PRACTICE EXAM 7 — SIMULATION (130 QUESTIONS)

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

1. A model code such as the IRC carries legal force in a jurisdiction only after it has been:

A. Published by the council

B. Printed in its current edition

C. Endorsed by manufacturers

D. Adopted by the state or local government

2. A finished space qualifies as a separate dwelling unit only if it contains permanent provisions for:

A. Parking and storage

B. Living, sleeping, eating, cooking, and sanitation

C. Retail and commercial activity

D. Recreation and landscaping

3. A footing 50 feet long, 2 feet wide, and 1 foot deep requires how many cubic yards of concrete?

A. 100 cubic yards

B. 3.7 cubic yards

C. 10 cubic yards

D. 1.2 cubic yards

4. A builder disagrees with a code official's rejection of the work. The proper avenue is to:

A. Proceed with the work anyway

B. Report the official to the supplier

C. Request a hearing before the board of appeals

D. Abandon the project

5. A house is structurally code-compliant but fails review for sitting inside the required offset from the property line. The governing authority for that offset is:

A. The IRC structural tables

B. The roofing manufacturer

C. Local zoning regulations

D. The concrete supplier

6. After staking a rectangular foundation, the fastest whole-footprint square check is to:

A. Measure the two diagonals and confirm they are equal

B. Re-drive each corner stake deeper

C. Check each stake for plumb

D. Re-measure each side once more

7. Batter boards are set back from the building corners primarily so that:

A. The layout strings can be re-established after excavation

B. Tools can be stored off the ground

C. Underground utilities are marked

D. The foundation forms are braced

8. A finished grade must fall at least 6 inches over the first 10 feet from the foundation. Expressed as a percentage, this slope is:

A. 1%

B. 10%

C. 5%

D. 0.5%

9. Of the following soils, which is unsuitable for bearing a footing?

A. Crystalline bedrock

B. Sandy gravel

C. Compacted sand

D. Organic topsoil

10. Fill placed to raise a building pad must be compacted in thin successive layers called:

A. Courses

B. Lifts

C. Wythes

D. Strata

11. A footing must extend below the frost line to prevent:

A. Slow concrete curing

B. Loss of bearing from drying

C. Frost heave from lifting the foundation

D. Water table contamination

12. The factor that most directly drives the required thickness of a foundation wall is the:

A. Unbalanced backfill height retained against it

B. Number of windows above

C. Color of the cladding

D. Brand of admixture

13. The single most important factor controlling concrete's compressive strength is the:

A. Aggregate color

B. Form temperature

C. Mixer brand

D. Water-cement ratio

14. Adding water to a concrete mix on site to ease placement will:

A. Increase its strength

B. Have no effect on strength

C. Speed curing harmlessly

D. Reduce its strength

15. Concrete gains its strength through hydration, which requires it to be:

A. Dried quickly

B. Exposed to direct sun

C. Kept adequately moist during curing

D. Frozen the first day

16. Concrete is specified to reach its design compressive strength at:

A. 7 days

B. 3 days

C. 28 days

D. 90 days

17. Steel reinforcing bars are embedded in concrete to provide:

A. Tensile strength the concrete lacks

B. Additional compressive strength

C. A paint-bonding surface

D. Curing moisture

18. Anchor bolts in the top of a foundation wall secure the framing against:

A. Surface water drainage

B. Frost in the footing

C. Uplift and lateral sliding

D. Future plumbing penetrations

19. A sill plate in direct contact with concrete must be:

A. Standard kiln-dried lumber

B. Pressure-treated or naturally durable lumber

C. The lowest grade available

D. Primed with latex paint

20. Waterproofing rather than dampproofing is required on a below-grade wall where:

A. The soil drains freely

B. The wall is above grade

C. A high water table creates hydrostatic pressure

D. The climate is arid

21. A vapor retarder beneath a slab-on-grade blocks:

A. Ground moisture from rising through the slab

B. Lateral soil pressure

C. Frost from the footing

D. Air leakage at outlets

22. A basement bedroom must be provided with which life-safety feature?

A. A second water heater

B. A fire-rated ceiling only

C. An interior balcony

D. An emergency escape and rescue opening

23. A nominal 2×10 floor joist has an actual depth of:

A. 10 inches

B. 9¼ inches

C. 8 inches

D. 11¼ inches

24. A floor joist's allowable span increases when the joist is:

A. Spaced farther apart

B. Made of a lower grade

C. Made deeper

D. Loaded more heavily

25. The worst 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 over a support

D. End at the rim joist

26. In a wall opening, the member that transfers the load to the jack studs is the:

A. Cripple stud

B. Rough sill

C. Header

D. King stud

27. Structural panel sheathing nailed to wall studs resists:

A. Vertical gravity load only

B. Thermal expansion

C. Vapor diffusion

D. Lateral racking from wind and seismic forces

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

A. Paint color

B. Insulation R-value

C. Nailing schedule at edges and field

D. Window placement

29. Hurricane ties in a high-wind home connect the:

A. Foundation to the footing

B. Roof rafters or trusses to the walls

C. Interior partitions to each other

D. Sill plate to the slab

30. Sloped rafters exert an outward thrust on the walls that must be resisted by:

A. The roof covering

B. Additional sheathing

C. The gutter system

D. Ceiling joists or rafter ties

31. A roof truss web may be cut only:

A. Whenever it blocks storage

B. At the framer's discretion

C. As long as one web remains each side

D. With the truss design engineer's approval

32. A 4,500-square-foot attic vented at the baseline 1:150 ratio requires net free vent area of:

A. 10 square feet

B. 20 square feet

C. 30 square feet

D. 15 square feet

33. Baffles at the eaves keep insulation from blocking the:

A. Ridge vent

B. Gable vent

C. Roof diaphragm

D. Soffit intake vents

34. In a cold climate, the load that most likely governs roof framing is the:

A. Snow load

B. Wind uplift load

C. Seismic load

D. Construction live load

35. A roof slope of "6:12" means the roof rises:

A. 12 inches per 6 inches of run

B. 6 inches per 12 inches of horizontal run

C. 6 percent over the roof

D. 6 feet per 12 feet of height

36. Roof sheathing fastened to the framing forms the structural:

A. Vapor retarder

B. Thermal envelope

C. Drainage plane

D. Roof diaphragm

37. An ice barrier membrane at the eaves prevents leaks caused by:

A. Wind-driven rain at the ridge

B. Condensation in the attic

C. Water backed up behind ice dams

D. Sun damage to shingles

38. Most roof leaks originate at:

A. The center field of the shingles

B. The ridge cap only

C. The sheathing underside

D. Valleys, penetrations, and chimney flashing

39. Relying on caulk instead of flashing at a roof penetration is poor practice because:

A. Caulk costs more than flashing

B. Sealant degrades and fails while flashing sheds water by design

C. Flashing is prohibited by code

D. Caulk improves appearance too much

40. Gutters and downspouts must discharge roof runoff:

A. Against the foundation wall

B. Well away from the foundation

C. Onto the neighbor's lot

D. Into the perimeter drain only

41. A water-resistive barrier behind cladding functions to:

A. Shed water that gets past the cladding back outside

B. Provide structural strength

C. Serve as the interior finish

D. Carry electrical wiring

42. A water-resistive barrier and its flashing must be lapped so that each upper piece:

A. Tucks behind the piece below

B. Overlaps the piece below for down-and-out drainage

C. Is caulked on all edges

D. Is installed randomly

43. Weep holes at the base of brick veneer serve to:

A. Increase the structural load

B. Drain water from the air space behind the veneer

C. Ventilate the interior

D. Anchor the veneer

44. Vinyl siding must be fastened loosely so it can:

A. Be removed for inspection

B. Pass water freely

C. Carry structural load

D. Expand and contract with temperature

45. Compared with R-value, a window's U-factor measures the:

A. Resistance to heat flow

B. Fraction of sunlight admitted

C. Rate at which the window conducts heat

D. Resistance to air leakage

46. Safety glazing is required in which location?

A. A high attic gable window

B. A glass panel beside an exterior door

C. A window above a cabinet run

D. A small clerestory window

47. The R-value of insulation measures its:

A. Density per cubic foot

B. Resistance to heat flow

C. Fire-resistance rating

D. Sound absorption

48. Compressing a fiberglass batt into a thinner cavity will:

A. Reduce its effective R-value

B. Increase its fire rating

C. Add structural strength

D. Eliminate vapor permeability

49. Continuous exterior rigid foam is used to address:

A. Bulk water intrusion

B. Thermal bridging through the framing

C. Air leakage at outlets

D. Sound transmission

50. In a cold (heating-dominated) climate, the vapor retarder is 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 moisture-control layers, the one stopping the most moisture movement is the:

A. Vapor retarder

B. Air barrier

C. Exterior paint

D. Cladding surface

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

A. Filled with gravel

B. Sealed and conditioned with a ground cover

C. Left with bare soil

D. Topped with a second slab

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

A. Outdoors

B. Attic above the ceiling

C. Soffit cavity

D. Crawlspace below

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

A. Lot size

B. Property value

C. House color

D. Climate zone

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

A. Slump test

B. Soil compaction test

C. Water pressure test

D. Blower-door test

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

A. Burns fuel more completely

B. Moves heat rather than generating it

C. Uses no electricity

D. Works only in mild weather

57. An oversized HVAC system beyond the calculated load will:

A. Run continuously at peak efficiency

B. Short-cycle and control humidity poorly

C. Use less energy than a right-sized unit

D. Last far longer than rated

58. A residential plumbing system pairs a pressurized supply system with a:

A. Gravity drain-waste-vent system

B. Combined supply-and-waste pipe

C. Closed heating loop

D. Grounding network

59. A fixture trap holds a water seal in order to:

A. Increase water pressure

B. Filter sediment

C. Block sewer gas from the building

D. Reduce draining noise

60. A trap must be vented so that drainage flow does not:

A. Siphon away the trap's water seal

B. Reduce the supply pressure

C. Slow the hot water delivery

D. Increase the noise

61. Supply piping in an unconditioned cold attic is most vulnerable to:

A. Freezing and bursting

B. Excessive pressure

C. Loss of a trap seal

D. Corrosion only

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

A. Ground rod

B. Light fixture

C. Circuit breaker

D. Receptacle

63. A circuit breaker must be sized so it:

A. Allows maximum current

B. Matches the largest appliance

C. Always exceeds the wire rating

D. Trips before the conductor overheats

64. A receptacle near water requires which device to protect the user from shock?

A. AFCI

B. Surge suppressor

C. Tamper-resistant cover

D. GFCI

65. An AFCI on living-area circuits protects primarily against:

A. Shock near water

B. Fires caused by arcing faults

C. Utility overvoltage

D. Child tampering

66. Carbon monoxide is dangerous because it is:

A. Visible as a dark vapor

B. Strongly odorous

C. Colorless, odorless, and poisonous

D. Harmless at low levels

67. CO alarms are required in a home with fuel-burning appliances or:

A. A finished basement

B. More than two bathrooms

C. An attached garage

D. A swimming pool

68. A deck ledger attached to a house must be fastened with:

A. Closely spaced common nails

B. Construction adhesive only

C. Hand-driven wood screws

D. Through-bolts or approved lag screws

69. The deck connection most responsible for catastrophic collapse is the:

A. Ledger-to-house connection

B. Footing-to-post connection

C. Joist-to-beam connection

D. Decking-to-joist connection

70. The maximum residential stair riser height is about:

A. 7¾ inches

B. 10 inches

C. 12 inches

D. 5 inches

71. Residential stair treads must have a minimum depth of about:

A. 6 inches

B. 4 inches

C. 10 inches

D. 14 inches

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

A. 12 inches

B. 60 inches

C. 30 inches

D. 6 inches

73. Required guard openings must not allow passage of a sphere of:

A. 8 inches

B. 4 inches

C. 6 inches

D. 12 inches

74. A masonry fireplace requires a hearth extension to:

A. Protect the combustible floor from sparks

B. Improve the chimney draft

C. Support the chimney's weight

D. Increase heat output

75. An attached garage must be separated from the dwelling by gypsum board and a door that is:

A. Hollow-core for lightness

B. Self-closing and tight-fitting, of an approved type

C. Glazed with clear glass

D. Propped open for ventilation

76. A residential pool barrier is required mainly to:

A. Keep leaves out

B. Provide privacy

C. Prevent unsupervised access by young children

D. Support the pool walls

77. A permit-exempt shed must still comply with:

A. Commercial sprinkler rules

B. Local zoning setback requirements

C. High-rise structural standards

D. Elevator codes

78. An engineered I-joist may be cut or bored only:

A. Anywhere convenient

B. Within the manufacturer's specified allowances

C. At the framer's discretion

D. Regardless of load

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

A. Required span in the specific building

B. Species or species group

C. Moisture condition

D. Grading agency

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

A. 4 feet and above

B. 10 feet and above

C. 6 feet and above

D. 20 feet and above

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

81. 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. Shielding with a trench box

D. Removing the spoil pile only

82. Under the Hazard Communication standard, workers are informed of chemical hazards through training, labels, and:

A. Safety Data Sheets

B. A blower-door test

C. A surety bond

D. A lien waiver

83. In the hierarchy of controls, the most effective response to a hazard is to:

A. Provide PPE

B. Post a warning sign

C. Eliminate the hazard

D. Train workers on it

84. The OSHA General Duty Clause requires employers to provide a workplace:

A. Inspected only once per year

B. Free of all paperwork

C. Staffed only by licensed contractors

D. Free from recognized hazards likely to cause serious harm

85. A worker using a personal fall arrest system must be connected with a:

A. Body belt alone

B. Full-body harness, lanyard, and secure anchor

C. Single hand grip

D. Rope around the waist

86. A job costs $20,000, and the builder applies a 25% markup. The selling price is:

A. $20,250

B. $24,000

C. $25,000

D. $26,000

87. A job sells for $30,000 with $6,000 profit. The profit margin as a percentage of the price is:

A. 25%

B. 30%

C. 20%

D. 16%

88. A balance sheet shows assets of $250,000 and liabilities of $160,000. Owner's equity is:

A. $410,000

B. $90,000

C. $250,000

D. $160,000

89. Which business entity exposes the owner to unlimited personal liability?

A. A limited liability company

B. A sole proprietorship

C. A C-corporation

D. An S-corporation

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

A. Limited liability company

B. Sole proprietorship

C. General partnership

D. C-corporation

91. "Pass-through taxation" means profits are:

A. Taxed twice, at entity and owner levels

B. Exempt from all taxation

C. Taxed once on the owners' personal returns

D. Paid only by the corporate entity

92. The financial statement showing assets, liabilities, and equity at a point in time is the:

A. Balance sheet

B. Income statement

C. Cash flow statement

D. Job-cost report

93. The accounting equation underlying the balance sheet is:

A. Revenue minus expenses equals profit

B. Assets equal liabilities plus equity

C. Cash in minus cash out equals reserve

D. Markup plus cost equals price

94. The leading cause of contractor business failure, even on profitable jobs, is:

A. Running out of cash

B. Excessive material quality

C. Too few subcontractors

D. Building too many homes

95. Progress payments tied to milestones help the builder by:

A. Eliminating the contract

B. Removing all profit risk

C. Raising the total price

D. Bridging the gap between paying costs and collecting revenue

96. 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

97. Payroll taxes withheld from employee wages are:

A. The employer's discretionary cash

B. Trust-fund money held for the government

C. A loan from the employee

D. Tax-exempt revenue

98. Insurance differs from a surety bond in that insurance protects the:

A. Public from the contractor

B. Surety from the owner

C. Board from the builder

D. Insured party against its own losses

99. 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. Charges the lender

D. Seeks reimbursement from the contractor

100. Workers' compensation insurance pays for:

A. Employees' work-related injuries

B. Damage to the structure during the build

C. The contractor's tools against theft

D. Completion of the project

101. In construction pricing, "markup" is a percentage applied to the:

A. Selling price of the job

B. Profit margin only

C. Cost of the work

D. Overhead alone

102. A 50% markup on a job's cost produces a profit that, as a margin of the selling price, is about:

A. 33%

B. 40%

C. 25%

D. 50%

103. A price that covers direct costs but fails to recover overhead will, over time:

A. Increase profit

B. Reduce taxes

C. Build reserves quickly

D. Cause the business to lose money

104. 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

105. The contract element in which each party exchanges something of value is:

A. Consideration

B. Acceptance

C. Capacity

D. Assent

106. Under the Statute of Frauds, a significant construction contract generally must be:

A. Notarized

B. Recorded with the county

C. In writing to be enforceable

D. Approved by the board

107. In a lump-sum (fixed-price) contract, the risk of cost overruns is borne by the:

A. Owner

B. Lender

C. Supplier

D. Contractor

108. In a cost-plus contract, the risk of higher-than-expected costs falls on the:

A. Subcontractor

B. Contractor

C. Surety

D. Owner

109. A change order should be executed:

A. After the changed work is complete

B. In writing and signed before the work proceeds

C. Only verbally to save time

D. At project closeout

110. A warranty imposed by law even when not stated in the contract is an:

A. Express warranty

B. Optional purchased warranty

C. Warranty waived at closing

D. Implied warranty

111. The key difference between mediation and arbitration is that arbitration:

A. Produces a binding decision

B. Is always free of charge

C. Cannot use a neutral party

D. Must precede negotiation

112. The fundamental purpose of contractor licensing is to:

A. Protect the public through competence and accountability

B. Generate revenue for the state

C. Limit competition

D. Guarantee a minimum income

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

A. Awarded double damages

B. Issued a license automatically

C. Exempt from all codes

D. Barred from enforcing the contract or collecting

114. 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

115. A mechanic's lien is a legal claim filed against the:

A. Real property that was improved

B. Contractor's license

C. Owner's bank account

D. General contractor's bond only

116. A mechanic's lien is powerful because an unpaid subcontractor can lien the property even when the:

A. Sub never performed work

B. Project was never permitted

C. Owner already paid the general contractor

D. Contractor was fully licensed

117. 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

118. A document by which a paid party relinquishes its right to file a lien is a:

A. Performance bond

B. Lien waiver

C. Change order

D. Title transfer

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

A. Cancel certain home-solicitation contracts within a short window

B. Delay all payments indefinitely

C. Demand a lower price

D. Extend the warranty automatically

120. Using one client's project funds to pay for another job is:

A. Diverting client funds, an ethical and often legal violation

B. A normal cash-management practice

C. Permitted on cost-plus jobs

D. Acceptable if disclosed verbally

121. The document establishing the order of precedence when drawings and specifications conflict is the:

A. Material supplier's catalog

B. Framing subcontractor's notes

C. Local utility's standards

D. Contract documents

122. When a written dimension differs from a scaled measurement on the same drawing, the builder relies on the:

A. Written dimension

B. Scaled measurement

C. Larger value

D. Average of both

123. The critical path of a project schedule is the:

A. Shortest single task

B. Material delivery route

C. Longest chain of dependent tasks that sets the completion date

D. Electrical pathway

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

A. Markup

B. Float

C. Retainage

D. Overhead

125. Concrete and excavation quantities are measured in:

A. Square feet

B. Linear feet

C. Board feet

D. Cubic yards

126. A labor estimate must be 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

127. 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

128. Substituting a cheaper "equal" for a spec-named product without approval is:

A. Standard acceptable practice

B. A required cost-saving step

C. An unauthorized substitution and potential breach

D. Permitted because products are similar

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

A. Section

B. Floor plan

C. Elevation

D. Plot plan

130. There are how many cubic feet in one cubic yard?

A. 9

B. 12

C. 36

D. 27

Answer Key with Full Answer Explanations

Section 1: Trade and Technical

1. D — A model code carries legal force only after a jurisdiction adopts it, usually with local amendments. Publication, the current edition, or manufacturer endorsement do not make it law. Adoption is what gives a model code force.

2. B — 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.

3. B — Volume = 50 × 2 × 1 = 100 cubic feet; 100 ÷ 27 = 3.7 cubic yards. Concrete is ordered by the cubic yard. The 27-per-yard divisor is essential.

4. C — The board of appeals is the proper avenue for disputing a code official's rejection. Proceeding anyway, reporting to a supplier, or abandoning the project are not proper. The board reviews the official's application of the code.

5. C — 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.

6. A — Measuring the two diagonals and confirming they are equal is the fastest 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.

7. A — Batter boards set back from the corners let the layout strings be re-established after excavation. They are not for tools, utilities, or bracing forms. They preserve layout accuracy.

8. C — A 6-inch fall over 10 feet (120 inches) is 6 ÷ 120 = 0.05 = 5%. This is the minimum grade slope away from the foundation. It directs surface water away.

9. D — Organic topsoil is unsuitable for bearing because it decays and compresses. Bedrock, sandy gravel, and compacted sand are competent. Footings must bear on competent soil or engineered fill.

10. B — Fill must be compacted in thin successive layers called lifts. Courses, wythes, and strata are other terms. Each lift is compacted before the next to prevent settlement.

11. C — A footing extends below the frost line 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.

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

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

14. D — Adding water on site reduces concrete's strength by raising the water-cement ratio. It improves workability but leaves voids. Workability should be improved with admixtures.

15. C — Concrete gains strength through hydration, which requires it to be kept adequately moist during curing. Drying, sun, or freezing interrupt hydration. Proper moist curing delivers design strength.

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

17. A — 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. They do not provide drainage, frost reinforcement, or mark plumbing. Code prescribes their size and spacing.

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

20. C — Waterproofing is required where a high water table creates hydrostatic pressure. Freely draining soil, an above-grade wall, and an arid climate do not. The water table is the trigger.

21. A — A vapor retarder beneath a slab blocks ground moisture from rising through it. It does not resist soil pressure, frost, or outlet air leakage. The retarder is the moisture block.

22. D — A basement bedroom must have an emergency escape and rescue opening. A second water heater, fire-rated ceiling, or balcony do not satisfy this. It is a life-safety requirement.

23. B — A nominal 2×10 has an actual depth of 9¼ inches. Ten, eight, and 11¼ inches are incorrect. Calculations use actual dimensions.

24. C — A joist's allowable span increases when it is made deeper. Wider spacing, lower grade, and heavier loads reduce span. Depth greatly increases bending capacity.

25. A — The worst 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. C — The header transfers the load around an opening to the jack studs. Cripples, the rough sill, and king studs serve other roles. This is the core opening load path.

27. D — Structural panel sheathing resists lateral racking from wind and seismic forces. It does not address gravity load alone, thermal expansion, or vapor. It makes the wall a shear wall.

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

29. B — Hurricane ties connect roof rafters or trusses to the walls to resist uplift. They do not tie the foundation, partitions, or sill plate. They address upward forces.

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

31. D — A truss web may be cut only with the truss design engineer's approval. Cutting for storage, at the framer's discretion, or because a web remains can cause failure. Each member is sized for the balanced system.

32. C — At the baseline 1:150 ratio, 4,500 ÷ 150 = 30 square feet of net free vent area. The ratio may be improved to 1:300 with balanced intake-and-exhaust venting or a vapor retarder. Net free area, not overall vent size, is the basis for the calculation.

33. D — Baffles keep insulation from blocking the soffit intake vents. The ridge vent, gable vent, and roof diaphragm are not what baffles protect. They maintain the airflow channel.

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

35. B — A "6:12" slope means the roof rises 6 inches per 12 inches of horizontal run. Slope is always rise over run per 12. It governs covering selection.

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

37. C — An ice barrier at the eaves prevents leaks from water backed up behind ice dams. Wind-driven rain, condensation, and sun damage are not what it addresses. It is a cold-climate requirement.

38. D — Most roof leaks originate at valleys, penetrations, and chimney flashing. The field, ridge, and sheathing underside are less likely. These transitions depend on flashing.

39. B — Sealant degrades and fails over time while flashing sheds water by design. Cost, code prohibition, and appearance are not the reason. Flashing, not caulk, seals penetrations.

40. B — Gutters and downspouts must discharge well away from the foundation. The foundation wall, neighbor's lot, and perimeter drain only are wrong. Roof drainage should reinforce foundation protection.

41. A — 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.

42. B — Each upper piece 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.

43. B — Weep holes drain water from the air space behind brick veneer. They do not increase load, ventilate the interior, or anchor the veneer. The veneer is a reservoir cladding.

44. D — Vinyl siding is fastened loosely so it can expand and contract with temperature. It is not for removal, water passage, or load. Nailing it tight causes buckling.

45. C — U-factor measures the rate at which a window conducts heat, the inverse of R-value. It does not measure sunlight, resistance to heat flow (that is R-value), or air leakage. Lower U-factor is better.

46. B — Safety glazing is required for a glass panel beside an exterior door, a hazardous location. The attic, above-cabinet, and clerestory windows are not hazardous locations. Safety glazing breaks safely.

47. B — R-value measures resistance to heat flow; higher is better. It does not measure density, fire rating, or sound absorption. R-values are additive across layers.

48. A — Compressing a batt reduces its effective R-value. It does not improve fire rating, strength, or eliminate vapor permeability. Insulation must fill the cavity fully.

49. B — Continuous exterior rigid foam addresses thermal bridging through the framing. It does not primarily handle bulk water, outlet air leakage, or sound. Foam over the sheathing blocks the bridge.

50. C — In a cold climate, the vapor retarder goes on the warm interior side. The cold exterior, cladding face, or both faces are wrong. Climate-specific placement prevents condensation.

51. B — The air barrier stops the most moisture movement, since air leakage carries more moisture than vapor diffusion. The vapor retarder, paint, and cladding stop less. Air sealing is the larger function.

52. B — 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. A — Bathroom and kitchen exhaust fans must discharge outdoors. The attic, soffit, and crawlspace cause moisture damage. Every fan ducts to an exterior termination.

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

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

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

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

58. A — A residential plumbing system pairs supply with a gravity drain-waste-vent system. A combined pipe, heating loop, or grounding network are wrong. The DWV carries waste while vents admit air.

59. 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.

60. A — A trap must be vented so drainage flow does not siphon away the water seal. Pressure, hot-water speed, and noise are not the reason. Traps and vents work as a pair.

61. A — 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. Route it in the conditioned envelope or insulate it.

62. C — The circuit breaker protects a branch-circuit conductor from overheating. Ground rods, fixtures, and receptacles do not. The breaker must match the conductor.

63. D — 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. D — A GFCI protects a person from shock at a receptacle near water. An AFCI, surge suppressor, or tamper-resistant cover do not provide that protection. GFCIs protect people near water.

65. B — An AFCI 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 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. C — CO alarms are required in a home with fuel-burning appliances or an attached garage. A finished basement, bathroom count, or pool do not trigger them. Smoke alarms do not detect CO.

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

69. A — 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.

70. A — The maximum residential stair riser height is about 7¾ inches. Ten, twelve, and five inches are incorrect. Risers must be uniform across the flight.

71. C — Residential stair treads must be a minimum of about 10 inches deep. Six, four, and fourteen inches are wrong. Combined with the riser maximum, this yields a safe stair.

72. C — A guard is required where a walking surface is more than 30 inches above the level below. Twelve, sixty, and six inches are not the threshold. Guards prevent falls off open edges.

73. B — Guard openings must reject a 4-inch sphere. Eight, six, and twelve inches are wrong. Wide spacing is a child-entrapment and fall hazard.

74. A — A hearth extension protects the combustible floor from sparks. It does not improve draft, support the chimney, or increase heat output. It is a fire-safety feature.

75. B — The garage-to-house door must be self-closing and tight-fitting, 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.

76. C — A pool barrier is required mainly to prevent unsupervised access by young children. It is not for debris, privacy, or structure. Code sets height, opening limits, and self-latching gates.

77. B — A permit-exempt shed must still comply with local zoning setback requirements. Commercial, high-rise, and elevator rules do not apply. Setbacks always apply.

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

79. A — A grade stamp does not identify 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.

80. C — 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.

Section 2: Business and Law

81. C — 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.

82. A — 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.

83. C — 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.

84. 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.

85. B — 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.

86. C — A 25% markup on $20,000 = $20,000 × 1.25 = $25,000. Markup is a percentage added to cost. The $5,000 markup brings the price to $25,000.

87. C — Margin = profit ÷ selling price = $6,000 ÷ $30,000 = 0.20 = 20%. Margin is always based on price. This differs from the markup on the same dollars.

88. B — Equity = assets − liabilities = $250,000 − $160,000 = $90,000, from Assets = Liabilities + Equity. The balance sheet always balances on this identity. Equity is the owner's residual stake.

89. B — A sole proprietorship exposes the owner to unlimited personal liability. LLCs, C-corps, and S-corps provide limited liability. This is the key entity distinction.

90. A — A limited liability company combines 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.

91. C — Pass-through taxation means profits are taxed once on the owners' personal returns. This avoids the double taxation of a C-corporation. Most LLCs, sole proprietorships, partnerships, and S-corps are pass-through.

92. A — The balance sheet shows assets, liabilities, and equity at a point in time. The income and cash flow statements cover periods of activity. Each statement serves a distinct purpose.

93. B — The accounting equation is Assets = Liabilities + Equity. The other formulas are not the balance-sheet identity. This equation always holds.

94. A — The leading cause of contractor failure, even on profitable jobs, is running out of cash. Material quality, subcontractor count, and home volume are not the cause. Progress draws and reserves bridge the gap.

95. 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.

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

97. B — Withheld payroll taxes are trust-fund money held for the government. Spending them is a severe violation that can create personal liability. They must never be used as operating cash.

98. D — 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.

99. D — 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.

100. A — Workers' compensation pays for employees' work-related injuries. It does not cover the structure, tools, or project completion. Comp protects employees and is legally required.

101. C — Markup is a percentage applied to the cost of the work. Margin is on price, the overhead alone is not the base, and it is not the margin only. Confusing markup with margin causes underpricing.

102. A — A 50% markup on cost yields a profit equal to about 33% of the selling price, because the denominators differ. A $10,000 cost marked up 50% gives a $15,000 price and $5,000 profit, which is 33% of $15,000. Mistaking markup for margin causes underpricing.

103. D — Pricing that covers direct costs but fails to recover overhead will cause the business to lose money. It does not increase profit, reduce taxes, or build reserves. Every price must carry overhead plus profit.

104. D — 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.

105. A — The element exchanging value is consideration. Acceptance, capacity, and assent are separate elements. Consideration is the most-tested element.

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

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

108. D — 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.

109. B — A change order must be in writing and signed before the changed work proceeds. After completion, verbally, or at closeout are too late. Documentation protects both parties.

110. D — A warranty imposed by law even when not stated is an implied warranty. It binds the builder regardless of any written promise. Express warranties, by contrast, are stated.

111. A — 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.

112. A — The fundamental 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.

113. D — 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.

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

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

116. C — An unpaid subcontractor can lien the property even when the owner already paid the GC, because the lien attaches to the property. The sub must have performed work, and licensing and permitting are not the point. Owners protect themselves with lien waivers.

117. 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.

118. B — 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.

119. A — A cooling-off period 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.

120. A — Using one client's funds for another job is diverting client funds, an ethical and often legal violation. It is not a normal practice or acceptable on any contract type. Project funds belong to that project.

121. 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.

122. A — 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.

123. C — 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.

124. B — 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.

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

126. D — 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.

127. A — 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.

128. C — Substituting a cheaper "equal" for a spec-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.

129. 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.

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