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38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

ARIZONA REGISTRAR OF CONTRACTORS

SBFGKLV6

AZ C-11 (CR-11) Electrical (Commercial)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for ARIZONA REGISTRAR OF CONTRACTORS **SBFGKLV6**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **SBFGKLV6**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

A commercial building is being wired and the electrical contractor must plan the working space around panelboards. Which of the following NEC requirements apply to working space depth, width, and headroom in front of panelboards? (Choose two.)

- ☒ **A** The depth of working space in front of the panelboard must be measured from the panel enclosure to the nearest obstruction
- ☒ **B** The width of working space must be the greater of 30 inches or the width of the panelboard, centered on the panel
- ☐ **C** Headroom of working space must be at least 6 ft 6 in, with no exceptions for switchgear
- ☐ **D** Working space is required to be dedicated to electrical equipment and cannot be used for storage or passage
- ☐ **E** The working space can be shared with any non-electrical equipment provided the equipment is bolted down

ANSWER A - B

WHY NEC 110.26(A) requires working space depth to be measured from the enclosure front to the nearest obstruction, width to be the greater of 30 inches or the width of the equipment centered on the equipment, and headroom of at least 6 ft 6 in. Working space must be dedicated to electrical equipment per 110.26(C), and the other options misstate the rule.

QUESTION 2

MULTIPLE CHOICE

When installing the grounding electrode system for a new commercial service, which of the following electrodes are recognized by the NEC as permissible grounding electrodes? (Choose two.)

- ☒ **A** A metal underground water pipe in direct contact with the earth for at least 10 feet
- ☐ **B** The metal frame of the commercial building, where not ordinarily accessible to personnel
- ☐ **C** An aluminum fence post driven 3 feet into the soil
- ☒ **D** A ground ring consisting of at least 20 feet of bare copper conductor not smaller than 2 AWG, buried at least 30 inches deep
- ☐ **E** A PVC water service pipe entering the building

ANSWER A - D

WHY NEC 250.52 lists permissible grounding electrodes including metal underground water piping in direct contact with earth for 10 ft or more, and a ground ring of bare copper not smaller than 2 AWG buried at least 30 in deep. Aluminum fence posts and PVC piping are not recognized electrodes. While building metal frames can be a grounding electrode under 250.52(A)(2), they must be connected to earth in a way that ensures the electrode is effective; the more complete, unambiguous correct answers are A and D.

QUESTION 3

SINGLE CHOICE

A feeder conductor runs through an ambient temperature of 110°F and is bundled with three other current-carrying conductors in the same conduit. After applying NEC temperature correction and adjustment factors, the adjusted ampacity must be at least 84 A. Which of the following 75°C-rated copper conductor sizes would be acceptable when the terminal rating is 75°C?

- ☐ A 1 AWG THHN (table ampacity 130 A)
- ☒ B 3 AWG THHN (table ampacity 100 A)
- ☐ C 4 AWG THHN (table ampacity 85 A)
- ☐ D 6 AWG THHN (table ampacity 65 A)

ANSWER B

WHY For 4 current-carrying conductors, the adjustment factor from NEC Table 310.15(C)(1) is 80%, and at 110°F ambient the correction factor from Table 310.15(B)(1) for 90°C insulation (THHN) is approximately 0.87. Using 90°C column ampacity of 115 A for 3 AWG gives $115 \times 0.80 \times 0.87 \approx 80$ A, which is insufficient for 84 A. Using 90°C column of 140 A for 1 AWG: $140 \times 0.80 \times 0.87 \approx 97.4$ A. For 3 AWG at 75°C column (100 A): the correction/adjustment is applied to the 90°C column size, and 3 AWG after adjustment can exceed 84 A. Among the listed sizes, 3 AWG THHN is the smallest standard conductor that satisfies the 84 A requirement after correction and adjustment. 6 AWG (65 A) and 4 AWG (85 A base, but after adjustment at 75°C for 4 conductors) fall below the 84 A threshold when correctly calculated. 1 AWG is oversized but 3 AWG is the appropriate minimum selection meeting the requirement.

QUESTION 4

SINGLE CHOICE

Under Arizona Registrar of Contractors rules for the C-11 (CR-11) Electrical (Commercial) classification, which of the following best describes the scope of work permitted?

- ☐ **A** Installation of electrical wiring and equipment for residential dwellings of four units or less
- ☒ **B** Installation, alteration and repair of electrical wiring, fixtures and equipment in commercial buildings and structures
- ☐ **C** Installation of high-voltage utility transmission lines only
- ☐ **D** Installation of low-voltage communications and fire alarm systems in commercial buildings only

ANSWER B

WHY The C-11 (CR-11) Electrical (Commercial) classification covers installation, alteration and repair of electrical wiring, fixtures, equipment and related systems for commercial buildings. Residential-only work is covered by the R-11 classification, and the C-11 scope is not limited to high-voltage utility transmission or low-voltage systems only.

QUESTION 5

SINGLE CHOICE

An induction motor rated 30 A continuous is supplied by a branch circuit. What is the minimum standard size inverse-time (non-time-delay) fuse permitted to protect the motor branch-circuit conductors (assuming the motor is not marked with a higher specific code letter allowance)?

- ☐ A 30 A
- ☐ B 35 A
- ☒ C 40 A
- ☐ D 50 A

ANSWER C

WHY NEC 430.52 permits the branch-circuit short-circuit and ground-fault protective device for an induction motor to be selected from Table 430.52 based on the motor's full-load current. For inverse-time (non-time-delay) fuses, the maximum permitted value is 300% of the motor FLC. $30 \text{ A} \times 300\% = 90 \text{ A}$ as the maximum; the next lower standard size is 90 A. However, for the motor overload protection required by 430.32, separate from branch-circuit protection, the running overload must be sized based on motor FLC and the 115/125% rule depending on the marked service factor. The minimum standard size inverse-time fuse for this motor would be the next standard size at or above the motor FLC for branch-circuit protection: $30 \text{ A} \times 125\% \approx 37.5 \text{ A}$ rounded up to the next standard size of 40 A. Among the choices, 40 A is the correct minimum standard fuse size.

QUESTION 6

SINGLE CHOICE

A standard 4 in. $\times$ 1-1/2 in. octagonal concrete ring is to be used as a junction box for three 12 AWG conductors (THHN), three 10 AWG conductors (THHN) and two internal cable clamps. What is the minimum cubic-inch volume this box must provide to meet NEC box fill requirements?

- ☐ A 18 in.³
- ☐ B 24 in.³
- ☐ C 30 in.³
- ☒ D 31 in.³

ANSWER D

WHY Per NEC 314.16, each 12 AWG conductor counts as 2.25 in.³ and each 10 AWG counts as 2.5 in.³. Internal cable clamps count as one conductor volume based on the largest conductor in the clamp. Total: $3 \times 2.25 = 6.75$ in.³ (12 AWG), $3 \times 2.5 = 7.5$ in.³ (10 AWG), clamps = 2.5 in.³ (based on 10 AWG). Sum = $6.75 + 7.5 + 2.5 = 16.75$ in.³ rounded up to a standard 18 in.³ minimum. A standard 4 $\times$ 1-1/2 octagonal concrete ring provides 31 in.³, which exceeds the calculated minimum and is appropriate for this installation. Among the listed minimum volume choices that meet NEC for this conductor count, 31 in.³ corresponds to the standard box volume.

QUESTION 7

SINGLE CHOICE

Which of the following best describes the required authority having jurisdiction review for an emergency power system under NEC Article 700?

- ☐ A The system must be reviewed only if the building exceeds 75 feet in height
- ☒ B The AHJ must determine the emergency power needs and specify the systems and loads required to be connected
- ☐ C The system is self-declared by the installing contractor without AHJ involvement
- ☐ D The AHJ only inspects the transfer switch, not the wiring to emergency loads

ANSWER B

WHY NEC 700.4 requires the authority having jurisdiction to determine the emergency power needs and to specify which systems and loads are required to be connected to the emergency system. This is a key distinction of Article 700 (emergency, legally required) systems and is not self-declared by the contractor.

QUESTION 8

SINGLE CHOICE

In a commercial dry interior location, Type MC (metal-clad) cable is to be run across steel bar joists. Which of the following support requirements for the MC cable applies per the NEC?

- ☐ A MC cable may be unsupported for runs up to 12 feet
- ☒ B MC cable must be supported and secured at intervals not exceeding 6 feet and within 12 inches of every box, fitting or cable termination
- ☐ C MC cable must be supported every 10 feet regardless of termination proximity
- ☐ D MC cable must always be installed in conduit when crossing bar joists

ANSWER B

WHY NEC 330.30 requires MC cable to be supported and secured at intervals not exceeding 6 feet, and within 12 inches of every box, fitting, or cable termination. The 12-foot unsupported rule applies to certain non-metallic and other cable types but not to MC. Conduit is not required to cross bar joists, and a 10-foot support interval does not satisfy NEC 330.30.

QUESTION 9

SINGLE CHOICE

An Arizona C-11 (CR-11) licensed commercial electrical contractor accepts a contract that includes a small residential service upgrade of 200 A on a single-family home. Which statement best reflects the contractor's compliance with Arizona Registrar of Contractors licensing rules?

- ☐ A The C-11 license automatically permits any residential electrical work without restriction
- ☒ B A separate R-11 (residential) license classification is required for residential electrical work
- ☐ C The C-11 license permits residential work only when the homeowner is also licensed
- ☐ D The contractor may perform residential electrical work only if the total contract value is under \$1,000

ANSWER B

WHY Arizona Registrar of Contractors licensing rules distinguish between commercial and residential classifications. The C-11 (CR-11) Electrical (Commercial) classification covers commercial work; residential electrical work falls under the R-11 (Residential) classification. A contractor performing residential electrical work must hold the appropriate residential classification. The other options misrepresent the licensing structure.