

2020 Master Code Practice Exam - 100 Question

1.	Type MV cable (Medium Voltage) shall be permitted for use on power systems rated up to and including 35,000 volts, nominal, in which of these circumstances:
	A. In wet or dry locationsB. direct buriedC. in messenger-supported wireD. all of the above
2.	Using the Standard Method, what is the calculated service rating for a 1500 square feet dwelling with the following:
	 (2) 20-A small appliance circuits (1) 20-A laundry circuit (2) 4-kW wall-mounted ovens (1) 5.1-kW counter-mounted cooking unit (1) 4.5-kW water heater, a 1.2 kW dishwasher (1) 5-kW clothes washer and dryer (6) 7-A, 230-V room air-conditioning units (1) 1.5-KW permanently installed bathroom space heater
	Note - use the column C method, rather than the column A method for this specific problem
	A. 115AB. 153AC. 162AD. 175A

4. The ampacity of the supply conductors for an individual resistance welder that can be operated at different times at different values of primary current or duty cycle shall not be less than _____ of the rated primary current for seam and automatically fed welders.

3. Where CNG or LNG dispensers are installed beneath a canopy or enclosure, all electrical equipment installed beneath the canopy or enclosure shall be suitable for ______

hazardous (classified) locations.

A. Class I, Division 1B. Class I, Division 2C. Class II, Division 1D. Class II, Division 2

	B. 75% C. 70% D. 80%
5.	Where heating equipment is supplied by more than one source, feeder, or branch circuit, the disconnecting means shall be
	 A. grouped and identified as having multiple disconnecting means B. located within 10 ft of equipment C. terminated to an equipment grounding conductor originating at the service D. all of these
6.	The connection of an Energy Storage System (ESS) that operates in parallel with other ac sources shall use inverters that are listed and identified as interactive.
	A. active B. reactive C. non-active D. interactive
7.	In a major repair garage where natural gas vehicles are repaired, the area within 18 inches of the ceiling is considered what classification?
	 A. Class I, Division 1 B. Class I, Division 2 C. Class II, Division 1 D. Class II, Division 2
8.	Calculate the maximum demand load for a single branch circuit supplying a counter-mounted cooking unit and two wall-mounted ovens, all located in the same room. The counter-mounted unit has a nameplate rating of 6 kW, and each wall-mounted oven has a rating of 4 kW.
	A. 7.7kW B. 8.8kW C. 11kW D. 14kW
9.	A bank has a total square footage of 25,000 sq-ft, and there are 250 receptacles installed. Determine the largest receptacle load to be applied to the total demand load.
	A. 45,000VA B. 46,000VA C. 50,000VA

10. A restaurant has all electric appliances, a connected lighting load that includes a sign, totaling

A. 25%

D. 55,000VA

50,000 VA.

The electrical service is rated at 120/208V, three-phase. The restaurant contains the following loads: 120-volt loads 60 duplex receptacles 100 ft multi-outlet assembly (simultaneous rated) 1 broiler 5 kW 2 deep fryers 5.5 kW 1 freezer 3,400 VA 1 booster heater 1,500 VA 1 coffee service machine 3,500 VA 1 dishwasher 3,500 VA 208-volt loads 1 walk-in cooler 6,400 VA 1 water heater 4,800 VA 1 oven 20 kW 1 range 15 kW 2 convection ovens 8kW 15kW electric heater 14 kW AC 3 exhaust fans 2.4 amperes 1 cooktop 10kW 2 10kw heating units. What is the total demand load for the restaurant? A. 122,700VA B. 160,000VA C. 162,940VA D. 214,550VA 11. What are the primary and secondary overcurrent protection devices for a 75kVA three-phase, 480V/208Y transformer? A. 125A primary, 300A secondary B. 150A primary, 300A secondary C. 250A primary, 300A secondary D. 350A primary, 320A secondary 12. A phase converter with a nameplate single-phase input rating of 100 FLA, protecting variable

loads, shall have overcurrent protection set at not more than ______.

A. 100AB. 125AC. 150AD. 225A

(3. What is the maximum size overcurrent protection device required to protect 14 AWG copper conductors used for a pump motor control-circuit that is protected by a motor branch circuit protection device and extends beyond the enclosure?	
	В. С.	15A 20A 45A 100A
	_	ers shall be designed and mounted such that all electrical equipment and fixed least above floor level.
	В. С.	6 inches 12 inches 18 inches 24 inches
_	up	tached power supply cable(s) for overhead gantries shall be provided with on exposure to strain that could result in either cable damage or separation from ery device and exposure of live parts.
		arc-fault protection,
		ground-fault interrupter protection, a means to energize the cable conductors and power service delivery device
	D.	a means to de-energize the cable conductors and power service delivery device
		floor is 70 ft by 10 ft and has two small appliance circuits; a 1000-VA, 240-V'A, 120-V exhaust fan; a 400-VA, 120-V dishwasher; and a 7000-VA electric range.
		30A
		40A 50A
		60A
17. Each conductor of a lead-in from an outdoor antenna shall be provided with a(n)		
		grounding electrode
		equipment grounding conductor listed antenna discharge unit
		listed disconnecting means
18. /	An energy man	agement system shall not override the load shedding controls for the following:
		Fire Pumps
		Emergency Systems
		Legally Required Standby Systems All of these
	٥.	

19.	9. What are the minimum size THWN conductors three-phase 480V/208V transformer?	required to feed the primary side of a 112.5kVA
	 A. 1/0 THWN Primary, 400 kcmil B. 2/0 THWN Primary, 500 kcmil C. 3/0 THWN Primary, 550 kcmil D. 4/0 THWN Primary, 600 kcmil 	THWN Secondary THWN Secondary
20.	On a property where flammable liquids are reconstored, the area within 3 ft of the edge of outdoor considered a environment Output Description:	eived by a pipeline and are blended in bulk and for equipment, extending in all directions, shall be
	A. Class I, Division 1B. Class I, Division 2C. Class II, Division 1D. Class II, Division 2	
21.	shall not be greater than the sum of the larges ground-fault protective device provided with the	for the circuit supplying the industrial control panel rating of the branch-circuit short-circuit and e industrial control panel,, plus the and apparatus that could be in operation at the
	 A. plus 80% of the FLA rating of B. plus 150% of the FLA rating of C. plus 125% of the FLA rating of D. plus 100% of the FLA rating or D. 	fall resistance heating loads fall resistance heating loads
22.	Fire alarm circuits shall be identified at termina during testing and servicing of	
	A. allows emergency workers toB. identifies the nominal voltageC. is legibleD. helps to prevent unintentional	
23.	 Underground wiring in motor fuel dispensing factorized conduit, or threaded steel intermediate metal of cover, shall be permitted to be conduit. 	<u> </u>
	A. 1 foot B. 2 feet C. 3 feet D. 6 feet	
24.	 A thermal barrier shall be required if the space combustible material is less than 	between the resistors and reactors and any

	В. С.	6 inches 12 inches 18 inches 24 inches
25.		g method encased in inch(es) of concrete, nonmetallic raceways ed to be used where installed in an occupancy where 100 or more people gathe
	A. B. C. D.	1 2
26.		shall not be installed on circuits operating at more
	В. С.	150V or more than 5A 250V or more than 5A 600V or more than 10A 1,000V or more than 10A
27.		ontrol power sources, other than transformers, shall be protected by overcurrent not more than of the VA rating of the source divided by the rated
	В. С.	200% 167% 125% 100%
28.	Where capacito	rs are installed in motor circuits, conductors shall not be less than of the rated current of the capacitor.
	В. С.	80% 115% 125% 135%
29.	-	230V wound-rotor motor rated at 15HP requires short-circuit and ground-fault manufacturer calls for a non time delay fuse to protect the motor. What size fused?
	В. С.	40A 45A 50A 60A

30.		achine's name plate shall be attached to the control equipment enclosure or nall be plainly visible after installation. The nameplate shall include:
	В. С.	supply voltage, number of phases, frequency, and FLA minimum ampere rating of the short-circuit and ground-fault protective device ampere rating of largest motor, from the motor nameplate, or load efficiency and power factor rating
31.		er sheath of a mineral-insulated, metal-sheathed cable is made of, it adequate path to serve as an equipment grounding conductor.
	В. С.	copper aluminum nickel steel
32.		Il be constructed, installed, or equipped with shades or guards so that combustible subjected to temperatures in excess of
	B. C.	90°F 104°F 194°F 200°F
33.	purposes, shall	on electrically driven irrigation machines, where used for control and signal have a current rating not less than of the full-load current of the served plus the full-load current of all other devices served.
	B. C.	100% 125% 175% 200%
34.	The branch-circ	cuit rating for an appliance that is a continuous load shall not be less than of the marked rating.
	A. B. C. D.	75% 83% 100% 125%
35.	Raceways shal	be used only as a means of support for other raceways where the raceway
	A. B. C. D.	is installed as a complete assembly contains only 600V conductors is identified as a means of support is installed above a grid ceiling

36			the midpoint of one phase winding is grounded, only nase voltage to ground shall be durably and
	permanently m	arked by an outer finish that i	s in color or by other effective means.
	۸	0.000	
		orange	
		yellow purple	
		white	
	٥.	······································	
37			3-conductor Type SO-cord with three
	current-carryin	g 12 AWG conductors?	
	۸	18A	
		20A	
		25A	
		30A	
38	B. Heat-resistant	•	ring 8 AWG conductors are listed for use in
		locations.	
	Α.	wet	
		outdoor	
		indoor	
	D.	dry and damp	
39			ces of utilization equipment, and are not protected by
	an overcurrent	device which opens all ungro	unded conductors simultaneously, shall supply only
		·	
	A.	Line-to-ground loads	
		Line-to-neutral loads	
	C.	Three-phase loads	
	D.	Line-to-line loads	
40) O	landara farificationa Baldian ale	all and by any allow the an AO ANAO and and the anada at any
40			all not be smaller than 12 AWG unless the conductors
	are	_·	
	А	listed for use in damp location	ons
		of the type THWN, THHN, o	
		supported by messenger wi	
	D.	no longer than 50 feet in len	gth
41			feet long and do not extend beyond the switchboard,
		_	is, or control devices they supply shall be permitted
	to be tapped w	ithout overcurrent protection a	астие тар.
	Δ	25	
		15	
		10	
	٥.		

42.	secondary conductors supply a transformer and the total length of one primary plus one secondary conductor, excluding any portion of the primary conductor that is protected at its ampacity, is not over 25ft, conductors shall	
	В. С.	be tapped without overcurrent protection at the tap be protected at 125% the ampacity of the feeder being tapped shall be protected at 200% the ampacity of the feeder being tapped be permitted to be tapped, without overcurrent protection at the tap
43.		overhead clearance from water level to an insulated overhead 240-volt feeder a pool and supported on a steel messenger cable is feet.
	В. С.	14.5 22.5 25 27
44.		ctors, for each phase, polarity, neutral, or grounded circuit shall be permitted to be arallel only in sizes
	В. С.	1/0 AWG and larger 2/0 AWG and larger 1 AWG and larger 250 Kcmil and larger
45.		lets in or on floors shall not be counted as part of the required number of ets unless located within inches of the wall.
	C.	6 12 18 24
46.	Conductors ins	talled in RMC in a trench below 2 inches of thick concrete must have a minimum inches.
	C.	6 12 18 24
47.	means are loca	system, if the source of the separately derived system and the first disconnecting ated in separate enclosures, a supply-side bonding jumper shall be installed with auctors from the source enclosure to the first disconnecting means enclosure. Anding jumper shall not be required to be larger than the

		grounding derived ungrounded
48.		nductor ampacity for a single-phase 240/120V Single-Family Dwelling rated be permitted to have an ampacity not less than of the service rating.
	B. C.	80% 83% 100% 125%
49.	protect wires from	ere the armor of cable terminates, a fitting shall be provided to om abrasion, unless the design of the outlet boxes or fittings is such as to afford ection, and, in addition, an insulating bushing or its equivalent protection shall be en the conductors and the armor.
	B. C.	MC NM UF AC
50.	connected load	and service load calculations shall be permitted for a dwelling unit having the total served by a single 120/240-volt or 208Y/120-volt set of service or ors with an ampacity of 100 or greater.
	В. С.	3-wire 2-wire parallel independent
51.		stalled in a kitchen to serve countertop surfaces shall be supplied by not fewer small-appliance branch circuit(s).
	B. C.	One Two Three Four
52.		t supply one or more welders shall be protected by an overcurrent device rated or than percent of the conductor ampacity.
	B. C.	100 125 150 200

A. groundedB. grounding electrode equipment

53.		ns, radio, and television coaxial cables shall be permitted at a height of not less	
		above swimming and wading pools, diving structures, and observation stands,	
	towers, or platforms.		
	A.	10 ft	
	B.	12 ft	
	C.	18ft	
	D.	25ft	
54.		phase panel with exposed live parts on one side, and no live or grounded parts on of the working space, must have a minimum clear working distance of in front of panel.	
	۸	2 feet	
		3 feet 6 inches	
		3 feet 6 inches 4 feet	
		4 feet 6 inches	
	В.	4 leet o mones	
55.		-sectional area of a 2 inch EMT conduit is 3.356 square inches and has (6) 12 rs inside it. What is the total area allowed to be taken up by all conductors in this	
	A.	1.342 square inches	
		1.566 square inches	
		2.013 square inches	
	D.	2.343 square inches	
56.	grounded parts	room with exposed 480/277V live parts on one side of the working space and on the other side of the working space, the minimum depth of working space in ipment shall be	
	Α.	3 feet	
	B.	3 feet 6 inches	
	C.	4 feet	
	D.	4 feet 6 inches	
57.		e bonding jumper for a 240V single phase service fed with (2) parallel 300 kcmil ounded conductors is aluminum.	
	B. C.	2 AWG 4 AWG 1/0	
	D.	3/0	
58.	A concrete-end	ased electrode shall consist of at least 20 feet of:	
	Α	Insulated copper conductor not smaller than 4 AWG	

B. Bare copper conductor not smaller than 6 AWGC. Bare copper conductor not smaller than 4 AWG

	D.	Insulated copper conductor not smaller than 6 AWG
59.	in the tubing are	nere the tubing is terminated in listed fittings and the circuit conductors contained e protected by overcurrent devices rated at 20A or less are allowed to be equipment grounding conductor.
	В. С.	Flexible metallic tubing Electrical Metallic Tubing Electrical Nonmetallic Tubing Flexible Nonmetallic Tubing
60.	The operating hopening a door	nandle of a circuit breaker shall be permitted to be accessible or cover.
	B. C.	while after without before
61.		that contains a(n) or uninsulated equipment grounding oe used as an EGC.
	B. C.	insulated steel shielded waterproof
62.	material likely to circuit from any	system, electrical equipment, wiring, and other electrically conductive become energized shall be installed in a manner that creates a low-impedance point on the wiring system to the electrical supply source to facilitate the ercurrent devices should a second ground fault from a different phase occur on the
	B.	1-phase 3-wire 3-phase 4-wire grounded ungrounded
63.	Overcurrent pro	otection for supply conductors as part of a Modular Data Center, shall:
	B. C.	consist of a single circuit breaker or set of fuses at no point be considered either as feeders or as taps be marked "OVERCURRENT PROTECTION PROVIDED AT MDC SUPPLY TERMINALS." not require supplementary overcurrent protection if below 150V to ground.
	E.	Both A and C

64. A dwelling has 9 ranges installed. Each range has a rating of 8 kW. What is the maximum demand load that should be used for calculating the service and feeder size?

	A.	18.9kW 24.5kW
		25.2 kW
	_	32.2kW
	Б.	OZ.ZKVV
65.		maximum size inverse-time breaker to be installed as motor short-circuit and otection for a 25HP, 460V, 3-phase, squirrel-cage motor.
	۸	70A
		85A
		90A
		110A
	В.	110/4
66.		Limited Circuits shall be supplied from a source that has a rated output of not volts and 1000 volt-amperes.
	A.	30
		40
		50
	D.	75
67.	The service dis	connecting means for each service shall consist of a combination of not more than switches or sets of circuit breakers.
	A.	1
	В.	
	C.	
	D.	12
68.	-	nat have sections located both inside and outside of buildings shall have a(n) at the building wall to prevent interchange of air between indoor and outdoor
	sections.	
		4 hour fire barrier
		bushing
		bonding bushing
	D.	vapor seal
60		continuous and a continuous to any ideal from aith an arranh and govern an achie
69.		c parking space equipment provided from either overhead gantry or cable
		ystems shall in electrified truck parking space supply
	equipment.	
	Δ	utilize a temporarily attached power supply cable utilize a twist
		utilize a permanently attached power supply cable
		lock power supply cable
		utilize a moisture-resistant power supply cable

70.	70. Equipment intended to interrupt current at other than fault levels shall have an interrupting rational circuit voltage the current that must be interrupted.			
	at Hominal Circl	uit voitage	the current that must be interrupted.	
	A.	at least greater than		
	B.	at most, less than		
		at least equal to		
	D.	matching		
71.			ipment lampholders shall be permitted to be operated in	
			, provided the voltage rating of the lampholders is not less	
	than the circuit	voitage.		
	A.	over 150V to ground		
	B.	over 50V to ground		
		over 120V to ground		
	D.	over 300V to ground		
72.	Legally required	d standby system wiring	shall be permitted to occupy	
			with other general wiring.	
	٨	congrato		
		separate only two		
		nonmetallic		
		the same		
70	la gonovator co	to duiven by a maiore man	von a timo dello stantino permittino e minimum	
73.	in generator se	• •	ver, a time-delay feature permitting a minimum vided to avoid retransfer in case of short-time	
	reestablishmen	t of the normal source.		
	۸	15-minute		
		20-minute		
		30-minute		
		60-minute		
7.4	The section of the se	of 0	advida a company de disease a sellativa a company de disease a company de disease a company de disease a compa	
74.			nductors supported on a solidly grounded messenger wire ving platform. What is the minimum clearance these	
		st be from the diving pla		
	٨	14.5 feet		
		17 feet		
		18 feet		
		22.5 feet		
75	The short circu	it and ground fault prote	action for a harmatic motor compressor shall have a rating	
10.			ection for a hermetic motor-compressor shall have a rating the motor-compressor rated-load current.	
	Λ	125 %		
		125 % 150 %		
		175 %		
	0.	/0		

D.	225	0/
U.	220	7/0

76.	In instances of	areas within the same facility classified separately, Class I, Zone 2 locations shall	
	be permitted to	Class I, Division 2 locations.	
		abut, but not overlap	
		overlap	
		be installed above	
	D.	be installed below	
77.		ne curve of the inner edge of any bend of Type SE cable, during or after	
	installation, sna	all not be less than the diameter of the cable.	
	A.	five times	
	B.	six times	
	C.	seven times	
	D.	eight times	
78.	A 3-phase 240	V service fed with 2/0 aluminum conductors shall have a minimum size main	
	bonding jumpe		
		2 AWG aluminum	
		4 AWG copper	
		6 AWG aluminum	
	D.	6 AWG copper	
79.	A receptacle outlet is not required at one- and two-family dwellings for the service of		
	Α.	pool equipment,	
		AC condensers	
		evaporative coolers	
		hot water heaters	
00	Comply store the	A complete on a company project on a consideration of all the property at all the company of the	
80.		at supply one or more resistance welders shall be protected by an overcurrent set at not more than of the conductor ampacity.	
		80%	
		125%	
	C.	200%	
	D.	300%	
81.	In a building in	which critical operations power systems (COPS) are present with other types of	
	_	described in other sections in this article, the cover plates for the receptacles or	
		themselves supplied from the COPS shall	
	Λ	he handed to the building grounding electrode conductor in a manner that	
	A.	be bonded to the building grounding electrode conductor in a manner that establishes a low-impedance ground-fault path	
		establishes a low-impedance ground-rault path	

B. have a distinctive color or marking so as to be readily identifiable

		be labeled with its circuit number and panel it's supplied from be labeled with its supplied voltage rating		
82.	Low-voltage suspended ceiling power distribution systems shall be permanently connected and shall be permitted for listed utilization equipment capable of operation at a maximum of			
	·			
	A.	24.8V AC		
	B.	30V AC		
	C.	42.4V AC		
	D.	60V AC		
83.	Where the AHJ	can satisfactorily determine that flammable liquids having a flash point below, will not be handled, such location shall not be required to be classified.		
	A.	100°F		
	B.	104°F		
	C.	121°F		
	D.	212°F		
84.		ce and feeders shall be calculated on the basis of not less thanruck parking space.		
	A.	5 kVA		
	B.	8 kVA		
	C.	11 kVA		
	D.	12 kVA		
85.	Where			
one location and supply separate loads from one service drop, one set of service-entrance conductors shall be permitted to supply each or several such service equipment enclosures.				
	A.	one to five		
	B.	one to six		
	C.	two to six		
	D.	three to six		
86.		res of battery support systems shall be provided with support e cells, or shall be constructed with a continuous insulating material.		
	A.	metallic		
		reinforced		
		independent		
	D.	nonconducting		
87.		d conductors 4 AWG or larger are pulled straight through a multioutlet assembly, tween raceway and cable entries enclosing the same conductor shall not be less.		

- A. eight times the metric designator (trade size) of the largest raceway B. six times the metric designator (trade size) of the largest raceway C. four times the metric designator (trade size) of the largest raceway D. two times the metric designator (trade size) of the largest raceway 88. Each patient bed location shall be supplied by at least two branch circuits, one from the and one from the normal system. All branch circuits from the normal system shall originate in the same panelboard. A. emergency override B. critical branch C. energy-storage system D. isolated grounding system 89. The minimum bending radius for 1 inch nonmetallic underground conduit with conductors shall be no less than A. 6 inches B. 12 inches C. 14 inches D. 18 inches 90. No conductor larger than _____ shall be installed, except by special permission, in Cellular Metal Floor Raceways A. 1/0 AWG B. 2/0 AWG C. 3/0 AWG D. 1 AWG 91. Where equipment is installed outdoors on a roof, an equipment grounding conductor of the wire
- type shall be installed in outdoor portions of metallic raceway systems that use ______.
 - A. threaded fittings
 - B. expansion fittings
 - C. non-threaded fittings
 - D. compression-type fittings
- 92. Where structural reinforcing steel is not available or encapsulated in a nonconductive compound, a copper conductor(s) shall be utilized where all of the following requirements are met, except:
 - A. At least one minimum 8 AWG bare solid copper conductor shall be provided
 - B. The required conductor shall be secured within or under the perimeter surface 120 mm to 170 mm (6 in to 8 in) below the subgrade
 - C. The conductors shall follow the contour of the perimeter surface
 - D. The required conductor shall be 450 to 600 mm (18 to 24 in) from the inside wall of the pool

93.	Zone 20, Zone 21, or Zone 22 location, provided that all of the space that is classified because or a single combustible dust, combustible fiber/flying, or ignitible fiber/flying source is under the requirements of this article.			
	A.	reclassified		
	B.	classified		
	C.	identified		
	D.	listed		
94.		/C conduit, Type RTRC conduit, or cable with a nonmetallic sheath is used, an shall be included to provide for electrical continuity of the raceway system and f non–current- carrying metal parts.		
	Δ.			
		grounding electrode conductor main		
		bonding jumper		
		equipment grounding conductor none of these		
95.	95. 22AWG control circuit conductors with 75°C insulation in a 30°C ambient environment shall hav a maximum ampacity of for permanent amusement attractions.A. 2A			
	B.	3A		
		4A		
	D.	5A		
96. The capacity of the sum of all sources of the stand-alone supply shall be equal to o the load posed by the utilization equipment(s) connected to the system.				
	А	smallest single		
		total combined load of all		
		largest two		
		largest single		
97.		of the supply conductors for a resistance welder that may be operated at different not values of primary current or duty cycle shall not be less than of the rated primary current for seam and automatically fed welders, andof the rated primary current for manually operated nonautomatic welders.		
	A.	40% / 60%		
	B.	50% / 70%		
	C.	60% / 40%		
	D.	70% / 50%		
98.		and control panels exceedingin width, there shall be one ch end of the equipment.		

	A.	4 feet				
	B.	4 ½ feet				
	C.	. 5 feet				
	D.	. 6 feet				
99.	Type MV cable	e terminated in	equipment shall be se	cured and supporte	ed at intervals	not
	exceeding		from terminations or a	maximum of		_between
	supports.					
	A.	4 ft, 5 ft				
	B.	5 ft, 5 ft				
	C.	. 5 ft, 6 ft				
	D.	. 6 ft, 4 ft				
100.	In agricultural	buildings the bo	onding conductor used	l for equipotential p	lanes shall be	solid copper,
	insulated, cove	ered or bare, ar	nd not smaller than			
	A.	8 AWG				
	B.	6 AWG				
	C.	. 4 AWG				

D. 2 AWG