

PRACTICE EXAM 5 — SIMULATION (130 QUESTIONS)

Section 1: Trade and Technical (Questions 1–80)

1. Of the following, which is the MOST accurate statement about the IRC's legal force?
 - A. It is automatically law nationwide upon publication
 - B. It applies only to commercial buildings
 - C. Manufacturers determine where it applies
 - D. It becomes enforceable only when a jurisdiction adopts it

2. A builder must decide which document a finished space must satisfy to be classified as a dwelling unit. The BEST indicator is the presence of permanent provisions for:
 - A. Parking and storage
 - B. Living, sleeping, eating, cooking, and sanitation
 - C. Retail and commercial activity
 - D. Recreation and landscaping

3. When a code provision uses the word "approved," the FINAL authority on acceptance rests with the:
 - A. Material manufacturer
 - B. Property owner

- C. General contractor
- D. Code official

4. A builder who disagrees with a code official's interpretation has which BEST avenue for relief?

- A. A hearing before the board of appeals
- B. Proceeding with the work anyway
- C. Reporting the official to the supplier
- D. Abandoning the project

5. Which of the following is the FIRST inspection in a typical residential sequence?

- A. The footing inspection before concrete is placed
- B. The final inspection
- C. The insulation inspection
- D. The framing rough-in inspection

6. A house is fully code-compliant in its construction but fails review because it sits inside the required offset from the property line. The PRIMARY governing authority for that offset is:

- A. The IRC structural tables
- B. The roofing manufacturer
- C. The concrete supplier
- D. Local zoning regulations

7. When laying out a rectangular foundation, the BEST single check that the entire footprint is square is to:

- A. Re-drive each corner stake deeper
- B. Measure the two diagonals and confirm they are equal
- C. Check each stake for plumb
- D. Re-measure each side once more

8. A builder squaring a corner uses legs of 9 and 12 feet. The diagonal confirming a true right angle MUST measure:

- A. 21 feet
- B. 16 feet
- C. 15 feet
- D. 13 feet

9. The PRIMARY purpose of setting batter boards back from the building corners is to:

- A. Store tools off the ground
- B. Re-establish the layout strings after excavation
- C. Mark underground utilities
- D. Brace the foundation forms

10. Of the following soils, which has the GREATEST presumptive load-bearing capacity?

- A. Clay
- B. Crystalline bedrock
- C. Organic topsoil
- D. Silty sand

11. A builder must place fill to raise a pad three feet. The BEST method to prevent future settlement is to compact the fill in:

- A. One deep layer compacted at the surface
- B. A single saturated pour
- C. Loose form left to settle
- D. Thin successive lifts, each compacted before the next

12. The PRIMARY reason a footing must extend below the frost line is to prevent:

- A. Slow concrete curing
- B. Loss of bearing capacity from drying
- C. Frost heave from lifting the foundation
- D. Water table contamination

13. Of the following, which factor MOST directly governs the required thickness of a foundation wall?

- A. The unbalanced backfill height retained against it
- B. The number of windows above

- C. The exterior cladding color
- D. The brand of admixture used

14. The single MOST important factor controlling the compressive strength of concrete is the:

- A. Color of the aggregate
- B. Temperature of the forms
- C. Water-cement ratio
- D. Brand of mixing equipment

15. A driver wants to add water to a stiff mix on site. The BEST response, to preserve strength, is to:

- A. Add water until it flows freely
- B. Improve workability with an admixture instead
- C. Add dry cement by hand
- D. Pour it stiff with no change at all

16. Concrete is specified to reach its full design strength at which point?

- A. 7 days
- B. 28 days
- C. 3 days
- D. 90 days

17. The PRIMARY function of steel reinforcing bars embedded in concrete is to provide:

- A. Additional compressive strength
- B. A bonding surface for paint
- C. Tensile strength the concrete lacks
- D. Curing moisture

18. The PRIMARY purpose of anchor bolts in the top of a foundation wall is to:

- A. Provide surface drainage
- B. Reinforce the footing against frost
- C. Secure the framing against uplift and lateral sliding
- D. Mark future plumbing penetrations

19. A sill plate rests directly on a concrete foundation. The MOST appropriate material is:

- A. Pressure-treated or naturally durable lumber
- B. Standard kiln-dried framing lumber
- C. The lowest-grade lumber available
- D. Lumber primed with latex paint

20. Which below-grade condition would MOST require waterproofing rather than dampproofing?

- A. Freely draining gravel soil
- B. A wall entirely above grade
- C. A high water table creating hydrostatic pressure
- D. A consistently arid climate

21. Of the foundation types, which carries the signature requirement of an emergency escape opening for a sleeping room?

- A. Slab-on-grade
- B. A basement
- C. A crawlspace
- D. A monolithic slab

22. The BEST measure to keep ground moisture from rising through a slab-on-grade floor is a:

- A. Vapor retarder beneath the slab
- B. Curing compound on the surface
- C. Layer of reinforcing mesh
- D. Granular base alone

23. A builder must select the actual dimension of a nominal 2×4. The correct figure is:

- A. 1½ inches by 3½ inches
- B. 2 inches by 4 inches

C. 1¾ inches by 3¾ inches

D. 2 inches by 3½ inches

24. To increase a floor joist's allowable span without changing species or grade, the MOST effective change is to:

A. Increase the spacing between joists

B. Use a deeper joist

C. Use a lower grade

D. Increase the load carried

25. The MOST damaging location to notch a floor joist is the:

A. Bottom edge near mid-span

B. End within a few inches of bearing

C. Top edge directly over a support

D. End at the rim joist

26. In a wall opening, the member that carries the load across the top and transfers it to the jack studs is the:

A. Header

B. Cripple stud

C. Rough sill

D. King stud

27. The PRIMARY function of structural panel sheathing nailed to wall studs is to resist:

- A. Vertical gravity load only
- B. Lateral racking from wind and seismic forces
- C. Thermal expansion of the studs
- D. Vapor diffusion through the wall

28. A shear wall's strength depends MOST critically on its:

- A. Paint color
- B. Insulation R-value
- C. Window placement
- D. Nailing schedule at panel edges and field

29. The BEST description of a continuous load path is the route loads travel through:

- A. The plumbing pipes
- B. The electrical wiring
- C. Members and connections to the foundation
- D. The roof drainage gutters

30. In a hurricane-prone region, the connector that MOST directly resists wind uplift on the roof is the:

- A. Anchor bolt
- B. Hurricane tie
- C. Sill-plate strap
- D. Shear-wall hold-down

31. Sloped rafters exert an outward thrust on the walls that is BEST resisted by:

- A. The roof covering
- B. Additional roof sheathing
- C. Ceiling joists or rafter ties
- D. The gutter system

32. A homeowner asks to cut a web member from a roof truss for storage. The BEST response is to:

- A. Refuse unless the truss engineer approves
- B. Cut it since one web remains
- C. Cut it to clear ductwork
- D. Let the framer decide

33. The baseline attic ventilation ratio required by the IRC is one square foot of net free vent area for every:

- A. 50 square feet of attic
- B. 100 square feet of attic
- C. 150 square feet of attic
- D. 300 square feet of attic

34. In a cold climate, the load that MOST likely governs roof rafter sizing is the:

- A. Wind uplift load
- B. Seismic load
- C. Construction live load
- D. Snow load

35. Which roof slope is the steepest?

- A. 12:12
- B. 6:12
- C. 4:12
- D. 2:12

36. Roof sheathing properly fastened to the framing creates the structural element BEST described as the:

- A. Vapor retarder
- B. Thermal envelope

- C. Drainage plane
- D. Roof diaphragm

37. The PRIMARY purpose of an ice barrier membrane at the eaves in a cold climate is to:

- A. Add insulation value
- B. Prevent leaks from ice-dam backup
- C. Provide structural support
- D. Improve appearance

38. Statistically, most roof leaks are BEST traced first to the:

- A. Center field of the shingles
- B. Ridge cap only
- C. Valleys, penetrations, and chimney flashing
- D. Underside of the sheathing

39. The BEST way to make a roof penetration watertight is to use:

- A. Properly installed flashing
- B. A thick bead of caulk
- C. Extra field shingles
- D. A ridge vent

40. Roof runoff from gutters and downspouts should be directed:

- A. Into the foundation drain only
- B. Well away from the foundation
- C. Onto the adjacent property
- D. Straight down the wall face

41. Behind exterior cladding, the layer that sheds water getting past the cladding back to the exterior is BEST described as the:

- A. Finished interior surface
- B. Structural sheathing
- C. Water-resistive barrier
- D. Electrical raceway

42. When installing a water-resistive barrier, each upper piece MUST be lapped so that it:

- A. Overlaps the piece below for down-and-out drainage
- B. Tucks behind the piece below
- C. Is sealed with caulk on all edges
- D. Is placed in a random pattern

43. The PRIMARY purpose of weep holes at the base of brick veneer is to:

- A. Increase the structural load carried
- B. Ventilate the interior
- C. Drain water from the air space behind the veneer
- D. Anchor the veneer to the studs

44. Vinyl siding MUST be fastened loosely PRIMARILY so that it can:

- A. Be removed for inspection
- B. Pass water freely
- C. Carry structural load
- D. Expand and contract with temperature

45. Comparing two windows, the one with the LOWER U-factor will:

- A. Admit more sunlight
- B. Insulate better
- C. Leak more air
- D. Be structurally stronger

46. Of the locations below, which MOST clearly requires safety glazing?

- A. A high attic gable window
- B. A window above a cabinet run

- C. A small fixed clerestory window
- D. A glass panel beside an exterior door

47. The BEST insulating product of the following, by R-value, is the:

- A. R-30 batt
- B. R-19 batt
- C. R-13 batt
- D. R-11 batt

48. Compressing a thick fiberglass batt into a shallow cavity will MOST likely:

- A. Increase its fire rating
- B. Increase its structural strength
- C. Reduce vapor permeability to zero
- D. Reduce its effective R-value

49. Continuous exterior rigid foam is BEST used to address:

- A. Bulk water intrusion
- B. Air leakage at outlets
- C. Thermal bridging through the framing
- D. Sound transmission between rooms

50. In a cold (heating-dominated) climate, the vapor retarder is BEST placed on the:

- A. Cold exterior side of the sheathing
- B. Outside face of the cladding
- C. Warm interior side of the insulation
- D. Both faces of the assembly

51. Of the three moisture-control layers, the one that stops the LARGEST amount of moisture movement is the:

- A. Air barrier stopping air leakage
- B. Vapor retarder slowing diffusion
- C. Exterior paint film
- D. Cladding surface

52. A crawlspace must be moisture-controlled by venting to the exterior or by being:

- A. Filled with gravel
- B. Left with bare soil
- C. Topped with a second slab
- D. Sealed and conditioned with a ground cover

53. Bathroom and kitchen exhaust fans MUST discharge to the:

- A. Attic above the ceiling
- B. Soffit cavity
- C. Outdoors
- D. Crawlspace below

54. Energy-code insulation and window requirements are organized PRIMARILY by:

- A. Lot size
- B. Property value
- C. Climate zone
- D. House color

55. The energy-code test that BEST measures whole-house air leakage is the:

- A. Blower-door test
- B. Concrete slump test
- C. Soil compaction test
- D. Water pressure test

56. A heat pump is MORE efficient than electric resistance heat PRIMARILY because it:

- A. Moves heat rather than generating it
- B. Burns fuel more completely

- C. Uses no electricity
- D. Operates only in mild weather

57. Oversizing HVAC equipment beyond the calculated load MOST likely causes the system to:

- A. Run continuously at peak efficiency
- B. Use less energy than a right-sized unit
- C. Last far longer than rated
- D. Short-cycle and control humidity poorly

58. The two systems of a residential plumbing installation are BEST described as a pressurized supply system and a:

- A. Combined supply-and-waste pipe
- B. Closed heating loop
- C. Grounding network
- D. Gravity drain-waste-vent system

59. The PRIMARY purpose of a fixture trap is to:

- A. Increase water pressure
- B. Hold a water seal that blocks sewer gas
- C. Filter sediment from the supply
- D. Reduce draining noise

60. A fixture trap loses its seal each time an adjacent fixture drains. The MOST likely cause is:

- A. A missing or inadequate vent allowing siphoning
- B. Excessive supply pressure
- C. A frozen supply line
- D. An oversized drain

61. Supply piping routed through an unconditioned cold attic is MOST vulnerable to:

- A. Excessive pressure
- B. Freezing and bursting
- C. Loss of a trap seal
- D. Corrosion only

62. The device that BEST protects a branch-circuit conductor from overheating is the:

- A. Ground rod
- B. Light fixture
- C. Circuit breaker
- D. Receptacle outlet

63. A breaker MUST be sized so that it:

- A. Allows the maximum possible current
- B. Trips before the conductor overheats
- C. Matches the largest appliance
- D. Always exceeds the wire rating

64. The device that BEST protects a person from shock at a receptacle near water is a:

- A. Standard breaker
- B. GFCI
- C. Surge suppressor
- D. Tamper-resistant cover

65. An AFCI device is required on living-area circuits PRIMARILY to protect against:

- A. Shock near water
- B. Utility overvoltage
- C. Child tampering
- D. Fires caused by arcing faults

66. Carbon monoxide is MOST accurately described as a gas that is:

- A. Visible as a dark vapor
- B. Strongly odorous

- C. Colorless, odorless, and poisonous
- D. Harmless at low levels

67. A home with a fuel-burning appliance and an attached garage **MUST** have CO alarms located:

- A. Near each separate sleeping area
- B. Inside the garage only
- C. In the attic only
- D. Outdoors at the meter

68. The **BEST** corrective approach for a backdrafting combustion appliance in a tight home is to:

- A. Seal the home more tightly
- B. Remove the CO alarms
- C. Provide adequate combustion air or use a sealed-combustion unit
- D. Block the appliance vent

69. A masonry fireplace requires a hearth extension **PRIMARILY** to:

- A. Improve chimney draft
- B. Carry the chimney's weight
- C. Increase heat output
- D. Protect the combustible floor from sparks

70. The BEST description of the attached-garage-to-house door requirement is a door that is:

- A. Hollow-core and lightweight
- B. Glazed with clear glass
- C. Propped open for ventilation
- D. Self-closing, tight-fitting, and of an approved type

71. A residential pool barrier is required PRIMARILY to:

- A. Keep leaves out of the water
- B. Provide privacy
- C. Prevent unsupervised access by young children
- D. Support the pool walls

72. A deck attached to a house connects through a ledger that MUST be fastened with:

- A. Through-bolts or approved lag screws, not nails alone
- B. Closely spaced common nails
- C. Construction adhesive only
- D. Hand-driven wood screws

73. Of the deck connections, the one MOST responsible for catastrophic collapse is the:

- A. Footing-to-post connection
- B. Joist-to-beam connection
- C. Ledger-to-house connection
- D. Decking-to-joist connection

74. The MOST consistently tested guard requirement is that openings must reject a sphere of:

- A. 8 inches
- B. 6 inches
- C. 4 inches
- D. 12 inches

75. The maximum riser height and minimum tread depth for residential stairs are BEST stated as:

- A. Maximum riser $7\frac{3}{4}$ inches, minimum tread 10 inches
- B. Maximum riser 10 inches, minimum tread 6 inches
- C. Maximum riser 5 inches, minimum tread 14 inches
- D. Maximum riser 12 inches, minimum tread 8 inches

76. A guard is required where a walking surface is MORE than how high above the level below?

- A. 12 inches
- B. 30 inches

- C. 60 inches
- D. 6 inches

77. Of the following, the FIRST line of defense in erosion and sediment control is to:

- A. Install silt fences after grading
- B. Minimize and stabilize disturbed soil
- C. Wait until final grade to act
- D. Rely on sediment traps alone

78. The PRIMARY purpose of a perimeter foundation drain is to:

- A. Speed concrete curing
- B. Provide structural support
- C. Carry groundwater away from the foundation
- D. Increase soil bearing capacity

79. An engineered I-joist may be cut or bored ONLY:

- A. Anywhere convenient along the span
- B. At the framer's discretion
- C. Within the manufacturer's specified allowances
- D. Without regard to load

80. A grade stamp on structural lumber identifies all of the following EXCEPT the:

- A. Species or species group
- B. Moisture condition
- C. Grading agency
- D. Required span in the specific building

Section 2: Business and Law (Questions 81–130)

81. A job has direct costs of \$24,000, and the builder applies a 25% markup. The BEST selling price to quote is:

- A. \$30,000
- B. \$24,250
- C. \$30,250
- D. \$29,000

82. A job sells for \$50,000 with \$10,000 profit. The profit margin as a percentage of the selling price is:

- A. 25%
- B. 20%
- C. 16%
- D. 10%

83. Which statement BEST describes the relationship between markup and margin?

- A. They are always the same percentage
- B. A 50% markup equals about a 33% margin
- C. Margin is calculated on cost
- D. Markup is calculated on the selling price

84. A balance sheet shows assets of \$250,000 and liabilities of \$150,000. The owner's equity is:

- A. \$400,000
- B. \$250,000
- C. \$150,000
- D. \$100,000

85. Which business entity exposes its owner to UNLIMITED personal liability for business debts?

- A. A sole proprietorship
- B. A limited liability company
- C. A C-corporation
- D. An S-corporation

86. The entity that BEST combines personal-asset protection with pass-through taxation is a:

- A. Limited liability company
- B. Sole proprietorship
- C. General partnership
- D. C-corporation

87. "Pass-through taxation" BEST describes profits that are:

- A. Taxed twice, at the entity and owner levels
- B. Taxed once on the owners' personal returns
- C. Exempt from all taxation
- D. Paid only by the corporate entity

88. The financial statement that BEST shows what a business owns and owes at a single point in time is the:

- A. Income statement
- B. Balance sheet
- C. Cash flow statement
- D. Job-cost report

89. The accounting equation underlying the balance sheet is BEST stated as:

- A. Revenue minus expenses equals profit
- B. Cash in minus cash out equals reserve

- C. Assets equal liabilities plus equity
- D. Markup plus cost equals price

90. The leading cause of contractor business failure, even on profitable jobs, is BEST described as:

- A. Excessive material quality
- B. Too few subcontractors
- C. Running out of cash
- D. Building too many homes

91. Progress payments tied to milestones BEST help the builder by:

- A. Eliminating the need for a contract
- B. Removing all profit risk
- C. Raising the total price
- D. Bridging the gap between paying costs and collecting revenue

92. Worker classification as employee versus independent contractor is determined PRIMARILY by:

- A. The degree of control the business exercises
- B. The label in the agreement
- C. The worker's preference
- D. The size of the company

93. Payroll taxes withheld from employees' wages are BEST described as:

- A. The employer's discretionary cash
- B. Trust-fund money held for the government
- C. A loan repayable to the employee
- D. Tax-exempt revenue

94. The KEY difference between insurance and a surety bond is that insurance protects the:

- A. Public from the contractor
- B. Insured party against its own losses
- C. Surety from the owner
- D. Board from the builder

95. When a surety pays an owner after a contractor's default, the surety then:

- A. Absorbs the loss permanently
- B. Bills the licensing board
- C. Seeks reimbursement from the contractor
- D. Charges the lender

96. The coverage that BEST pays for an employee's work-related injuries is:

- A. Builder's risk insurance
- B. A performance bond
- C. Workers' compensation
- D. General liability for the structure

97. In construction pricing, "markup" is BEST defined as a percentage applied to the:

- A. Cost of the work
- B. Selling price of the job
- C. Profit margin only
- D. Overhead alone

98. A builder who prices jobs to beat direct costs but ignores overhead will, over time, MOST likely:

- A. Increase profit
- B. Reduce taxes
- C. Build reserves quickly
- D. Lose money by not recovering overhead

99. Overhead is BEST defined as costs that:

- A. Are charged entirely to one project
- B. Come solely from material sales

- C. Apply only to subcontracted work
- D. Are not directly chargeable to a single specific job

100. The contract element in which each party exchanges something of value is BEST called:

- A. Consideration
- B. Acceptance
- C. Capacity
- D. Assent

101. Under the Statute of Frauds, a significant construction contract MUST generally be:

- A. In writing to be enforceable
- B. Notarized by an official
- C. Recorded with the county
- D. Approved by the board

102. In a lump-sum (fixed-price) contract, the party who bears the risk of cost overruns is the:

- A. Owner
- B. Lender
- C. Supplier
- D. Contractor

103. In a cost-plus contract, the party who bears the risk of higher-than-expected costs is the:

- A. Subcontractor
- B. Owner
- C. Contractor
- D. Surety

104. The BEST way to protect payment for an owner's mid-project change is to:

- A. Bill it at closeout
- B. Rely on the verbal instruction
- C. Wait until the warranty period
- D. Execute a written, signed change order before proceeding

105. A warranty imposed by law even when not stated in the contract is BEST described as an:

- A. Implied warranty
- B. Express warranty
- C. Optional purchased warranty
- D. Warranty waived at closing

106. The KEY difference between mediation and arbitration is that arbitration:

- A. Is always free of charge
- B. Produces a binding decision
- C. Cannot use a neutral party
- D. Must occur before negotiation

107. The PRIMARY purpose of contractor licensing is BEST described as:

- A. Generating revenue for the state
- B. Limiting competition among builders
- C. Guaranteeing a minimum income
- D. Protecting the public through competence and accountability

108. An unlicensed person who performs work requiring a license may, in many jurisdictions, be:

- A. Awarded double damages
- B. Issued a license automatically
- C. Barred from enforcing the contract or collecting
- D. Exempt from all building codes

109. The disciplinary action that PERMANENTLY cancels a contractor's license is:

- A. A written warning
- B. Revocation

- C. A continuing-education order
- D. A temporary suspension

110. A mechanic's lien is BEST described as a legal claim filed against the:

- A. Contractor's license
- B. Real property that was improved
- C. Owner's personal bank account
- D. General contractor's bond only

111. A mechanic's lien is so powerful PRIMARILY because:

- A. It doubles the contract price
- B. It cancels the building permit
- C. It transfers the license
- D. An unpaid sub can lien the property even if the owner paid the GC

112. Lien rights are MOST often lost because the claimant:

- A. Performed poor-quality work
- B. Charged too little
- C. Used the wrong ink color
- D. Missed a strict filing or enforcement deadline

113. A document by which a paid party relinquishes its right to file a lien is BEST described as a:

- A. Lien waiver
- B. Performance bond
- C. Change order
- D. Title transfer

114. A "cooling-off period" in consumer-protection law BEST allows a homeowner to:

- A. Delay payments indefinitely
- B. Demand a lower price
- C. Extend the warranty
- D. Cancel certain home-solicitation contracts within a short window

115. Using one client's project funds to pay for another job is BEST described as:

- A. Progress billing
- B. Retainage
- C. Diverting client funds
- D. Cost-plus accounting

116. Diverting client funds is BEST characterized as:

- A. A normal cash-management practice
- B. Both an ethical breach and often a legal violation
- C. Acceptable if disclosed verbally
- D. Permitted on cost-plus jobs

117. The document that establishes the order of precedence when drawings and specifications conflict is BEST identified as the:

- A. Material supplier's catalog
- B. Framing subcontractor's notes
- C. Local utility's standards
- D. Contract documents

118. When a written dimension differs from a scaled measurement on the same drawing, the builder should rely on the:

- A. Scaled measurement
- B. Average of both
- C. Written dimension
- D. Larger value

119. The critical path of a project schedule is BEST defined as the:

- A. Longest chain of dependent tasks that sets the completion date

- B. Shortest single task
- C. Material delivery route
- D. Electrical pathway

120. A non-critical task that can be delayed within limits without affecting the finish date has scheduling:

- A. Markup
- B. Retainage
- C. Overhead
- D. Float

121. The drawing view that BEST shows the internal assembly of a wall from foundation to roof is the:

- A. Floor plan
- B. Elevation
- C. Plot plan
- D. Section

122. When a specification names a specific product, substituting a cheaper "equal" without approval is BEST described as:

- A. Standard acceptable practice
- B. A required cost-saving step

- C. An unauthorized substitution and potential breach
- D. Permitted because products are similar

123. Concrete and excavation quantities are BEST measured in:

- A. Square feet
- B. Cubic yards
- C. Linear feet
- D. Board feet

124. A labor estimate is BEST priced using the:

- A. Bare hourly wage only
- B. Material cost as a proxy
- C. Owner's salary alone
- D. Burdened labor rate including taxes and benefits

125. A bid priced below true cost will MOST likely:

- A. Win the job but lose money
- B. Always lose the bid
- C. Guarantee a profit
- D. Have no business effect

126. In construction, fall protection is generally required at heights of:

- A. 6 feet and above
- B. 4 feet and above
- C. 10 feet and above
- D. 20 feet and above

127. A trench 5 feet or deeper generally requires a protective system. The recognized methods are sloping, shoring, and:

- A. Painting the walls
- B. Adding water
- C. Removing the spoil pile only
- D. Shielding with a trench box

128. Under the Hazard Communication "Right to Know" standard, workers must be informed through training, labels, and:

- A. A blower-door test
- B. A surety bond
- C. A lien waiver
- D. Safety Data Sheets

129. In the hierarchy of controls, the MOST effective response to a hazard is to:

- A. Provide PPE
- B. Eliminate the hazard
- C. Post a warning sign
- D. Train workers on it

130. The OSHA General Duty Clause BEST requires employers to provide a workplace that is:

- A. Free from recognized hazards likely to cause serious harm
- B. Inspected only once per year
- C. Free of all paperwork
- D. Staffed entirely by licensed contractors

Answer Key with Full Answer Explanations

Section 1: Trade and Technical

1. D — The IRC becomes enforceable only when a jurisdiction adopts it, usually with local amendments. It is not automatically law on publication, not limited to commercial buildings, and not controlled by manufacturers. Adoption is what gives a model code legal force.
2. B — A dwelling unit requires permanent provisions for living, sleeping, eating, cooking, and sanitation. Parking, retail, and recreation do not define a dwelling unit. This combination distinguishes it from other spaces.
3. D — Where the code says "approved," final authority rests with the code official. The manufacturer, owner, and contractor do not hold that authority. This precise meaning is frequently tested.

4. A — The board of appeals is the best avenue for relief from a code official's interpretation. Proceeding anyway, reporting to a supplier, or abandoning the project are not proper. The board reviews the official's application of the code.
5. A — The footing inspection, before concrete is placed, is the first in a typical residential sequence. The final, insulation, and framing inspections come later. Inspections precede the phase that conceals the work.
6. D — The offset from the property line is governed by local zoning regulations, not the building code. Code compliance does not cure a setback violation. Setbacks must be confirmed before layout.
7. B — Measuring the two diagonals and confirming they are equal is the best single whole-footprint square check. Re-driving stakes, checking plumb, or re-measuring sides do not confirm square as efficiently. Equal diagonals mean a true rectangle.
8. C — With legs of 9 and 12, the diagonal is 15 ($9^2 + 12^2 = 225 = 15^2$), the 3-4-5 ratio tripled. A 15-foot diagonal confirms a square corner. Any multiple of the ratio works.
9. B — Batter boards set back from the corners hold the layout strings so they can be re-established after excavation. They are not for tools, utilities, or bracing forms. They preserve layout accuracy.
10. B — Crystalline bedrock has the greatest presumptive bearing capacity of the options. Clay, organic topsoil, and silty sand are all lower. The hierarchy runs from rock down to organics.
11. D — Fill must be compacted in thin successive lifts, each compacted before the next, to prevent settlement. A deep surface-compacted layer, a saturated pour, or loose fill all settle later. Lift compaction is the correct method.
12. C — A footing extends below the frost line primarily to prevent frost heave from lifting the foundation. Curing, drying, and water contamination are not the reason. Below the frost line the soil never freezes.

13. A — Foundation wall thickness is governed most directly by the unbalanced backfill height retained against it. Window count, cladding color, and admixture brand do not govern thickness. Code tables size the wall to retained height.

14. C — The water-cement ratio is the single most important factor in concrete strength; a lower ratio yields stronger concrete. Aggregate color, form temperature, and mixer brand do not govern strength. Adding water weakens the mix.

15. B — To keep a stiff mix workable without weakening it, use an admixture rather than adding water. Adding water raises the water-cement ratio and reduces strength. Dry cement and pouring it unadjusted are not the correct fixes.

16. B — Concrete is specified to reach full design strength at 28 days. It gains strength rapidly early and continues for weeks. The 28-day value is the standard reference.

17. C — Steel reinforcing bars provide the tensile strength concrete lacks. They are not for compressive strength alone, paint bonding, or curing. Concrete is strong in compression but weak in tension.

18. C — Anchor bolts secure the framing against uplift and lateral sliding by tying the sill plate to the foundation. They do not provide drainage, frost reinforcement, or mark plumbing. Code prescribes their size and spacing.

19. A — A sill plate on concrete must be pressure-treated or naturally durable, because concrete wicks moisture that rots untreated wood. Standard, low-grade, or primed lumber do not satisfy this. A capillary break is also used.

20. C — A high water table creating hydrostatic pressure most requires waterproofing rather than dampproofing. Freely draining soil, an above-grade wall, and an arid climate do not create that pressure. The water table is the trigger.

21. B — A basement carries the signature requirement of an emergency escape opening for a sleeping room. Slab-on-grade and crawlspaces have different signature requirements. This is a basement life-safety feature.

22. A — A vapor retarder beneath the slab is the best measure to keep ground moisture from rising through the floor. A curing compound, reinforcing mesh, or granular base alone do not perform this. The retarder is the moisture block.

23. A — A nominal 2×4 has an actual dimension of 1½ inches by 3½ inches after drying and planing. The nominal figures are not the actual dimensions. Calculations use actual dimensions.

24. B — Using a deeper joist is the most effective way to increase allowable span without changing species or grade. Wider spacing, lower grade, and heavier loads all reduce span. Depth greatly increases bending capacity.

25. A — The most damaging place to notch a floor joist is the bottom edge near mid-span, where bending and tension are greatest. Notches near supports do far less harm. Over-notching here can crack the joist.

26. A — The header carries the load across the top of an opening and transfers it to the jack studs. Cripples, the rough sill, and king studs serve other roles. This is the core opening load path.

27. B — Structural panel sheathing nailed to the studs primarily resists lateral racking from wind and seismic forces. Studs carry gravity load, and sheathing does not address thermal or vapor movement. It makes the wall a shear wall.

28. D — A shear wall's strength depends most on its nailing schedule at the panel edges and field. Paint, R-value, and window placement do not affect it. Under-nailed sheathing cannot develop shear capacity.

29. C — The continuous load path is the route loads travel through members and connections to the foundation. It is not through plumbing, wiring, or gutters. The path must be continuous to the ground.

30. B — A hurricane tie most directly resists wind uplift on the roof by tying rafters or trusses to the walls. Anchor bolts and sill straps tie the wall to the foundation, and hold-downs anchor shear walls. Each connector addresses a specific link.

31. C — Ceiling joists or rafter ties best resist the rafters' outward thrust, turning the assembly into a stable triangle. The covering, sheathing, and gutters do not perform this. A structural ridge beam is the alternative.

32. A — A truss web may be cut only with the truss engineer's approval, so the builder must refuse otherwise. Cutting because a web remains, for ductwork, or at the framer's discretion can cause failure. Each member is sized for the balanced system.

33. C — The baseline attic ventilation ratio is one square foot of net free vent area per 150 square feet of attic. It may improve to 1:300 with balanced venting or a vapor retarder. Net free area is the basis.

34. D — In a cold climate, the snow load most likely governs roof rafter sizing. Wind uplift governs in hurricane regions, and seismic and construction loads are not the typical governing case here. Local design values set the requirement.

35. A — A 12:12 slope is the steepest of the options, rising 12 inches per 12 inches of run. The 6:12, 4:12, and 2:12 slopes are progressively shallower. Higher rise-over-12 means steeper.

36. D — Roof sheathing fastened to the framing creates the roof diaphragm, a rigid plane resisting lateral loads. It is not a vapor retarder, thermal envelope, or drainage plane. Its strength depends on fastening.

37. B — An ice barrier membrane at the eaves prevents leaks from ice-dam backup in cold climates. It does not add insulation, structure, or appearance value. It is a cold-climate requirement.

38. C — Most roof leaks trace first to valleys, penetrations, and chimney flashing, not the field, ridge, or sheathing underside. These transitions depend on flashing. The covering field rarely leaks.

39. A — Properly installed flashing is the best way to make a roof penetration watertight. Caulk degrades, and field shingles or a ridge vent do not seal a penetration. Flashing sheds water by design.

40. B — Gutters and downspouts should direct runoff well away from the foundation. Dumping at the base, into the perimeter drain only, or onto a neighbor's lot are wrong. Roof drainage should reinforce foundation protection.

41. C — The water-resistive barrier behind the cladding sheds water getting past the cladding back to the exterior. It is not the finished interior surface, structure, or a raceway. It is the secondary drainage plane.

42. A — Each upper piece of a water-resistive barrier must overlap the piece below for down-and-out drainage, shingle-fashion. Tucking behind, caulking all edges, or random patterns are wrong. Reversed laps funnel water into the wall.

43. C — Weep holes at the base of brick veneer drain water from the air space behind it. They do not increase load, ventilate the interior, or anchor the veneer. The veneer is a reservoir cladding that must drain.

44. D — Vinyl siding is fastened loosely primarily so it can expand and contract with temperature without buckling. It is not for removal, water passage, or load. Nailing it tight causes buckling.

45. B — The window with the lower U-factor insulates better, since U-factor is the rate of heat conduction. It does not admit more sunlight, leak more air, or relate to strength. Lower U-factor means better performance.

46. D — A glass panel beside an exterior door most clearly requires safety glazing, as a hazardous location where a person could fall against it. The attic, above-cabinet, and clerestory windows are not hazardous locations. Safety glazing breaks safely.

47. A — An R-30 batt is the best insulator of the options, since higher R-value means better resistance to heat flow. R-19, R-13, and R-11 are all lower. R-value is additive and "higher is better."

48. D — Compressing a thick batt into a shallow cavity reduces its effective R-value by diminishing the insulating air space. It does not improve fire rating, strength, or eliminate vapor permeability. Insulation must fill the cavity fully.

49. C — Continuous exterior rigid foam is best used to address thermal bridging through the framing. It does not primarily handle bulk water, outlet air leakage, or sound. Foam over the sheathing blocks heat that bypasses the cavity.

50. C — In a cold climate, the vapor retarder is best placed on the warm interior side of the insulation. Placing it on the cold exterior, the cladding, or both faces is wrong. Climate-specific placement prevents condensation.

51. A — The air barrier stops the largest amount of moisture movement, since air leakage carries more moisture than vapor diffusion. The vapor retarder only slows diffusion, a smaller mechanism. Air sealing is the larger moisture-control function.

52. D — A crawlspace must be vented to the exterior or sealed and conditioned with a ground cover. Gravel, bare soil, or a second slab do not control moisture properly. A half-and-half approach traps moisture.

53. C — Bathroom and kitchen exhaust fans must discharge outdoors, never into the attic, soffit, or crawlspace. Indoor discharge deposits moisture that condenses and causes damage. Every fan ducts to an exterior termination.

54. C — Energy-code insulation and window requirements are organized primarily by climate zone. Lot size, value, and color are irrelevant. The builder must know the project's zone.

55. A — The blower-door test best measures whole-house air leakage for energy-code compliance. Slump, compaction, and pressure tests measure other things. A home can fail on leakage despite proper insulation.

56. A — A heat pump is more efficient than electric resistance heat because it moves heat rather than generating it. It does not burn fuel, avoid electricity entirely, or work only in mild weather. This is why it outperforms resistance heat.

57. D — Oversized HVAC equipment short-cycles and controls humidity poorly. Bigger is not better; it does not run efficiently, save energy, or last longer. Equipment must be sized to a calculated load.

58. D — The two systems are a pressurized supply system and a gravity drain-waste-vent system. A combined pipe, closed heating loop, or grounding network are not correct. The DWV carries waste while vents admit air.

59. B — The primary purpose of a fixture trap is to hold a water seal that blocks sewer gas. It does not increase pressure, filter sediment, or reduce noise as its purpose. Every fixture needs one.

60. A — A trap losing its seal when an adjacent fixture drains indicates a missing or inadequate vent allowing siphoning. Supply pressure, a frozen line, and an oversized drain are not the cause. Traps and vents work as a pair.

61. B — Supply piping in an unconditioned cold attic is most vulnerable to freezing and bursting. Excess pressure, trap-seal loss, and corrosion are not the chief risk. Such piping should be in the conditioned envelope or insulated.

62. C — The circuit breaker best protects a branch-circuit conductor from overheating by tripping at excess current. Ground rods, fixtures, and receptacles do not perform this. The breaker must match the conductor.

63. B — A breaker must be sized so it trips before the conductor overheats. It must not allow maximum current, match the appliance, or exceed the wire rating. Breaker and wire size must match.

64. B — A GFCI best protects a person from shock at a receptacle near water by cutting power on ground-fault leakage. A standard breaker, surge suppressor, or tamper-resistant cover do not provide that protection. GFCIs protect people near water.

65. D — An AFCI on living-area circuits protects primarily against fires caused by arcing faults. It does not address shock, overvoltage, or tampering. GFCIs protect people; AFCIs protect property.

66. C — Carbon monoxide is most accurately described as colorless, odorless, and poisonous, giving no warning. It is not visible, odorous, or harmless in a hazardous accumulation. CO alarms exist because the gas defeats the senses.

67. A — CO alarms must be located near each separate sleeping area in a home with a fuel-burning appliance and attached garage. Placing them only in the garage, attic, or at the meter does not protect sleeping occupants. Smoke alarms do not detect CO.

68. C — The best fix for a backdrafting appliance in a tight home is to provide adequate combustion air or use a sealed-combustion unit. Sealing tighter, removing alarms, or blocking the vent worsen the hazard. Combustion safety requires air and proper venting.

69. D — A hearth extension protects the combustible floor from sparks in front of the fireplace opening. It does not improve draft, carry the chimney's weight, or increase heat output. It is a fire-safety feature.

70. D — The attached-garage-to-house door must be self-closing, tight-fitting, and of an approved type. A hollow-core, glazed, or propped-open door does not satisfy the fire and CO barrier. It is a life-safety requirement.

71. C — A pool barrier is required primarily to prevent unsupervised access by young children, for whom drowning is a leading cause of death. It is not for debris, privacy, or structure. Code sets height, opening limits, and self-latching gates.

72. A — A deck ledger must be fastened with through-bolts or approved lag screws, not nails alone. Nails pull out under load, and the ledger is the leading cause of catastrophic collapse. It must also be flashed.

73. C — The ledger-to-house connection is most responsible for catastrophic deck collapse. The footing, beam, and decking connections are less commonly the failure point. The ledger must be bolted and flashed.

74. C — Guard openings must reject a 4-inch sphere, the most consistently tested guard requirement. The 8-, 6-, and 12-inch figures are wrong. Wide spacing is a child-entrapment and fall hazard.

75. A — Residential stairs have a maximum riser of $7\frac{3}{4}$ inches and a minimum tread of 10 inches. The other pairings are incorrect. These dimensions produce a safe, walkable stair.

76. B — A guard is required where a walking surface is more than 30 inches above the level below. Below 30 inches no guard is required. Guards prevent falls off open edges.

77. B — The first line of defense in erosion control is to minimize and stabilize disturbed soil. Installing silt fences after grading, waiting until final grade, or relying on traps alone are not the first line. Prevention at the source comes first.

78. C — A perimeter foundation drain carries groundwater away from the foundation. It does not speed curing, provide structure, or increase bearing capacity. It works with grading and waterproofing.

79. C — An engineered I-joist may be cut or bored only within the manufacturer's specified allowances. Cutting anywhere convenient, at the framer's discretion, or regardless of load can cause failure. Each engineered member is sized for its role.

80. D — A grade stamp does not identify the required span in a specific building; it shows species, moisture condition, grade, agency, and mill. The span is determined by the builder and designer from span tables. The stamp guides member selection.

Section 2: Business and Law

81. A — A 25% markup on \$24,000 = $\$24,000 \times 1.25 = \$30,000$ selling price. Markup is a percentage added to cost. The \$6,000 markup brings the price to \$30,000.

82. B — Margin = profit \div selling price = $\$10,000 \div \$50,000 = 0.20 = 20\%$. Margin is always based on price. This differs from the markup on the same dollars.

83. B — The best statement is that a 50% markup equals about a 33% margin, because markup is on cost while margin is on price. They are not the same percentage, margin is not on cost, and markup is not on price. Confusing them causes underpricing.

84. D — Equity = assets - liabilities = $\$250,000 - \$150,000 = \$100,000$, from Assets = Liabilities + Equity. The balance sheet always balances on this identity. Equity is the owner's residual stake.

85. A — A sole proprietorship exposes the owner to unlimited personal liability, with no separation between owner and business. LLCs, C-corps, and S-corps provide limited liability. This is the key entity distinction.

86. A — A limited liability company best combines personal-asset protection with pass-through taxation. A sole proprietorship and general partnership lack asset protection, and a C-corp faces double taxation. The LLC combines both advantages.

87. B — Pass-through taxation describes profits taxed once on the owners' personal returns, avoiding double taxation. Most LLCs, sole proprietorships, partnerships, and S-corps are pass-through. Tax treatment drives entity choice.

88. B — The balance sheet best shows what a business owns and owes at a single point in time. The income and cash flow statements cover periods of activity. Each statement serves a distinct purpose.

89. C — The accounting equation is $\text{Assets} = \text{Liabilities} + \text{Equity}$. The other statements are not the balance-sheet identity. This equation always holds.

90. C — The leading cause of contractor failure, even on profitable jobs, is running out of cash, because builders pay before collecting. Material quality, subcontractor count, and home volume are not the cause. Progress draws and reserves bridge the gap.

91. D — Progress payments tied to milestones bridge the gap between paying costs and collecting revenue. They do not eliminate contracts, remove profit risk, or raise the price. They are essential to construction cash flow.

92. A — Worker classification is determined primarily by the degree of control the business exercises. The label, worker preference, and company size do not control. Misclassification carries penalties.

93. B — Withheld payroll taxes are trust-fund money held for the government, not discretionary cash. Spending them is a severe violation that can create personal liability. They must never be used as operating cash.

94. B — Insurance protects the insured party against its own losses, while a bond protects a third party. The distinction is the key difference. The insurer covers the builder's claims.

95. C — After paying the owner on a default, the surety seeks reimbursement from the contractor. Unlike insurance, the contractor ultimately bears the loss. A bond is a guarantee to a third party.

96. C — Workers' compensation best pays for an employee's work-related injuries. Builder's risk covers the structure, and a performance bond guarantees completion. Comp protects employees and is legally required.

97. A — Markup is best defined as a percentage applied to the cost of the work. Margin, by contrast, is profit as a percentage of price. Confusing the two leads to underpricing.

98. D — A builder who beats direct costs but ignores overhead will lose money by not recovering overhead. It does not increase profit, reduce taxes, or build reserves. Every price must carry overhead plus profit.

99. D — Overhead is best defined as costs not directly chargeable to a single specific job, such as office and insurance. It applies across all jobs, not one or only material sales or subcontracted work. It must be recovered in pricing.

100. A — The contract element in which each party exchanges value is consideration. Acceptance, capacity, and assent are separate elements. Consideration is the most-tested element.

101. A — Under the Statute of Frauds, a significant construction contract must generally be in writing to be enforceable. Notarization, recording, and board approval are not the requirement. A writing protects against fraudulent claims.

102. D — In a lump-sum (fixed-price) contract, the contractor bears the risk of cost overruns because the price is fixed. This is why accurate estimating is critical. A cost-plus contract shifts that risk to the owner.

103. B — In a cost-plus contract, the owner bears the risk of higher costs because they reimburse actual costs plus a fee. A guaranteed maximum price can cap that exposure. The contract type determines who carries cost risk.

104. D — The best way to protect payment for an owner's mid-project change is to execute a written, signed change order before proceeding. Billing at closeout or relying on a verbal instruction invites disputes. Documentation protects both parties.

105. A — A warranty imposed by law even when not stated is an implied warranty, such as good workmanship and habitability. It binds the builder regardless of any written promise. Express warranties, by contrast, are stated.

106. B — Arbitration produces a binding decision, unlike mediation, which is a non-binding facilitated settlement. An arbitration award is enforceable like a court judgment. This is the key difference.

107. D — The primary purpose of contractor licensing is to protect the public through competence and accountability. It is not about revenue, limiting competition, or guaranteeing income. Every licensing rule flows from public protection.

108. C — An unlicensed person who performs work requiring a license may be barred from enforcing the contract or collecting payment in many jurisdictions. This can forfeit the right to be paid. Unlicensed contracting is a serious violation.

109. B — Permanent cancellation of a license is revocation. A warning, CE order, or suspension are lesser or temporary actions. Revocation is the most severe discipline.

110. B — A mechanic's lien is a legal claim filed against the real property that was improved. It is not against the license, a personal bank account, or only the bond. Attaching to the property gives the unpaid party leverage.

111. D — A mechanic's lien is so powerful primarily because an unpaid sub can lien the property even if the owner paid the GC. It does not double the price, cancel the permit, or transfer the license. The lien attaches to the property, not to who owes the money.

112. D — Lien rights are most often lost because the claimant missed a strict filing or enforcement deadline. Poor work, low charges, and ink color are not the reason. The law imposes unforgiving timeframes.

113. A — A document by which a paid party relinquishes the right to lien is a lien waiver. It is not a bond, change order, or title transfer. Waivers are exchanged for payment.

114. D — A cooling-off period best allows a homeowner to cancel certain home-solicitation contracts within a short window. It does not delay payments, lower the price, or extend warranties. It protects homeowners in door-to-door sales.

115. C — Using one client's funds to pay for another job is diverting client funds. The funds belong to that project, not general cash flow. It is distinct from progress billing or retainage.

116. B — Diverting client funds is both an ethical breach and often a legal violation that can result in revocation and criminal liability. It is never a normal practice or acceptable on any contract type. Project funds belong to that project.

117. D — The contract documents establish the order of precedence when drawings and specifications conflict. The supplier's catalog, subcontractor's notes, and utility's standards do not govern. When in doubt, the builder submits an RFI.

118. C — When a written dimension differs from a scaled measurement, the builder relies on the written dimension. Paper distorts and copies scale inaccurately. Written dimensions always govern.

119. A — The critical path is the longest chain of dependent tasks that sets the completion date. It is not the shortest task, the delivery route, or the wiring path. Delaying any critical-path task delays the project.

120. D — A non-critical task that can be delayed within limits has scheduling float. Markup, retainage, and overhead are financial terms. Float allows some delay without affecting the finish date.

121. D — The section view best shows the internal assembly of a wall from foundation to roof, as a vertical cut. The floor plan, elevation, and plot plan show other perspectives. Each view answers a different question.

122. C — Substituting a cheaper "equal" for a named product without approval is an unauthorized substitution and potential breach. It is not standard practice, required, or automatically permitted. Approval is needed for substitutions.

123. B — Concrete and excavation quantities are best measured in cubic yards. Square feet, linear feet, and board feet apply to other quantities. There are 27 cubic feet in a cubic yard.

124. D — A labor estimate is best priced using the burdened labor rate, which includes payroll taxes, comp, insurance, and benefits. The bare wage, material cost, or owner's salary alone are wrong. Using the bare wage under-prices labor.

125. A — A bid priced below true cost will win the job but lose money. It does not always lose the bid, guarantee profit, or have no effect. Underbidding wins work the builder cannot afford to build.

126. A — In construction, fall protection is generally required at heights of 6 feet and above. Four, ten, and twenty feet are not the construction trigger. Falls are the leading cause of construction deaths.

127. D — A trench 5 feet or deeper requires sloping, shoring, or shielding with a trench box. Painting the walls, adding water, or removing only the spoil pile are not protective systems. A competent person inspects the excavation.

128. D — Under the Hazard Communication "Right to Know" standard, workers are informed through training, labels, and Safety Data Sheets. A blower-door test, surety bond, and lien waiver are unrelated. SDSs must be accessible on site.

129. B — In the hierarchy of controls, the most effective response is to eliminate the hazard. PPE, warning signs, and training are lower in the hierarchy. PPE is the last line of defense.

130. A — The OSHA General Duty Clause requires employers to provide a workplace free from recognized hazards likely to cause serious harm. It is not about annual inspections, paperwork, or staffing. It applies even without a specific standard.

