TRADE PRACTICE EXAMS (GENERAL BUILDING — COMMERCIAL AND RESIDENTIAL)

The six simulation exams in this section prepare you for the PSI-administered Trade Exam — the hands-on construction knowledge assessment that tests whether you understand the materials, methods, codes, and safety standards that define competent general contracting in Arizona. These 600 questions cover every subject area on the official PSI content outline for both the commercial track (B-1, B-2, KB-1, KB-2) and the residential track (B, B-3, CR-61), distributed across each exam according to the official domain weightings so that your practice experience mirrors the real exam as closely as possible.

The domain distribution for each 100-question trade simulation exam follows this structure:

Subject Area	**Questions Per Exam**
Sitework	9–17
Concrete	14–17
Masonry	9–10
Metals / Metal Framing	6–13
Carpentry	12–17
Thermal and Moisture Protection	10–12
Doors and Windows	5–7
Finishes	6–9
Safety	6–12
General Building Code	0–9

The range for each domain reflects the difference between the commercial and residential content outlines. Practice Exams 5 and 6 weight the domains toward the commercial distribution. Practice Exams 7 and 8 weight toward the residential distribution. Practice Exams 9 and 10 blend both distributions, giving you

comprehensive exposure to the full range of questions you may encounter regardless of which track you are testing on.

These exams test applied construction knowledge — not just definitions and terminology, but your ability to solve problems, identify correct procedures, calculate material quantities, recognize code requirements, and make the decisions that a competent general contractor makes on every project. You will encounter questions about soil classification and excavation safety, concrete mix design and placement, masonry mortar types and reinforcement, structural steel connections and joist bridging, wood framing spans and fastening schedules, roofing systems and flashing details, window egress requirements, drywall fire ratings, stucco application procedures, OSHA fall protection thresholds, and building code provisions from the 2018 IBC and 2018 IRC.

The trade exam is semi-open book. You are permitted to bring specific approved reference materials into the testing center, including the 2018 International Building Code, the 2018 International Residential Code, and OSHA 29 CFR Part 1926. These practice exams are designed to build both your knowledge and your reference book skills — some questions can be answered from memory, while others require you to locate specific code provisions, tables, or safety standards within your references. By the time you complete all six exams, you should know exactly which sections of each reference book contain the answers to the most commonly tested topics and be able to find them in under a minute.

Take each exam under full testing conditions with a 240-minute timer. Use only your approved references and a basic calculator. Score each exam using the Answer Key and Explanations, review every question you missed or guessed on, and return to the corresponding learning chapters in Part One for targeted review before taking the next exam. The passing score is 70 out of 100. Aim for 80 or higher to build a comfortable margin for exam day.

The construction knowledge you built over years in the field is your greatest asset. These exams sharpen that knowledge into exam-ready precision.

PRACTICE EXAM 5: TRADE SIMULATION (100 QUESTIONS)

Time Limit: 240 Minutes | Passing Score: 70%

Commercial weighting. Questions emphasize applied construction knowledge, code provisions, and field problem-solving.

SITEWORK (Questions 1–9)

1. The IRC requires the finished grade to slope away from the foundation a minimum of six inches within the first ten feet. When physical barriers prevent achieving this slope, what is the minimum alternative grade requirement?

A. One percent slope away from the building for a distance of five feet

B. Three percent slope away from the building for a distance of eight feet

C. One-half percent slope away from the building for a minimum of twelve feet

D. Two percent slope away from the building

2. OSHA requires protective systems for excavations at what minimum depth unless the excavation is entirely in stable rock?

A. Four feet below the adjacent ground surface

B. Five feet below the adjacent ground surface

C. Six feet below the adjacent ground surface

D. Eight feet below the adjacent ground surface

3. A competent person classifies excavation soil and determines it has an unconfined compressive strength of 0.8 tons per square foot. The soil has not been previously disturbed. What is the correct OSHA soil classification?

A. Type B soil requiring a maximum slope of 1H:1V

B. Type A soil requiring a maximum slope of ¾H:1V

C. Type C soil requiring a maximum slope of 1½H:1V

D. Stable rock allowing vertical excavation walls

4. When excavating near existing structures, what must the competent person evaluate before work begins?

A. The depth of the water table relative to the excavation bottom

B. The distance from the excavation to the nearest fire hydrant

C. The stability of adjacent structures that could be affected by the excavation

D. The chemical composition of the soil for potential contamination

5. Before any excavation begins on a construction site in Arizona, the contractor must contact Arizona 811 at least how many full business days in advance?

A. One full business day before excavation begins

B. Three full business days before excavation begins

C. Five full business days before excavation begins

D. Two full business days before excavation begins

6. Excavated material (spoil) must be placed at least how far from the edge of an excavation to prevent it from falling back in?

A. Three feet from the edge of the excavation

B. Two feet from the edge of the excavation

C. Four feet from the edge of the excavation

D. Five feet from the edge of the excavation

7. OSHA requires a means of egress in excavations four feet or deeper. Workers must not travel more than what distance laterally to reach the nearest ladder, stairway, or ramp?

A. Fifteen feet from any point in the excavation

B. Thirty feet from any point in the excavation

C. Twenty-five feet from any point in the excavation

D. Fifty feet from any point in the excavation

8. A ladder used for access in an excavation must extend at least how far above the top edge of the excavation?

A. Three feet above the top edge for a handhold

B. Two feet above the top edge for visibility

C. Four feet above the top edge as a safety margin

D. One foot above the top edge for identification

9. For excavations twenty feet or deeper, OSHA requires the protective system to be designed by which professional?

A. A certified safety professional with five years of experience

B. The OSHA area director serving the project jurisdiction

C. The general contractor's designated competent person

D. A registered professional engineer

CONCRETE (Questions 10–23)

10. Which factor has the greatest influence on the compressive strength of concrete?

A. The aggregate gradation and maximum particle size

B. The water-cement ratio of the mix design

C. The ambient temperature during placement

D. The type of vibrator used for consolidation

11. A contractor needs concrete that will set faster than normal to allow early form removal. Which type of portland cement should be specified?

A. Type II for moderate sulfate resistance and faster setting

B. Type IV for low heat of hydration and rapid strength gain

C. Type III for high early strength development

D. Type V for high sulfate resistance and accelerated curing

12. In areas where concrete will be exposed to moderate sulfate concentrations in the soil or groundwater, which cement type is most appropriate?

A. Type II portland cement for moderate sulfate resistance

B. Type I portland cement for general purpose applications

C. Type III portland cement for rapid strength development

D. Type IV portland cement for mass concrete placements

13. The standard slump test measures which property of freshly mixed concrete?

A. The air content percentage of the concrete mix

B. The compressive strength at the time of placement

C. The temperature of the concrete at delivery

D. The consistency and workability of the mix

14. Ready-mix concrete must be discharged from the transit mixer within what maximum time after batching?

A. Sixty minutes or two hundred drum revolutions

B. Ninety minutes or three hundred drum revolutions

C. One hundred twenty minutes or four hundred revolutions

D. Forty-five minutes or one hundred fifty revolutions

15. The standard acceptance test for concrete compressive strength uses cylindrical specimens tested at what age?

A. Twenty-eight days after casting the test cylinders

B. Fourteen days after casting the test cylinders

C. Seven days after casting the test cylinders

D. Fifty-six days after casting the test cylinders

16. What is the minimum curing period for most structural concrete using Type I portland cement?

A. Three days or until forty percent of specified strength is achieved

B. Fourteen days or until ninety percent of specified strength is achieved

C. Seven days or until seventy percent of specified strength is achieved

D. Twenty-one days or until eighty-five percent of specified strength is achieved

17. Adding water to concrete at the jobsite to improve workability has what effect on the finished product?

A. Increases compressive strength due to improved hydration

B. Has no measurable effect on strength or durability

C. Improves durability by reducing internal void spaces

D. Reduces compressive strength and increases shrinkage

18. Which admixture is most appropriate for concrete placement in Arizona's hot summer conditions?

A. An accelerating admixture to speed initial set time

B. A retarding admixture to extend the working time

C. An air-entraining admixture to increase freeze-thaw resistance

D. A corrosion-inhibiting admixture to protect reinforcement

19. Concrete finishing operations performed over bleed water are the primary cause of which surface defect?

A. Dusting, scaling, delamination, and blistering of the surface

B. Structural cracking from thermal expansion and contraction

C. Honeycombing from insufficient aggregate consolidation

D. Efflorescence from salt migration through the concrete

20. A concrete slab shows white, powdery deposits on its surface shortly after placement. This condition is known as what?

A. Scaling caused by freeze-thaw cycle damage

B. Spalling caused by corroded embedded reinforcement

C. Plastic shrinkage cracking from rapid moisture loss

D. Efflorescence caused by soluble salts migrating to the surface

21. What is the minimum concrete cover required for reinforcement in concrete cast against and permanently exposed to earth?

A. One and one-half inches for all bar sizes

B. Two inches for No. 6 bars and larger only

C. Three inches regardless of bar size

D. Three-quarters of an inch for interior elements

22. The rebar size number indicates the nominal bar diameter in what unit of measurement?

A. Eighths of an inch per the standard designation system

B. Sixteenths of an inch per the metric conversion table

C. Millimeters per the international sizing standard

D. Quarter inches per the imperial measurement system

23. The general rule for tension lap splices in reinforcing bars is a minimum of how many bar diameters?

A. Twenty bar diameters for standard conditions

B. Thirty bar diameters for most applications

C. Fifty bar diameters for high-stress connections

D. Forty bar diameters for standard conditions

MASONRY (Questions 24–33)

24. The standard nominal dimensions of a concrete masonry unit are 8 inches by 8 inches by 16 inches. What are the actual dimensions?

A. 7¼ inches by 7¼ inches by 15¼ inches

B. 7⅝ inches by 7⅝ inches by 15⅝ inches

C. 7½ inches by 7½ inches by 15½ inches

D. 7¾ inches by 7¾ inches by 15¾ inches

25. Which mortar type is specified for below-grade applications such as foundation walls and retaining walls?

A. Type N for general above-grade construction

B. Type O for non-load-bearing interior partitions

C. Type M for below-grade and high-strength applications

D. Type S for structural walls with moderate lateral loads

26. Mortar that is stronger than the masonry units it bonds creates what condition?

A. Stress concentration in the units rather than distribution through the joints

B. Improved load-bearing capacity of the overall wall assembly

C. Enhanced weather resistance at the mortar joint surfaces

D. Reduced risk of cracking under thermal expansion loads

27. Grout used in reinforced masonry construction must have a slump in what range to properly fill cores?

A. Two to four inches for standard applications

B. Four to six inches for most wall construction

C. Six to eight inches for thin-wall assemblies

D. Eight to eleven inches to flow completely into cores

28. Weep holes in masonry veneer construction must be spaced at a maximum of what interval?

A. Twenty-four inches on center along the base course

B. Thirty-three inches on center along the base course

C. Forty-eight inches on center along the base course

D. Sixteen inches on center along the base course

29. Cleanout openings at the base of grouted masonry cells are required when the grout pour height exceeds what dimension?

A. Three feet above the base of the wall

B. Four feet above the foundation level

C. Five feet above the base of the grouted cells

D. Eight feet above the bottom of the lowest core

30. The most weather-resistant mortar joint profiles for exterior masonry walls are which two types?

A. Concave joint and V-joint due to surface compression

B. Raked joint and flush joint due to smooth surfaces

C. Struck joint and weathered joint due to water shedding

D. Beaded joint and extruded joint due to mortar density

31. When repointing deteriorated mortar joints, the replacement mortar should be what strength relative to the original?

A. Significantly stronger to prevent future deterioration

B. Equal to or stronger than the masonry units in the wall

C. The same strength regardless of the original mortar type

D. Equal to or softer than the original mortar to prevent unit damage

32. The minimum air space between the back face of masonry veneer and the backup wall is what dimension?

A. One-half inch to allow limited drainage

B. One inch minimum to form an adequate drainage cavity

C. Two inches minimum for all veneer applications

D. Three-quarters of an inch for residential construction

33. Bond beam blocks in masonry construction serve what primary structural function?

A. Providing decorative horizontal bands at specified course heights

B. Creating access channels for electrical conduit and plumbing

C. Forming horizontal channels for reinforcement and grout to resist lateral forces

D. Supporting the weight of the masonry units in the course above

METALS (Questions 34–46)

34. The most commonly used structural steel grade for wide-flange shapes has what minimum yield strength?

A. Fifty thousand pounds per square inch (50 ksi) under ASTM A992

B. Thirty-six thousand pounds per square inch (36 ksi) under ASTM A36

C. Sixty-five thousand pounds per square inch (65 ksi) under ASTM A572

D. Forty-two thousand pounds per square inch (42 ksi) under ASTM A529

35. In a steel joist roof system, the correct load path flows through which sequence of members?

A. Columns to joist girders to joists to roof deck

B. Roof deck to joist girders to joists to columns

C. Joist girders to roof deck to joists to columns

D. Roof deck to joists to joist girders to columns

36. The minimum bearing length for K-Series steel joists on masonry or concrete supports is what dimension?

A. Two and one-half inches on masonry and concrete

B. Four inches on masonry or concrete supports

C. Three inches on masonry and six inches on concrete

D. Six inches on all support types regardless of material

37. OSHA requires that at least one row of bridging be installed on steel joists before which action occurs?

A. The hoisting cables are released from the joists

B. The roof deck panels are distributed on the joists

C. The permanent bracing connections are tightened

D. The joist girder connections are fully welded

38. Why must no construction loads be placed on steel joists until all bridging is fully installed and connected?

A. Bridging distributes gravity loads evenly across adjacent joists

B. Unloaded joists are easier to align for permanent connections

C. Unbridged joists are susceptible to lateral buckling and collapse

D. Bridging prevents thermal expansion from affecting joist spacing

39. Cold-formed steel studs have lip stiffeners on their flanges. What is the primary purpose of these lips?

A. To provide a fastening surface for drywall screw attachment

B. To allow the stud to nest inside the track at top and bottom

C. To create a channel for running electrical wiring through the wall

D. To prevent the flanges from buckling under compressive loads

40. CFS tracks differ from CFS studs in what key structural feature?

A. Tracks do not have lip stiffeners because they must accept studs inside them

B. Tracks have thicker flanges than studs for increased bearing capacity

C. Tracks are manufactured from a higher gauge steel than studs

D. Tracks have a wider web dimension than studs of the same series

41. Which fastener type is used for steel-to-steel connections in cold-formed steel framing?

A. Powder-actuated pins driven through both members simultaneously

B. Self-drilling, self-tapping screws designed for metal-to-metal connections

C. Structural adhesive applied between the flanges at each connection

D. Toggle bolts inserted through pre-drilled holes in both members

42. High-strength structural bolts used in steel connections are typically manufactured to which ASTM standards?

A. ASTM A307 for standard strength and ASTM A325 for high strength

B. ASTM A153 for galvanized bolts and ASTM A194 for high-temperature

C. ASTM A490 for standard connections and ASTM A307 for slip-critical

D. ASTM A325 and ASTM A490 for high-strength structural connections

43. In a slip-critical bolted connection, forces are transferred between members by what mechanism?

A. Shear across the bolt shank and bearing against the hole walls

B. Tension in the bolt shank pulling the connected members together

C. Friction between the faying surfaces created by bolt pretension

D. Adhesion between the bolt coating and the connected steel surfaces

44. A fillet weld is placed in what geometric configuration between structural steel members?

A. In the corner formed by two members meeting at an angle

B. In a groove between two members aligned end to end

C. Through a circular hole in one member to the member beneath

D. Along the full penetration of two butted plate edges

45. OSHA requires written confirmation of concrete strength before steel erection begins. Who must provide this confirmation?

A. The structural engineer of record for the project

B. The concrete testing laboratory that broke the cylinders

C. The steel erector's designated competent person

D. The controlling contractor, typically the general contractor

46. The minimum number of anchor bolts that must be installed and tightened per column before temporary bracing can be removed is what quantity?

A. Two anchor bolts tightened to snug-tight condition

B. Four anchor bolts per column as required by OSHA

C. Six anchor bolts per column for multi-story structures

D. Three anchor bolts with a minimum of one per quadrant

CARPENTRY (Questions 47–58)

47. The actual dimensions of a nominal 2×6 piece of lumber are what measurements?

A. 1¾ inches by 5¾ inches after drying and surfacing

B. 1½ inches by 5¼ inches after kiln drying only

C. 1½ inches by 5½ inches after drying and surfacing

D. 1⅝ inches by 5⅝ inches after surfacing to standard

48. The IRC requires sill plates to be anchored to the foundation with a minimum bolt diameter and maximum spacing of what values?

A. One-half-inch bolts at six feet on center maximum

B. Five-eighths-inch bolts at four feet on center maximum

C. Three-eighths-inch bolts at eight feet on center maximum

D. Three-quarters-inch bolts at five feet on center maximum

49. Sill plate anchor bolts must be placed within what maximum distance from each end of each sill plate piece?

A. Six inches from each end of the sill plate

B. Twenty-four inches from each end of the plate

C. Eighteen inches from each end of the plate

D. Twelve inches from each end of the sill plate

50. Floor joists must bear a minimum of what distance on wood or metal supports?

A. Three inches on wood and metal supports

B. One and one-half inches on wood or metal supports

C. Two inches on wood and metal supports

D. One inch on wood and two inches on metal

51. What is the standard subflooring fastening schedule for panels on floor joists?

A. Eight inches on center at edges and sixteen inches in the field

B. Four inches on center at edges and eight inches in the field

C. Six inches on center at edges and twelve inches on center in the field

D. Twelve inches on center at edges and sixteen inches in the field

52. Load-bearing walls require a double top plate. Joints in the two top plate members must be offset by at least what distance?

A. Forty-eight inches to prevent a weak point at the splice

B. Twenty-four inches from the nearest joint in either plate

C. Thirty-six inches as measured along the wall centerline

D. Sixteen inches to align with the nearest stud location

53. Prefabricated roof trusses must not be cut, notched, or modified in the field without approval from which professional?

A. The general contractor's project superintendent

B. The local building inspector having jurisdiction

C. The architect of record for the building project

D. The truss design engineer who designed the specific truss

54. The maximum riser height for residential stairs under the IRC is what dimension?

A. Seven inches for all residential applications

B. Seven and three-quarters inches as the code maximum

C. Eight and one-quarter inches for standard stairs

D. Eight inches for main stairs and nine inches for basement

55. The minimum tread depth for residential stairs under the IRC is what dimension?

A. Nine inches measured from nosing to nosing

B. Eleven inches measured from riser to riser

C. Ten inches as the minimum code requirement

D. Eight and one-half inches for standard residential

56. The maximum allowable variation between the largest and smallest riser in a residential stair flight is what dimension?

A. Three-eighths of an inch between any two risers

B. One-quarter of an inch between consecutive risers

C. One-half of an inch between the highest and lowest

D. Five-sixteenths of an inch as the code tolerance

57. Braced wall panels in residential construction must be located at each end of the braced wall line and at intervals not exceeding what maximum spacing?

A. Sixteen feet on center along the braced wall line

B. Twenty feet on center along the braced wall line

C. Thirty-two feet on center along the braced wall line

D. Twenty-five feet on center along the braced wall line

58. In conventional roof framing, ceiling joists or rafter ties connect opposing rafters at the wall plate level. What is the primary structural purpose of these members?

A. To support the weight of the ceiling finish material

B. To resist the outward thrust from opposing rafters

C. To provide lateral bracing for the wall top plates

D. To transfer roof dead loads to interior bearing walls

THERMAL AND MOISTURE PROTECTION (Questions 59–68)

59. The IRC requires a minimum insulation R-value of what number for ceiling or attic insulation in Arizona's Climate Zone 2?

A. R-30 for all residential ceiling applications

B. R-49 for climate zones with heating-dominated loads

C. R-38 as the minimum for Climate Zone 2

D. R-19 for climates with minimal heating requirements

60. What is the primary difference between dampproofing and waterproofing for below-grade foundation walls?

A. Dampproofing uses a thicker coating than waterproofing

B. Waterproofing is required only for commercial construction

C. Dampproofing and waterproofing use identical materials

D. Dampproofing resists moisture vapor while waterproofing resists hydrostatic pressure

61. The IRC requires a vapor retarder of what minimum thickness under concrete slabs cast on the ground?

A. Six-mil polyethylene sheeting or other approved material

B. Four-mil polyethylene sheeting for residential applications

C. Ten-mil polyethylene sheeting for all slab installations

D. Eight-mil polyethylene with sealed and overlapped joints

62. The minimum slope for asphalt shingle installation with standard single-layer underlayment is what pitch?

A. 2:12 with enhanced double-layer underlayment

B. 3:12 with standard single-layer underlayment applied

C. 4:12 with standard single-layer underlayment

D. 6:12 regardless of the underlayment configuration

63. Which low-slope roofing membrane is white, heat-welded at seams, and valued for energy efficiency in hot climates like Arizona?

A. EPDM synthetic rubber membrane with adhesive seams

B. TPO thermoplastic membrane with heat-welded seams

C. PVC membrane with chemical-resistant properties

D. Modified bitumen with torch-applied seam connections

64. The weather-resistive barrier on exterior walls must be installed in what lapping pattern?

A. Vertical seams lapped over horizontal seams at all intersections

B. Random lapping with all seams sealed using compatible tape

C. Horizontal seams lapped under upper courses for water drainage

D. Shingle-lap fashion with upper courses overlapping lower courses

65. The maximum SHGC for windows in Arizona's IECC Climate Zone 2 is what value?

A. 0.25, blocking at least seventy-five percent of solar radiation

B. 0.40, blocking at least sixty percent of solar radiation

C. 0.30, blocking at least seventy percent of solar radiation

D. 0.55, blocking at least forty-five percent of solar radiation

66. The minimum total thickness for three-coat stucco applied over metal lath is what dimension?

A. One inch including the scratch, brown, and finish coats

B. Three-quarters of an inch for residential applications

C. Seven-eighths of an inch for all three coats combined

D. One and one-eighth inches for commercial applications

67. The brown coat of a three-coat stucco application must cure for a minimum of how many days before the finish coat is applied?

A. Three days with continuous moist curing during the wait

B. Seven days with moist curing during the waiting period

C. Fourteen days with natural air curing during the period

D. Twenty-one days regardless of the curing method used

68. Stucco must terminate a minimum of what distance above the finished earth surface?

A. Two inches above finished earth and one inch above paved surfaces

B. Six inches above finished earth and four inches above paved areas

C. Three inches above all surfaces regardless of material type

D. Four inches above earth and two inches above paved surfaces

DOORS AND WINDOWS (Questions 69–73)

69. The IRC requires emergency egress windows in bedrooms to have a minimum net clear opening area of what size?

A. 5.7 square feet for upper floors and 5.0 square feet at ground level

B. 5.0 square feet for all floors regardless of the story level

C. 6.0 square feet for upper floors and 5.7 square feet at ground level

D. 4.5 square feet for all residential bedroom applications

70. The maximum sill height above the finished floor for an emergency egress window is what dimension?

A. Thirty-six inches above the finished floor level

B. Forty-eight inches above the finished floor level

C. Thirty inches above the finished floor level

D. Forty-four inches above the finished floor level

71. The minimum clear width of an egress door measured with the door open at ninety degrees is what dimension?

A. Thirty-six inches as the standard nominal door width

B. Thirty-two inches as the minimum clear passage width

C. Thirty inches for secondary egress doors in bedrooms

D. Twenty-eight inches for interior passage doors only

72. Egress doors must be operable from the interior without a key. Which type of deadbolt is prohibited on egress doors?

A. Single-cylinder deadbolt with a thumb-turn on the interior

B. Electronic keypad deadbolt with an interior bypass button

C. Double-keyed deadbolt requiring a key on both sides

D. Lever-handle deadbolt with an automatic locking mechanism

73. The maximum U-factor for windows in IECC Climate Zone 2 is what value?

A. 0.25 for single-pane windows in residential construction

B. 0.35 for all window types and frame materials

C. 0.50 for windows in cooling-dominated climates

D. 0.30 for double-pane windows with low-E coating

FINISHES (Questions 74–79)

74. A single layer of five-eighths-inch Type X gypsum drywall provides what fire-resistance rating?

A. Thirty-minute fire rating for non-load-bearing partitions

B. Forty-five-minute fire rating for corridor separations

C. Two-hour fire rating for fire wall assemblies

D. One-hour fire rating for fire-rated assemblies

75. The standard drywall screw spacing for ceiling applications is what interval?

A. Sixteen inches on center along each framing member

B. Twelve inches on center along each framing member

C. Eight inches on center along each framing member

D. Twenty-four inches on center along each framing member

76. The building code requires Type X fire-rated drywall for the wall and ceiling separation between which two spaces in residential construction?

A. The master bedroom and the adjacent bathroom

B. The kitchen and the adjacent dining room area

C. The attached garage and the dwelling living space

D. The laundry room and the adjacent hallway

77. Which substrate material is required for ceramic tile installation in wet areas such as shower enclosures?

A. Cement board or fiber-cement backer board as the tile substrate

B. Moisture-resistant green board drywall with a water-based sealer

C. Standard half-inch drywall with a waterproof membrane overlay

D. Exterior-grade plywood with a thinset mortar primer coat

78. Hardwood flooring must be acclimated to the installation environment before installation to prevent what problem?

A. Adhesive failure between the flooring and the subfloor surface

B. Color variation between boards from different production lots

C. Finish coat delamination due to temperature shock after installation

D. Excessive expansion or contraction causing buckling or gapping

79. The standard drywall finish level for surfaces that will receive flat paint or light-texture finishes is which level?

A. Level 3 with two coats on joints and one coat on fasteners

B. Level 4 with three coats on joints and two coats on fasteners

C. Level 5 with a full skim coat over the entire surface

D. Level 2 with tape set in compound and one coat on fasteners

SAFETY (Questions 80–91)

80. OSHA requires fall protection for workers in general construction at what minimum height above a lower level?

A. Six feet above a lower level as the standard trigger height

B. Ten feet above a lower level for all construction activities

C. Four feet above a lower level matching general industry standards

D. Fifteen feet above a lower level for steel erection activities

81. The required height for the top rail of a guardrail system is what dimension?

A. Thirty-six inches above the walking and working surface

B. Thirty-nine inches above the walking and working surface

C. Forty-two inches plus or minus three inches above the surface

D. Forty-eight inches above the walking and working surface

82. A personal fall arrest system anchorage must be capable of supporting at least what load per attached worker?

A. Five thousand pounds per worker attached to the anchorage

B. Three thousand pounds per worker attached to the anchorage

C. Two thousand pounds per worker with a safety factor of two

D. Ten thousand pounds shared among all attached workers

83. OSHA requires employers to report work-related fatalities to OSHA within what timeframe?

A. Twelve hours of learning of the employee's death

B. Twenty-four hours of learning of the fatality

C. Forty-eight hours of the incident occurring on site

D. Eight hours of the employer learning of the fatality

84. Work-related inpatient hospitalizations, amputations, and losses of an eye must be reported to OSHA within what timeframe?

A. Eight hours of the employer learning of the event

B. Twenty-four hours of the employer learning of the event

C. Seventy-two hours of the event occurring on the jobsite

D. Forty-eight hours of the employer learning of the event

85. The fall protection trigger height for workers on supported scaffolds is what minimum height?

A. Six feet above a lower level for all scaffold types

B. Fifteen feet above a lower level for supported scaffolds

C. Ten feet above a lower level for supported scaffolds

D. Eight feet above a lower level for mobile scaffolds

86. Every scaffold and scaffold component must support its own weight plus at least how many times the maximum intended load?

A. Four times the maximum intended load without failure

B. Two times the maximum intended load without failure

C. Three times the maximum intended load without failure

D. Six times the maximum intended load without failure

87. GFCIs are required on all temporary electrical circuits of what voltage and amperage on construction sites?

A. 240-volt, 30-ampere circuits used for heavy equipment

B. All circuits regardless of voltage or amperage rating

C. 120-volt circuits rated at 30 amperes or higher

D. 120-volt, single-phase, 15- and 20-ampere receptacle outlets

88. The minimum clearance distance from overhead power lines rated at 50 kV or less is what measurement?

A. Fifteen feet in all directions from the energized lines

B. Ten feet in all directions from the energized lines

C. Twenty feet in all directions from the energized lines

D. Six feet in all directions from the energized lines

89. Under OSHA's hierarchy of controls, personal protective equipment is considered what level of protection?

A. The first line of defense against all workplace hazards

B. An engineering control that eliminates the hazard at its source

C. The last line of defense when other controls are inadequate

D. An administrative control that reduces worker exposure time

90. The OSHA Form 300A summary of work-related injuries and illnesses must be posted at the workplace during which period each year?

A. February 1 through April 30 of the year following the recorded year

B. January 1 through March 31 of the year following the recorded year

C. March 1 through May 31 of the year following the recorded year

D. The entire calendar year with quarterly updates as incidents occur

91. Under OSHA, the term "competent person" refers to an individual who possesses what two qualifications?

A. A construction management degree and five years of field experience

B. OSHA 30-hour certification and a first aid training certificate

C. A professional engineering license and construction safety certification

D. The ability to identify hazards and the authority to take prompt corrective action

GENERAL BUILDING CODE (Questions 92–100)

92. The 2018 International Residential Code applies to which types of residential construction?

A. Multi-family residential buildings with three or more dwelling units

B. One- and two-family dwellings and townhouses up to three stories

C. All residential buildings regardless of the number of units

D. Single-family dwellings only, excluding townhouses and duplexes

93. Under the IBC, building construction types range from Type I (most fire-resistant) to Type V (least fire-resistant). Which construction type describes conventional wood-framed buildings without fire-rated assemblies?

A. Type IV heavy timber construction with large cross-sections

B. Type III with non-combustible exterior and combustible interior

C. Type V-B combustible construction without fire-resistance ratings

D. Type II-B non-combustible construction without fire resistance

94. The minimum number of exits required for a building with an occupant load between one and five hundred persons is what quantity?

A. Two exits minimum for occupant loads up to five hundred

B. Three exits minimum for occupant loads exceeding two hundred

C. One exit for occupant loads up to three hundred persons

D. Four exits minimum for all commercial occupancies

95. The minimum design live load for residential living areas under the IBC is what value?

A. Fifty pounds per square foot for all residential spaces

B. One hundred pounds per square foot for ground floor areas

C. Twenty pounds per square foot for sleeping rooms only

D. Forty pounds per square foot for residential living areas

96. An automatic sprinkler system installed throughout a building typically allows what modification to the base allowable height and area?

A. A two-story height increase and unlimited area increase

B. A one-story height increase and a significant area increase

C. No change to height but a fifty percent increase in area

D. A three-story height increase with no change to floor area

97. The IBC classifies buildings by occupancy group based on the building's intended use. A retail store is classified under which occupancy group?

A. Group B for business and professional services

B. Group S for storage of goods and merchandise

C. Group M for mercantile sales and retail operations

D. Group A for assembly of persons in a commercial setting

98. Floor plans for residential construction are typically drawn at what architectural scale?

A. One-quarter inch equals one foot for residential floor plans

B. One-eighth inch equals one foot for residential applications

C. One-half inch equals one foot for residential detail drawings

D. Three-sixteenths inch equals one foot for all plan drawings

99. When the construction drawings and the project specifications conflict on a material or method, standard contract practice dictates that which document typically governs?

A. The construction drawings govern because they are the primary documents

B. The most recently dated document governs regardless of document type

C. The general contractor determines which document applies on a case basis

D. The specifications govern because they describe quality and performance requirements

100. A building permit must be obtained before construction begins. Work must not be covered or concealed before which step in the construction process?

A. Before the architect issues a certificate of substantial completion

B. Before the required inspection for that stage of construction is completed

C. Before the contractor submits the final invoice for the completed phase

D. Before the owner provides written approval of the completed work stage

PRACTICE EXAM 5: ANSWER KEY AND EXPLANATIONS

1. D — When physical barriers prevent achieving the standard six-inch drop in ten feet, the IRC requires a minimum two percent grade away from the building. This alternative ensures positive drainage even where space constraints limit the standard slope. Two percent equals approximately one-quarter inch per foot of horizontal distance.

2. B — OSHA requires protective systems — sloping, shoring, or shielding — for all excavations five feet or deeper unless the excavation is made entirely in stable rock. For excavations less than five feet, a competent person must evaluate conditions and determine whether protection is needed.

3. A — An unconfined compressive strength of 0.8 tsf falls within the Type B range (0.5 to 1.5 tsf) for undisturbed soil. Type B soil requires a maximum allowable slope of 1H:1V, which is a 45-degree angle. If the soil had been previously disturbed, it could not be classified higher than Type B regardless of strength.

4. C — The competent person must evaluate the stability of adjacent structures — buildings, walls, sidewalks, and utilities — that could be undermined or destabilized by the excavation. Failure to assess adjacent structures can result in collapse into the excavation, endangering workers below.

5. D — Arizona law requires contractors to contact Arizona 811 at least two full business days before any excavation begins. This notification triggers the utility locating process, during which utility owners mark the approximate location of buried lines to prevent accidental strikes.

6. B — OSHA requires excavated material to be placed at least two feet from the edge of the excavation. This setback prevents spoil from falling back into the trench and reduces the surcharge loading on the excavation walls that could contribute to a cave-in.

7. C — Workers in excavations four feet or deeper must not travel more than twenty-five feet laterally to reach the nearest means of egress. In a long trench, this means ladders must be spaced at maximum fifty-foot intervals so no worker is more than twenty-five feet from an exit point.

8. A — Ladders used for access and egress in excavations must extend at least three feet above the top edge of the excavation. This extension provides a handhold for workers transitioning from the ladder to the ground surface, reducing the risk of falls at the top of the excavation.

9. D — OSHA requires that protective systems for excavations twenty feet or deeper be designed by a registered professional engineer. The complexity and hazard level of deep excavations exceed what can be safely addressed using the standard OSHA tabulated data for shallower excavations.

10. B — The water-cement ratio is the single most important factor controlling concrete compressive strength. Lower ratios produce stronger, more durable concrete because less water means less porosity and a denser cement paste matrix. This inverse relationship is the most fundamental principle of concrete technology.

11. C — Type III portland cement is specifically formulated for high early strength development. It is chemically similar to Type I but ground more finely, allowing faster hydration and more rapid strength gain. Type III is used when forms need to be stripped early or the structure must be loaded sooner than normal.

12. A — Type II portland cement provides moderate sulfate resistance and is designed for concrete exposed to moderate sulfate concentrations in soil or groundwater. It generates less heat during hydration than Type I, making it also suitable for moderately massive concrete placements.

13. D — The slump test measures the consistency and workability of freshly mixed concrete. A cone-shaped mold is filled with concrete, the mold is removed, and the amount the concrete settles from its original height indicates the workability. Higher slump means a more fluid, workable mix.

14. B — Ready-mix concrete must be discharged within ninety minutes or three hundred drum revolutions after batching, whichever comes first. In hot weather, this time may be shortened because elevated temperatures accelerate hydration and reduce the available working time.

15. A — The standard acceptance test for concrete compressive strength uses cylindrical specimens tested at twenty-eight days after casting. The twenty-eight-day break is the industry standard acceptance criterion, though seven-day tests are often performed as early indicators of strength development.

16. C — The minimum curing period for most structural concrete using Type I portland cement is seven days, or until the concrete has achieved seventy percent of its specified compressive strength. Inadequate curing prevents full hydration and results in weaker, more porous concrete at the surface.

17. D — Adding water at the jobsite increases the water-cement ratio, which reduces compressive strength, increases porosity, increases drying shrinkage, and decreases durability. If additional workability is needed, admixtures — not water — should be used to achieve the desired consistency without compromising strength.

18. B — Retarding admixtures slow the hydration process and extend the working time of the concrete. In Arizona's hot summer conditions, where temperatures routinely exceed 110°F, concrete can set prematurely before proper placement and finishing can be completed. Retarders prevent this flash set condition.

19. A — Finishing over bleed water traps the water beneath a densified surface layer, causing dusting, scaling, delamination, and blistering as the trapped water eventually evaporates. The cardinal rule of concrete finishing is to wait until all bleed water has evaporated before troweling or floating.

20. D — Efflorescence is white, powdery salt deposits that appear on concrete or masonry surfaces when water-soluble salts migrate through the material via capillary action and are deposited on the surface as the water evaporates. It is primarily an aesthetic issue that indicates moisture movement through the material.

21. C — The minimum concrete cover for reinforcement in concrete cast against and permanently exposed to earth is three inches regardless of bar size. This generous cover protects the reinforcement from moisture, soil chemicals, and corrosion in the harsh below-grade environment.

22. A — The rebar size number indicates the nominal bar diameter in eighths of an inch. A No. 4 bar is 4/8 inch (½ inch) in diameter. A No. 6 bar is 6/8 inch (¾ inch). This simple rule allows instant conversion from any bar size number to its diameter.

23. D — The general rule for tension lap splices is a minimum of forty bar diameters. For a No. 4 bar (½-inch diameter), the minimum lap is twenty inches. For a No. 5 bar (⅝-inch diameter), the minimum is twenty-five inches. Exact requirements vary with specific conditions and code provisions.

24. B — Standard CMU actual dimensions are 7⅝ inches by 7⅝ inches by 15⅝ inches — three-eighths of an inch less than the nominal dimensions in each direction. The three-eighths-inch difference accounts for the standard mortar joint thickness, so the unit plus the joint equals the nominal dimension.

25. C — Type M mortar has the highest compressive strength (minimum 2,500 psi) and is specified for below-grade applications including foundation walls, retaining walls, and any masonry in contact with earth. It provides maximum resistance to the compressive and lateral loads common in below-grade conditions.

26. A — Mortar significantly stronger than the masonry units concentrates stress in the units rather than distributing it through the joints. This can cause the units to crack or spall under load because the mortar joints do not deform to absorb movement. The mortar should be matched appropriately to the unit strength.

27. D — Grout for reinforced masonry must have a slump of eight to eleven inches — much more fluid than structural concrete. This high fluidity allows the grout to flow completely into hollow cores and around reinforcing bars, eliminating voids that would compromise the structural bond between steel and masonry.

28. B — Weep holes must be spaced at a maximum of thirty-three inches on center along the base course of masonry veneer walls. Weep holes allow water collected by the flashing in the air space to drain to the exterior, completing the moisture management system of the veneer wall assembly.

29. C — Cleanout openings are required at the base of all grouted masonry cells when the grout pour height exceeds five feet. These openings allow workers to remove mortar droppings and debris from the bottom of the cores before grouting, ensuring the reinforcement is fully encapsulated.

30. A — Concave joints and V-joints are the most weather-resistant profiles because the tooling process compresses the mortar surface and creates a profile that sheds water away from the joint. Raked joints are the least weather-resistant because they create a ledge that traps water.

31. D — Replacement mortar for repointing must be equal to or softer than the original mortar to prevent damage to the masonry units. Mortar harder than the original concentrates stress in the units, potentially causing cracking and spalling. This is especially critical for historic masonry with lime-based mortars.

32. B — The minimum air space between the back face of masonry veneer and the backup wall is one inch. This air space serves as the drainage cavity, allowing water that penetrates the veneer to drain downward and exit through weep holes at the base. The cavity must remain clear of mortar droppings.

33. C — Bond beam blocks form horizontal channels within the masonry wall that are filled with reinforcing steel and grout. The resulting reinforced concrete beams resist horizontal shear forces, distribute concentrated loads, and tie the wall together at floor levels, the top of the wall, and at specified vertical intervals.

34. A — ASTM A992 is the standard structural steel grade for wide-flange shapes with a minimum yield strength of 50 ksi (50,000 psi). It replaced the older ASTM A36 (36 ksi) as the default steel for W-shapes and provides improved strength, weldability, and consistency.

35. D — In a steel joist roof system, gravity loads flow from the roof deck down through the joists, which transfer their reactions to the joist girders, which in turn bear on columns that deliver the loads to the foundations. This sequence represents the complete gravity load path from the roof surface to the ground.

36. B — K-Series steel joists require a minimum bearing length of four inches on masonry or concrete supports and two and one-half inches on steel supports. The bearing seat must be securely attached to the supporting structure before the joist is considered permanently connected.

37. A — OSHA and the Steel Joist Institute require that at least one row of erection bridging be installed near the midspan of each joist before the hoisting cables are released. Without this initial bridging, the slender joist top chords are vulnerable to lateral buckling and the joists can topple.

38. C — Unbridged or partially bridged steel joists are susceptible to lateral buckling of the top chord under any applied load. The slender compression chord can buckle sideways without warning, causing the joist to collapse. All bridging must be fully installed and connected before any loads are applied.

39. D — The lip stiffeners on CFS studs prevent the flanges from buckling under compressive loads. Without the lips, the thin flanges would curl or distort when the stud is loaded in compression, dramatically reducing the member's structural capacity. This is why studs and tracks are not interchangeable.

40. A — CFS tracks do not have lip stiffeners because they must accept studs inside them. The U-shaped profile of the track is slightly wider than the stud, allowing the stud to nest inside and be fastened through the flanges. This design difference means tracks cannot be substituted for studs in load-bearing applications.

41. B — Cold-formed steel framing is assembled using self-drilling, self-tapping screws specifically designed for steel-to-steel connections. These screws have a drill-point tip that penetrates the steel without a pilot hole and cut threads that engage the material as the screw is driven.

42. D — ASTM A325 and ASTM A490 are the two standard specifications for high-strength structural bolts used in steel connections. A325 bolts have a minimum tensile strength of 120 ksi, and A490 bolts have a minimum of 150 ksi. Both are used for slip-critical and bearing-type connections.

43. C — In a slip-critical connection, forces are transferred through friction between the faying surfaces (the surfaces in contact) created by the clamping force of the pretensioned bolts. The bolts must be tightened to a specified minimum tension to generate enough friction to prevent any slip.

44. A — A fillet weld is placed in the corner formed by two members meeting at an angle, typically at a right angle. Fillet welds are the most common weld type in structural steel construction because they are versatile, economical, and can be made without special edge preparation.

45. D — OSHA requires the controlling contractor — typically the general contractor — to provide written notification that the concrete has achieved sufficient strength to support steel erection loads. This confirmation ensures anchor bolts and base plates are not loaded before the concrete can safely resist the forces.

46. B — OSHA requires at least four anchor bolts per column to be installed and tightened before temporary bracing can be removed. This ensures the column base connection has sufficient capacity to resist overturning forces even when the permanent lateral bracing system is not yet complete.

47. C — A nominal 2×6 has actual dimensions of 1½ inches by 5½ inches after drying and surfacing. The reduction from nominal to actual dimensions is one-half inch in each direction for lumber with nominal dimensions up to six inches. All framing calculations must use actual, not nominal, dimensions.

48. A — The IRC requires sill plates to be anchored with one-half-inch-diameter bolts at a maximum spacing of six feet on center. The bolts must be embedded a minimum of seven inches into the concrete or masonry foundation. This anchoring connects the wood framing to the foundation for uplift and lateral resistance.

49. D — Sill plate anchor bolts must be placed within twelve inches of each end of each sill plate piece. This ensures that the ends of the sill plate — which are the most vulnerable to uplift and displacement — are securely fastened to the foundation.

50. B — Floor joists must bear a minimum of one and one-half inches on wood or metal supports. On masonry or concrete supports, the minimum bearing is three inches. These minimums ensure adequate bearing area to transfer the joist reactions without crushing the supporting material.

51. C — The standard subflooring fastening schedule is six inches on center along panel edges and twelve inches on center at intermediate supports (in the field). This schedule provides adequate attachment to resist the shear and uplift forces that act on the floor diaphragm.

52. A — Joints in the two members of a double top plate must be offset by at least forty-eight inches. This offset ensures that no single location has both plates interrupted at the same point, which would create a weak splice incapable of transferring loads across the joint.

53. D — Trusses are engineered as complete structural systems and any field modification must be approved in writing by the truss design engineer. Cutting, notching, or drilling truss members invalidates the engineering design and can cause structural failure because every member carries specific calculated loads.

54. B — The maximum riser height for residential stairs under the IRC is seven and three-quarters inches (7¾ inches). This dimension is the code maximum — actual riser heights are calculated by dividing the total floor-to-floor height by the number of risers, and no individual riser may exceed this limit.

55. C — The minimum tread depth for residential stairs under the IRC is ten inches, measured from the leading edge of one tread to the leading edge of the tread above. This minimum ensures a safe, comfortable foot placement area for ascending and descending the stairway.

56. A — The maximum allowable variation between the largest and smallest riser (or tread) in a residential stair flight is three-eighths of an inch. This uniformity requirement prevents tripping hazards caused by unexpected changes in step height as occupants ascend or descend.

57. D — Braced wall panels must be located at each end of the braced wall line and at intervals not exceeding twenty-five feet on center. This maximum spacing ensures adequate lateral resistance along the full length of each wall line to resist wind and seismic forces.

58. B — Ceiling joists or rafter ties connect opposing rafters at the wall plate level to resist the outward horizontal thrust generated by the angled rafters under roof loads. Without these ties, the rafters would push the walls outward and the ridge would sag — potentially causing structural collapse.

59. C — The IECC requires a minimum ceiling insulation R-value of R-38 for Arizona's Climate Zone 2. The ceiling is the highest-priority insulation location because the roof receives the most intense solar radiation, and the temperature differential between the attic and the conditioned space is greatest.

60. D — Dampproofing resists moisture vapor and capillary moisture migration through porous materials like concrete. Waterproofing resists hydrostatic pressure — the force of standing water

pushing against the below-grade wall. When the water table is at or above the foundation level, waterproofing is required.

61. A — The IRC requires a minimum six-mil polyethylene vapor retarder under concrete slabs cast on the ground. This barrier prevents moisture from migrating upward through the slab by capillary action, which can cause flooring failures, mold growth, and indoor air quality problems.

62. C — Asphalt shingles require a minimum roof slope of 4:12 with standard single-layer underlayment. At slopes between 2:12 and 4:12, asphalt shingles may be installed with enhanced double-layer underlayment. Below 2:12, asphalt shingles are not appropriate.

63. B — TPO (Thermoplastic Polyolefin) is a white thermoplastic membrane that is heat-welded at seams and valued for its solar reflectivity and energy efficiency. In Arizona's hot climate, TPO's reflective surface significantly reduces roof surface temperatures and cooling loads.

64. D — The weather-resistive barrier must be installed in shingle-lap fashion with upper courses overlapping lower courses so that water draining down the surface flows over the lap joints rather than behind them. This gravity-based lapping pattern is essential for proper drainage.

65. A — The maximum SHGC for windows in IECC Climate Zone 2 is 0.25, meaning the window must block at least seventy-five percent of the solar radiation striking it. In Arizona's cooling-dominated climate, SHGC is as important as or more important than U-factor for window selection.

66. C — The minimum total thickness for three-coat stucco over metal lath is seven-eighths of an inch (⅞ inch) — consisting of a ⅜-inch scratch coat, a ⅜-inch brown coat, and a ⅛-inch finish coat. This combined thickness provides adequate durability and weather resistance.

67. B — The brown coat must cure for a minimum of seven days before the finish coat is applied. During this curing period, the brown coat must be kept moist to prevent premature drying and shrinkage cracking. In Arizona's dry climate, consistent moist curing is especially critical.

68. D — Stucco must terminate a minimum of four inches above the finished earth surface and two inches above paved surfaces. A weep screed at the base creates the required gap, directing any moisture that migrates through the stucco system to drain out rather than wick up from the ground.

69. A — The IRC requires emergency egress windows to have a minimum net clear opening area of 5.7 square feet for upper floors and 5.0 square feet at ground level. These minimums ensure the opening is large enough for an adult to escape and for firefighters to enter during an emergency.

70. D — The maximum sill height for emergency egress windows is forty-four inches above the finished floor. This height ensures that occupants — including children and elderly persons — can reach and climb through the window during an emergency escape.

71. B — The minimum clear width of an egress door is thirty-two inches, measured with the door open at ninety degrees from the face of the door to the opposite stop. A standard thirty-six-inch nominal door typically provides approximately thirty-two inches of clear passage when open.

72. C — Double-keyed deadbolts (requiring a key on both sides) are prohibited on egress doors because they trap occupants who cannot locate a key during an emergency. Egress doors must be operable from the interior with a single motion and without a key, special knowledge, or special effort.

73. D — The maximum U-factor for windows in IECC Climate Zone 2 is 0.40, corresponding to approximately double-pane insulating glass with low-E coating. While less stringent than cold-climate requirements, this standard ensures meaningful thermal resistance in Arizona's hot climate.

74. D — A single layer of five-eighths-inch Type X gypsum drywall provides a one-hour fire-resistance rating. Type X drywall contains glass fibers and additives that increase fire resistance compared to standard drywall. This is the most commonly tested drywall fire-rating fact.

75. B — Drywall screws on ceilings must be spaced at twelve inches on center along each framing member. This is closer than the sixteen-inch spacing required for walls because gravity pulls the ceiling panel away from the framing, requiring more fasteners to maintain secure attachment.

76. C — The building code requires Type X fire-rated drywall for the wall and ceiling separation between an attached garage and the dwelling living space. This is a life safety requirement designed to prevent garage fires — which may involve vehicles, fuel, and chemicals — from spreading into living areas.

77. A — Cement board or fiber-cement backer board is the required substrate for ceramic tile in wet areas such as shower enclosures. Cement board is waterproof and dimensionally stable when wet. Moisture-resistant green board is not adequate for direct water exposure in showers.

78. D — Hardwood flooring must be acclimated to the installation environment to reach equilibrium moisture content before installation. Wood expands when it absorbs moisture and contracts when it dries. Installing at the wrong moisture content causes buckling when too wet or gapping when too dry.

79. B — Level 4 drywall finish — three coats of compound on joints and two coats on fastener heads — is the standard for surfaces receiving flat paint or light-texture finishes. This level provides a smooth enough surface that minor imperfections are not visible through the paint.

80. A — OSHA requires fall protection for workers at six feet or more above a lower level in general construction. This six-foot trigger height applies to all construction activities except steel erection (fifteen feet) and scaffolding (ten feet for supported scaffolds), which have their own specific thresholds.

81. C — The top rail of a guardrail system must be forty-two inches (plus or minus three inches) above the walking and working surface. The top rail must withstand a force of at least two hundred pounds applied in any outward or downward direction at any point along its length.

82. A — A personal fall arrest system anchorage must support at least five thousand pounds per worker attached to it. This high capacity ensures the anchorage can withstand the dynamic forces generated when a falling worker is arrested, with a safety margin to prevent anchorage failure.

83. D — Work-related fatalities must be reported to OSHA within eight hours of the employer learning of the death. This is the shortest mandatory reporting timeline and reflects the severity of a fatal incident. Failure to report within eight hours is a separate, citable violation.

84. B — Inpatient hospitalizations, amputations, and losses of an eye must be reported to OSHA within twenty-four hours of the employer learning of the event. This is distinct from the eight-hour fatality reporting requirement and applies to these three specific categories of serious injury.

85. C — The fall protection trigger height for supported scaffolds is ten feet above a lower level. This is higher than the general construction threshold of six feet but lower than the steel erection threshold of fifteen feet. Workers on suspended scaffolds require fall protection at all heights.

86. A — Every scaffold and scaffold component must support its own weight plus at least four times the maximum intended load without failure. This 4:1 safety factor is a fundamental scaffold design requirement that provides an adequate margin against overloading and structural failure.

87. D — GFCIs are required on all temporary 120-volt, single-phase, 15- and 20-ampere receptacle outlets on construction sites. GFCIs detect ground faults as small as 5 milliamps and disconnect the circuit in milliseconds, preventing electrocution from faulty equipment or wet conditions.

88. B — The minimum clearance from overhead power lines rated at 50 kV or less is ten feet in all directions. This applies to cranes, aerial lifts, scaffolding, ladders, and all other equipment and materials. For lines above 50 kV, the clearance increases by four inches for every additional 10 kV.

89. C — Under OSHA's hierarchy of controls, PPE is the last line of defense — used only when elimination, substitution, engineering controls, and administrative controls are insufficient. PPE protects the individual worker but does not eliminate the underlying hazard.

90. A — The OSHA Form 300A must be posted in a conspicuous location at the workplace from February 1 through April 30 of the year following the recorded year. This posting period allows all employees to review the annual summary of work-related injuries and illnesses.

91. D — A competent person under OSHA is an individual who can identify existing and predictable hazards and who has the authority to take prompt corrective action to eliminate those hazards. Both qualifications are required — knowledge alone without authority, or authority without knowledge, does not meet the definition.

92. B — The 2018 IRC applies to one- and two-family dwellings and townhouses not more than three stories above grade plane. All other residential buildings — including multi-family buildings with three or more units — are governed by the IBC.

93. C — Type V-B describes combustible construction without fire-resistance ratings — the classification that applies to most conventional wood-framed residential and light commercial buildings. Type V-A is also combustible but includes one-hour fire-rated assemblies.

94. A — The minimum number of exits for a building with an occupant load between one and five hundred persons is two exits. Three exits are required for 501 to 1,000 occupants, and four exits are required for more than 1,000 occupants.

95. D — The minimum design live load for residential living areas is forty pounds per square foot (40 psf) under the IBC. Higher live loads apply to other occupancies — fifty psf for offices, one hundred psf for corridors and assembly areas, and specific values for other uses.

96. B — An automatic sprinkler system installed throughout a building typically allows a one-story height increase and a significant floor area increase beyond the base values in the IBC height and area tables. Sprinklers are the most powerful single code compliance tool for expanding allowable building size.

97. C — Retail stores, markets, and sales rooms are classified under Group M (Mercantile) in the IBC occupancy classification system. Mercantile occupancies are characterized by the display and sale of merchandise and involve moderate to high occupant loads.

98. A — Residential floor plans are typically drawn at a scale of one-quarter inch equals one foot (¼" = 1'-0"). This scale provides adequate detail for room layouts, door and window locations, and dimensional information on standard-sized residential drawings.

99. D — When construction drawings and project specifications conflict, standard contract practice dictates that the specifications govern because they describe the quality, performance, and installation requirements for materials and methods in greater written detail than can be conveyed graphically.

100. B — Work must not be covered or concealed before the required inspection for that stage of construction is completed. Covering work before inspection — such as insulating before framing inspection or pouring concrete before foundation inspection — prevents the inspector from verifying compliance.