

PRACTICE EXAM 8 — SIMULATION (130 QUESTIONS)

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

1. A builder pours two footings: one 40 feet by 2 feet by 1 foot and another 20 feet by 2 feet by 1 foot. The total concrete needed is:

- A. 120 cubic yards
- B. 60 cubic yards
- C. 2.22 cubic yards
- D. 4.44 cubic yards

2. A slab measures 25 feet by 36 feet at 4 inches thick, and the builder rounds up the order to the next whole cubic yard. The rounded order is approximately:

- A. 12 cubic yards
- B. 8 cubic yards
- C. 33 cubic yards
- D. 100 cubic yards

3. A roof rises 5 feet over a 20-foot run, and the builder must confirm a covering rated for a 4:12 minimum may be used. The slope is:

- A. 3:12, below the covering minimum

- B. 4:12, at the minimum
- C. 6:12, above the minimum
- D. 2:12, below the minimum

4. A 3,300-square-foot attic is vented at the baseline ratio, and half the venting is placed at the soffit. The total net free vent area required is:

- A. 11 square feet
- B. 22 square feet
- C. 33 square feet
- D. 16.5 square feet

5. A builder must determine which document a finished basement apartment must satisfy to be a separate dwelling unit. It qualifies only with permanent provisions for:

- A. Living, sleeping, eating, cooking, and sanitation
- B. Parking and storage
- C. Retail activity
- D. Recreation and landscaping

6. A house is structurally sound but fails review for encroaching on a utility easement. The builder recognizes that a structure generally may not be placed:

- A. Within the buildable area
- B. Behind the setback line

C. Within an easement

D. On the benchmark

7. A footing must bear below a 36-inch frost line, but the builder finds organic soil at that depth. The correct action is to:

A. Pour at 36 inches anyway

B. Add water to firm the soil

C. Use stronger concrete

D. Excavate deeper to competent soil or use engineered fill

8. A foundation wall retaining 8 feet of backfill is poured, and the crew wants to backfill the next day. The builder must require that the wall first be:

A. Painted on the interior

B. Backfilled immediately

C. Braced or supported at the top

D. Coated with curing compound

9. A concrete finisher requests water for a stiff mix, and the builder must protect strength. The correct response is to:

A. Add water freely

B. Use a water-reducing admixture

C. Add dry cement

D. Pour it and hope

10. A slab dries hard within two hours on a hot, windy day, and the builder is concerned about strength because concrete:

A. Gains strength by drying fast

B. Cures best in direct sun

C. Is strengthened by evaporation

D. Needs retained moisture to hydrate

11. A nominal 2×12 must fit a beam pocket, and the builder verifies clearance. The actual depth to clear is:

A. 12 inches

B. 10 inches

C. 9¼ inches

D. 11¼ inches

12. A floor feels bouncy, and the builder finds joists overspanned for the load. To gain span capacity without changing species or grade, the builder would:

A. Use a lower grade

B. Use a deeper joist

C. Widen the spacing

D. Reduce the bearing

13. A plumber bores a large hole in the bottom edge of a joist at mid-span, and the builder responds. The builder must:

- A. Allow it since holes aid drainage
- B. Reject it, as the bottom edge at mid-span is the worst location
- C. Allow it if the top is also bored
- D. Allow it since mid-span is unrestricted

14. A wide window opening is framed, and the builder identifies the member carrying the load to the jack studs. That member is the:

- A. Cripple stud
- B. Rough sill
- C. King stud
- D. Header

15. A high-wind home needs racking resistance, and the builder specifies the sheathing nailing. The element developing shear capacity is the:

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

16. A coastal home needs uplift resistance, and the builder selects the roof-to-wall connector. That connector is the:

- A. Hurricane tie
- B. Anchor bolt
- C. Sill sealer
- D. Hold-down

17. A stick-framed roof shows walls bowing outward, and the builder identifies the missing element. The element resisting thrust is the:

- A. Roof covering
- B. Ridge vent
- C. Ceiling joists or rafter ties
- D. Gutter system

18. A homeowner wants a truss web cut for storage, and the builder responds. The correct action is to:

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

19. A cold-climate roof leaks at the eaves after a freeze, and the builder identifies the missing component. To prevent ice-dam leaks, the builder installs:

- A. A ridge vent
- B. A drip edge only
- C. A gutter guard
- D. An ice barrier membrane at the eaves

20. A roof leak is reported, and the builder decides where to inspect first by probability. The most likely origin is a:

- A. Field shingle
- B. Valley, penetration, or chimney flashing
- C. Ridge cap
- D. Sheathing underside

21. A penetration sealed with caulk leaks, and the builder makes the lasting repair. The correct fix, and reason, is to install:

- A. More caulk, since caulk lasts
- B. Field shingles, the weak point
- C. Proper flashing, since flashing sheds water by design while caulk degrades
- D. A ridge vent, since vents stop leaks

22. A downspout discharges at the foundation, saturating the soil, and the builder corrects it. Runoff must be directed:

- A. Well away from the foundation

- B. Into the attic drain
- C. Onto the neighbor's lot
- D. Down the wall face

23. A crew installs housewrap with the top course tucked behind the lower course, and the builder stops them. Each upper piece must instead:

- A. Overlap the piece below for down-and-out drainage
- B. Tuck behind the lower piece
- C. Be caulked on all edges
- D. Be installed randomly

24. A brick veneer is built tight to the sheathing with no weep holes, and the backing later rots. The omitted feature was the:

- A. Extra ties
- B. Interior paint
- C. Second sheathing layer
- D. Air space and weep holes

25. Vinyl siding buckles in summer heat, and the builder identifies the install error. The siding should have been:

- A. Painted after install
- B. Installed without housewrap

- C. Lapped behind the lower course
- D. Fastened loosely for thermal movement

26. A glass panel beside the front door uses ordinary glass, and the inspector flags it. The builder must replace it with:

- A. A smaller pane of the same glass
- B. Tempered or laminated safety glazing
- C. Frosted glass
- D. Single-pane clear glass

27. A basement bedroom has only a high transom window, and the inspector requires a change. The builder must add an escape opening meeting limits for clear area, width, height, and:

- A. Maximum sill height above the floor
- B. Glass tint
- C. Frame color
- D. U-factor

28. An R-30 batt is compressed into a shallow bay, and the builder explains the effect. The compression will:

- A. Increase the R-value
- B. Improve the fire rating
- C. Reduce the effective R-value

D. Add strength

29. Heat escapes through the studs of an insulated wall, and the builder interrupts the bridge. The correct measure is:

A. More cavity batt

B. Extra drywall

C. Continuous exterior rigid foam

D. Interior paint

30. In a heating climate, the builder places the vapor retarder to prevent condensation on cold sheathing. The correct placement is the:

A. Cold exterior side

B. Cladding face

C. Both faces

D. Warm interior side of the insulation

31. A tight new home has poor air quality and high humidity, and the builder identifies the missing system. It needs:

A. More attic insulation

B. A larger water heater

C. Additional cladding

D. Whole-house mechanical ventilation

32. A bath fan discharges into the attic, where moisture stains appear, and the builder reroutes it to discharge:

- A. At the ridge
- B. Into the soffit
- C. Outdoors
- D. Into the crawlspace

33. A crawlspace shows mold and decay, and the builder controls the moisture. The two valid approaches are venting to the exterior or:

- A. Sealing and conditioning with a ground cover
- B. Filling with gravel
- C. Leaving the soil bare
- D. Adding a second slab

34. Supply piping runs through an uninsulated cold attic, and the builder addresses the chief risk. That risk is:

- A. Excessive pressure
- B. Trap-seal loss
- C. Freezing and bursting
- D. Corrosion only

35. A rarely used floor drain emits sewer gas, and the builder diagnoses the cause. The most likely cause is:

- A. Excessive supply pressure
- B. A frozen supply line
- C. An evaporated trap seal
- D. An oversized vent

36. A new sink gurgles and loses its trap seal, and the builder identifies the defect. The defect is a:

- A. Trap installed right-side up
- B. Missing or inadequate vent allowing siphoning
- C. Pressure regulator failure
- D. Oversized drain

37. A breaker trips repeatedly, and a worker proposes a larger breaker on the same wire, which the builder rejects because it would:

- A. Solve the problem safely
- B. Increase the wire's capacity
- C. Allow the conductor to overheat and risk fire
- D. Reduce the load

38. A kitchen receptacle near the sink lacks shock protection, and the builder adds the correct device. That device is a:

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

39. Bedroom circuits lack arc-fault protection, and the builder adds AFCI devices to guard against:

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

40. A home has a gas furnace and attached garage but no CO detection, and the builder places alarms. They must be located:

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

41. A gas appliance in a tight home backdrafts, and the builder corrects the hazard by:

- A. Sealing the home tighter
- B. Providing combustion air or using a sealed-combustion unit

C. Removing the CO alarms

D. Blocking the vent

42. A footing only 12 inches deep is found where the frost line is 42 inches, and the builder predicts the failure. The expected outcome is:

A. Slow curing

B. Faster bearing

C. Frost heave cracking the foundation

D. Water contamination

43. A pad needs three feet of fill, and the builder places it to avoid settlement. The fill goes in:

A. One deep layer compacted at the surface

B. A saturated pour

C. Thin successive lifts, each compacted

D. Loose form left to settle

44. Sediment washes off a lot into a storm drain, and the inspector cites the builder. The missing control was a:

A. Curing blanket

B. Vapor retarder

C. Roof underlayment

D. Silt fence along the down-slope edge

45. A rectangular foundation shows unequal diagonals, and the builder interprets it. The layout is:

A. Perfectly square

B. Out of square and must be adjusted

C. Too small

D. Sloped toward the street

46. A heavy two-story house sits on moderate soil, and the builder sizes the footing. To keep soil pressure within capacity, the footing must be:

A. Wider to spread the load

B. The same width as the wall

C. Narrower to save concrete

D. Thinner than the wall

47. A homeowner asks when the new foundation reaches full design strength, and the builder answers. It is expected at:

A. 1 day

B. 3 days

C. 28 days

D. 90 days

48. A sill plate of ordinary lumber is set on damp concrete and begins to rot, and the builder replaces it with:

- A. The same lumber, sealed
- B. A higher-strength concrete cap
- C. Pressure-treated or naturally durable lumber
- D. A thicker untreated plate

49. A spec names a specific product, and a sub substitutes a cheaper "equal" without approval, which the builder identifies as:

- A. Standard practice
- B. An unauthorized substitution and potential breach
- C. A required cost-saving step
- D. Permitted because products are similar

50. Drawings and specifications conflict on a material, and the builder resolves it by consulting the:

- A. Supplier's catalog
- B. Framing subcontractor
- C. Local utility
- D. Contract documents' order of precedence

51. A printed dimension reads 32'-0" but scaling yields 31'-9", and the builder chooses the:

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

52. A 2:12 low-slope roof is planned, and the builder checks a covering rated for a 4:12 minimum, concluding it:

- A. May be used freely
- B. Is ideal at 2:12
- C. May not be used at 2:12 without special provisions
- D. Sheds water faster at 2:12

53. A snowy northern region home is designed, and the builder identifies the governing roof load. That load is the:

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

54. An engineered I-joist must be bored for a drain, and the builder sets the limit. The hole may be made only:

- A. Anywhere convenient

- B. At the framer's discretion
- C. Regardless of load
- D. Within the manufacturer's specified allowances

55. A grade stamp is reviewed, and the builder notes what it does NOT show. The stamp does not show the:

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

56. A deck collapses, and investigation points to the most failure-prone connection, the:

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

57. A deck ledger is attached to the house, and the builder specifies the fastening. The correct method is:

- A. Closely spaced common nails
- B. Construction adhesive only
- C. Hand-driven wood screws

D. Through-bolts or approved lag screws, then flashed

58. A stair is built with $8\frac{1}{2}$ -inch risers, and the inspector rejects it because the maximum riser height is about:

A. 10 inches

B. 12 inches

C. $7\frac{3}{4}$ inches

D. 5 inches

59. A landing 40 inches above the floor below has no barrier, and the builder must add a guard because the drop exceeds:

A. 30 inches

B. 12 inches

C. 60 inches

D. 6 inches

60. A deck guard has balusters 5 inches apart, and the inspector fails it, requiring openings that reject a sphere of:

A. 8 inches

B. 6 inches

C. 12 inches

D. 4 inches

61. A masonry fireplace lacks the noncombustible floor area in front, and the builder adds a:

- A. Larger flue liner
- B. Hearth extension
- C. Second damper
- D. Taller chimney cap

62. An attached garage door to the house is hollow-core with no self-closer, and the builder corrects it to a door that is:

- A. Glazed with clear glass
- B. Propped open
- C. Made lighter
- D. Self-closing, tight-fitting, and of an approved type

63. A new pool gate does not self-latch, and the builder corrects the barrier so the gate is:

- A. Self-closing and self-latching, opening away from the pool
- B. Propped open in daylight
- C. Removable without tools
- D. Latched at child height

64. A permit-exempt shed is built over the rear setback line, and the builder learns it must still comply with:

- A. Commercial sprinkler rules
- B. High-rise standards
- C. Local zoning setback requirements
- D. Elevator codes

65. A worker on a roof needs fall protection, and the builder applies the trigger height. In construction, protection is required at:

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

66. A trench 6 feet deep must be entered, and the builder protects the worker with sloping, shoring, or:

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

67. A worker will cut concrete and masonry, and the builder controls the silica dust hazard with:

- A. PPE alone
- B. Source controls (wet cutting or vacuum) plus respiratory protection

- C. Dry cutting in open air
- D. No control, as it is harmless

68. A chemical hazard is present, and the builder informs workers under HazCom through training, labels, and:

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

69. A hazard exists on site, and the builder applies the hierarchy of controls. The most effective response is to:

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

70. A worker uses a personal fall arrest system, and the builder verifies the components, which must include a:

- A. Body belt alone
- B. Single hand grip
- C. Full-body harness, lanyard, and secure anchor

D. Rope around the waist

71. An extension ladder is set against a wall, and the builder applies the angle rule, the:

A. 4:1 rule (1 foot out per 4 feet up)

B. 1:1 rule

C. 2:1 rule

D. 8:1 rule

72. A scaffold is erected, and the builder verifies it is safe, requiring it be fully planked and inspected by a:

A. Random worker

B. Competent person

C. Material supplier

D. The homeowner

73. A homeowner asks why a heat pump uses less energy than baseboard heat, and the builder explains it:

A. Burns fuel more completely

B. Stores electricity

C. Works only in mild weather

D. Moves heat rather than generating it

74. An oversized furnace is installed "to be safe," and the builder warns it will:

- A. Run efficiently at peak
- B. Short-cycle and control humidity poorly
- C. Use less energy
- D. Last far longer

75. A blower-door test is run on a finished home, and the builder explains it measures:

- A. Slab compressive strength
- B. Whole-house air leakage
- C. Soil bearing capacity
- D. Water pressure

76. A fixture trap holds a water seal, and the builder explains its purpose, which is to:

- A. Increase pressure
- B. Filter sediment
- C. Block sewer gas
- D. Reduce noise

77. Energy-code insulation and window requirements are organized by, and the builder confirms the basis is:

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

78. A water-resistive barrier behind cladding functions to, and the builder explains it:

- A. Provides structural strength
- B. Sheds water that gets past the cladding back outside
- C. Serves as the interior finish
- D. Carries wiring

79. A circuit breaker protects the branch-circuit wire, and the builder explains it must be sized to:

- A. Trip before the conductor overheats
- B. Allow maximum current
- C. Match the largest appliance
- D. Always exceed the wire rating

80. Roof sheathing is properly nailed to resist uplift, and the builder names what it forms. It forms the:

- A. Roof diaphragm
- B. Vapor retarder

C. Thermal envelope

D. Drainage plane

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

81. A job costs \$32,000, and the builder applies a 25% markup, quoting a price of:

A. \$32,250

B. \$40,000

C. \$42,000

D. \$38,000

82. A job sells for \$60,000 with \$12,000 profit, and a competitor calls it a "20% markup." The builder corrects them: \$12,000 is a 20% margin but a markup of:

A. 20%

B. 16%

C. 25%

D. 40%

83. A balance sheet shows assets of \$500,000 and equity of \$300,000, and the builder finds the liabilities equal:

A. \$200,000

- B. \$800,000
- C. \$500,000
- D. \$300,000

84. A builder forming a business wants personal-asset protection and pass-through taxation, choosing a:

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

85. A sole proprietor loses a lawsuit exceeding business assets, and the builder learns the structure exposes:

- A. Only the business account
- B. Nothing, the entity is separate
- C. The licensing board
- D. The owner's personal assets

86. A builder's income statement shows \$800,000 revenue and \$730,000 expenses, and the net profit is:

- A. \$1,530,000
- B. \$800,000
- C. \$70,000

D. \$730,000

87. A struggling builder considers spending withheld payroll taxes, and the accountant warns these are:

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

88. A worker is directed in all tasks, paid weekly, and uses company tools, and the builder classifies them as:

- A. An independent contractor by preference
- B. A volunteer
- C. Exempt from payroll taxes
- D. An employee

89. A builder carries general liability insurance and a license bond, and explains insurance protects the:

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

90. A bonded contractor defaults and the surety pays the owner, and the builder explains the surety then:

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

91. An employee is injured on site, and the builder identifies the coverage that pays for it as:

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

92. A builder wins low bids covering only direct costs and wonders why money is tight, the cause being failure to recover:

- A. Sales tax
- B. The deposit
- C. Overhead in the price
- D. Retainage

93. A homeowner and builder exchange work for payment in their agreement, and the builder names the element:

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

94. A large remodel is agreed verbally and a dispute arises, and the builder learns that under the Statute of Frauds it generally must be:

- A. Notarized
- B. Recorded
- C. Board-approved
- D. In writing to be enforceable

95. A builder signs a fixed-price contract and faces higher costs, and in a lump-sum contract the overrun is borne by the:

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

96. A homeowner agrees to reimburse actual costs plus a fee, and in this cost-plus arrangement the cost risk falls on the:

- A. Subcontractor

B. Contractor

C. Owner

D. Surety

97. A client verbally asks for a mid-project skylight, and to protect payment the builder should:

A. Bill it at closeout

B. Rely on the verbal request

C. Wait until the warranty

D. Execute a written, signed change order first

98. A new home has a defect the contract never stated, yet the builder is liable, reflecting an:

A. Express warranty

B. Implied warranty imposed by law

C. Optional purchased warranty

D. Warranty waived at closing

99. A contract specifies arbitration, and the builder distinguishes it from mediation in that arbitration:

A. Is always free

B. Must precede negotiation

C. Produces a binding decision

D. Cannot use a neutral

100. A state requires an exam and insurance for licensure, and the builder identifies the purpose as to:

A. Raise revenue

B. Limit competition

C. Guarantee income

D. Protect the public through competence and accountability

101. An unlicensed person performs licensed work and sues for nonpayment, and the court may:

A. Award double damages

B. Bar them from enforcing the contract or collecting

C. Issue a license automatically

D. Exempt them from codes

102. A contractor commits repeated serious violations, and the board takes the most severe action, which is:

A. A warning

B. A CE order

C. A temporary suspension

D. Revocation

103. An unpaid drywall sub files a claim against the home, which, attached to the property, is a:

- A. Mechanic's lien
- B. Performance bond
- C. License complaint
- D. Surety claim

104. A homeowner who already paid the GC is liened by an unpaid sub, possible because the lien attaches to the:

- A. Contractor's license
- B. Real property itself
- C. GC's bond only
- D. Owner's bank account

105. A supplier waits too long and loses lien rights, the most common reason being:

- A. Missing a strict filing or enforcement deadline
- B. Poor-quality work
- C. Charging too little
- D. Wrong ink color

106. A GC pays a sub and obtains a document releasing the sub's lien rights, which is a:

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

107. A homeowner cancels a door-to-door remodeling contract the next day, exercising a:

- A. Statute-of-Frauds requirement
- B. Mechanic's lien right
- C. Cooling-off period under consumer-protection law
- D. Workers' comp provision

108. A builder spends one client's project funds on another job, which the board characterizes as:

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

109. A builder maps the schedule and finds the chain of dependent tasks setting the completion date, naming it the:

- A. Material delivery route
- B. Shortest task

C. Electrical pathway

D. Critical path

110. A non-critical task can be delayed within limits without affecting the finish date, having scheduling:

A. Float

B. Markup

C. Retainage

D. Overhead

111. A builder's accountant explains profits are taxed once on the owners' returns, describing:

A. Double taxation

B. Pass-through taxation

C. Tax exemption

D. Entity-level-only taxation

112. A lender wants a year-end statement of what the business owns and owes, and the builder provides the:

A. Income statement

B. Balance sheet

C. Cash flow statement

D. Job-cost report

113. A profitable builder cannot make payroll because clients pay slowly, illustrating the leading cause of contractor failure:

A. Excessive material quality

B. Too few subcontractors

C. Running out of cash

D. Building too many homes

114. To match cash in with cash out during a build, the builder uses:

A. Progress payments tied to milestones

B. A single closeout payment

C. No interim payments

D. A reduced total price

115. A builder reconciles a balance sheet and confirms the equation:

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

116. A builder applies a percentage to job cost to set the price, naming it:

- A. Margin
- B. Markup
- C. The overhead rate
- D. Break-even

117. A 50% markup on a \$10,000 cost is applied, and as a margin of the selling price it is about:

- A. 50%
- B. 33%
- C. 25%
- D. 15%

118. Overhead is best defined as costs that:

- A. Are not directly chargeable to a single specific job
- B. Are charged to one project
- C. Come only from materials
- D. Apply only to subs

119. A labor estimate must reflect true cost, so the builder uses the:

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

120. A bid is priced below true cost, and the builder predicts it will:

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

121. A drawing view shows the internal assembly of a wall from foundation to roof, which the builder names the:

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

122. Concrete and excavation quantities are ordered in, and the builder confirms the unit is:

- A. Square feet
- B. Linear feet

- C. Board feet
- D. Cubic yards

123. A builder converts cubic feet to cubic yards, applying the factor of how many cubic feet per cubic yard?

- A. 9
- B. 12
- C. 27
- D. 36

124. A change order is needed for added work, and the builder determines it must be written and signed:

- A. Before the changed work proceeds
- B. After the work is complete
- C. At project closeout
- D. Only if a dispute arises

125. A bathroom receptacle near the sink needs shock protection, and the builder selects a:

- A. AFCI
- B. Surge suppressor
- C. GFCI
- D. Tamper-resistant cover alone

126. A home with a gas water heater and attached garage needs detection, and the builder installs:

- A. A second smoke alarm only
- B. Carbon monoxide alarms near sleeping areas
- C. A radon system
- D. A garage sprinkler

127. A builder must keep ground moisture out of a slab floor, selecting a measure beneath the slab, the:

- A. Curing compound
- B. Reinforcing mesh alone
- C. Granular base alone
- D. Vapor retarder

128. A builder confirms a footing bears on competent soil and must size its width for the load, governed by the soil's:

- A. Bearing capacity
- B. Color
- C. Temperature
- D. Moisture content alone

129. A builder weighs requiring a written contract for a major job, the strongest reason being that it:

- A. Documents scope and price and may be legally required
- B. Is never legally required
- C. Only benefits the owner
- D. Slows the project

130. A builder applies the General Duty Clause, which requires a workplace that is:

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

Answer Key with Full Answer Explanations

Section 1: Trade and Technical

1. D — First footing = $40 \times 2 \times 1 = 80$ cu ft; second = $20 \times 2 \times 1 = 40$ cu ft; total 120 cu ft $\div 27 = 4.44$ cubic yards. Both footings are summed before converting. The 27-per-yard divisor is essential.
2. A — Convert 4 inches to 0.333 ft; volume = $25 \times 36 \times 0.333 = 300$ cu ft; $300 \div 27 = 11.1$, rounded up to 12 cubic yards. Concrete is ordered by the cubic yard and rounded up. The conversion and divisor are both required.
3. A — Slope = 5 ft rise over 20 ft run = 1:4 = 3:12. At 3:12 a covering rated for a 4:12 minimum may not be used, since 3:12 is below the minimum. Slope is expressed per 12 inches of run.
4. B — At the 1:150 baseline, $3,300 \div 150 = 22$ square feet of net free vent area. Splitting half at the soffit does not change the total. Net free area is the basis.

5. A — A dwelling unit requires permanent provisions for living, sleeping, eating, cooking, and sanitation. Parking, retail, and recreation do not define it. This combination distinguishes it from other spaces.

6. C — A structure generally may not be placed within an easement, even on the owner's land. The buildable area and the space behind the setback are where building is allowed, and the benchmark is a reference point. An easement reserves that strip for another party's use.

7. D — Finding organic soil at the bearing depth requires excavating deeper to competent soil or using engineered fill. Pouring on organics, adding water, or stronger concrete do not fix the bearing problem. Organics decay and compress.

8. C — A wall retaining 8 feet of backfill must be braced or supported at the top before backfilling. Painting, immediate backfill, or curing compound do not provide lateral support. Brace first, backfill second.

9. B — To protect strength with a stiff mix, use a water-reducing admixture rather than adding water. Adding water raises the water-cement ratio, and dry cement or pouring it as-is are not fixes. Admixtures improve workability without weakening.

10. D — A slab that dries within hours is a concern because concrete needs retained moisture to hydrate and gain strength. It does not gain strength by drying, sun, or evaporation. Proper moist curing delivers design strength.

11. D — A nominal 2×12 has an actual depth of 11¼ inches, the dimension the pocket must clear. Twelve, ten, and 9¼ inches are incorrect. Calculations use actual dimensions.

12. B — To gain span capacity without changing species or grade, use a deeper joist. Lower grade, wider spacing, and reduced bearing all worsen capacity. Depth greatly increases bending capacity.

13. B — A large hole in the bottom edge of a joist at mid-span must be rejected, as that is the worst location for bending and tension. Holes do not aid drainage, mid-span is restricted, and boring the top does not cure it. Notching and boring are strictly limited.

14. D — The header carries the load across a wide opening to the jack studs. Cripples, the rough sill, and king studs serve other roles. This is the core opening load path.

15. A — The nailing schedule at panel edges and field develops the wall's shear capacity. Paint, R-value, and window placement do not. Under-nailed sheathing cannot resist racking.

16. A — A hurricane tie connects the roof to the walls to resist uplift. Anchor bolts and sill sealer tie the wall to the foundation, and hold-downs anchor shear walls. Each connector addresses a specific link.

17. C — Ceiling joists or rafter ties resist the rafters' outward thrust. The covering, ridge vent, and gutters do not. A structural ridge beam is the alternative.

18. B — 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.

19. D — Eave leaks after a freeze indicate a missing ice barrier membrane at the eaves. A ridge vent, drip edge alone, or gutter guard do not prevent ice-dam leaks. The ice barrier is a cold-climate requirement.

20. B — A roof leak most likely originates at a valley, penetration, or chimney flashing. The field, ridge, and sheathing underside are less likely. These transitions depend on flashing.

21. C — A leaking caulked penetration is lastingly repaired with proper flashing, because flashing sheds water by design while caulk degrades. More caulk, field shingles, or a ridge vent do not seal it. Flashing, not caulk, is the solution.

22. A — A downspout saturating the foundation soil must direct runoff well away from the foundation. The attic drain, neighbor's lot, and wall face are wrong. Roof drainage should reinforce foundation protection.

23. A — Each upper piece of housewrap must overlap the piece below for down-and-out drainage. Tucking behind, caulking all edges, or random installation are wrong. Reversed laps funnel water into the wall.
24. D — Brick veneer rot from being built tight to the sheathing results from omitting the air space and weep holes. Extra ties, interior paint, or a second sheathing layer do not fix trapped water. The veneer is a reservoir cladding.
25. D — Vinyl siding that buckles in heat should have been fastened loosely for thermal movement. Painting, omitting housewrap, or lapping behind are not the cause. Nailing it tight causes buckling.
26. B — A glass panel beside the front door must be tempered or laminated safety glazing. A smaller pane, frosted glass, or single-pane clear glass do not satisfy the safety requirement. Safety glazing breaks safely.
27. A — An escape opening must meet limits for clear area, width, height, and maximum sill height above the floor. Glass tint, frame color, and U-factor are not egress criteria. Every sleeping room needs a compliant opening.
28. C — Compressing an R-30 batt reduces its effective R-value by diminishing the insulating air space. It does not increase R-value, fire rating, or strength. Insulation must fill the cavity fully.
29. C — Continuous exterior rigid foam interrupts thermal bridging through the studs. More cavity batt, extra drywall, or paint do not stop the bridge. Foam over the sheathing blocks heat that bypasses the cavity.
30. D — In a heating climate, the vapor retarder goes on the warm interior side of the insulation. The cold exterior, cladding face, or both faces are wrong. Climate-specific placement prevents condensation.
31. D — A tight home with poor air quality and high humidity needs whole-house mechanical ventilation. More insulation, a larger heater, or more cladding do not provide ventilation. Tight construction requires controlled fresh air.

32. C — A bath fan discharging into the attic must be rerouted to discharge outdoors. The ridge, soffit, and crawlspace cause moisture damage. Every fan ducts to an exterior termination.
33. A — A moldy, decaying 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.
34. C — Supply piping in an uninsulated cold attic is at chief risk of freezing and bursting. Excess pressure, trap-seal loss, and corrosion are not the chief risk. Route it in the conditioned envelope or insulate it.
35. C — Sewer gas from a rarely used floor drain is most likely from an evaporated trap seal, refilled with water. Supply pressure, a frozen line, or an oversized vent are not the cause. The trap seal blocks gas only while water remains.
36. B — A sink that gurgles and loses its trap seal has a missing or inadequate vent allowing siphoning. Trap orientation, a regulator failure, and an oversized drain are not the issue. Traps and vents work as a pair.
37. C — A larger breaker on the same wire would allow the conductor to overheat and risk fire. It does not solve the problem safely or increase capacity. Breaker and wire size must match.
38. A — A kitchen receptacle near the sink requires a GFCI to guard against shock. A standard breaker, surge suppressor, or tamper-resistant cover do not provide that protection. GFCIs protect people near water.
39. C — AFCI devices on bedroom circuits guard against fires caused by arcing faults. They do not address shock, surges, or tampering. GFCIs protect people; AFCIs protect property.
40. D — CO alarms in a home with a gas furnace and attached garage must be located near each separate sleeping area. The garage only, attic only, or meter do not protect sleeping occupants. Smoke alarms do not detect CO.

41. B — A backdrafting appliance in a tight home is corrected by providing combustion air or using a sealed-combustion unit. Sealing tighter, removing alarms, or blocking the vent worsen the hazard. Combustion safety requires air and proper venting.

42. C — Footings only 12 inches deep where the frost line is 42 inches will suffer frost heave cracking the foundation. Slow curing, faster bearing, and water contamination are not the failure. Footings must bear below the frost line.

43. C — Three feet of fill must be placed in thin successive lifts, each compacted before the next. A deep surface-compacted layer, a saturated pour, or loose fill all settle later. Lift compaction prevents settlement.

44. D — Sediment washing into a storm drain indicates a missing silt fence along the down-slope edge. A curing blanket, vapor retarder, and roof underlayment are unrelated. Silt fence is a primary sediment-capture measure.

45. B — Unequal diagonals mean the layout is out of square and must be adjusted, since a true rectangle has equal diagonals. It is not square, undersized, or sloped. Equalizing the diagonals squares the footprint.

46. A — A footing for a heavy house on moderate soil must be wider to spread the load within the soil's bearing capacity. The same width, a narrower footing, or a thinner one would overload the soil. Width is governed by load and bearing capacity.

47. C — Concrete is expected to reach full design strength at 28 days of proper curing. One, three, or 90 days are not the standard reference. It gains strength rapidly early and reaches design strength at 28 days.

48. C — A rotting sill on damp concrete must be replaced with pressure-treated or naturally durable lumber. The same sealed lumber, a concrete cap, or a thicker untreated plate do not solve the moisture issue. Concrete wicks moisture that rots untreated wood.

49. B — 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.

50. D — A conflict between drawings and specifications is resolved by the contract documents' order of precedence. The supplier's catalog, subcontractor, and utility do not govern. When in doubt, the builder submits an RFI.

51. A — When a written dimension differs from a scaled measurement, the builder uses the written dimension. Paper distorts and copies scale inaccurately. Written dimensions always govern.

52. C — A covering rated for a 4:12 minimum may not be used on a 2:12 roof without special provisions. It is not ideal there and does not shed water faster at low slope. Match covering to slope.

53. B — In a snowy northern region, the snow load governs roof sizing. Wind uplift governs in hurricane regions, and seismic and construction loads are not the typical case. Local design values set the requirement.

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

55. A — A grade stamp does not show the required span in the building; it shows species, moisture, grade, agency, and mill. The span is determined from span tables. The stamp guides member selection.

56. B — 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.

57. D — A deck ledger must be fastened with through-bolts or approved lag screws, then flashed. Nails, adhesive, and hand-driven screws are inadequate. The ledger is the leading cause of catastrophic collapse.

58. C — A stair with 8½-inch risers exceeds the maximum of about 7¾ inches. Ten, twelve, and five inches are incorrect. Risers must be uniform across the flight.

59. A — A 40-inch-high open landing requires a guard, since the drop exceeds 30 inches. Twelve, sixty, and six inches are not the threshold. Guards prevent falls off open edges.

60. D — Guard openings must reject a 4-inch sphere, so 5-inch spacing must be corrected. Eight, six, and twelve inches are wrong. Wide spacing is a child-entrapment and fall hazard.

61. B — A fireplace without the noncombustible floor area needs a hearth extension to protect the floor from sparks. A larger flue, second damper, or taller cap do not address floor protection. The hearth extension is a fire-safety feature.

62. D — A hollow-core garage door without a self-closer must be replaced with one that is self-closing, tight-fitting, and of an approved type. Glazing, propping it open, or making it lighter do not satisfy the fire and CO barrier. It is a life-safety requirement.

63. A — A pool gate must be self-closing and self-latching, opening away from the pool. Propping it open, making it removable, or latching at child height fail. The gate is critical to preventing child drownings.

64. C — A permit-exempt shed over the rear setback must still comply with local zoning setback requirements. Commercial, high-rise, and elevator rules do not apply. Setbacks always apply.

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

66. A — A 6-foot trench 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.

67. B — Silica dust from cutting concrete and masonry is best controlled by source controls (wet cutting or vacuum) plus respiratory protection. PPE alone, dry cutting, or ignoring it are unsafe. Source control comes before PPE.

68. D — Under HazCom, 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.

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

70. C — A personal fall arrest system requires a full-body harness, lanyard, and secure anchor. A body belt, hand grip, or rope around the waist are not acceptable. The full-body harness distributes arrest forces safely.

71. A — An extension ladder follows the 4:1 rule — one foot of base offset per four feet of working height. The 1:1, 2:1, and 8:1 ratios are wrong. Proper angle prevents slipping.

72. B — A scaffold must be fully planked and inspected by a competent person before use. A random worker, supplier, or homeowner do not satisfy this. A competent person can identify and correct hazards.

73. D — A heat pump moves heat rather than generating it, using less energy than baseboard heat. It does not burn fuel, store electricity, or work only in mild weather. This is why it is more efficient.

74. B — An oversized furnace short-cycles and controls humidity poorly. It does not run efficiently, save energy, or last longer. Equipment must be sized to a calculated load.

75. B — A blower-door test measures whole-house air leakage. It does not measure slab strength, soil bearing, or water pressure. A home can fail on leakage despite proper insulation.

76. C — A fixture trap holds a water seal to block sewer gas. It does not increase pressure, filter sediment, or reduce noise as its purpose. Every fixture needs one.

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

78. B — A water-resistive barrier sheds water that gets past the cladding back outside. It is not structure, interior finish, or wiring. It is the secondary drainage plane.

79. A — A circuit breaker must be sized to trip before the conductor overheats. It must not allow maximum current, match the appliance, or exceed the wire rating. Breaker and wire size must match.

80. A — Roof sheathing properly nailed to resist uplift forms the roof diaphragm. It is not a vapor retarder, thermal envelope, or drainage plane. Its strength depends on fastening.

Section 2: Business and Law

81. B — A 25% markup on \$32,000 = $\$32,000 \times 1.25 = \$40,000$. Markup is a percentage added to cost. The \$8,000 markup brings the price to \$40,000.

82. C — The \$12,000 profit on a \$60,000 price is a 20% margin ($12,000 \div 60,000$); as a markup it is 25% of the implied \$48,000 cost ($12,000 \div 48,000$). The keyed answer C = 25% reflects the markup. Margin is on price, markup is on cost.

83. A — Liabilities = assets - equity = $\$500,000 - \$300,000 = \$200,000$, from Assets = Liabilities + Equity. The balance sheet always balances on this identity. Each term is found by rearranging.

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

85. D — A sole proprietorship exposes the owner's personal assets to a judgment exceeding business assets. The business account alone, the entity being separate, and the board are not correct. This liability divide is the key entity distinction.

86. C — Net profit = revenue – expenses = \$800,000 – \$730,000 = \$70,000. The income statement reports profit over a period. Revenue and expenses are the inputs.

87. C — Withheld payroll taxes are trust-fund money held for the government, not available to spend. Spending them is a severe violation that can create personal liability. They must never cover payroll.

88. D — Directing all tasks, paying weekly, and supplying tools indicate a high degree of control, classifying the worker as an employee. The label or preference does not control. Misclassification carries penalties.

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

90. B — 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.

91. B — Workers' compensation 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.

92. C — A builder winning low bids that cover only direct costs is failing to recover overhead in the price. Sales tax, the deposit, and retainage are not the issue. Every price must carry overhead plus profit.

93. C — The element exchanging work for payment is consideration. Acceptance, capacity, and assent are separate elements. Consideration is the most-tested element.

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

95. B — In a lump-sum (fixed-price) contract, the contractor bears the cost overrun. This is why accurate estimating is critical. A cost-plus contract shifts that risk to the owner.

96. C — 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.

97. D — To protect payment for a verbal skylight request, the builder should execute a written, signed change order first. Billing at closeout or relying on the verbal request invites disputes. Documentation protects both parties.

98. B — A defect the contract never stated for which the builder is still liable reflects an implied warranty imposed by law. It binds the builder regardless of any written promise. Express warranties, by contrast, are stated.

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

100. D — Requiring an exam and insurance serves the purpose of protecting the public through competence and accountability. It is not about revenue, limiting competition, or guaranteeing income. Every licensing rule flows from public protection.

101. B — An unlicensed person performing licensed work may be barred from enforcing the contract or collecting payment. This can forfeit the right to be paid. Unlicensed contracting is a serious violation.

102. D — The most severe disciplinary action for repeated serious violations is revocation. A warning, CE order, or suspension are lesser or temporary. Revocation permanently cancels the license.

103. A — An unpaid sub's claim attached to the home is a mechanic's lien. It is not a bond, license complaint, or surety claim. Attaching to the property gives the unpaid party leverage.

104. B — An unpaid sub can lien a home the owner already paid the GC for because the lien attaches to the real property itself. It is not against the license, the bond only, or the bank account. Owners protect themselves with lien waivers.

105. A — 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.

106. A — A document releasing a paid sub's lien rights is a lien waiver. It is not a bond, change order, or title transfer. Waivers are exchanged for payment.

107. C — Cancelling a door-to-door contract the next day is a cooling-off period under consumer-protection law. It is not a Statute-of-Frauds requirement, lien right, or comp provision. It protects homeowners in home-solicitation sales.

108. D — Spending one client's funds on another job is both an ethical breach and often a legal violation. It is not a normal practice or acceptable on any contract type. Project funds belong to that project.

109. D — The chain of dependent tasks setting the completion date is the critical path. It is not the delivery route, shortest task, or wiring path. Delaying any critical-path task delays the project.

110. A — Slack on a non-critical task is called float. Markup, retainage, and overhead are financial terms. Float allows some delay without affecting the finish date.

111. B — Profits taxed once on the owners' returns describe pass-through taxation. This avoids the double taxation of a C-corporation. Most LLCs, sole proprietorships, partnerships, and S-corps are pass-through.

112. B — The balance sheet shows what the business owns and owes at year-end. The income and cash flow statements cover periods of activity. Each statement serves a distinct purpose.

113. C — A profitable builder who cannot make payroll because of slow collections illustrates that running out of cash is the leading cause of failure. Material quality, subcontractor count, and home volume are not the cause. Progress draws and reserves bridge the gap.

114. A — Progress payments tied to milestones match cash in with cash out during a build. A single closeout payment or no interim payments worsen the cash gap. Progress draws are essential to construction cash flow.

115. C — The balance sheet reconciles using $\text{Assets} = \text{Liabilities} + \text{Equity}$. The other formulas are not the balance-sheet identity. This equation always holds.

116. B — A percentage applied to job cost to set the price is the markup. Margin is on price, the overhead rate covers operating costs, and break-even is a volume measure. Markup is on cost.

117. B — A 50% markup on a \$10,000 cost gives a \$15,000 price and \$5,000 profit, which is about 33% of the selling price. The denominators differ (cost versus price). Mistaking markup for margin causes underpricing.

118. A — Overhead is the cost not directly chargeable to a single specific job. It is not charged to one project, only materials, or only subs. It must be recovered across all jobs.

119. C — A labor estimate uses the burdened labor rate, including payroll taxes, comp, insurance, and benefits. The bare wage, material cost, or owner's salary alone under-price labor. The burden adds a substantial percentage to the wage.

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

121. A — The section view 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. D — Concrete and excavation quantities are ordered in cubic yards. Square feet, linear feet, and board feet apply to other quantities. There are 27 cubic feet in a cubic yard.

123. C — There are 27 cubic feet in a cubic yard. Nine, twelve, and thirty-six are wrong. This conversion is essential for ordering concrete and excavation.

124. A — A change order for added work must be written and signed before the changed work proceeds. After completion, at closeout, or only on dispute are too late. Documentation protects both parties.

125. C — A bathroom receptacle near the sink requires a GFCI to guard against shock. An AFCI, surge suppressor, or tamper-resistant cover alone do not provide ground-fault protection. GFCIs protect people near water.

126. B — A home with a gas water heater and attached garage requires carbon monoxide alarms near sleeping areas. A second smoke alarm, radon system, or garage sprinkler do not satisfy this. Smoke alarms do not detect CO.

127. D — A vapor retarder beneath a slab keeps ground moisture out of the floor. A curing compound, reinforcing mesh, or granular base alone do not perform this. The retarder is the moisture block.

128. A — Footing width is governed by the load and the soil's bearing capacity. Color, temperature, and moisture content alone do not govern width. The footing spreads load to stay within the soil's capacity.

129. A — The strongest reason to require a written contract for a major job is that it documents scope and price and may be legally required under the Statute of Frauds. It is sometimes legally required, benefits both parties, and protects the builder. A writing prevents and resolves disputes.

130. D — The General Duty Clause requires 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.