakers used _____ than the rating required by section 2.30.6.10.

A. can be more than
B. shall not be less
C. must be more than
D. none of these

262. A building or structure shall be supplied by a maximum of _____ service(s)

A. one
B. two
C. three
D. as many as desired

263. In a multiple-occupancy building, each occupant shall have access to his or her own _____.

A. overcurrent
B. service –entrance assembly
C. receptacles
D. panelboard

264. Service-lateral conductors are required to be insulated (except the grounded conductor) when it is _____.

A. bare copper in a raceway
B. bare copper and part of a assembly that is identified for underground use
C. copper-clad aluminum with individual insulation
D. a and b

Answers: 257.(B), 258.(C), 259.(B), 260.(A), 261.(B), 262.(A), 263.(A), 264.(D)

B. sealed

267. The maximum setting the ground-
means shall be ____ amperes.

A. 800
B. 1000

268. Ground-fault protection that funct
means ____ protect(s) service condu

A. will
B. will not

269. For services exceeding 600 volts
permitted to support cables identifie

A. service-entrance
B. overcurrent protection

270. Branch circuit and feeder conductor
with service conductors

A. raceway
B. cable

271. The _____clearances of all servi
conductor temperature of 60°C, no
conductor, or cable.

A. horizontal
B. lateral

272. There shall be no more than ____
for each set of service entrance con

A. two
B. four

273. The service conductors shall plainly

A. open or closed
B. on or off

Answers: 265.(A), 266.(C), 267.(C), 268.(B

A. door
B. insulated metal
C. glass or porcelain
D. any of these

276. Where must the service head be located?
A. above the point of attachment
B. below the point of attachment
C. within 20 mm from the point of attachment
D. none of these

277. Where the service disconnecting means is mounted on a switchboard having exposed busbars on the back, a raceway shall be permitted to terminate at a _____.
A. connector
B. box
C. bushing
D. junction box

278. In a multiple-occupancy building, each occupant shall have access to its own service _____.
A. conductor
B. disconnecting means
C. controller
D. overcurrent protection

279. Service conductors shall be connected to the disconnecting means by _____ or other approved means.
A. bolts
B. solder
C. clamps
D. clamp or solder

280. Circuits used only for the operation of fire alarm, other protective signaling systems, or the supply to fire pump equipment shall be permitted to be connected on the _____ of the service overcurrent protection device where separately provided with overcurrent protection.
A. base
B. load side
C. supply side
D. top

281. Each_____ service conductor shall have overload protection.
A. overhead
B. underground
C. ungrounded
D. any of these

Answers: 274.(D), 275.(C), 276.(A), 277.(C), 278.(B), 279.(D), 280.(C), 281.(C)

284. Where a service mast is used f
shall be of adequate strength or
A. studs
B. braces or guys

285. The rating of the service disconn
the largest ____that can be ins
setting for which the actual ove
breaker I rated or can be adjust
A. fuse
B. circuit

286. To prevent the entrance of m
connected to the service drop co
I. below the level of the ter
II. below the level of the se
A. I only
B. II only

287. The vertical clearances of all
conductor temperature of _____
conductor, or cable.
A. 60 degrees C
B. 90 degrees C

288. Service heads for service conduc
A. raintight
B. weatherproof

289. The service conductors shall be
by _____ or other approved mea
I. clamps II. pressure co
A. I only
B. II only

Answers: 282.(C), 283.(C), 284.(B), 285

B. clips
D. rubber

OVERCURRENT – PROTECTION

292. Where the rating exceeds _____ amperes, a lower standard rated and PS or UL – listed fuse or a circuit breaker without overload trip adjustment above its rating may be permitted
(A) 800
B. 450
C. 600
D. 700

293. Which of the following is not a standard ampere rating for fuses and inverse time circuit breakers?
A. 40
B. 45
C. 50
(D) 55

294. In general, conductors other than flexible cords and fixture wires shall be protected against overcurrent in accordance with their _____ as specified in Section 2.40.1.4(a).
A. rating
B. markings
(C) ampacities
D. listings

295. Flexible cord used in PS or UL – listed extension cord sets having _____ mm^2 or larger conductors shall be considered as protected by a 20-ampere branch circuit protection
A. 1
(B) 1.25
C. 2
D. 3.5

296. Plug fuses and fuseholders shall not be used in circuits exceeding _____ volts between conductors
A. 220
B. 230
C. 240
(D) 250

297. An overcurrent device shall be connected at the point where the conductor to be protected receives its supply except if the length of the tap conductors does not exceed _____ meters
A. 1
B. 2
(C) 3
D. 4

Answers: *290.(C) , 291.(A), 292.(A), 293.(D), 294.(C), 295.(B), 296.(D), 297.(C)*

300. Cartridge fuses and fuseholders shall
between conductors.
A. 250
(B) 300
C. 500
D. 600

301. Ground-fault protection of equipment
provisions of Section 2.40.1.13 for sc
more than 150 volts to ground but no
each building or structure main discon
more.
(A) 1,000
B. 1,500
C. 2,0
D. 2,5

302. Where circuit breakers are used as s
circuit breakers shall be PS – or US –
A. "SWF"
B. "SWL"
C. "SW
(D) "SW

303. Circuit breakers rated at _____ amp
have the ampere rating molded, sta
their handles.
A. 50
(B) 100
C. 150
D. 200

304. Which of the following statemer
protection is correct?
A. Shall not be used in lighting fixture
B. May be used as a substitute fo
device.
(C) May be used to protect internal cir
D. Shall be readily accessible.

305. Circuit breakers shall _____ all ungro
(A) open
B. close
C. pro
D. inh

Answers: *298.(A), 299.(D), 300.(B), 301.(A), 3*

C. readily accessible
D. inaccessible to unauthorized personnel

308. Enclosures for overcurrent protection devices must be mounted in a _____ position.
(A) vertical
B. horizontal
C. vertical or horizontal
D. there are no requirements

309. Which of the following statements about Type S fuses are not true?
A. Adapters shall fit Edison-base fuse holders
B. Adapters are designed to be easily removed
C. Type S fuses shall be classified as not over 125 volts and 30 amperes
(D) a and c

310. Plug fuses with Edison bases have a maximum rating of _____ amperes.
A. 20
(B) 30
C. 40
D. 50

311. Dimensions of Type S fuses, fuseholders, and adapters shall be standardized to permit interchange ability regardless of the _____.
A. model
(B) manufacturer
C. amperage
D. voltage

312. Fuses are required to be marked with _____.
A. ampere and voltage rating
B. interrupting rating where other than 10,000 amperes
C. the name or trademark of the manufacturer
(D) all of these

313. A _____ shall be of such design that any alteration of its trip point (calibration) or the time required for its operation will require dismantling of the device or breaking of a seal for other than intended adjustments.
A. Type S fuse
B. Edison-base fuse
C. circuit breaker
(D) fuseholder

Answers: 306.(C), 307.(C), 308.(A), 309.(D), 310.(B), 311.(B), 312.(D), 313.(D)

A. straight
B. slash

316. Overcurrent protection for conducto
circuit if the current reaches a valu
temperature in conductors or condu
(A) open
B. close

317. When can breakers or fuses be use
A. Factory assembled in parallel
B. Listed as a unit
(C) a and b
D. a or b

318. Where an orderly shutdown is re
and equipment, a system of coor
permitted. Those two conditions ar
_____ indication based on monitori
A. uncoordinated, overcurrent
B. coordinated, overcurrent

319. A _____ shall be considered equiva
A. current transformer
B. overcurrent relay

320. Conductors supplying a transforme
overcurrent protection at the tap w
a transformer have an ampacity a
device protecting the feeder condu
A. primary
(B) secondary

321. Cartridge fuses and fuseholders sha
A. voltage
B. amperage

Answers: 314.(C), 315.(C), 316.(A), 317.(C

B. near easily ignitable materials, such as clothes closets
C. in bathrooms of dwelling units
(D) all of these

324. Plug fuses of 15 amperes and lower ratings shall be identified by a _____ configuration of the window, cap, or other prominent part to distinguish them from fuses of higher ampere ratings.
A. octagonal
B. rectangular
(C) hexagonal
D. triangular

325. Fuseholders of the Edison-base type shall be installed only where they are made to accept _____ fuses by the use of adapters.
A. Edison base
B. medium base
C. heavy-duty base
(D) Type S

326. Type S fuses, fuse holders, and adapters are required to be designed so that _____ would be difficult.
A. installation
B. tampering
C. shunting
(D) b and c

327. Fuseholders for cartridge fuses shall be so designated that it is difficult to put a fuse of any given class into a fuseholder that is designed for a _____ lower, or _____ higher, than that of the class to which the fuse belongs.
A. voltage, amperage
B. amperage, voltage
C. voltage, current
(D) current, voltage

328. 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

329. A fusestat is different than 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 screwshell

Answers: 322.(C), 323.(D), 324.(C), 325.(D), 326.(D), 327.(D), 328.(D), 329.(B)

332. An overcurrent trip unit of a circu
_____.
A. transformer
B. grounded conductor
C. c
(D)

333. A _____ is a certain type cartridge
A. time-lag fuse
B. permanent fuse
C. c
(D)

334. If a fuse becomes hot under norma
A. excessive tension in the fuse clip
B. rating of the fuse is too low
(C) insufficient pressure at the fuse
D. rating of the fuse is too high

335. If the spring tension on a cartrid
would be ____.
A. the fuse would blow immediateh
(B) the fuse clips would become wa
C. the voltage to the load would in
D. the supply voltage would increa

336. A common fuse and circuit breake
A. voltage develops heat
B. voltage breaks down insulation
(C) current develops heat
D. current expands a wire

337. If the end of a cartridge fuse b
_____.
(A) tighten the fuse clips
B. lower the voltage on the circuit
C. notify the utility company
D. change the fuse

Answers: 330.(C), 331.(B), 332.(D), 333.(D

340. A fuse puller is used in replacing _____.
(A) cartridge fuses
B. plug fuses
C. link fuses
D. ribbon fuses

341. Plug fuses and fuseholders can be used in circuits supplied by a system having a grounded neutral and having no conductor at over _____ volts to ground.
A. 115
B. 120
C. 125
(D) 150

342. An overcurrent trip unit of a circuit shall be connected in series with each _____.
A. ungrounded conductor
B. grounded conductor
(C) overcurrent device
D. transformer

343. The rating of an overcurrent device for a capacitor shall be _____.
A. not over 20 amp
(B) as low as practicable
C. less than 50 amp
D. none of these

344. Equipment intended to break current at fault levels shall have an interrupting rating sufficient for the system voltage and the current which is _____ at the line terminals of the equipment.
A. at maximum
B. operating
(C) available
D. required

345. The maximum percent of overcurrent protection allowed is _____ of the input current to an autotransformer when less than 9 amps.
(A) 167%
B. 150%
C. 300%
D. 125%

346. Where necessary to prevent _____, an automatic overcurrent device protecting service conductors supplying only a specific load, such as a water heater, shall be permitted to be locked or sealed where located so as to be accessible.
A. tripping
B. corrosion
C. heat built up
(D) tampering

Answers: 338.(B), 339.(A), 340.(A), 341.(D), 342.(C), 343.(B), 344.(C), 345.(A), 346.(D)

(C) interruption of the circuit can cre
D. none of these

349. Plug-in-type overcurrent protect assemblies that are _____ shall be that requires other than a pull to re on the panel.
A. three-phase only
B. 480 v
(C) b
D. r

350. Which of the following is the max connected appliance where the br the appliance disconnecting means
(A) 1/8 hp
B. ¼ hp
C. ½
D. 1

351. The maximum rating of a plug fuse
A. 20 A
(B) 30 A
C. 1
D. 3

352. Circuit breakers shall be so located
(A) will not be burned or otherwise i
B. other than the authority cannot
C. cannot operated them without a
D. other than the authority cannot

353. The ampacity of a device to open on its _____ rating.
A. operating
(B) interrupting
C. a
D. t

354. Circuit breakers shall not be locate such as in _____.
A. hallways
B. laundry rooms
(C) c
D. l

Answers: 347.(D), 348.(C), 349.(C), 350.(A

357. A thermal protector is intended to protect a motor against ____.
(A) dangerous overheating
B. short circuit
C. ground fault
D. none of these

358. Which of the following is not a standard size fuse?
A. 110 amp
B. 125 amp
C. 75 amp
(D) 601 amp

359. A fuse puller is used to replace _____ fuses.
(A) cartridge
B. plug
C. link
D. current-limiting

360. A switch or circuit breaker should disconnect the grounded conductors of a circuit _____.
A. by hand levers only
(B) simultaneously as it disconnects the ungrounded conductors
C. before it disconnects the ungrounded conductors
D. in none of the above ways

361. The maximum size fuse to be used in a branch circuit containing no motors depends on the _____.
(A) load
B. wire size
C. voltage drop
D. switch size

362. A current-limiting over current protective device is a device which will _____ the current flowing in the faulted circuit.
(A) reduce
B. increase
C. maintain
D. vary

363. When the circuit current exceeds the allowable capacity of the conductor the part of the circuit that melts is called a _____.
A. thermal overload
B. heater
C. breaker
(D) fuse

Answers: 355.(D), 356.(A), 357.(A), 358.(D), 359.(A), 360.(B), 361.(A), 362.(A), 363.(D)

A. I only
(B) II only

366. _____ devices providing equivale
power distribution systems shall p
breakers.
A. Approved
(B) Listed

367. Circuit breakers shall be so located
(A) will not be burned or otherwise i
B. other than the authority cannot
C. cannot operate them without a k
D. other than the authority cannot

368. The supply cord conductors and
spray washing machines shall have
A. thermal overloads
B. time delay breakers

369. An over current trip unit of a circuit
A. underground conductor
B. grounded conductor

370. Ground-fault protection that funct
_____ protect(s) service conductors
A. will
(B) will not

371. 4160 v feeder, in no case shall the
three times, or the long-time trip
the ampacity of the conductor
A. 3
B. 5

Answers: 364.(B), 365.(B), 366.(B), 367.(A)

the motor.
II. The breakers may sense a fault current by means of integral external sensing elements.

A. I only
C. both I & II
B. II only
D. neither I nor II

374. Which of the following must be provided with GFCI?

A. computation
C. outdoor lights
B. fountains
D. refrigerators

375. The branch circuit overcurrent devices in emergency circuits shall be _____.

A. time delay type
B. a slow-blow type
C. accessible to only authorized personnel
D. painted yellow

376. Conductor overload protection is not required if _____.

A. conductors are oversized by 125%
B. conductors are part of a limited-energy circuit
C. interruption of the circuit can create a hazard
D. conductors are oversized by 115%

377. Supplementary overcurrent devices shall not be required to be _____.

A. accessible
C. variable
B. readily accessible
D. adjustable

378. Plug fuses of the Edison-base type shall be used _____.

A. only for 50 A and below
B. only as replacement items in existing installations
C. as a replacement for type S fuses
D. only for 50 amp and above

379. The ground fault protection system shall be tested when it is _____.

A. installed
C. inspected
B. sold
D. manufactured

Answers: 372.(D), 373.(C), 374.(B), 375.(C), 376.(C), 377.(B), 378.(C), 379.(A)

be provided in the secondary conn

A. 80
C.
B. 200
D.

382. What is the maximum time of del the ground – fault current is 4000

A. ½ second
C.
B. 1 second
D.

383. According to the P.E.C. high- protected by a circuit breaker if it its trip setting. (Short circuit protec

A. 3 times
C.
B. 5 times
D.

384. Fuses and circuit breakers shall b be burned or otherwise injured by

A. concealed
C.
B. guarded
D.

385. In other than dwellings, it mus building.

A. garage receptacle
C.
B. outdoor receptacle
D.

386. Equipment intended to break curr rating sufficient for the system vo line terminals of the equipment.

A. existing
C.
B. operating
D.

387. The highest current at rated volta standard test conditions is known

A. overload
C.
B. inverse time rated
D.

Answers: 380.(D), 381.(C), 382.(B), 383.(

390. The maximum percent of overcurrent protection allowed is _____ of the input current to an autotransformer when less than 9 amps.
(A) 167%
B. 150%
C. 300%
D. 200%

391. Where the overcurrent device is rated over _____ amperes, the ampacity of the conductors it protects shall be equal to or greater than rating of the overcurrent device.
A. 150
B. 300
C. 500
(D) 800

392. Where necessary to prevent _____ an automatic overcurrent device protecting service conductors supplying only a specific loads, such as a water heater, shall be permitted to be locked or sealed where located so as to be accessible.
A. tripping
B. corrosion
C. opening
(D) tampering

393. Plug fuses and fuseholders can be used in circuits supplied by a system having a grounded neutral and having no conductor at over _____ volts to ground.
A. 115
B. 200
C. 125
(D) 150

394. Plug fuses shall be permitted on circuits not exceeding _____ volts between conductors
A. 110
B. 120
(C) 250
D. 300

395. Fuseholder of Edison-base type shall be installed only where they are made to accept _____ fuses by the use of adapters.
A. General plug
B. Edison-base plug
(C) Type S Plug
D. Cartridge

396. Defined as properly localizing a fault condition to restrict outages to the equipment effected, accomplished by choice of selective fault protective devices.
A. Monitoring
(B) Coordination
C. Sensing
D. Fault device

Answers: 388.(A), 389.(B), 390.(A), 391.(D), 392.(D), 393.(D), 394.(C), 395.(C), 396.(B)

volts.
A. 12
(B) 15
C. 2
D. 3

399. Where the length of the tap con
ampacity of the tap conductors is
overcurrent device protecting the fe
(A) one-third
B. one-half
C. o
D. t

400. The maximum number of overcur
lighting panel is _____.
A. 30
B. 40
(C) 4
D. 4

GROUNDING AND BONDING

401. A two-wire DC system operating at
between conductors may not be gro
A. 60, 350
B. 55, 300
C. 5
(D) 4

402. Which of the following circuits shall
(A) Portable generators
B. AC system of less than 50 V
C. E
D. H

403. Plate electrodes shall be installed n
of the earth.
(A) 760
B. 880
C. 9
D. 1

404. Metal raceways, enclosure, frames
of equipment shall be kept at le
conductors.
(A) 1900
B. 2100
C. 1
D. 2

Answers: 397.(C), 398.(B), 399.(A), 400.(C),

407. Rod and pipe electrodes shall not be less than ____ mm in length
A. 1800
B. 2000
C. 2400
D. 2500

408. Frames of ranges and clothes Dryers shall be grounded using a ground conductor not smaller than ____ mm^2 copper or ____ mm^2 aluminum.
A. 5.0 , 14
B. 5.5 , 8.0
C. 14, 22
D. 8 , 22

409. The equipment bonding jumper shall not be required to be larger than the circuit conductors supplying the equipment but shall not be smaller than ____ mm^2
A. 2
B. 5.5
C. 8
D. 14

410. When installed on the outside of a raceway or enclosure , the lengths of the bonding jumper shall not exceed _____ mm
A. 1500
B. 1800
C. 2000
D. 2400

411. Liquidtight flexible metal circuit shall be permitted as a grounding means in the 32 mm and smaller trade size if the total length of any ground return path is _____mm or less.
A. 1800
B. 2000
C. 2400
D. 3000

412. Ground-fault protection of equipment shall be provided for solidly grounded wye electrical services of more than ____ to ground but not exceeding ____ phase-to-phase for each service disconnecting means rated 1000 amperes or more
A. 150 volts , 600 volts
B. 240 volts , 600 volts
C. 120 volts , 480 volts
D. 110 volts , 480 volts

413. Grounding Electrodes of pipe or conduit shall not be smaller than _____ mm trade size and where iron or steel shall have the outer surface galvanized.
A. 10
B. 20
C. 8
D. 16

Answers: 406.(D), 406.(D), 407.(C), 408.(B), 409.(A), 410.(B), 411.(A), 412.(A), 413.(B)

B. 12
D. 2

416. Rod and pipe grounding electrodes
mm in length and in contact with th
A. 1800
B. 2000
C. 2
D. 2

417. Each grounding plate electrode sha
of surface to exterior soil.
A. ¼
B. 1/5
C. 1
D. ½

418. _____ grounding electrode is not p
A. iron
B. aluminum
C. s
D. s

419. Where used outside, aluminum
conductors shall not be installed wit
A. 460
B. 470
C. 4
D. 5

420. The size of the grounding conducte
____ mm^2 copper or ____ mm^2 alu
A. 5.5 , 8
B. 8 , 14
C. 5
D. 8

421. Instruments, meter, relays separat
than ____ volts shall be grounded.
A. 300
B. 500
C. 6
D. 1

422. Grounding conductor for secondary
instrument cases shall not be sma
aluminum.
A. 3.5 , 5.5
B. 5.5 , 8
C. 5
D. 2

Answers: 414.(B), 415.(A), 416.(D), 417.(B)

B. 1000 mm
(D) 1900 mm

425. The grounding electrode shall be of
A. Copper
B. aluminum copper-added
C. Aluminum
(D) any of these

426. Aluminum, copper clad aluminum, or copper conductors of size _____mm larger, comprising each phase, natural, or grounded circuit conductor shall be permitted to be connected in parallel
(A) 50
B. 60
C. 38
D. 30

427. In no case shall the grounding conductor be smaller than _____ mm^2 copper or _____ mm^2 aluminum
(A) 8 , 14
B. 3.5 , 5.5
C. 8 , 22
D. 22 , 24

428. The grounding conductor for secondary circuits of instrument transformers and for instrument cases shall not be smaller than _____mm^2 copper of _____mm^2 aluminum.
A. 3.5 , 8.0
B. 5.5 , 8.0
(C) 3.5 , 5.5
D. 5.5 , 22

429. Clamps shall make contact with the ground rod for a distance of
(A) 38 mm
B. 30 mm
C. 42 mm
D. 50 mm

430. The aluminum diameter of a steel ground electrode is
A. 8 mm
B. 14 mm
C. 12 mm
(D) 16 mm

431. Code requires that the minimum area exposed surface offered by a plate electrode shall be
A. 3/8 sq. m
(B) ¼ sq. m
C. ½ sq. m
D. ¾ sq. m

Answers: 423.(D), 424.(D), 425.(D), 426.(A), 427.(A), 428.(C), 429.(A), 430.(D), 431.(B)

B. copper
(D) no

434. The path to ground from circuits, eq
shall _____.
A. be permanent and continuous
(B) have the capacity to conduct saf
on it
C. have sufficiently low impedance
facilitate the operation of the circ
D. all of these

435. The minimum size of a copper equ
equipment connected to 40-ampere
A. 16 sq. m
B. 10 sq. m
(C) 14
D. 12

436. Grounding conductors not an integra
than _____mm^2 copper or _____m
(A) 14 , 22
B. 8 , 22
C. 5.
D. 8

437. The conductor between the surge
connection shall not be smaller than
(A) 14
B. 5.5
C. 8.
D. 22

438. Connection between a conductive or
a lightning protection system to acc
two.
A. interlink
B. messenger
C. co
(D) bo

439. Ground terminals (rods) shall not be
A. 12.5 mm, 2200 mm
B. 13.5 mm, 2500 mm
C. 2.
(D) 12

Answers: 432.(D), 433.(D), 434.(B), 435.(C),

442. When grounding service-supplied alternating-current systems, the grounding electrode conductor shall be coming (bounded) to the grounded service conductor (neutral) at _____.
A. the load end of the service drop
B. the meter equipment
C. the service disconnect
(D) any of these

443. Grounding conductors shall not be connected by
A. pressure-connector
B. Clamps
C. lugs
(D) soldered fitting

444. Grounding and bonding conductors shall not be connected by _____.
(A) solder
B. pressure connections
C. welding
D. approved clamps

445. Main and equipment bonding jumpers shall be a _____.
A. screw
B. wire
C. bus
(D) any of these

446. The upper end of the made electrode shall be ____ ground level unless the aboveground end and the grounding electrode conductor attachment are protected against physical damage.
A. above the
B. flush with
C. below the
(D) b or c

447. An electrically operated pipe organ shall have both the generator and motor frame grounded or _____.
A. the generator and motor shall be effectively insulated from the ground
B. the generator and motor shall be effectively insulated from the ground and from each other
(C) the generator shall be effectively insulated from the ground and from the motor driving it
D. both shall have double insulation

Answers: 440.(B), 441.(D), 442.(D), 443.(D), 444.(A), 445.(D), 446.(D), 447.(C)

A. listed lugs
B. exothermic welding
C. lis
(D) ar

450. Metal enclosures used to provide su damage shall not be required to be
A. conductors
B. feeders
(C) ca
D. n

451. When bonding enclosures, metal ra noncurrent-carrying parts, any con shall be removed at _____.
A. contact surfaces
B. threads
C. co
(D) al

452. The lightning protection system gr the building grounding electrode sys
(A) shall
B. shall not
C. ca
D. n

453. An uninsulated equipment groundi covering shall have continuous outc one or more _____ stripes.
A. red
B. blue
(C) ye
D. v

454. Equipment grounding conductors conductors for _____ ampere circ
A. 15
B. 20
C. 3
(D) a

455. The terminal for the connection of be identified by a green-colored ___
A. not readily removable terminal sc
B. hexagonal , not readily removabl
C. pressure wire connector
(D) all of these

Answers: 448.(B), 449.(D), 450.(C), 451.(D)

materials?

A. copper
B. aluminum
C. copper-clad aluminum
D. any of these

458. Cases of frames of instrument transformers are not required to be grounded _____.

A. when accessible to qualified persons only
B. for current transformers where the primary is not over 150 volts to ground and which are used exclusively to supply current to meters
C. for potential transformers where the primary is less than 150 volts to ground
D. A or B

459. Secondary circuits of current and potential instrument transformers shall be grounded where the primary windings are connected to circuits of _____ volts or more to ground and, where on switchboards, shall be grounded irrespective of voltage.

A. 300
B. 600
C. 1,000
D. 150

460. _____ on equipment to be grounded shall be removed from contact surfaces to ensure good electrical continuity

A. Conductive coating
B. Nonconductive coating
C. manufacture's instructions
D. all of these

461. A grounding connection shall not be made to any grounded circuit conductor on the _____side of the service disconnecting means except as permitted for separately derived systems or separate buildings.

A. supply
B. power
C. line
D. load

462. If none of the electrodes specified in section 250-50 are available, then _____ can be used as the required grounding electrode.

A. local metal underground systems or structures (not gas)
B. ground rods or pipes
C. plate electrodes
D. any of these

Answers: 456.(D), 457.(D), 458.(D), 459.(A), 460.(B), 461.(D), 462.(D)

be grounded?

A. a toaster
B. an aquarium
C. a c
D. a r

465. The connection (attachment) of th grounding electrode shall _____.

A. be readily accessible
B. be made in a manner that will ens
C. not require bonding around insulat
D. none of these

466. The connection of the grounding el electrode (driven ground rod)shall b is _____.

A. suitable for direct burial
B. accessible
C. rea
D. co

467. Metal enclosures for conductors ac which do not provide an equipment they are less than 25 feet long and conductive material.

A. nonmetallic-sheathed cable
B. open wiring
C. kn
D. all

468. Metal parts that serve as the ground ensure electrical continuity and have current likely to be imposed.

A. grounded
B. effectively bonded
C. att
D. ar

469. Where required for the reduction o electrical continuity of the metal raceway can terminate to a (n)___ electrons equipment.

A. listed
B. labeled
C. id
D. m

Answers: 463.(A), 464.(A), 465.(B), 466.(A),

A. equipment bonding jumper
B. equipment grounding jumper
C. A or B
D. A and B

472. Where a single equipment grounding conductor is used for multiple circuits in the same raceway. The single equipment grounding conductor must be sized according to _____.
A. the combined rating of all the overcurrent protection devices
B. the largest overcurrent protection device of the multiple circuits
C. the combined rating of all the loads
D. any of these

473. The equipment grounding conductor shall be identified by _____.
A. a continuous outer green finish
B. being bare
C. a continuous outer green finish with one or more yellow stripes
D. any of these

474. DC systems to be grounded shall have the grounding connection made at _____.
A. one supply station only
B. one or more supply station
C. the individual services
D. any point on the premise wiring

475. Which of the following grounding electrodes is the only one shall be supplemented by an additional electrode?
A. metal underground water pipe
B. ground ring
C. building steel
D. concrete-encased

476. Grounding conductor shall not be connected by
A. exothermic welding
B. soldered fittings
C. listed pressure connectors
D. welded fittings

Answers: 470.(D), 471.(A), 472.(B), 473.(A), 474.(B), 475.(A), 476.(B)

that serves in place of the earth.
A. identifying
B. intentional
C. c
D. c

479. The code require all circuits to have
A. an ungrounded wire and a groun
B. two hot wires and a grounding w
C. at least two wires
D. a hot wire and two grounding wi

480. What conductor used to connect th grounding electrode
A. grounded conductor
B. bonding jumper
C. n
D. g

481. Grounding the metallic cover of fle for protection against
A. shock or injury
B. lightning
C. o
D. s

482. A switch or breaker should disconne
A. using only an isolating switch
B. before disconnecting the hot con
C. simultaneously as it disconnects
D. the grounded conductor can nev

483. What is the primary purpose for gro
A. accidentally energized at a highe
B. a source of induction
C. magnetized
D. a path for eddy current

484. According to the code receptacles c to the same _____ conductor of lighting.
A. grounded
B. ungrounded
C. g
D. b

Answers: 477.(D), 478.(B), 479.(C), 480.(D

B. common main grounding conductor
C. equipment grounding conductor
D. grounding electrode conductor

487. The grounded system conductor is connected to the grounding electrode by the
A. grounded conductor
B. grounding conductor
C. bonding jumper
D. bonding jumper main

488. If there are two driven grounding electrodes, the total resistance is
A. not changed
B. increased twice
C. is reduced by 50%
D. increase four times

489. A single electrode consisting of a _____ which does not have a resistance to ground of 25Ω or less shall be augmented by one additional electrode.
I. rod II. pipe III. Plate
A. I only
B. II & III only
C. III only
D. I, II & III

490. If the terminals for the equipment grounding conductor is not visible on the receptacle, the conductor entrance hole shall be marked with the
A. letter G
B. letter GR
C. word ground
D. any of these

491. A grounding electrode connection that is encased in concrete or directly buried shall _____.
A. be made accessible
B. be made only by exothermic welding
C. be a minimum 50 mm^2 bare
D. not be required to be accessible

492. A forming shell shall be provided with a number of grounding terminals that shall be _____ the number of conduit entries.
A. one more
B. two more
C. same as
D. three more

Answers: 485.(C), 486.(D), 487.(B), 488.(C), 489.(D), 490.(D), 491.(D), 492.(A)

I. must be bonded around me
II. must bond around insulate
A. I only
B. II only

495. Where separate services supply a
a grounding electrode, _____ shal
A. multiple electrodes
B. the same grounding electrodes
C. additional
D. paralleled electrodes

496. According to PEC in a grounded
shall be connected to the following
I. at any accessible point from
II. including the terminal to
connected at the service disco
A. I only
B. II only

497. An accessible means external
bonding and grounding conductor
one of the following means
I. exposed grounding electroc
II. exposed nonflexible metall
III. approve means for the
corrosion-resistance bonding,
A. I only
B. I & II only

498. A pool panelboard, not part of th
conductor installed between its gr
A. a separate ground
B. a ground rod
C. the grounding terminal of the s
D. bonding grid

Answers: 493.(C), 494.(C), 495.(B), 496.

500. Where extensive metal in or on buildings may become energized and is subject to personal contact _____ will provided additional safety.
(A) adequate bonding and grounding
B. bonding
C. suitable ground detectors
D. circuit breaker

501. The earth shall not be used as the sole _____ conductor.
(A) equipment grounding
B. grounded
C. system
D. bonding

502. A grounding electrode conductor shall not be required for a system that supplies a _____ circuit and is derived from a transformer rated not more than 1000va.
A. Class I & Class II
B. Class II
C. Class III
(D) Class I, II & III

503. Metal enclosures for grounding electrode conductors shall be _____.
A. rigid conduit only
B. not less than 20 mm in diameter
C. bonded
(D) electrical continuous

504. The grounding electrode conductor shall be _____ and shall be installed in one continuous length without a splice or joint.
I. solid II. solid or stranded
III. Insulated, covered or bare
A. I only
B. II only
(C) II & III
D. III only

505. A main bonding jumper shall be a _____ or similar suitable conductor
I. wire II. screw III. Bus
A. I only
B. II only
C. III only
(D) I, II or III

506. The grounded conductor would connect to what part of a lampholder.
(A) screw shell
B. filament
C. base contact
D. lead in wire

Answers: 499.(D), 500.(A), 501.(A), 502.(D), 503.(D), 504.(C), 505.(D), 506.(A)

A. line-to-line
B. a lightning strike
C. a
(D) a

509. If the appliance is provided w attachment plug shall be
I. of the grounding type
A. I only
B. II only
I
(C) I
D. n

510. No premises wiring, with a grounde to a supply system unless the supp
(A) a grounded conductor
B. a wiring design
C. p
D. t

511. A run of flexible metal conduit n conductor if the conductors are pro
A. 20 A or more
(B) 20 A or less
C. 3
D.

512. Where a change occurs in the size
A. the neutral can be reduced two
B. the grounded conductor can be
(C) a similar change may be made i
D. the only reduction for the neutr

513. According to the code the groundi
A. one continuous green color
B. being bare
C. a continuous green color with y
(D) any of these

514. A/an _____ shall be used to con type receptacle to a grounded box
A. feeder conductor
B. branch circuit
(C)
D.

Answers: 507.(C), 508.(D), 509.(C), 510.

A. stripping the insulation
B. coloring the exposed insulation
C. marking the exposed insulation
D. coloring the exposed insulation or covering red

517. The grounding electrode conductor shall be _____ and shall be installed in one continuous length without a splice or joint.
I. solid II. solid or stranded III. insulated, covered or bare
A. I only
B. I and II
C. II and III
D. I & III

518. Which of the following shall be provided where necessary to ensure electrical continuity?
A. Grounding
B. Bonding
C. Jumpers
D. connectors

519. The identification of terminals to which a grounded conductor is to be connected shall be substantially _____ in color.
A. gray
B. black
C. green
D. white

520. Equipment grounding conductors, when installed, _____ be included when calculating conduit fill.
A. should
B. shall
C. should not
D. shall never

521. The paralleling efficiency of rods longer than 2500 mm is improved by spacing greater than _____ mm
A. 2000
B. 1900
C. 1800
D. 1500

522. A single grounding electrode is permitted when the resistance to ground does not exceed _____ ohms.
A. 5
B. 10
C. 15
D. 25

Answers: 515.(A), 516.(D), 517.(C), 518.(B), 519.(D), 520.(B), 521.(B), 522.(D)

A. within sight
B. reachable
C. rea
D. no

525. Where an AC system operating at le
point, the grounded conductor shall b
A. 300
B. 250
C. 40
D. 50

526. According to the Code, metal enclos
shall be _____.
A. not permitted
B. electrically continuous
C. rig
D. pe

PROTECTION AGAINST LIGHTNING

527. A device capable to drawing light
vulnerable parts of the protected area
A. rods
B. points
C. air
D. gr

528. Connection between a conductive or
a lightning protection system to acc
two.
A. interconnecting conductors
B. bonding
C. fitt
D. co

529. All conductors, fittings, and fixture ne
buildings and structures not exceedin
I materials.
A. 23
B. 25
C. 18
D. 15

530. A stack, heavy duty is a smoke or
cross-sectional area of the flux is gre
m.
A. 0.25
B. 0.28
C. 0.
D. 0.

Answers: 523.(A), 524.(D), 525.(A), 526.(B),

533. For the purpose of lightning protection, a building over _____ m in height.
A. 18
B. 23
C. 25
D. 28

534. Metal body of inductance are metal objects located within _____ mm of a conductor subject to build up of potential.
A. 2000
B. 2250
C. 2500
D. 3000

535. Which of the following materials is not used in lightning protection system?
A. copper
B. copper alloy
C. steel alloy
D. aluminum

536. The height of air terminals shall be such as to bring the tip not less than _____ mm above the object to be protected for _____ mm maximum intervals.
A. 240, 5000
B. 254, 6000
C. 275, 6000
D. 300, 6500

537. Air terminals shall extend not less than 600 mm above the object protected for _____ mm maximum intervals.
A. 7600
B. 8000
C. 8250
D. 8500

538. For irregular roof lines, the edge of the roof shall be considered continuous and air terminals shall be located within _____ mm at the outermost projections of roof edge.
A. 500
B. 600
C. 650
D. 700

539. The perimeter of open areas such as light or mechanical wells which are located in large flat roofed structures shall be protected if their perimeter exceeds _____ m provided either rectangular dimensions exceeds 15 meters.
A. 92
B. 96
C. 100
D. 105

Answers: 531.(A), 532.(B), 533.(B), 534.(A), 535.(C), 536.(B), 537.(A), 538.(B), 539.(A)

542. Roofs with a series of intermediate
along the end ridges of intervals not e
A. 7600
B. 8100
C. 830
D. 85

543. Chimney air terminals shall be attach
of the chimney is more than _____ m
A. 400
B. 500
C. 60
D. 65

544. No bend of a conductor used in air
less than 90° nor shall have a radius
A. 186
B. 203
C. 21
D. 21

545. Air terminal conductors may be co
distance of _____ mm or less.
A. 700
B. 750
C. 80
D. 90

546. Conductors shall interconnect the ai
that exceed _____ m in width.
A. 10
B. 12
C. 15
D. 18

547. Air terminal conductor drops from
without an extra downlead provide
exceed _____ m.
A. 12
B. 15
C. 18
D. 20

548. Air terminals may be "dead ended" v
roof below the main ridge level p
terminal to a main conductor is not
A. 4000
B. 4500
C. 49
D. 52

Answers: 540.(B), 541.(C), 542.(A), 543.(C),

551. Ground terminals (Rods) shall not be less than _____ mm in diameter and _____ mm long.
(A) 12.7, 2400
B. 13.2, 2500
C. 13.8, 2500
D. 15, 2750

552. Ground rod clamps shall make contact with the ground rod for a distance of _____ mm parallel to the axis of ground rod for lightning protection.
A. 35
(B) 38
C. 40
D. 45

553. The nearest ground terminal or lightning conductor shall not be less than _____ mm from the foundation wall.
A. 400
B. 500
C. 560
(D) 600

554. The lightning conductor or ground terminal shall extend vertically not less than _____ mm into the earth if the soil is depth moist clay.
A. 2200
B. 2600
(C) 3000
D. 3200

555. In sand or gravel, the minimum number of ground terminals, at not less than 3000 mm spacings driven vertically to a maximum depth of 3000 mm below grade is
(A) two
B. three
C. four
D. five or more

556. If the soil is less than _____ mm deep the ground terminal structure should be surrounded with a main –size conductors (a counterpoise) lain in a trench, or in rock crevice.
A. 250
(B) 300
C. 350
D. 400

557. Connection to metal bodies of inductance are required if such bodies fall within _____ mm of the main conductor or other bonded metal body.
A. 1200
B. 1500
C. 1600
(D) 1800

Answers: 549.(D), 550.(B), 551.(A), 552.(B), 553.(D), 554.(C), 555.(A), 556.(B), 557.(D)

over _____ m apart.
(A) 18
B. 22
C. 2
D. 2

560. A smoke or vent stack is classified a the flux is greater than _____ m^2 ar
A. 0.28
(B) 0.32
C. 0
D. 0

561. Top mounted air terminals shall no top of a Heavy Duty Stacks.
A. 400
B. 420
(C) 4
D. 5

562. On square or rectangular stacks, ai _____ mm from the corners and s apart around the perimeter.
A. 500, 2200
(B) 600, 2400
C. 5
D. 6

563. The height of air terminals in vent be less than 460 mm and not more mm in diameter.
(A) 15
B. 18
C. 2
D. 2

564. Conductors used for protection fo weighing not less than _____ gra having a size not less than 1.5 mm
A. 525
B. 532
(C) 5
D. 5

565. Protection of structures containin achieved to a considerable degree b
A. air terminals
B. masts
C. c
(D) a

Answers: 558.(A), 559.(A), 560.(B), 561.(C

(A) 15 C. 20
B. 18 D. 25

568. Masts separate from the structure to be protected shall be a minimum of _____ mm from the protected structure.
A. 1500 C. 2000
(B) 1800 D. 2200

569. The minimum clearance between the overhead ground wires and the highest projection on the protected structure containing flammable liquids and gasses shall be _____ mm.
A. 1000 C. 1500
B. 1250 (D) 1800

570. For an overhead ground wire more than 15 m above the ground, the zone of protection is based on the striking distance of _____ meters.
A. 15 C. 25
B. 18 (D) 30

571. For lightning protection of above ground tanks containing flammable liquids at atmospheric pressure, the metal roof shall have a minimum thickness of _____ mm.
A. 4.5 C. 5.2
(B) 4.8 D. 5.5

WIRING METHODS, MATERIALS AND DEVICES

General Requirement

572. Conductive materials enclosing electrical conductors are grounded to ____
I. prevent lightning surges
II. prevent voltage surges
III. facilitate the operation of the over current device under ground-fault conduction.
A. I only (C) III only
B. II only D. all of these

Answers: 566.(B), 567.(A), 568.(B), 569.(D), 570.(D), 571.(B), 572.(C)

B. bending the conduit (D)

575. In theaters and similar locations, _
I. EMT II. NM code
IV. nonmetallic raceways encas
A. I and II only C. I
B. II & III only (D)

576. _____ shall be permitted to be inst earth, or in areas subject to severe
A. PVC C.
B. Ceramic (D)

577. Connections from headers to c concrete floor raceways. Shall be approved fittings.
A. rigid nonmetallic (C)
B. non-metallic D.

578. In general, the voltage limitation raceway is _____ volts.
(A) 300 C.
B. 600 D.

579. Voltage markings on cables may b may be suitable for _____ applicati
I. power II. electric light
A. I only C.
B. II only (D)

580. A motel conference room is des persons. The room is fire rated methods shall be required;
A. rigid nonmetallic conduit C.
(B) MI cable D.

Answers: 573.(B), 574.(D), 575.(D), 576.(

A. grounded
B. grounding
C. equipment grounding
(D) grounding electrode

583. The following applies to the temporary wiring of branch circuits
A. No open wiring conductors shall be laid on the floor
B. All circuits shall originate in an approved panelboard
C. overcurrent devices in accordance with PEC
(D) all of these

584. At construction sites boxes are not required for temporary wiring splices of
A. multiconductor cords
B. multiconductor cables
(C) a or b
D. none of these

585. Where voltage does not exceed 150 volts to ground and where not subject to physical damage, feeders for temporary wiring shall be permitted to be run on open conductors if supported on insulators at intervals of not more than ___ mm
A. 250
(B) 300
C. 325
D. 350

586. Temporary electrical power and lighting installations shall be permitted for a period not to exceed ___ days for Christmas decorative lighting, carnivals, and similar purpose.
A. 45
B. 60
C. 75
(D) 90

587. Temporary electrical power is permitted for emergencies and ___
A. Tests
B. experiments
(C) development work
(D) all of these

588. For temporary wiring over 600 volts, ___ shall be provided to prevent access of other than authorized and qualified personnel.
A. fencing
B. barriers
C. signs
(D) A or B

Answers: 581.(D), 582.(D), 583.(D), 584.(C), 585.(B), 586.(D), 587.(D), 588.(D)

(B) immediately

Conductors for General Wiring

591. The maximum temperature that th
maximum temperature will be reache
ampacity in an ambient temperature
A. 25
(B) 30
C. 35
D. 40

592. For voltage rating of conductor u
conductor is _____ mm^2 copper.
(A) 2.0
B. 3.5
C. 5.
D. 8

593. When run in separate raceways or
the same _____.
A. material
B. weight
(C) ph
D. al

594. Conductors in sizes smaller than 5
parallel for frequencies of _____ her
A. 300
(B) 360
C. 38
D. 40

595. Derating factors shall not apply to u
an outdoor trench if those conductor
not exceeding _____ mm above grad
exceed _____.
(A) 3000, 4
B. 2500, 3
C. 30
D. 25

596. For conductor voltage rating of 200
cables the minimum conductor size i
(A) 2.0
B. 3.5
C. 5.
D. 8

Answers: 589.(B), 590.(B), 591.(B), 592.(A),

(B) P D. N

599. Derating factors shall not apply to conductors in nipples having a length not exceeding _____ mm.
(A) 600 C. 463
B. 500 D. 400

600. For RHW insulation, "H" indicates _____°C maximum operating temperature.
(A) 75 C. 90
B. 85 D. 95

601. For THHN insulation "HH" indicates _____ °F maximum operating temperature.
A. 174 (C) 194
B. 185 D. 196

602. The maximum operating temperature of Propylene FEPB is _____ °C
A. 85 (C) 200
B. 90 D. 250

603. Insulated wires shall be marked or tagged with which of the following?
A. maximum rated voltage C. manufacturer identification
B. proper type letters (D) all of these

604. _____ conductors shall be used for wiring chains or movable parts
A. solid C. insulated
B. covered (D) stranded

605. Solid dielectric insulated conductors operated above 2000 volts in permanent installations shall have ozone-resistant insulation shall be _____.
A. covered (C) shielded
B. protected D. surface mounted

606. Insulated conductors used in wet locations shall be
(A) MTW C. THHN
B. asbestos D. varnished cambric

Answers: *597.(B), 598.(B), 599.(A), 600.(A), 601.(C), 602.(C), 603.(D), 604.(D), 605.(C), 606.(A)*

609. Ambient temperature is defined as t
A. short circuit temperature of the c
B. maximum heat the insulation can
(C) temperature of the area surround
D. insulating rating of conductor

610. Where bare conductors are used v ampacities shall be limited to t conductors.
A. next smaller (C) ac
B. next bigger D. ba

611. Which of the following can be used
A. TW C. M
B. THWN (D) V

612. Unless otherwise specified conduct following, except
A. copper C. al
(B) aluminum clad D. c

613. Where installed in raceways, condu stranded.
A. 3.5 C. 5.
(B) 8 D. 1

614. What conductors size comprising e are permitted to be connected in pa
A. 38 mm² or larger (C) 5
B. 38 mm² or smaller D. 5

615. For type V-cables, the minimum size
A. 3.5 (C) 8
B. 5.5 D. 1

616. For type MI conductor, the maximu
A. 65 C. 8
B. 75 (D) 9

Answers: *607.(B), 608.(B), 609.(C), 610.(C) 616.(D)*

(B) 8.0 D. 22

619. Solid aluminum conductors 8.0 mm², 5.5 mm² and 3.5 mm² shall be made of an AA ___ series electrical grade.
A. 5000 (C) 8000
B. 7000 D. 9000

620. For type MI conductor, the insulated material used is
A. propylene C. paper
(B) magnesium oxide D. ethylene

621. The maximum operating-temperature of type TFE conductor is ___ °C.
A. 90 C. 175
B. 120 (D) 250

622. The letter W of type THW conductor means
A. wet (C) moisture
B. water D. weather

623. The maximum operating temperature type THW conductor is ___ °C.
A. 65 C. 90
(B) 75 D. 150

624. The maximum operating temperature of type TW conductor is ___ °C.
(A) 60 C. 85
B. 75 D. 90

625. The ampacity of 8.0 mm² type TW single insulated, rated 0-2000 V in free air conductor based on ambient temperature of 30°C is ___ amperes.
A. 35 (C) 55
B. 40 D. 45

626. When there are 6 conductors in a raceway or cable the ampacity reduction factor is ___ %.
A. 70 C. 90
(B) 80 D. 95

Answers: 617.(A), 618.(B), 619.(C), 620.(B), 621.(D), 622.(C), 623.(B), 624.(A), 625.(C), 626.(B)

B. counted as 2 D. no

629. With two conductors installed in a c section the conduit can be filled to
A. 25% C. 42
(B) 31% D. 63

630. A conductor having one or more laye considered as electrical insulation
A. bare C. iso
B. insulated (D) co

631. When bare grounded conductors ar ampacities are limited to _____.
A. 60 degrees C
B. 75 degrees C
C. 90 degrees C
(D) that permitted for the adjacent ins

632. Conductors shall not be installed in lo will exceed that specified by the code
(A) Insulation C. co
B. wiring D. pro

633. An enclosed designed either for surfa frame, mat, or trim in which a swingi
(A) cabinet C. par
B. switchboard D. me

634. The conductor with the highest insula
A. THWN (C) RH
B. RH D. TH

635. The temperature rating associated w so selected and coordinated as to not any connected termination, conducto
(A) I only C. II
B. II only D. I,

Answers: 627.(C), 628.(C), 629.(B), 630.(D),

B. THW
D. MHR

638. Aluminum and copper-clad aluminum of the same circular-mil and insulation have _____.
A. the same physical characteristics
B. the same termination methods
(C) the same ampacity
D. different ampacities

639. A manufactured assembly designed to support and energize lighting fixtures that are capable of being readily repositioned is _____.
A. ceiling grid lighting
(C) lighting track
B. electric discharge lighting
D. open circuit lighting

640. The temperature rating of a conductor is the maximum temperature, at any location along its length, that the conductor can withstand over a prolonged time period without _____.
A. tripping the breaker
C. short circuiting
(B) serious degradation
D. a grounding fault

641. The minimum insulation level for neutral conductors of solidly grounded systems shall be _____ volts
(A) 600
C. 1500
B. 1000
D. 2100

642. The maximum operating temperatures of rubber-covered, type RFH-1 heat resistant fixture wire is _____ degree F.
A. 124
C. 195
(B) 167
D. 224

643. Insulated conductors used in wet locations shall be _____.
(A) MTW
C. THHN
B. asbestos
D. varnished cambric

644. The ampacity of type UF cable shall be that of _____ conductors.
A. 60 °F
C. 140 °F
B. 75 °F
(D) 60 °F

Answers: 636.(C), 637.(C), 638.(C), 639.(C), 640.(B), 641.(A), 642.(B), 643.(A), 644.(D)

647. Thermoplastic insulation may stiffen degrees C requiring care be temperatures.
A. 5
C. 15
(B) 10
D. 30

648. Silicone rubber insulated fixture wire voltage does not exceed _____ volts
A. 500
C. 20
(B) 300
D. 10

649. Type THW insulation has a _____ fixtures.
A. 60
C. 85
B. 75
(D) 90

Wiring Devices

650. What is the reason why tinning rubb
A. it will make the strands stronger
(B) chemical reactions between rubbe
C. it will increase conductivity of the
D. to meet PEC requirements

651. Galvanized conduit has a finish exter
(A) Zinc
C. Ti
B. brass
D. St

652. To remove the rough edges after a c should be
A. Brushed
C. Va
B. Sanded
(D) Bu

653. When a fluorescent lamp blinks on a
A. damage the switch
C. da
B. damage of the starter
(D) da

Answers: 645.(C), 646.(D), 647.(B), 648.(B),

656. What will an electrician use to determine if whether that raceway is truly vertical
A. T-square
B. transit level
C. plumb bob
D. level

657. When working in high voltage equipment, an electrician before wearing the rubber gloves should make sure that the gloves are cleaned both outside and inside and
A. inside
B. waved both outside and inside
C. tested to withstand the high voltage
D. powdered both outside and inside

658. Before being placed under a screw head stranded wire should be
A. twisted together tightly
B. burnished
C. sanded
D. powdered

659. What is used to sharpen an electricians knife
A. Bakelite
B. graphite
C. carborundum
D. dolomite

660. What is the usual cause for breaking a drill bit when drilling into a steel I-beam?
A. slow drill speed
B. fast drill speed
C. heavier pressure on the bit
D. dull drill bit

661. The purpose of using lock nuts sometimes in making electrical connecting on studs
A. more wires can be connected on the stud
B. tightened connection
C. loosening of connection due to vibration is presented
D. connection is easier to check

662. Raceways are provided with _____ to compensate for thermal expansion and contraction,
A. expansion joints
B. contraction joint
C. buckling joints
D. thermal fittings

Answers: 654.(B), 655.(C), 656.(D), 657.(C), 658.(A), 659.(C), 660.(C), 661.(C), 662.(A)

C. before soldering, twist the wires t
D. use enough heat making the solde

665. Instead of slicing across the cross-
insulation must be penciled down to
A. give more space for the splice
B. reduce time in splicing
C. decrease the danger of nicking the
D. frying of braid is prevented

666. Cutting fluid is used when threading
A. formation of electrolytic pocket is
B. metal chips are wash away
C. formation of rust is minimized
D. finish of thread is improved

667. In electrical constructing mica is com
A. suspension insulators
B. insulating heating cord
C. sw
D. co

668. Which of the following is not a type
A. Octagonal TUBULAR
B. Mill
C. Ha
D. Ba

669. When the fuse becomes hot under n
be?
A. high fuse rating
B. low fuse rating
C. mu
D. pr

670. A type of wrench that is not used to
A. stills-on
B. box end
C. str
D. Ch

671. What is galvanized conduit made of
A. Zinc
B. bronze
C. iro
D. br

Answers: 663.(A), 664.(B), 665.(C), 666.(D),

B. compensate for voltage drop
C. decrease the resistance
D. increase the strength of the conductors

674. To cut raceways , a type of saw with fine teeth called _____ is used
A. tube saw
B. diagonal saw
C. knife saw
D. horizontal saw

675. What is the purpose of using a friction type when wrapping a splice rubber and friction tape
A. to give extra insulation
B. to provide a moisture proof seal
C. to protect the rubber
D. to increase the required thickness

676. What tool is used to bend small sized conduit?
A. mandrel
B. bender
C. growler
D. hickey

677. When cutting holes in masonry, what tool is commonly used?
A. router drill
B. anger drill
C. star drill
D. saw drill

678. It is not advisable for electrician to wear shoes that have sponge rubber sole while working because they are
A. Not oil proof
B. Not water proof
C. Not properly insulated
D. Easily punctured when stepping on nail

679. When cutting _____ wire, electrician should not use diagonal lineman pliers
A. Bronze
B. copper
C. aluminum
D. steel

680. When do you use a tap tool?
A. connecting wires
B. reaming raceways
C. cutting internal threads
D. cutting external threads

Answers: 672.(C), 673.(B), 674.(A), 675.(C), 676.(D), 677.(C), 678.(D), 679.(D), 680.(C)

C. coarse blade easily breaks
D. pulling of strands is avoided

683. To fastened a box to a terra cotta,
A. rawl plug
B. aluminum plug
C. s
D. w

684. When connecting a rigid conduit should be
A. lock nut on the outside and a bus
B. lock nut on the inside and a bush
C. lock nut and brushing on the out
D. lock nut and brushing on the insi

685. The reason why Electricians must condition is because
A. a good work requires good tools
B. defective tools will cause delay in
C. defective tools may cause accide
D. it can be readily used

686. Conductor should never be overloac
A. deterioration of insulation
B. damage to raceway
C. s
D. n

687. What is the most important thin together
A. apply sufficient heat
B. make sure that the conductors ar
C. use plenty of solder
D. use a strong flux

688. It is not considered as a good flux w
A. is expensive
B. may burn your skin
C. is
D. a

Answers: 681.(A), 682.(D), 683.(A), 684.(B),

691. If the allowable current carrying capacity of a conductor does not correspond to the rating of a standard size overcurrent device, the next used provided the current does not exceed _____ amps.
A. 300
B. 600
C. 800
D. 1000

ARMORED CABLE (TYPE AC CABLE)

692. Armored cables that are flame retardant and have limited smoke characteristics shall be permitted to be identified with suffix ___.
A. AC
B. LV
C. LS
D. LC

693. It is a fabricated assembly of insulated conductors in a flexible metallic enclosure
A. Type MC
B. Type AC
C. Type NMC
D. Type NM

694. Armored cable installed in thermal insulation shall have conductors rated at _____. The ampacity of the cable installed in these applications shall be that of 60 degrees C conductors.
A. 60 degrees C
B. 194 degrees F
C. 75 degrees C
D. 90 degrees F

695. Cable of type AC shall have an internal strip of ___ in intimate contact with the armor for its entire length
A. copper
B. aluminum
C. a and b
D. none of these

696. Type ACL cable shall not be use for
A. concealed work
B. cable trays
C. direct burial
D. underplaster extension

697. Type AC cable shall be permitted for use in the following except
A. cable tray
B. as aerial cable
C. as open runs of cable
D. direct burial in concrete

Answers: 689.(B), 690.(C), 691.(C), 692.(C), 693.(B), 694.(B), 695.(C), 696.(C), 697.(D)

700. The radius of the curve of the inner r
___ turns the diameter of any AC cabl
A. 4
B. 5
C. 6
D. 7

701. Which of the following may **not** be us
A. AC armored cable
B. EMT
C. ope
D. rigi

702. Which of the following may not be use
A. type AC armored cable
B. open wiring
C. elec
D. rigi

FLAT CABLE ASSEMBLIES (TYPE FC)

703. Flat cable assemblies shall be perm
suitable tap devices for
A. lighting
B. small appliances
C. sma
D. any

704. Flat cable assemblies shall not be insta
A. subject to corrosive vapors
B. in moistways
C. dry
D. wet

705. The maximum number of conductors
A. 3
B. 4
C. 5
D. 6

706. Flat cable assemblies shall have condu
wires
A. 12
B. 8
C. 5.5
D. 3.5

707. FCC carpet squares that are adhered
A. tacking strip
B. release-type adhesive
C. glu
D. nor

Answers: 698.(D), 699.(A), 700.(B), 701.(A), 707.(B)

B. 300 (D) 600

710. When flat cable assembly is installed less than ___ mm from the floor, it shall be protected by a metal cover identified for the use
A. 2400 C. 3000
(B) 2500 D. 3200

711. Flat cable assemblies may be installed _____.
I. for small power loads outdoors, not subjected to physical damage.
II. as tap devices for lighting and small appliances
III. for small power loads in hoist ways.
A. I only C. I & III only
(B) II only D. I, II & III

712. Type _____ a flat cable assembly, is an assembly of parallel conductors formed integrally with an insulating material web specifically for field installation in surface metal raceway.
A. FCC C. TC
(B) FC D. SNM

713. Metal enclosures used to protect _____ from physical damage shall not be required to be grounded.
A. service conductors (C) cable assemblies
B. feeders D. none of these

714. Connection from any grounding conductor of the type FCC cable shall be made to the shield system at each _____.
(A) receptacle C. switch
B. outlet D. junction

FLAT CONDUCTOR CABLE (TYPE FCC)

715. Use of Type FCC cable shall be permitted on
A. wet location (C) damp locations
B. hospital buildings D. any hazardous location

Answers: 708.(B), 709.(D), 710.(B), 711.(B), 712.(B), 713.(C), 714.(A), 715.(C)

718. Any portion of the FCC system with ___ mm shall be tapered or feathered
(A) 2.3 C. 3.5
B. 3.2 D. 3.8

719. FCC cable connections shall use conn _____ against dampness and liquid sp
I. sealing II. insulation III
A. I only C. III
B. II only (D) I, I

720. All bare FCC cable end fittings shall b
A. sealed C. list
B. insulated (D) all

721. Use of FCC Systems in damp location
A. restricted C. avo
(B) permitted D. ap

722. Type FCC cable shall be clearly and c of not more ___ mm
A. 400 (C) 60
B. 500 D. 70

723. Type FCC shall consists of ___ condu
A. three or more square C. tw
(B) three or more flat D. tw

724. Receptacles, receptacle housing, sel system shall be
A. rated a minimum of 20 A (C) ide
B. rated a minimum of 15 A D. no

725. General use branch circuit using FCC
A. 15 C. 30
(B) 20 D. 40

Answers: 716.(B), 717.(A), 718.(A), 719.(D), 725.(B)

728. Using FCC cable, the voltage between ungrounded conductors and grounded conductors shall not exceed ___ volts.
A. 110
B. 125
C. 230
D. 150

729. When installing a type FCC system under carpet squares, not more than _____ crossings of cable runs shall be permitted at any one point.
A. 1
B. 2
C. 4
D. 5

730. Power feed, grounding connection, and shield system connection between the FCC system and other wiring systems shall be accomplished in a _____.
A. transition assembly
B. raceway
C. trench
D. cable connector

731. A protective layer which is installed between the floor and type FCC flat conductor cable to protect the cable from physical damage and may or may not be incorporated as an integral part of the cable is the _____.
A. transition assembly
B. outer sheath
C. bottom shield
D. top shield

732. Type _____ cable consist of three or more flat copper conductors placed edge-to-edge and separated enclosed within an insulating assembly.
A. NMC
B. AC
C. MI
D. FCC

733. Voltage between the hot (ungrounded) conductors on FCC cable shall not exceed _____ volts.
A. 50
B. 300
C. 150
D. 600

734. Type FCC cable wiring system is designed for installations under _____.
A. tile
B. carpet
C. carpet squares
D. concrete

Answers: 726.(C), 727.(D), 728.(D), 729.(B), 730.(A), 731.(C), 732.(D), 733.(B), 734.(C)

A. one
B. two
C. th
D. fo

737. The conductor of Type IGS cable s
consisting of 1 to ___ 13 mm diamet
A. 3
B. 7
C. 11
D. 19

738. The minimum conductor size of Ty
maximum size shall be ___ mm²
A. 100, 2375
B. 125, 2375
C. 15
D. 20

739. SF6 gas insulation shall have a nomi
A. 100
B. 126
C. 13
D. 14

740. The conduit use in Type IGS cable
polyethylene identified as suitable fo
trade size.
A. 63
B. 20
C. 11
D. an

741. Conduit raceway size permitted for IG
A. 50
B. 80
C. 12
D. 10

742. For conductor size, 625 mm² to 2
thickness shall be
A. 1.52
B. 1.64
C. 1.7
D. 1.7

743. For conductor size, 125 mm² to 5
thickness shall be _____ mm
A. 1.01
B. 1.02
C. 10
D. 1.0

Answers: 735.(B), 736.(D), 737.(D), 738.(B),

nominal.

A. 30
B. 33
C. 35
D. 40

746. Type MV cable shall be permitted for use in the following, except
A. in raceways
B. in cable trays
C. direct burial
D. where direct expose to sunlight

747. Non-shielded high-voltage cables shall be installed in _____ conduit encased in not less than 3" of concrete.
I. rigid PVC II. IMC III. rigid metal
A. I only
B. II only
C. III only
D. I, II or III

748. Type MV cables shall have ____ conductors and shall be constructed in accordance with section 3.18.1.13.
A. Copper
B. Aluminum
C. copper-clad aluminum
D. any of these

749. Type _____ is a single or multiconductor solid dielectric insulated cable rated 2001 volts or higher.
A. MI
B. NM
C. MC
D. MV

METAL CLAD CABLE (TYPE MC)

750. Type MC cable shall be permitted for system ___ 600 volts nominal
A. exactly
B. not more than
C. in excess of
D. any of these

751. Type MC cable shall not be used where exposed to _____ conditions.
A. wet
B. destructive corrosive
C. unsafe
D. high-heat

752. The minimum size of conductor for MC cable is ___ mm^2 copper
A. 0.75
B. 2
C. 3.5
D. 5.5

Answers: 744.(B), 745.(C), 746.(D), 747.(D), 748.(D), 749.(D), 750.(C), 751.(B), 752.(A)

755. Type MC cable shall be supported a
mm.
A. 1800
B. 2000
C. 2
D. 2

756. Metal Clad Cable can be installed
A. direct burial
B. in concrete
C. in
D. n

757. The minimum size of conductor perm
A. 2
B. 3.5
C. 5.
D. 8

758. The metallic sheath cable shall be c
A. flame retardant
B. weatherproof
C. d
D. a

759. For interlocked type Armor or corr
times the external diameter of the m
A. 5
B. 7
C. 1
D. 1

760. For type MC cable having an extern
is ___ times the external diameter o
A. 7
B. 10
C. 1
D. 1

761. Type _____ cable is a factory ass
individually insulated and enclosed i
a smooth or corrugated tube.
A. MI
B. AC
C. M
D. M

Answers: 753.(A), 754.(C), 755.(A), 756.(A),

764. Type MI cable shall be securely supported by the following, except
(A) tie wires
B. straps
C. staples
D. hangers

765. Type MI cable shall be so made of
A. solid copper
B. nickel clad copper
(C) any of these
D. both of these

766. In type MI cable, the radius of the inner edge of any bend shall not be less than ___ times the cable diameter for cable not more than 19mm in diameter
A. 10
B. 8
C. 7
(D) 5

767. All of the following may be used on services of 2300/4600v except _____.
(A) MI cable
B. MV cable
C. cable bus
D. busway

768. The temperature limitation of MI cable is based on the _____.
A. ambient temperature
B. conductor insulation
(C) insulating materials used in the end seal
D. all of these

769. The grounded conductor of a mineral-insulated, metal-sheathed cable shall be identified at the time of installation by _____ marking at its termination.
(A) distinctive
B. colored
C. solid
D. identified

770. Sealing compound is employed with mineral-insulated cable in a class I location for the purpose of
A. preventing passage of gas or vapor
(B) excluding moisture
C. limiting a possible explosion
D. preventing escape of powder

Answers: *762.(D), 763.(B), 764.(A), 765.(C), 766.(D), 767.(A), 768.(C), 769.(A), 770.(B)*

(B) 10
D. 7

773. Which of the following statements ab
(A) it may be used in any hazardous lo
B. it may be mounted flush on a wall
C. it shall be supported every 3000 m
D. a single run of cable shall not cont

774. Running open wiring on insulators, wiring, conductors in raceway, and a surfaces is permitted for circuits op nominal.
(A) 600
B. 660
C. 750
D. 90

775. Where MI cable terminates, a ___ stripping to prevent the entrance of m
A. bushing
B. enclosure
C. fitti
(D) sea

776. MI cable shall be permitted _____.
I. indoors and outdoors
II. for wet and dry locations
III. where exposed to oil and gas
A. I only
B. II only
C. III
(D) I, I

777. The temperature limitation of MI cabl
A. ambient temperature
B. conductor insulation
(C) ins
D. no

778. For a feeder supplying household co maximum unbalanced load on the n _____ of the load on the ungrounded
A. 50%
B. 60%
(C) 70
D. 80

Answers: *771.(D), 772.(B), 773.(A), 774.(A),*

781. The difference in overall covering between NM cable end NMC cable is that it is
(A) corrosion-resistant
B. Flame-retardant
C. Fungus-resistant
D. moisture resistant

782. When passing through a floor NM or NMC type cable shall be enclosed metal conduit extending at least ___ mm above the floor.
A. 100
(B) 150
C. 200
D. 250

783. Where the cable is run at right angles with the joists in unfinished basement, it shall be permissible to secure cables not smaller than two ___ mm^2 or three ___ mm^2 conductors directly to the lower edges of the joists
A. 5.5, 8
B. 8, 14
(C) 14, 8
D. 22, 14

784. In Types NM or NMC, no bend shall have a radius less than ___ times the diameter of the cable.
(A) 5
B. 6
C. 7
D. 10

785. Type NM or NMC cable supports shall be secured in place at intervals of ___ mm.
A. 1500
(B) 1300
C. 1000
D. 800

786. Nonmetallic sheated cable shall be secured in place within ___ mm from every cabinet, box, or fitting
A. 200
(B) 300
C. 500
D. 1300

787. For concealed work in finished buildings where supporting the cable is impracticable it shall be permissible to ___.
A. use staples
B. use straps
C. use hangers
(D) fish the cable

Answers: 779.(D), 780.(D), 781.(A), 782.(B), 783.(C), 784.(A), 785.(B), 786.(B), 787.(D)

(A) 0.75, 500
B. 2, 200

790. Type TC tray Cable shall not be inst
A. where it will be exposed to physi
B. as open cable on brackets or clea
C. direct burial unless identified for
(D) all of these

791. Type TC power and control cable m
(A) in outdoor locations when suppo
B. as open cable on brackets
C. where exposed to physical dama
D. none of these

792. The outer sheath of a type TC tray
A. moisture resistant
B. corrosion resistant
(C) fl
D. fl

SERVICE ENTRANCE CABLE (TYPES

793. Type USE cable is identified for
covering
A. flame retardant
B. corrosion resistant
(C) m
D. a

794. If SE or USE cable consist of two c
to be ___
A. grounded
B. open
C. u
(D) u

795. Type SE service-entrance cable wit
conductor shall not be used as a
cable that has a final nonmetallic
source at not over ___ volts, to gro
A. 100
(B) 150
C. 2
D. 2

Answers: 788.(D), 789.(A), 790.(D), 791.(A)

A. lighting C. motors
(B) appliances D. generators

798. The minimum ampacity for a 120/240v service entrance conductors is _____ amps.
A. 15 C. 60
B. 30 (D) 100

799. Type SE service-entrance cables shall be permitted in interior wiring systems where all of the circuit conductors of the cable are of the _____ type.
I. rubber-covered II. thermoplastic III. metal
(A) I and II C. II & III only
B. II only D. I, II and III

800. Type USE service entrance cable, identified for underground use in a cabled assembly, may have a _____ concentric conductor applied.
(A) bare copper C. bare aluminum
B. covered metal D. covered

UNDERGROUND FEEDER AND BRANCH CIRCUIT CABLE (TYPE UF)

801. A factory assembly of one or more insulated conductors with an overall covering of non-metallic material suitable for direct burial in the earth.
A. Type MC (C) Type UF
B. Type TC D. Type RMC

802. A type UF cable is permitted to be used
(A) for solar photovoltaic system
B. as service-entrance cable
C. in commercial garage
D. in motion picture studies

803. Bends in Type UF cable shall be such that this radius of the curve of the inner edge of any bend shall not be less than _____ times the diameter of the cable.
A. four C. six
(B) five D. seven

Answers: 796.(C), 797.(B), 798.(D), 799.(A), 800.(A), 801.(C), 802.(A), 803.(B)

INTERMEDIATE METAL CONDUIT (T

806. Intermediate metal conduit smaller t
be used
(A) 15 C. 25
B. 20 D. 32

807. Intermediate metal conduit larger th
be used.
A. 80 (C) 10
B. 90 D. 1

808. All supports, bolts, straps, screws, et
A. moisture resistant C. co
(B) flame retardant D. al

809. When intermediate metal conduit is
due with 19 mm taper per ___ mm
A. 200 C. 40
(B) 300 D. 50

810. Intermediate metal conduit shall be
outlet box, junction box, cabinet, or
A. 500 (C) 90
B. 750 D. 10

811. Intermediate metal conduit shall be
A. 2000 C. 27
B. 2400 (D) 30

812. The distance between supports
permitted to be increased to ___ m
the conduit is firmly supported at the
A. 4000 (C) 60
B. 5000 D. 70

Answers: 804.(A), 805.(D), 806.(A), 807.(C),

815. Each length of IMC shall be clearly and durably identified at ___ mm intervals with letters IMC.
(A) 760
B. 840
C. 960
D. 1000

RIGID METAL CONDUIT (TYPE RMC)

816. Rigid metal conduit shall not be used in or under cinder fill where subject to permanent moisture except when the conduit is at least ___ mm cinder fill.
A. 380
B. 420
(C) 400
D. 500

817. Rigid metal conduit smaller than ___ mm electrical trade size shall not be used
(A) 15
B. 20
C. 25
D. 52

818. Aluminum fittings and enclosure are permitted to be used with ___ conduit
A. steel rigid metal
B. aluminum rigid metal
C. rigid nonmetallic
(D) a and b

819. Where rigid metal conduit is threaded in the field a standard conduit cutting due with ___ mm tapes per ___ mm shall be used
A. 15, 250
(B) 19, 300
C. 19, 250
D. 21, 300

820. Rigid metal conduit shall be firmly fastened within ___ mm of each outlet box, junction box, cabinet or fitting
A. 500
B. 700
(C) 900
D. 1000

821. Materials such as straps, bolts, screws associated with installation of rigid metal conduit are required to be ___
A. weatherproof
B. weathertight
(C) corrosion resistant
D. none of these

Answers: 813.(B), 814.(C), 815.(A), 816.(C), 817.(A), 818.(D), 819.(B), 820.(C), 821.(C)

(A) 15
B. 20

824. Flexible metal conduit of 10 m
length not in excess of ___ mm.
A. 1000
B. 1500

825. Flexible metal conduit shall be se
exceeding ___ mm.
A. 1200
(B) 1300

826. Flexible metal conduit shall be
box, junction box, cabinet, or fitti
(A) 300
B. 400

827. Flexible metal conduit shall be
length in any ground return path
A. 1000
B. 1200

LIQUIDTIGHT FLEXIBLE METAL C

828. Liquidtight Flexible metal condu
installation, operation or mainten
A. requires flexibility
B. requires protection from liquid
C. requires protection from vapor
(D) is subject to physical damage

829. Liquidtight flexible metal condu
locations?
(A) in area that are both exposed
B. in areas where the ambient te
C. in areas that are subject to ph
D. in connection areas for gasolin

Answers: 822.(A), 823.(A), 824.(C), 825.

RIGID NONMETALLIC CONDUIT (TYPE RNC)

832. Rigid nonmetallic conduit shall be permitted for use in the following, except
A. In walls, floors and ceilings
C. in theaters
B. In cinder fills
D. in wet locations

833. Rigid nonmetallic conduit when used aboveground is
A. flame retardant
B. resistant to impact and crushing
C. resistant to distortion from heat
D. all of these

834. Rigid nonmetallic conduit shall be securely fastened within ___ mm of each cabinet, box and other conduit termination
A. 800
C. 1000
B. 900
D. 1100

835. For rigid nonmetallic conduit having an outside diameter of (40-63) mm the maximum spacing between supports shall be ___ mm
A. 900
C. 1500
B. 1300
D. 1800

836. The maximum spacing between supports shall be 2100 mm for rigid nonmetallic conduit having an outside diameter of ___ mm.
A. 90
C. 130
B. 110
D. 160

837. No rigid nonmetallic conduit smaller than ___ mm (outside diameter) electrical trade size shall be used
A. 15
C. 25
B. 20
D. 32

838. _____ of conductors in rigid nonmetallic conduit shall be made only in junction, outlet boxes or conduit bodies.
A. Splices
C. Connections
B. Splices & taps
D. none of these

Answers: 830.(A), 831.(B), 832.(C), 833.(D), 834.(B), 835.(C), 836.(B), 837.(B), 838.(B)

840. The use of HDPE conduit shall be except
A. in discrete lengths
C. i
B. within a building
D. i

841. HDPE conduit shall not be used v excess of _____ degrees.
A. 90°
C. 6
B. 75°
D. 5

842. HDPE conduit smaller than raceway
A. 10
C. 2
B. 15
D. 2

843. HDPE conduit larger than raceway
A. 65
C. 1
B. 80
D. 1

844. Each length of HDPE shall be clearl mm.
A. 2000
C. 2
B. 2400
D. 3

NON METALLIC UNDERGROUN (TYPE NUCC)

845. The use of NUCC and fittings shall
A. direct burial underground installa
B. inside buildings
C. in cinder fill
D. embedded in concrete

846. NUCC smaller than receiving size
A. 15
C. 2
B. 20
D. 4

Answers: 839.(A), 840.(B), 841.(D), 842.(B)

849. NUCC shall be clearly and durably marked at every _____ mm.
A. 2000
B. 2500
C. 3000
D. 3500

LIQUIDTIGHT FLEXIBLE NONMETALLIC CONDUIT (TYPE LFNC)

850. A smooth seamless inner core and bonded together and having one or more reinforcement layers between the core and covers, designated as
A. Type LFNC A
B. Type LFNC B
C. Type LFNC C
D. Type LFNC D

851. A corrugated internal and external surface without integral reinforcement within the conduit wall, designated as
A. Type LFNC A
B. Type LFNC B
C. Type LFNC C
D. None of these

852. A smooth inner surface with integral reinforcement within the conduit wall, designated as
A. Type LFNC A
B. Type LFNC B
C. Type LFNC C
D. Type LFNC D

853. Type LFNC B shall be permitted to be installed in lengths longer than _____ mm where it is properly secured.
A. 1200
B. 1500
C. 1600
D. 1800

854. LFNC shall not be used where the operating voltage of the contained conductors is in excess of _____ volts, nominal.
A. 500
B. 600
C. 400
D. 1000

855. Type LFNC when installed in lengths exceeding 1800 mm, the conduit shall be securely fastened at intervals not exceeding _____ mm and within _____ mm on each side of every outlet box, junction box, cabinets, or fittings.
A. 900, 300
B. 1000, 400
C. 1200, 500
D. 1800, 600

Answers: 847.(B), 848.(B), 849.(C), 850.(A), 851.(C), 852.(B), 853.(D), 854.(B), 855.(A)

858. LFNC shall be marked at every _____
A. 600
B. 800
C.
D.

859. Securing or supporting of LFNC lengths not exceeding _____ mm securely fastened for connections.
A. 1200
B. 1500
C.
D.

ELECTRICAL METALLIC TUBING (T

860. Minimum size of Electrical metallic
A. 10
B. 15
C.
D.

861. Where electrical metallic tubing is shall be so designed to prevent _____
A. cracking
B. twisting
C.
D.

862. Maximum size of Electrical metallic
A. 50
B. 75
C.
D.

863. EMT when buried in masonry shall
A. watertight
B. raintight
C.
D.

864. EMT when installed in wet location
A. weatherproof
B. raintight
C.
D.

865. EMT shall not be
A. covered
B. shielded
C.
D.

Answers: 856.(D), 857.(B), 858.(A), 859.(C 865.(C)

A. 2100 C. 1600
B. 1800 D. 1500

868. Flexible metallic tubing shall be permitted to be used in the following except
A. in dry location C. in hoistways
B. in accessible location D. in branch circuit

869. Minimum use of flexible metallic tubing is ___ mm electrical trade
A. 15 C. 20
B. 10 D. 25

870. Maximum size of flexible metallic tubing shall be the ___ mm trade size
A. 10 C. 20
B. 15 D. 25

871. When flexible metallic tubing is bent for installation purposes the radii of fixed bend for 15 mm trade size shall be ___ mm.
A. 90 C. 125
B. 100 D. 115

ELECTRICAL NONMETALLIC TUBING (TYPE EMT)

872. The use of electrical nonmetallic tubing and fittings shall be permitted
A. in hazardous location
B. in concealed, dry and damp location
C. for direct earth burial
D. in theaters and similar locations

873. Electrical nonmetallic tubing is permitted _____.
I. concealed in walls, floors and ceilings with a 15 minute fire rating
II. embedded in concrete provided with approved fitting
III. directly buried
IV. above a suspended ceiling with a 15 minute fire rating
A. I only C. I, II and III
B. I, II and IV D. all of the above

Answers: 866.(A), 867.(B), 868.(C), 869.(A), 870.(C), 871.(B), 872.(B), 873.(B)

B. 65 D. 5

AUXILIARY GUTTERS

876. An auxiliary gutter shall not extend the equipment which it supplements
A. 7500 C. 9
B. 9100 D. 8

877. Gutters shall be supported through preferably not exceeding ___ mm
A. 1000 C. 1
B. 1200 D. 1

878. Auxiliary gutters shall not contain at any cross-section
A. 15 C. 2
B. 20 D. 3

879. The conductors within gutter, inclu to more ____ percent of its area.
A. 60 C. 7
B. 70 D. 8

880. Auxiliary gutter is permitted to cont
A. conductors C. E
B. overcurrent devices D. a

881. Auxiliary gutters shall not contain section
A. 30 C. 2
B. 40 current–carrying D. 3

882. Auxiliary gutters shall be construc continuity
A. mechanical C. a
B. electrical D. a

Answers: 874.(A), 875.(B), 876.(B), 877.(D)

884. It shall be permissible to extend busways vertically through dry floors if totally enclosed where passing through and for a distance of ___mm above the floor
(A) 1800 C. 2000
B. 1500 D. 1200

885. For over 600v busways having sections located both inside and outside of buildings shall have a _____ at the building wall.
(A) vapor seal C. condulet
B. fire barrier D. ventilated enclosure

886. Busways rated over 600 volts shall have all conductor termination and connection hardware accessible for _____.
A. installation C. maintenance
B. connection (D) all of these

Shielded Nonmetallic – Sheated Cable (Type SNM)

887. The following conductors are used in Type SNM cable, except
A. TFN (C) THN
B. TFFN D. THWN

888. Type SNM shall be used only
A. When operating temperature do not exceed temperature rating
B. in cable trays or in raceways
C. in hazardous locations
(D) all of these

889. For type SNM the bending radius shall not be less than ___ times the cable diameter
(A) 5 C. 10
B. 7 D. 12

890. The conductors of type SNM cable shall be in sizes ___ mm^2 through ___ mm^2 copper
A. 0.75, 22 C. 0.75, 38
(B) 0.75, 30 D. 2, 38

Answers: 883.(D), 884.(A), 885.(A), 886.(D), 887.(C), 888.(D), 889.(A), 890.(B)

(B) in exposed indoor locations
C. encased or imbedded in concrete
D. in underground locations subject

893. _____ cable shall be flame-retardan corrosion-resistant.
A. MI (C) M
B. USE D. M

CABLE BUS

894. The size and number of conducto designed and in no case smaller tha
A. 30 (C) 5
B. 38 D. 6

895. The individual conductors in a ca longer than ___mm for horizontal r
(A) 900, 460 C. 1
B. 1000, 500 D. 8

896. Cablebus shall be securely supporte
A. 1800 C. 3
B. 2500 (D) 3

897. Cablebus shall be installed only for
(A) exposed C. c
B. commercial D. h

898. The code requires all conductors th raceway because _____.
A. of less voltage drop C. i
B. the cost is less (D) c

899. Cablesbus framework, where ___ grounding conductor for branch cir
(A) bonded C. p
B. welded D. g

Answers: 891.(D), 892.(B), 893.(C), 894.(C), 899.(A)

901. No conductor larger then ____mm^2 shall be installed using cellular concrete floor raceways
A. 30
B. 38
C. 50
D. 60

902. In cellular metal floor raceways all of the following are true except _____.
A. splices and taps can be made in junction boxes
B. disconnected outlets are removed
C. entry boxes are installed flush to the floor
D. the combined cross sectional fill cannot exceed 45%

CELLULAR METAL FLOOR RACEWAYS

903. Conductors using cellular metal floor raceways shall not be larger than____mm^2
A. 40
B. 60
C. 50
D. 45

904. The combined cross-sectional area of all conductors or cables used in cellular metal floor raceway shall not exceed ____ percent of the interior cross-sectional area of the coil or header
A. 25
B. 40
C. 50
D. 60

WIREWAYS

905. The sum of cross-sectional areas of all contained conductors at any cross-section of the wireway shall not exceed ___ percent of the interior cross-sectional area of the wire way
A. 15
B. 20
C. 25
D. 30

906. Wireway shall not contain more than ___ current carrying conductors at any cross section
A. 20
B. 25
C. 30
D. 40

Answers: 900.(D), 901.(C), 902.(D), 903.(C), 904.(B), 905.(B), 906.(C)

909. Vertical runs of wireways shall exceeding ___mm.
A. 1500
B. 3000
C.
D.

910. Splices and taps shall be permi accessible. The conductor includin to more than ____ percent of its a
A. 25
B. 80
C.
D.

911. Which of the following is the maxi that can be used at any cross-sect
A. 100
B. 30
C.
D.

MULTI OUTLET ASSEMBLY

912. Multioutlet assembly shall not be more between conductors unless of not less than ____ mm.
A. 1.0
B. 1.2
C.
D.

NONMETALLIC EXTENSIONS

913. One or more nonmetallic extensio from an existing, but not on the fl
A. 25
B. 40
C.
D.

914. Nonmetallic surface extensions sh at intervals not exceeding ___ mm
A. 200
B. 250
C.
D.

Answers: 907.(D), 908.(B), 909.(D), 910.(

B. 55 D. 70

917. Aerial cable shall have a clearance of not less than ___ mm above floor areas accessible to pedestrian traffic
A. 3000 C. 3300
B. 3100 D. 3500

918. Aerial cable shall have a clearance of not less than ___ mm above floor areas accessible to vehicular traffic
A. 3300 C. 4000
B. 3600 D. 4300

919. Aerial cable suspended over work benches, not accessible to pedestrian traffic shall have a clearance of not less than ___ mm above the floor.
A. 2500 C. 3000
B. 2800 D. 3100

STRUT TYPE CHANNEL RACEWAY

920. The use of strut-type channel raceways shall be permitted in the following, except
A. in dry location C. as power poles
B. where concealed D. where the voltage is 600 V or less

921. A surface mount short-type channel raceway shall be secured to the mounting surface at intervals not exceeding _____ mm and within _____ mm of each outlet box, cabinet, junction box.
A. 2500, 600 C. 3000, 900
B. 2800, 800 D. 3200, 1000

922. In strut-type channel raceway, splices and taps shall be permitted in raceways that are accessible after installation by having a _____.
A. flexible cover C. shielded cover
B. removable cover D. portable cover

923. Strut-type channel steel raceways shall be protected against corrosion by
A. galvanizing only C. either of these
B. organic coating only D. none of these

Answers: 915.(B), 916.(A), 917.(C), 918.(D), 919.(A), 920.(B), 921.(C), 922.(B), 923.(C)

location except
A. Class 1 Division I C.
B. Class 1 Division II D.

926. The number of conductors installed
the number for which the raceway
A. equal to C.
B. less than D.

927. A transverse metal raceway for
predetermined cells of a precas
installation of conductors from a di
A. an underfloor raceway C.
B. a header duct D.

928. It is permissible to extend unbroke
the following, except
A. dry walls C.
B. dry floors D.

929. When calculating the conductor
internal joiners, the raceway shall
the cross-sectional area.
A. 20 C.
B. 25 D.

930. Raceways on the outside of buildin
A. weatherproof and covered
B. watertight, arranged to drain
C. rain tight and arranged to drain
D. rainproof and guarded

931. A 120v lighting circuit and a 277
raceway, the 120v circuit has a w
grounded conductor would be ___
A. white C.
B. gray D.

Answers: 924.(C), 925.(B), 926.(B), 927.(B

B. grounded conductor D. none of these

934. A raceway containing 30 current carrying conductors the ampacity of each conductor shall be reduce _____ percent.
A. 80 C. 45
B. 70 D. 50

935. Where covers and accessories of nonmetallic materials are used on surface metal raceway, they shall be ___ for such use
A. labeled C. listed
B. identified D. labeled

936. A raceway contains 45 current-carrying conductors. The ampacity of each conductor shall be reduced _____ percent.
A. 80 C. 60
B. 70 D. 35

937. Which of the following locations is not permitted for the use of surface raceways?
A. dry location C. under raised floors
B. hoist ways D. hazardous

938. Metal surface raceways having splices and taps shall be permitted as long as the splices and taps and conductors do not fill the raceway more than _____ percent of the area of the raceway at that point.
A. 40 C. 70
B. 50 D. 75

SURFACE NON METALLIC RACEWAYS

939. Surface non metallic raceway shall not be used in the following, except
A. where subject to physical C. where concealed
B. in hoistways D. extension through walls and floor

940. Surface non metallic raceways shall not be used where the voltage is _____ volts or more between conductors.
A. zero C. 300
B. 250 D. 500

Answers: 932.(A), 933.(C), 934.(C), 935.(B), 936.(D),937.(B), 938.(D), 939.(D), 940.(C)

than ___ mm concrete or wood ab
A. 80 C.
B. 100 D.

943. Flat-top raceways over 100 mm b
25 mm spacing between raceways
spacing between raceways shall
less than ____ mm
A. 25 C.
B. 30 D.

944. Underfloor raceways spaced less
concrete to a depth of ___mm
A. 25 C.
B. 33 D.

945. In undefloor raceways , the cros
shall not exceed ____ percent
raceway
A. 40 C.
B. 50 D.

946. Using underfloor raceways, functio
sealed to prevent the free entranc
A. water C.
B. concrete D.

947. Underground cable installed under
A. encased
B. extended beyond the outside w
C. buried at least 6 inches
D. not buried more than 12 inches

948. Loop wiring for underfloor raceway
I. a splice II. a tap
A. I only C.
B. II only D.

Answers: 941.(B), 942.(B), 943.(A), 944.(C

A. 55
B. 30
C. 40
D. 38

951. The installation of underfloor raceways shall be permitted _____.
I. beneath the surface of concrete
II. beneath floor material other than concrete
III. where laid flush with the concrete floor and covered with linoleum
A. I only
B. II only
C. III only
D. I, II & III

952. When an outlet from an underfloor raceway is discontinued, the circuit conductors supplying the outlet
A. may be handled like abandoned outlets on loop wiring
B. may be reinsulated
C. may be spliced
D. shall be removed from the raceway

CABLE TRAYS

953. Single conductor cable shall be ___mm^2 or larger and shall be of a PS- or UL listed and marked on the surface for use in cable trays.
A. 22
B. 30
C. 38
D. 50

954. Nonmetallic cable tray shall be made of ___material
A. non corrosive
B. waterproof
C. theme retardant
D. sun proof

955. Cable tray systems shall not be used in
A. hoistways
B. environmentally air-handling space
C. where subject to physical damage
D. all of these

956. Single conductor cable 50 mm^2 through 100 mm^2 shall be installed in ladder type cable tray with a maximum rung spacing of ___mm.
A. 229
B. 325
C. 362
D. 377

Answers: 949.(B), 950.(C), 951.(D), 952.(D), 953.(D), 954.(C), 955.(D), 956.(A)

959. Aluminum cable trays shall not b
for circuits with ground fault prob
A. 1200
B. 1500

960. A unit or assembly of units or se
structural system used to securel
A. flat cable assembly
B. wireway

961. Steel cable trays shall not be u
circuits protected above _____ a
A. 200
B. 60

962. Cable tray systems shall not be
physical damage.
A. tunnels
B. hoistways

963. Power and control tray cable can
I. as open cables on bracket
II. in cable trays in hazardou
A. I only
B. II only

964. Field bends or modifications shal
system and support for the cable
A. temperature
B. electrical continuity

965. Cable splices made and insulat
within a cable tray provided they
A. have a hinged cover
B. are crimped properly

Answers: 957.(C), 958.(B), 959.(D), 960

common neutral shall be _____
A. insulated for 600 volt
B. enclosed within the same raceway
C. shielded
D. none of these

CONCEALED KNOB AND TUBE WIRING

968. Concealed knob and tube wiring shall be permitted to be used only for extensions of existing installation in
A. hollow spaces of wall
B. unfinished attic and roof spaces
C. hollow spaces of ceilings
D. all of these

969. Conductor supports in concealed knob and tube wiring shall be installed within ___ mm of each side of each tap or splice and at intervals not exceeding ___ mm
A. 150, 300
B. 100, 200
C. 75, 150
D. 50, 100

970. When passing through wood members in plastered partitions, conductors in concealed knob and tube wiring shall be protected by noncombustible, nonabsorbent insulating tubes extending not less than ___ mm beyond the wood member.
A. 76
B. 80
C. 86
D. 89

971. A clearance of not less than ___ mm shall be maintained between conductors in concealed knob and tube wiring
A. 50
B. 63
C. 76
D. 80

972. Knob and tube wiring splices shall be _____ unless approved devices are used.
A. taped
B. bolted
C. clamped
D. soldered

Answers: 966.(C), 967.(B), 968.(D), 969.(A), 970.(A), 966.(C), 971.(C), 972.(D)

maintained between conductors
A. 18
B. 26

MESSENGER SUPPORTED WIRING

975. The following cable type shall
supported wiring, except
A. metal clad cable
B. mineral-insulated metal sheath
C. power control tray cable
D. mineral clad cable

976. The messenger shall be supporte
A. dead-ends
B. intermediate locations only

977. The conduction shall not be
messenger support or
A. structural member
B. walls

OPEN WIRING ON INSULATOR

978. On open wire on insulators, ___
knobs shall be securely tied
equivalent to that of the conducto
A. 3.5
B. 5.5

979. In dry locations where not expo
shall be permitted to be separa
continuous lengths not exceeding
A. 1300
B. 1800

Answers: 973.(B), 974.(B), 975.(D), 976.

nominal in thickness.

A. 25
B. 30
C. 40
D. 50

982. Open wiring on insulators shall be permitted on systems up to ___ volts nominal, only for industrial or agricultural establishment.

A. 230
B. 440
C. 500
D. 600

983. In industrial establishment only where conditions of maintenance and supervision assure that only qualified person will service the system, conductors of size ___ mm² or larger shall be permitted to be run across open spaces where supported on intervals up to 9000 mm apart.

A. 100
B. 125
C. 150
D. 160

984. Where screws are used to mount knobs in open wiring, they shall be of length sufficient to penetrate the wood to a deft equal to at least ___ of the height of the knob.

A. ¼
B. 3/8
C. ½
D. ¾

985. Open conductors within ___ mm from the floor shall be considered exposed to physical damage.

A. 1500
B. 2000
C. 2200
D. 2500

986. Open conductors crossing ceiling joist and wall studs can also be protected by a substantial running board at least ___ mm thick back of the conductors with side protection but not more than ___ mm.

A. 8, 25
B. 10, 15
C. 12, 15
D. 15, 18

987. Exposed conductors in open wiring shall be separated at least ___ mm from metal raceways, pipings, or other conducting materials

A. 50
B. 150
C. 100
D. 75

Answers: 980.(D), 981.(A), 982.(D), 983.(B), 984.(C), 985.(B), 986.(C), 987.(A)

989. The rating of the branch circu
exceed ____ amperes, 250 V, 2-v

A. 15
B. 20
C
D

990. The equipment grounding condu
a separate, continues, copper co

A. 2.0
B. 3.5
C
D

Liquidtight

991. Liquid tight flexible nonmetallic
than ____mm.

A. 1500
B. 1800
C
D

992. The size of liquidtight flexible no
___mm to _____ mm (outside di

A. 20 , 160
B. 32, 110
C
D

993. Liquidtight flexible conduit shall n

A. in hazardous locations
B. in high temperature areas
C. in expose and concealed work
D. where installations requires f
solids

SURGE ARRESTER – LIGHTING PI

994. On circuit of less than 1000 volts
the maximum continuous phase-
at the point of application.

A. be equal to or greater than
B. be equal to or less than
C
D

Answers: 988.(D), 989.(B), 990.(B), 991.

997. On circuits of 1 kV and over, the rating of the surge arrester shall _____ the maximum continuous phase ground voltage available at the point of application?

A. equal to 125% of
B. shall be slightly less than
C. shall be 115% of
D. not be less than 125% of

998. When surge arrester is installed at services of less than 1000 volts line and ground connecting conductors shall not be smaller than _____ mm^2 copper or _____ mm^2 aluminum

A. 2, 3.5
B. 3.5, 5.5
C. 3.5 , 8
D. 8, 14

999. The height of air terminal shall be such as to bring the tip not less than _____ mm above the object to be protected for _____ mm maximum intervals and not less than _____ mm above the object to be protected for 7600 mm maximum interval

A. 245, 500
B. 254, 600
C. 300, 600
D. 300, 500

1000. When surge arrester is installed at services of 1 kV and over, the conductor between surge the arrester and the line, the surge arrester and the grounding connection shall not be smaller than _____ mm^2 copper or aluminum

A. 5.5
B. 8
C. 14
D. 22

1001. Where copper is used as protection system material it shall be of grade ordinarily required for commercial electrical work, generally designated as being of _____% conductivity when annealed.

A. 85
B. 90
C. 95
D. 98

1002. The perimeter of open areas which are located in large flat roofed structures shall be protected if their perimeter exceeds 92 m provided either rectangular dimension exceeds _____ m

A. 15
B. 18
C. 22
D. 25

Answers: *995.(D), 996.(B), 997.(D), 998.(A), 999.(B), 1000.(C), 1001.(D), 1002.(A)*

1005. Buildings which exceed _____ lower roof portions of building in a

A. 8
B. 12
C.
D.

1006. Air terminals exceeding 600 m not less than _____ of its height

A. 0.5
B. 0.6
C.
D.

1007. Conductors shall interconnect roofs that exceeds _____ m in widt

A. 8
B. 12
C.
D.

1008. A _____ is a protective device or by passing surge current, and current while remaining capable of

A. surge arrester
B. auto fuse
C. f
D.

1009. Conductor drops from a highe extra download provided the lower

A. 10
B. 12
C.
D.

1010. Roofs with a series of paralle end ridges at intervals not exceedi

A. 5000
B. 6600
C.
D.

1011. Ground rod clamps shall make of _____ mm measured parallel to

A. 38
B. 35
C.
D.

Answers: *1003.(B), 1004.(C), 1005.(C), 100 1011.(A)*

system.

A. 0.16, 0.009
B. 0.18, 0.012
C. 0.22, 0.014
D. 0.26, 0.016

1014. An air terminal shall be placed within _____ mm at the end of each intermediate ridge

A. 400
B. 500
C. 600
D. 700

1015. The edge of the roof shall be considered continuous and air terminals should be located within _____ mm of the outermost projections of the roof edge

A. 300
B. 400
C. 500
D. 600

1016. No bend of a conductor shall form an included angle of _____ degrees nor shall have a radius of bend less than _____ mm

A. 45, 180
B. 60, 205
C. 90, 210
D. 90, 203

1017. When installing a surge arrester at the service of less than 1000 volts, the grounding conductor shall be connected to _____.

I. the grounded service conductor
II. the grounding electrode conductor
III. the grounding electrode for the service
IV. the equipment grounding terminal in the service equipment

A. I and II only
B. I and III only
C. III & IV only
D. I, II, III or IV

1018. Ground terminal (rods) shall not be less than _____ mm in diameter and _____ mm long.

A. 12.2, 2500
B. 12.7, 2400
C. 12.5, 2500
D. 12.8, 2400

1019. When the soil is deep moist clay the lightning conductor or ground terminal shall extend vertically not less than _____ mm into the earth

A. 2500
B. 2300
C. 2500
D. 3000

Answers: *1012.(B), 1013.(D), 1014.(C), 1015.(D), 1016.(D), 1017.(D), 1018.(B), 1019.(D).*

B. 19
D. 2

1022. The height of air terminals abo
be less than _____ mm nor more th
A. 400, 720
B. 440, 750
C. 4
D. 5

1023. Air terminals use for Heavy-Du
mm in diameter, exclusive of the co
A. 15
B. 12
C. 1
D. 1

1024. Top-mounted air terminals fo
extend more than _____ mm above
A. 600
B. 550
C. 5
D. 4

1025. Conductors used by air termina
not less than _____ mm^2
A.. 5.5
B. 3.5
C. 2
D. 1

1026. Splices in conductors used
protection shall be as few as pra
withstand a pull test of _____ N.
A. 750
B. 810
C. 8
D. 9

1027. For structure containing flam
from the structure shall be a mi
structure
A. 1500
B. 1800
C. 2
D. 2

1028. A surge arrester is a protect
_____ or by passing surge current.
A. decreasing
C. I

Answers: *1020.(A), 1021.(B), 1022.(C), 102*

1030. In all types of concealed wiring installed in buildings of all types of construction, boxes used for ceiling outlets are
A. square
B. round
C. hexagonal
(D) octagonal

1031. Conduit bodies enclosing 1 mm^2 conductors or smaller should have a cross-sectional area ___ the cross-sectional area of the largest conduit or tubing to which it is attached
A. equal to exactly 1.5 times
B. not less than twice
(C) not less than twice of
D. exactly twice

1032. In walls or ceiling, concrete, tile or other non combustible material, boxes and fittings shall be installed that the front edge of the box or fitting will not set back of the finished surface more than ___ mm.
A. 4.5
B. 5.6
(C) 6.4
D. 6.8

1033. Plaster, dry-board or plaster-board surfaces that are broken or incomplete shall be repaired so that there will be no gaps or open spaces greater than ___ mm at the edge of the box or fitting.
(A) 3.2
B. 3.6
C. 3.8
D. 4.0

1034. Boxes intended to enclose flush devices shall have an internal depth of not less than ___ mm
A. 20
(B) 24
C. 28
D. 30

1035. In straight pulls the length of the box shall not be less than ___ times the trade diameter of the largest raceway.
A. five
B. six
C. seven
(D) eight

1036. No box shall have an internal depth of less than ___ mm
A. 16
(B) 13
C. 18
D. 24

Answers: 1028.(B), 1029.(A), 1030.(D), 1031.(C), 1032.(C), 1033.(A), 1034.(B), 1035.(D), 1036.(B)

(B) six
D. ei

1039. In pull boxes or junction boxes conductors shall be cabled or racked
A. 1400
B. 1600
(C) 1
D. 1

1040. Sheet steel boxes not over 164 less than ___ mm thick.
A. 1.2
(B) 1.6
C. 1.
D. 1

1041. The maximum number of 5.5 octagonal outlet box is
A. 5
(B) 6
C. 7
D. 8

1042. For use on system over 600 straight pulls shall not be less th sheath, or the largest shielded or the box.
A. 36
(B) 32
C. 4
D. 3

1043. For angle on U pulls on syste between each cable on conductor of the box shall not be less than largest cable, or conductor
(A) 36
B. 38
C. 4
D. 4

1044. In walls of concrete, tile, or oth be so installed that the front edg finished surface more than ___ mm
A. 4.8
B. 5.0
(C) 6.
D. 6

Answers: 1037.(B), 1038.(B), 1039.(C), 1040

1047. The maximum number of 8 mm² conductors permitted in a 100 x 32 square outlet box is
A. 5
(B) 6
C. 7
D. 8

1048. Where non-metallic sheathed cable is used, the cable assembly shall extend into the box no less than ___ mm through a non-metallic sheathed cable knock-out opening
(A) 6.4
B. 5.8
C. 6.8
D. 5.4

1049. The maximum number of 14 mm² conductors permitted in 100 x 40 square outlet box is
(A) 4
B. 6
C. 5
D. 7

1050. Outlet boxes used whose gas outlet are present shall be fastened to the ___ as to be mechanically secured
A. wall near the outlet
B. ceiling
C. lowest portion of the wall
(D) gas pipes

1051. Metal boxes not made of sheet steel, die-cast or permanent mold aluminum, brass or bronze, shall have a wall thickness not less than ___ mm
A. 1.6
B. 2.4
C. 2.8
(D) 3.2

1052. For cabinets and cut-out boxes constructed of sheet steel, the metal thickness shall not be less than ___ mm uncoated
A. 1.20
(B) 1.35
C. 1.55
D. 1.65

1053. Other than at points of support, there shall be an air space of a least ___ mm between the base of the device and the wall of any metal cabinet or cu-out box in which the device is mounted.
A. 1.5 mm
B. 2.5 mm
(C) 2.0 mm
D. 1.75 mm

Answers: *1045.(C), 1046.(C), 1047.(B), 1048.(A), 1049.(A), 1050.(D), 1051.(D), 1052.(B), 1053.(C)*

to at least ___ mm for 251 to 600
A. 12, 24
(B) 13, 26
C.
D.

1056. Outlet boxes can be secured mechanical means such as _____ ceiling framing member
A. bolts
B. screws
C.
(D)

1057. ___ boxes shall not be used use of lock-nuts and bushing are t
A. square
(B) round
C.
D.

1058. In completed installation, eac
A. cover
B. faceplate
C.
(D)

1059. In which wiring method, non are permitted
(A) metal raceways
B. open wiring on insulators
C.
D.

1060. When cable is used, each ca box, and metal socket enclosure _____ mm along the sheath of th
A. 250
(B) 300
C.
D.

1061. Sheet steel boxes over 1640 less than ___ mm uncoated
(A) 1.35
B. 1.6
C.
D.

Answers: *1054.(A), 1055.(B), 1056.(D), 10*

B. 3 D. none of these

1064. For 2.0 mm^2 conductor size, the free space within box for each conductor in cm^2 is
(A) 32 C. 28
B. 36 D. 24

1065. Cables entering a cutout bus shall ____
(A) be secured independently to the cutout box
B. be cleaved through a chase
C. have a maximum of two cables for connector
D. all of these

1066. Cabinets a cutout box installed in wet location shall be
A. waterproof (C) weatherproof
B. raintight D. watertight

1067. A clearance of ____mm shall be secured between base current –carrying metal parts and any metal surface
A. 24 C. 30
(B) 26 D. 32

1068. In damp and wet locations cabinets and cutout boxes shall be mounted so there is at last ____mm air space between the enclosure and the wall or other supporting surfaces
A. 4.6 (C) 6.4
B. 5.2 D. 6.8

1069. Where metal plugs or plates are used with nonmetallic cabinets , they shall be recessed at least ____mm from the outer surface
(A) 6.4 C. 7.2
B. 6.8 D. 7.5

1070. _____ cover and plates shall be permitted with nonmetallic boxes.
A. I only (C) either I or II
B. II only D. neither I or II

Answers: *1062.(B), 1063.(C), 1064.(A), 1065.(A), 1066.(C), 1067.(B), 1068.(C), 1069.(A), 1070.(C)*

III. limit the voltage to ground
IV. Facilitate over current devic
A. I only C. II
B. I & II only (D) II

1073. Boxes used for ceiling in all type of all types of construction are
A. square (C) oc
B. oblong D. d

1074. An outlet box should be fastene
(A) toggle bolts C. lo
B. wood plugs D. e

1075. It is permissible to install conductors in one pull box?
(A) Yes, if insulated for the maximum
B. not recommended
C. Yes, if ampacity is the same for b
D. Yes, in dry places only

1076. _____ boxes may be weatherpr
I. rainproof II. Raintight
A. I only C. II
B. II & III only (D) I,

1077. A _____ is an enclosure design provide with a frame, mat, or trim may be hung.
(A) cabinet C. pa
B. switchboard D. c

1078. Boxes and fittings shall be ____
A. sealed (C) d
B. dustproof D. w

Answers: *1071.(D), 1072.(D), 1073.(C), 1074*

1080. Auxiliary gutter shall be permitted to supplement wiring spaces at meter spaces at meter centers, distribution centers, switchboards, and similar points or wiring system and may enclosed _____

I. switches
II. Over current devices
III. Conductors
IV. Busbars

A. I & II only
B. I & III only
C. II & III only
(D) III & IV only

1081. Cabinets and cutout boxes that contain devices or appatatus connected within the cabinet or box to more than _____ conductors, including those branch circuits, meter loops, feeder circuits, power circuits and similar circuits, but not including the supply circuit or continuation there of, shall have back wiring spaces or one or more side wiring spaces, side gutters, or wiring compartments.

(A) 8
B. 12
C. 20
D. 28

1082. 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 may be hung is a

A. panelboard
B. switchboard
C. wireway
(D) cabinet

1083. All boxes and enclosures for emergency circuits shall be marked so they will be _____ as a component of an emergency circuit.

(A) readily identified
B. recognized
C. easily sighted
D. classified

1084. For straight pulls, the length of the box shall be not less than _____ the outside diameter, over sheath, of the largest conductor or cable entering the box on systems over 600 volts.

A. 8 times
B. 10 times
C. 36 times
(D) 48 times

1085. In straight pulls, the length of the box shall be not less than _____ times the trade diameter of the largest raceway.

A. 10
B. 14
(C) 8
D. 12

Answers: 1079.(A), 1080.(D), 1081.(A), 1082.(D), 1083.(A), 1084.(D), 1085.(C),

B. 15
(D)

1088. Where a permanent barrier i considered as _____.

A. permanent barriers are not allow
(B) a separate box
C. 60% of the box
D. the same box

1089. Suitable covers shall be ins enclosures to prevent accidental co to parts or insulation. Over 600v no

(A) energized
B. mechanical
C.
D.

1090. How would you seal unused ko

A. cardboard
B. duct seal
C.
(D)

1091. In completed installations each

A. receptacle
B. switch
(C)
D.

1092. _____ boxes shall not be used use of locknuts or bushings are to

(A) Round
B. Shallow
C.
D.

1093. When counting the number o through the box is counted as _____

(A) one
B. two
C.
D.

1094. A junction box used in a syste the box of _____.

A. caution
B. Danger
C.
(D)

Answers: 1086.(D), 1087.(D), 1088.(B), 10 1094.(D),

1096. Unused opening in boxes, raceways, and other enclosures shall be
A. closed with a device listed for such service with the equipment
B. effectively closed
C. closed to afford protection equivalent to the equipment wall
D. open

1097. Boxes having an approved system of organic coatings and are installed out of doors shall be marked _____.
A. weatherproof
B. raintight
C. watertight
D. outdoor usage

1098. A cutout box installed in a wet location shall be _____.
A. raintight
B. weatherproof
C. waterproof
D. rainproof

1099. Cabinets and cutout boxes shall be deep enough to allow the closing of the doors when _____ ampere branch circuit panelboard switches are in any position; when combination cutout switches are in any position; or when other single throw switches are opened as far as their construction will permit.
A. 15
B. 20
C. 30
D. 100

Switches, Switchboard and Panelbaords

1100. A switch or a circuit breaker in a wet location or outside of the building and shall be enclosed in a _____ enclosure
A. waterproof
B. watertight
C. weatherproof
D. any of these

1101. Single throw knife switches shall be so connected that the blades are _____ when the switch is in open position.
A. grounded
B. de energized
C. shielded
D. covered

1102. Where the throw of a double-throw switch is vertical, a _____ device shall be provided to hold the blades in the open position when so set.
A. automatic
B. holding
C. protective
D. locking

Answers: 1095.(A), 1096.(C), 1097.(B), 1098.(B), 1099.(C), 1100.(C), 1101.(B), 1102.(D),

A. 300
B. 200
C. 5
D. 4

1105. Metal faceplates of flush-mou
metal shall not be less than _____
A. 0.75
B. 0.65
C. 0
D. 1

1106. A faceplate for flush-mounted s
thick when made of nonferrous met
A. 0.75
B. 1.0
C. 1
D. 1

1107. A fused switch shall not have fu
A. less than 100 A
B. parallel
C. s
D. o

1108. A faceplate for flush-mounte
_____mm thick when made of nonc
A. 1.8
B. 2.0
C. 2
D. 2

1109. Snap switches used with open
insulating material that will separat
the surface wired over.
A. 13
B. 14
C. 1
D. 1

1110. Auxiliary contacts of renewable
be provided on all knife switches
breaking current of over _____ amp
A. 200
B. 180
C. 1
D. 1

1111. Barriers shall be placed in all
_____ and terminals from the remain
A. busbars
B. conductors
C. C
D. e

*Answers: 1103.(C), 1104.(A), 1105.(C), 110
1111.(A),*

B. rated for the highest voltage at may contact
C. flame retardant
(D) all of these

1114. All panelboard circuit breaker _____ shall be legibly identified as to purpose or use on a circuit directory located on face or inside of the panel doors.
A. manufacturers
B. conductors
C. feeders
(D) modification

1115. The arrangement of busbars and conductors in switch board and panelboard shall be such to avoid overheating due to ____effects
A. resistive
(B) inductive
C. capacitive
D. all of these

1116. A space of _____mm or more shall be provided between the top of any switchboard and any combustible ceiling
A. 800
(B) 1000
C. 1200
D. 1500

1117. Not more than _____ overcurrent devices of a lighting and appliance branch circuit panelboard shall be installed in any one cabinet or cutout box
A. 40
B. 44
(C) 48
D. 50

1118. A lighting and appliance branch-circuit panelboard is one having more than ____ percent of its overcurrent devices rated 30 amperes or less for which the neutral connection is provided
(A) 10
B. 12
C. 15
D. 20

1119. Each lighting and appliance branch –circuit panelboard shall be individually protected on the supply side by not more than ____ circuit breakers
A. 1
(B) 2
C. 3
D. 4

Answers: *1112.(A), 1113.(D), 1114.(D), 1115.(B), 1116.(B), 1117.(C), 1118.(A), 1119.(B).*

B. flame retardant

1122. Instruments circuits and othe
shall be supplied by a circuit that is
rated up to _____ amperes
(A) 15
B. 20
C.
D.

1123. Renewable type contacts shall
volts designed for use in breaking
A. 50
B. 100
C.
(D)

1124. The supply to a portable swit
hard usage cords or cables. W
conductors, there shall be a ma
(mated connector pairs) where th
does not exceed 100 feet.
A. 2
(B) 3
C.
D.

1125. Snap switches can be group
between adjacent switches do not
A. 150
(B) 300
C.
D.

1126. Where a double-throw knife h
be provided to hold the blades in t
A. closed
B. automatic
(C)
D.

1127. Individual overcurrent protec
omitted if the panelboard feeder
_____.
A. the combined capacity of the co
B. 200 amps
(C) the rating of the panelboard
D. the feeder ampacity

Answers: *1120.(C), 1121.(C), 1122.(A), 11*

B. may be opened under load
C. should be placed so that gravity tends to close them
D. should be connected in parallel

1130. Minimum headroom shall be provided for all working spaces about service equipment, switchboards, panelboards, or motor control center except in service equipment or panelboards in dwelling units that do not exceed _____ amperes.
A. 150
(B.) 200
C. 175
D. 300

1131. All devices excluding lighting and appliance branch circuit panelboards provided with terminals for the attachment of conductors and intended for connection to more than one side of the circuit shall have _____ property marked for identification.
A. conductors
(B.) terminals
C. sides
D. none of these

1132. A stage switchboard that is not completely enclosed dead-front and dead-rear or recessed into a wall shall provided with a _____ extending the full length of the board from falling objects.
A. cover
B. guard
C. mesh net
(D.) metal hood

1133. 3-way and 4-way switch shall be so wired that all switching is done in the _____ conductor.
(A.) ungrounded
B. grounded
C. neutral
D. grounding

1134. Each switchboard, switchboard section, or panelboard, if used as service equipment, shall be provided with _____.
(A.) a main bonding jumper
B. a power circuit
C. a battery charging panel
D. a 4-wire delta connected system

1135. All disconnect means required by the code, and each service, feeder and branch circuit at the point where it originates shall be legibly marked
A. with a sign "Danger of Electrocution"
B. "Disconnect"

Answers: 1128.(B), 1129.(A), 1130.(B), 1131.(B), 1132.(D), 1133.(A), 1134.(A),

1137. Aerial cable shall have a clear
areas accessible to pedestrian traff
area accessible to vehicular traffic
(A.) 3100, 4300
B. 3200, 4200
C. 3
D. 3

1138. Travel from flexible cord or ca
shall be limited to ___ mm
A. 1500
(B.) 1800
C. 1
D. 2

1139. Flexible cords and cables shall
(A.) when run through doorways, win
B. wiring of cranes and hoists
C. pendants
D. elevator cables

1140. Unless special means for acce
accessible
A. out of sight
B. separated
C. g
(D.) is

1141. The following are methods o
transmitted to joints or terminals, e
A. knotting the cord
(B.) attaching it to building surface
C. winding with tape
D. fittings designed for the purpose

1142. The ampacity of fixture wire
amperes
A. 5
(B.) 6
C. 8
D. 1

1143. The ampacity of fixture wire, si
A. 5
B. 6
(C.) 8
D. 1

*Answers: 1135.(D), 1136.(C), 1137.(A), 113
1143.(C),*

1146. The ampacity of fixture wire, size 5.5 mm² shall not exceed ___ amperes
A. 16
B. 20
C. 24
D. 29
30A

1147. The minimum size of fixture wire in mm²
A. 0.50
B. 0.75
C. 1.0
D. 0.35

1148. Thermoplastic insulated fixture wire shall be durably marked on the surface at intervals not exceeding ___ mm.
A. 300
B. 400
C. 500
D. 600

1149. A fixture that weights more than ___ kg shall be supported independently by an outlet box
A. 12
B. 18
C. 23
D. 25

1150. The use of fixture wire shall be permitted in the following, except
A. for installation of lighting fixture
B. for connecting the lighting fixture to branch circuit conductors supplying the fixture
C. as branch circuit conductors
D. installation of equipment where enclosed and not subject to bending or twisting in use

1151. Fixture shall be constructed, or insulated, or equipped with shades or guards that combustible materials will not be subjected to temperatures an excess of ___ °C.
A. 60
B. 60
C. 80
D. 90

1152. Flexible cords shall not be connected to devices and to fittings that tension will not be transmitted to joints or terminal screws. This shall be accomplished by
A. a knot in the cord
B. winding with tape
C. a special fitting
D. all of these

Answers: *1144.(C), 1145.(C), 1146.(D), 1147.(B), 1148.(D), 1149.(C), 1150.(C), 1151.(D), 1152.(D).*

A. 0.50
B. 0.75

1155. Rossettes shall be rated at rating of ___ amperes
A. 5
B. 6

1156. Unless special means for acc readily accessible
A. out of reach
B. concealed

1157. It means that there are operating side of the equipment
A. dead front
B. insulated

1158. Flexible cords to portable than _____ watts shall be approv
A. 50
B. 100

1159. Individual showcases, othe connected by flexible cord t installation shall comply with of t
I. the wiring will not be expo
II. attachment plugs shall be
III. flexible cord shall be har
A. I only
B. II only

1160. Flexible cords and cables sh that _____ will not be transmitte
A. shock
B. tension

Answers: *1153.(B), 1154.(A), 1155.(B),*

LIGHTING FIXTURE,LAMPHOLDERS, LAMPS, RECEPTACLES AND ROSETTES

1163. Cleat –type lampholders, receptacles, and rosette located at least ___mm above the floor shall be permitted to have exposed contacts.
A. 1800
B. 2000
(C) 2400
D. 2500

1164. No parts of cord-connected fixtures, hanging fixtures, or pendants shall be located within a zone measured ___mm horizontally and ___mm vertically from the top of the bathtub rim.
A. 600, 1800
(B) 900 , 2400
C. 1000, 2000
D. 1200, 2400

1165. Fixtures near combustible material shall be equipped with shades or guards that combustible material will not be subjected to temperature in excess of ____°C.
A. 75
(B) 90
C. 120
D. 150

1166. Lampholder installed over highly combustible material shall be located at least ___mm above the floor
A. 1500
B. 1800
C. 2000
(D) 2400

1167. A fixture that weighs more than ____ kilograms shall be supported independently of the outlet box,
(A) 23
B. 25
C. 28
D. 30

1168. A fixture that weighs more than ____ kilograms shall not be supported by screw shell of a lampholder
A. 2.0
(B) 2.5
C. 3.0
D. 3.5

Answers: 1161.(B), 1162.(A), 1163.(C), 1164.(B), 1165.(B), 1166.(D), 1167.(A), 1168.(B),

A. 300
B. 250
C.
(D)

1171. Lampholders installed in wet
(A) weatherproof
B. raintight
C.
D.

1172. Lamp tie wires , mounting s
lamps spaced no less than ___m
to be grounded.
A. 30
B. 34
(C)
D.

1173. Fixture conductors smaller th
A. 0.50
(B) 0.75
C.
D.

1174. Pendant conductors for incan
than ____mm² for intermediate or
(A) 0.75
B. 2.0
C.
D.

1175. Pendant conductors (for In
smaller than ____mm² for m
lampholders
A. 0.75
B. 1.0
(C)
D.

1176. Pendant conductors longer th
not cabled in PS or UL – listed ass
A. 600
B. 700
(C)
D.

1177. Bushing having holes 7 mm
plain pendant cord and holes ___
(A) 10
B. 7
C.
D.

Answers: 1169.(A), 1170.(D), 1171.(A), 11
1177.(A)

A. 4.5 C. 6.0
B. 5.0 (D) 6.4

1180. Metal canopies supporting lampholders, shades etc, exceeding 3.6 kg shall not be less than ____mm in thickness
A. 0.25 (C) 0.50
B. 0.36 D. 0.64

1181. Pull type canopy switches shall not be inserted in the rims of metal canopies that are less than ____ micrometers in thickness.
A. 525 C. 645
(B) 635 D. 650

1182. The outer metal shall and cap shall be lined with insulating material and this lining shall not extend beyond the metal shell more than ___mm.
(A) 3.2 C. 6.4
B. 4.5 D. 8.0

1183. An incandescent lamp for general use on lighting branch circuit shall not be equipped with a medium base if rated over ____watts.
A. 250 C. 400
(B) 300 D. 460

1184. Lead wires furnished as part of a weatherproof lampholders shall be of approved stranded, rubber covered inductors not less than ___mm^2
A. 0.75 (C) 2
B. 1.0 D. 3.5

1185. Receptacles installed for the attachment of portable cords shall be rated at not less than ___ amperes, 125 volts
(A) 15 C. 25
B. 20 D. 30

1186. Rosettes shall be rated at 660 watts, 250 volts with a maximum current rating of ___ amperes.
A. 2.6 C. 7.5
B. 5.0 (D) 10

Answers: 1178.(B), 1179.(D), 1180.(C), 1181.(B), 1182.(A), 1183.(B), 1184.(C), 1185.(A), 1186.(D),

A. 5 (C)
B. 7.5 D.

1189. Recessed portion of lighting fi
support, shall be spaced at least _
(A) 13 C.
B. 15 D.

1190. Sheet metal of flush and re
against corrosion and shall not be
A. 0.32 (C)
B. 0.50 D.

1191. Fixtures shall be so construc
not be subjected to temperatures
A. 60 (C)
B. 75 D.

1192. The terminals of an electri
energized where any lamp termina
A. 250 C.
(B) 300 D.

1193. Transformers used for electr
____type.
A. shell C.
B. core (D)

1194. Lighting tracks shall not be in
finished floor except when protect
(A) 1500 C.
B. 1800 D.

1195. For branch-circuit calculations
fraction therefore shall be conside
A. 150 C.
(B) 180 D.

*Answers: 1187.(B), 1188.(C), 1189.(A), 11
1195.(B),*

1198. A receptacle installed outdoor shall be considered protected from the weather by which of the following methods?

I. located under roofted open porches
II. have an enclosure that is weatherproof when the receptacle is covered
III. located under a canopy where the receptacle is not subject to water run-off

A. I only
C. I and II only
B. II and III only
D. I, II and III

1199. An attachment plug connecting to a receptacle shall _____ the equipment grounding conductor.

A. have conductors the same size as
B. provide for first-make, last-break of
C. provided a twist-lock connecting for
D. none of these

1200. A cord connector that is supported by a permanently installed cord pendant shall be considered a (an) _____.

A. receptacle outlet
C. lighting outlet
B. permanent cord
D. outlet device

1201. Light fixtures hung by chains should be wired so that the _____.

A. chain is not grounded
B. wires support the light
C. wires do not support the light
D. light is insulated from the chain

1202. Double-pole switch lampholders supplied by the ungrounded conductors of a circuit, the switching device of lampholders of the switched type shall _____ disconnect both conductors of the circuit.

A. separately
C. readily
B. simultaneously
D. automatically

1203. When installing office furnishings, receptacle outlets, _____ be located in lighting accessories.

A. single-type only can
C. shall
B. duplex-type only can
D. shall not

Answers: 1196.(C), 1197.(B), 1198.(D), 1199.(B), 1200.(A), 1201.(C), 1202.(B), 1203.(D),

A. 75
C.
B. 90
D.

1206. Fixture shall be wired with c
environment conditions and _____
A. temperature
C.
B. voltage
D.

1207. Fixtures shall be securely
mechanical means such as _____.
I. rivets II. screws III
A. II only
C.
B. III only
D.

1208. Receptacles rated _____ amp
conductors shall be marked CO/AL
A. 20
C.
B. 25
D.

1209. The rating of a lampholder o
than 50 volts shall be at least _____
A. 220
C.
B. 660
D.

1210. Where flexible cords are p
connected, it is permissible to omi
A. switches
C.
B. receptacles
D.

1211. A cord connector that is s
pendant shall be considered _____
A. receptacle outlet
C.
B. permanent cord
D.

1212. Receptacles mounted on _____
A. outdoor circuits
C.
B. garage walls
D.

*Answers: 1204.(A), 1205.(B), 1206.(D), 12
1212.(C),*

material, armored or lead-covered conductors with suitable fittings shall be used for the wiring compartment lined with _____

A. wood
B. plastic
C. metal
D. any of these

1215. A 20 ampere rated branch circuit serves four receptacles. The rating of the receptacles must not be less than _____ amperes.

A. 20
B. 15
C. 25
D. none of these

1216. A receptacle outlet installed outdoors shall be located so that _____ is not likely to touch the outlet cover or plate.

A. persons
B. water accumulation
C. metal
D. none of these

1217. Lampholders installed over highly combustible material shall be of the _____ type.

A. porcelain
B. low smoke
C. switched
D. unswitched

APPLIANCES

1218. All Cord- and plug connected smoothing crons and electrically heated appliances appliances that are rated more than ___watts and produces in excess of 121°C shall be provided with approved heater cords.

A. 50
B. 100
C. 150
D. 200

1219. The length of cords for electrically heated appliances shall not be less than ____mm and not over _____mm.

A. 500, 800
B. 400, 800
C. 1000, 2000
D. 500, 1000

1220. For built-in dishwashers and trash compactors intended for dwelling unit use, the length of the cords shall be ____mm to ____mm.

A. 500 , 1000
B. 1000, 2000
C. 1000, 1300
D. 500, 800

Answers: 1213.(D), 1214.(C), 1215.(B), 1216.(B), 1217.(D), 1218.(A), 1219.(D), 1220.(C).

A.30
B. 40
C.
D.

1223. Open-coil or exposed sheate commercial –type heating appl protection devices rated at not ov

A. 15
B. 20
C.
D.

1224. A branch circuit supplying a capacity of ____ liters or less sha the nameplate rating of the water

A. 400
B. 450
C.
D.

1225. Infrared heating lamps rated lampholders of medium-base, uns

A. 300
B. 400
C.
D.

1226. screw-shell type lampholders ___watts.

A. 300
B. 400
C.
D.

1227. PS or UL listed ceiling fans th accessories ,shall be permitted to

A. 10
B. 15
C.
D.

1228. For permanently connected a amperes or ____horsepower , th permitted to serve as disconnectir

A. 1/8
B. ¼
C.
D.

Answers: 1221.(A), 1222.(C), 1223.(D), 12

1231. All heating elements that are _____ and are a part of an electric heater shall be legibly marked with the ratings in volts and watts, or in volts and amperes.

I. rated over one amp II. replaceable in the field
III. a part of an appliance

A. I only
C. III only
(B) II only
D. I, II & III

1232. When operated on a voltage 10% higher than nameplate rating, an appliance will

I. have a shorted life II. Draw a higher current
III. use more power

A. I only
C. III only
B. II only
(D) I, II & III

1233. Five pieces of kitchen equipment in a restaurant would have a feeder demand factor of _____ percent.

A. 65
C. 80
(B) 70
D. 90

1234. A lighting and appliance branch circuit panel board contains six-3pole circuit breakers and eight 2 pole circuit breakers. The maximum allowable number of single pole circuit breakers permitted to be added is _____.

(A) 8
C. 28
B. 16
D. 12

1235. An appliance (not motor driven) is rated 1200 watts at 120 volts, with no marked nameplate, the branch circuit overcurrent device shall not exceed _____ amps.

A. 15
C. 30
(B) 20
D. 40

1236. For household ranges rated _____ or mote rating, the minimum branch circuit rating shall be 40 amperes.

A. 4 kw
C. 8 kw
B. 6 kw
(D) 8 ¾ kw

Answers: 1229.(D), 1230.(D), 1231.(B), 1232.(D), 1233.(B), 1234.(A), 1235.(B), 1236.(D).

A. 60
(C) 7
B. 70
D. 8

1239. Under the optional method of "other load" beyond the initial 10 kV
(A) 40
C. 6
B. 50
D. 7

1240. Which of the following state appliance receptacle outlet at a dwe
I. The refrigerator can be plugg
II. The outdoor receptacle c required small appliance circuit
(A) I only
C. b
B. II only
D. n

1241. With consideration to mobile appliances, other than built in, connected?
A. refrigerators
C. c
B. range equipment
(D) v

1242. Wall-mounted ovens and coun provisions for mounting and for permitted to be _____.
I. plug and cord connected
A. I only
(C) e
B. II only
D. n

1243. Which of the following is the m connected appliance where the b appliance disconnecting means?
(A) 1/8 hp
C. ¼
B. ¼ hp
D. 1

Answers: 1237.(C), 1238.(C), 1239.(A), 124