PRACTICE EXAM 13: CTS-I SIMULATION

QUESTIONS 1–125

Domain A — Conducting Pre-Installation Activities

1. Which approach best ensures that a pre-installation site survey captures all relevant conditions?

A. Relying on the lead installer's memory and observation skills

B. Using a systematic checklist-driven survey with documentation and photographs

C. Performing the survey as quickly as possible to save time

D. Focusing only on the most visible issues without comprehensive review

2. Which represents professional best practice for handling a discrepancy between architectural drawings and AV drawings?

A. Use the architectural drawings since they are the most detailed

B. Use the AV drawings since they are AV-specific

C. Select the most recent drawing without verification

D. Document the discrepancy and request clarification from the design team

3. Which best demonstrates best practice for cable pathway planning during pre-installation?

A. Coordinating pathways with other trades to avoid conflicts and ensure code compliance

B. Selecting the shortest possible route regardless of trade coordination

C. Using the lead installer's personal judgment for routing

D. Following routing shown on drawings without field verification

4. Which approach best ensures appropriate take-off calculations for cable orders?

A. Ordering the exact wire schedule length without any margin

B. Ordering twice the calculated length to ensure adequate supply

C. Calculating run distance plus service loops plus contingency margin

D. Ordering cable in bulk without specific calculations

5. Which represents professional best practice for pre-installation meetings with the client?

A. Meeting only when the client has specific questions

B. Holding a formal meeting covering schedule, scope, access, safety, and communication

C. Meeting only with the project manager, not direct client contact

D. Skipping formal meetings to save time

6. Which approach best ensures safe working conditions for AV installers at construction sites?

A. Comprehensive safety planning including PPE, training certifications, and site-specific hazard assessment

B. Providing basic PPE without formal safety planning

C. Relying on the general contractor to provide all safety measures

D. Following only OSHA minimums without site-specific considerations

7. Which best demonstrates professional handling of a specified equipment item not available within project timeline?

A. Substituting generic equivalent without coordination

B. Proceeding with installation and leaving the item for later

C. Informing the client and letting them resolve it

D. Coordinating formal substitution request or alternative procurement approach with design team

8. Which approach best ensures that pre-installation hardware lists are complete?

A. Using a standard template without project-specific verification

B. Relying on the lead installer's experience

C. Systematically reviewing project scope and generating item-by-item calculations

D. Ordering a generic kit for all installations

9. Which represents best practice for documenting pre-installation site conditions?

A. Verbal summary to the project manager

B. Written report with photographs and detailed findings distributed to stakeholders

C. Notes in the installer's personal field notebook

D. Audio recording for later reference

10. Which best ensures accurate pre-installation labor estimates?

A. Applying productivity factors that account for site conditions, trade coordination, and other factors affecting efficiency

B. Using historical averages without specific adjustments

C. Adding flat percentage for all variables

D. Estimating hours without adjustments

11. Which approach best addresses pre-installation planning for code-compliant firestopping?

A. Using any fire-rated material available

B. Standardizing on one firestop product for all penetrations

C. Ignoring firestopping during pre-installation

D. Identifying fire-rated walls, verifying firestop materials match wall ratings, and coordinating with firestop contractor

12. Which represents professional best practice for wireless microphone frequency selection?

A. Using the same frequencies across all projects

B. Selecting frequencies based on manufacturer defaults

C. Coordinating FCC-compliant frequencies considering local spectrum conditions and reassignments

D. Testing with any available frequency during installation

13. Which approach best ensures appropriate pre-installation coordination with the general contractor?

A. Working completely independently from the GC

B. Participating in coordination meetings, submitting schedule requirements, and establishing communication protocols

C. Communicating only when problems arise

D. Delegating all coordination to the project manager

14. Which best demonstrates professional pre-installation review of project documentation?

A. Systematic review of all drawings, specifications, and schedules for accuracy and completeness

B. Reviewing only the wiring schedule

C. Reviewing only the architectural drawings

D. Skipping document review to save time

15. Which approach best ensures that pre-installation planning addresses acoustic considerations?

A. Ignoring acoustics since they are not AV-specific

B. Relying on default microphone specifications

C. Using standard templates without room-specific consideration

D. Considering room acoustics, microphone placement, and coordinating with acoustic designers when available

16. Which represents professional handling of a cable specification conflict between wiring schedule and project specifications?

A. Using the wiring schedule cable type

B. Using the project specifications cable type

C. Documenting the conflict and requesting design team resolution

D. Using whichever cable is available

17. Which best ensures that pre-installation planning addresses client IT coordination?

A. Skipping IT coordination and proceeding independently

B. Early engagement with the client's IT department for network integration planning

C. Delegating IT coordination to the client

D. Contacting IT only when problems arise during installation

18. Which approach best demonstrates professional pre-installation hazard assessment?

A. Systematic evaluation of project hazards with documented mitigation strategies

B. Relying on lead installer's personal assessment

C. Using a standard checklist without project-specific adaptation

D. Performing assessment only when explicitly required

19. Which represents best practice for pre-installation documentation retention?

A. Discarding documents after project completion

B. Keeping only physical drawings

C. Retaining only invoices for billing purposes

D. Maintaining complete project documentation for the installation's service life

20. Which approach best ensures appropriate pre-installation equipment inventory verification?

A. Verifying against shipment documentation during delivery acceptance

B. Verifying only problematic equipment

C. Inventorying quantities and model numbers against specifications upon receipt

D. Assuming shipments match specifications without verification

21. Which best demonstrates professional handling of a client's unreasonable schedule demand?

A. Accepting the demand and absorbing costs

B. Documenting schedule implications and proposing alternatives with impact assessment

C. Refusing the project entirely

D. Attempting the schedule without coordination

22. Which approach best ensures pre-installation electrical coordination?

A. Verifying circuit requirements, grounding provisions, and coordination with electrical engineer before installation

B. Proceeding without electrical coordination

C. Using existing circuits without verification

D. Coordinating only with the general contractor

23. Which represents professional pre-installation planning for change management?

A. Assuming no changes will occur

B. Reacting to changes as they arise

C. Hoping changes can be absorbed

D. Establishing change order processes, RFI protocols, and communication pathways for field-discovered issues

24. Which best demonstrates best practice for pre-installation structural considerations?

A. Installing mounts without structural verification

B. Using only drywall anchors for all loads

C. Coordinating with structural engineer for substantial loads and verifying adequate blocking or structural attachment

D. Relying on general contractor for all structural considerations

25. Which approach best ensures pre-installation coordination with other AV vendors on a project?

A. Working completely independently

B. Inter-vendor coordination through project manager or general contractor

C. Direct vendor-to-vendor coordination without supervision

D. Avoiding other vendors entirely

26. Which represents professional best practice for pre-installation environmental considerations?

A. Considering temperature, humidity, dust, and equipment cooling requirements before installation

B. Ignoring environmental factors

C. Using portable climate control

D. Relying on building HVAC without specific planning

27. Which approach best ensures pre-installation planning addresses cable support?

A. Using any available support method

B. Relying on ceiling grid for all support

C. Planning J-hooks, cable trays, or conduit with attachment to structural members appropriate for loads and code compliance

D. Using adhesive supports where available

28. Which best demonstrates professional pre-installation planning for cable labeling?

A. Using a systematic labeling scheme applied at both ends of every cable, coordinated with wiring schedule

B. Using only one end label to save time

C. Labeling only trunk cables

D. Applying labels randomly without systematic approach

Domain B — Conducting Site Rough-In/First-Fix

29. Which approach best demonstrates professional cable pulling practice through conduit?

A. Rapid pulling to minimize time

B. Skipping lubrication

C. Pulling without coordination between crew members

D. Coordinated crew positioning, appropriate lubrication, tension monitoring, and bend angle compliance

30. Which represents best practice for working at heights above 6 feet?

A. Fall protection through guardrails, personal fall arrest, or other OSHA-compliant methods

B. Working without fall protection if wearing safety shoes

C. Using a spotter only

D. Reducing work pace to prevent falls

31. Which approach best ensures proper cable bend radius during installation?

A. Pulling cables without bend radius consideration

B. Sharp bends to achieve desired routing

C. Maintaining minimum 4× cable diameter bend radius during installation per manufacturer specifications

D. Bending tighter for better signal performance

32. Which best demonstrates professional handling of fire-rated wall penetrations?

A. Using any firestop material

B. Coordinating proper firestop assembly matching wall rating, either performing firestopping correctly or coordinating with firestop contractor

C. Deferring all firestopping to the general contractor

D. Applying silicone caulk as temporary measure

33. Which approach best ensures safe mounting of AV equipment to various wall types?

A. Using same fasteners for all wall types

B. Using plastic expansion anchors universally

C. Relying on adhesive mounting

D. Selecting fasteners appropriate to the wall material (wood studs, metal studs, concrete, masonry)

34. Which represents professional handling of a cable that encounters resistance during a pull?

A. Stopping the pull and investigating the cause before continuing

B. Increasing pull tension to overcome resistance

C. Pulling faster to move through the resistance

D. Continuing regardless of tension readings

35. Which approach best addresses OSHA silica standard compliance during concrete cutting?

A. Using standard N95 dust masks only

B. Outdoor cutting only

C. Water suppression, local exhaust ventilation, or respiratory protection per the silica standard

D. Using only carbide-tipped blades

36. Which best demonstrates professional handling of asbestos discovery during deinstallation?

A. Continuing using respiratory protection

B. Stopping work and contacting qualified asbestos abatement personnel

C. Capping cable ends and continuing

D. Notifying only the client without stopping work

37. Which approach best ensures proper cable support in plenum spaces?

A. Plenum-rated supports attached to structural members above the ceiling

B. Any metal supports attached to ductwork

C. Wood supports attached to ceiling grid

D. Adhesive supports on ceiling tiles

38. Which represents best practice for boom lift operation?

A. Working without fall protection if wearing safety shoes

B. Relying on guardrails alone

C. Using adjacent structure anchor points

D. Personal fall arrest attached to designated platform anchor

39. Which approach best ensures appropriate overhead mounting safety factors?

A. No safety factor required for small loads

B. 2:1 safety factor adequate for all loads

C. Minimum 5:1 safety factor for overhead loads per industry standard

D. Manufacturer recommendations alone

40. Which best demonstrates proper structural blocking installation for wall-mounted equipment?

A. Installing blocking after drywall

B. Coordinating blocking installation with general contractor or framing trade during construction to span multiple studs

C. Using metal plates secured to drywall

D. Adhesive mounting directly to drywall

41. Which approach best ensures safe use of extension ladders?

A. Positioning at 4-to-1 ratio, extending 3 feet above landing, securing against movement

B. Using at any angle for flexibility

C. Relying on ladder stability without positioning

D. Positioning based on worker preference

42. Which represents best practice for working in plenum spaces?

A. Using non-plenum materials during AV work

B. Using any available materials

C. Using mixed plenum and non-plenum materials

D. Using plenum-rated materials throughout and maintaining plenum integrity

Domain C — Installing Audiovisual Systems

43. Which approach best ensures professional rack build quality?

A. Mounting equipment in any order

B. Systematic rack design with equipment placement planning, airflow management, cable management, and power distribution planning

C. Using any available mounting hardware

D. Installing equipment in order of physical delivery

44. Which represents best practice for rack cable management?

A. Systematic approach with proper cable routing, strain relief, labeled cables, and maintained bend radius

B. Using whatever cables are available

C. Tying cables tightly with electrical tape

D. Running cables without management

45. Which approach best ensures appropriate equipment airflow in racks?

A. Installing equipment tightly packed

B. Using only rear-mounted fans

C. Maintaining front-to-back airflow paths with blanking panels and proper equipment spacing

D. Relying on room air conditioning alone

46. Which best demonstrates professional balanced audio signal installation?

A. Using unbalanced connections to save cost

B. Using shielded balanced cables

C. Using balanced connections without shield

D. Using XLR connectors, balanced cables with shield, proper pin assignments per AES convention

47. Which approach best ensures appropriate phantom power delivery to condenser microphones?

A. Using phantom power without verification

B. Providing 48V DC through balanced audio cables with compatible microphone verification

C. Using 24V DC as a safer alternative

D. Providing phantom power only when microphone requires it, without pre-verification

48. Which represents best practice for 70-volt distributed audio system design?

A. Sizing amplifier at approximately 125% of total tap load with transformer at each loudspeaker

B. Using 100% tap load match with amplifier capacity

C. Connecting loudspeakers in series

D. Using 200% tap load for maximum output

49. Which approach best ensures appropriate Cat6A cable installation and termination?

A. Terminating with untwist beyond manufacturer specifications

B. Using Cat5e termination procedures

C. Maintaining 0.5-inch maximum untwist at termination with proper termination tools and verification

D. Termination without testing

50. Which best demonstrates best practice for coaxial cable installation?

A. Using any coaxial cable type

B. Using 75-ohm cable for video applications with appropriate compression terminations

C. Using RJ45 terminations

D. Using cable splicing without connectors

51. Which approach best ensures appropriate HDBaseT cable installation?

A. Installing without distance verification

B. Using any Category-rated cable

C. Using unterminated cable

D. Cat6A cable within 100-meter specification with verified category performance

52. Which represents best practice for HDCP compatibility verification?

A. Verifying all devices in the signal path support compatible HDCP versions matching the content requirements

B. Using any HDCP-compliant device

C. Assuming all modern equipment is HDCP 2.2 compatible

D. Testing only end-to-end

53. Which approach best ensures appropriate EDID handling?

A. Manually entering EDID at both ends

B. Disabling EDID for troubleshooting

C. Allowing automatic EDID exchange via DDC with troubleshooting capability if mismatches occur

D. Using default EDID for all displays

54. Which best demonstrates professional fiber optic cable installation?

A. Handling fiber without bend radius consideration

B. Selecting fiber type (OM3, OM4, single-mode) per distance and bandwidth, proper cleaning, bend radius maintenance, and certification testing

C. Using single-mode fiber for all applications

D. Using any fiber cable available

55. Which approach best ensures appropriate Dante audio networking installation?

A. Using general-purpose Ethernet without QoS

B. Connecting to any existing network

C. Using wireless networking

D. Dedicated or properly segmented network with appropriate QoS and switch configuration

56. Which represents best practice for AV network installation?

A. Sharing the general office network

B. Coordinating VLANs, IP addressing, QoS, and security with client IT department

C. Using wireless connections for all AV traffic

D. Using default DHCP for all devices

57. Which approach best ensures appropriate RS-232 serial control installation?

A. Matching baud rate, data bits, parity, stop bits between controller and device

B. Using any serial cable

C. Using Ethernet instead of RS-232

D. Using default settings without verification

58. Which best demonstrates professional display calibration practice?

A. Using default display settings

B. Using manufacturer recommended settings

C. Calibrating to D65 white point, gamma 2.2 for standard video content, verified with measurement equipment

D. Setting the brightest image possible

59. Which approach best ensures proper video projector installation?

A. Using any throw distance available

B. Maximizing image brightness

C. Positioning based on physical access

D. Calculating throw distance using throw ratio, accounting for keystone, aligning with screen

60. Which represents best practice for audio system calibration?

A. Calibrating at maximum loudness levels

B. Using measurement microphones, room analysis, and systematic equalization approach

C. Using graphic equalizer presets without measurement

D. Trusting ear-based adjustments exclusively

61. Which approach best ensures proper audio level management?

A. Establishing reference levels, maintaining unity gain through the chain, and calibrating with measurement

B. Using loudest possible signals

C. Using quietest signals to avoid distortion

D. Using variable levels throughout

62. Which best demonstrates professional acoustic echo cancellation setup in conferencing systems?

A. Disabling AEC for simpler setup

B. Using default AEC without calibration

C. Relying on microphone mute

D. AEC calibration accounting for room acoustics, microphone placement, and loudspeaker positioning

63. Which approach best ensures appropriate cable certification practices?

A. Testing only when problems occur

B. Using untested cables if they appear intact

C. Systematic certification of Cat6A cabling testing insertion loss, return loss, NEXT, ANEXT, and other parameters

D. Testing only continuity

64. Which represents professional handling of digital video signal bandwidth requirements?

A. Selecting cable infrastructure supporting the required bandwidth for the content format

B. Using any HDMI cable available

C. Using lower-grade cable to save costs

D. Assuming all cables support any content

65. Which approach best ensures appropriate Power over Ethernet installation?

A. Matching PoE source and device power classes (basic PoE, PoE+, PoE++) with verification

B. Using any PoE source with any device

C. Using higher-class source than device requires

D. Using unregulated power

66. Which best demonstrates professional control system installation?

A. Implementing any control protocol available

B. Using only wired IR control

C. Using default manufacturer settings

D. Integration with bidirectional IP-based control, tested user interface, appropriate programming

67. Which approach best ensures appropriate network segmentation for AV systems?

A. Mixing AV and general network traffic

B. Using flat network without segmentation

C. VLANs coordinated with IT, with appropriate QoS, security, and traffic isolation

D. Using separate physical network infrastructure only

68. Which represents best practice for audio gain structure?

A. Maximizing gain at every stage

B. Coordinating gain stages to avoid clipping while maintaining signal-to-noise ratio

C. Using maximum input trim

D. Using single gain stage at output

69. Which approach best ensures appropriate signal routing verification?

A. Systematic verification of source-destination routing against design documentation

B. Trial and error until correct

C. Verifying only final output

D. Verifying when problems are reported

70. Which best demonstrates professional video signal verification?

A. Using visual inspection only

B. Checking only when problems occur

C. Relying on specification sheets

D. Waveform monitor and vectorscope verification of amplitude, sync, and chrominance against standards

71. Which approach best ensures appropriate loudspeaker impedance matching?

A. Connecting without impedance verification

B. Using highest impedance available

C. Verifying parallel/series configuration maintains amplifier-compatible impedance

D. Mixing impedances randomly

72. Which represents best practice for 8-ohm loudspeaker cable selection?

A. Using any gauge cable available

B. Maintaining cable resistance below 5% of loudspeaker impedance through gauge selection

C. Using lightest gauge to save cost

D. Using speaker cable regardless of distance

73. Which approach best ensures appropriate rack grounding?

A. Grounding only through the outlet

B. Using floating grounds for isolation

C. Multiple grounds for redundancy

D. Single-point grounding connection to building ground system

74. Which best demonstrates professional AV-over-IP installation?

A. 10 Gbps Ethernet for SDVoE, appropriate switches, QoS, multicast configuration, and IT coordination

B. Any available network infrastructure

C. 1 Gbps Ethernet for all applications

D. Wireless infrastructure

75. Which approach best ensures appropriate display calibration target white point?

A. Using 5500K for all displays

B. Using maximum brightness setting

C. Calibrating to D65 (6500K) per video content standards

D. Using 9300K for more blue

76. Which represents best practice for fiber optic connector cleaning?

A. Wiping with paper towels

B. No cleaning needed

C. Proper fiber cleaning kits and procedures before every termination and inspection

D. Using compressed air only

77. Which approach best ensures appropriate 70V tap load calculation?

A. Connecting any number of loudspeakers

B. Summing all loudspeaker taps and sizing amplifier at 125% of total load

C. Using 100% of amplifier capacity

D. Using 200% of amplifier capacity

78. Which best demonstrates professional wiring schedule execution?

A. Following the schedule's specified cable types, routes, sources, and destinations with verification

B. Using available cable types

C. Routing based on installer preference

D. Following only source and destination

79. Which approach best ensures appropriate video over fiber installation?

A. Using appropriate fiber type (OM3, OM4, single-mode) matching distance and bandwidth requirements

B. Using any fiber available

C. Using single-mode for all distances

D. Using multi-mode regardless of distance

80. Which represents best practice for AV rack installation in data-adjacent environments?

A. Separate grounds for AV and data

B. Shared network infrastructure only

C. Coordinating environmental conditions, power, and network integration with adjacent data infrastructure

D. Complete separation without coordination

81. Which approach best ensures appropriate acoustic treatment for AV spaces?

A. Ignoring acoustics entirely

B. Coordinating with acoustic consultants or applying fundamental acoustic principles for room use

C. Using maximum absorption

D. Using reflective surfaces only

82. Which best demonstrates professional signal-to-noise ratio verification?

A. Ensuring adequate signal levels through gain staging and verifying noise floor through measurement

B. Maximum possible signal levels

C. Minimum possible signal levels

D. Using default levels without verification

83. Which approach best ensures appropriate audio conferencing system installation?

A. Proper AEC calibration, ceiling microphone placement, appropriate loudspeaker positioning, and gain structure

B. Using default settings

C. Positioning microphones anywhere convenient

D. Relying on microphone auto-gain

84. Which represents best practice for video wall installation?

A. Single display alternative

B. Manual alignment without tools

C. Precise mechanical alignment, color matching across displays, appropriate processor configuration

D. Using mismatched displays

85. Which approach best ensures appropriate cable identification in complex installations?

A. Color coding alone

B. Manufacturer markings only

C. Verbal identification during installation

D. Systematic labeling scheme at both ends with consistent format and coordination with documentation

86. Which best demonstrates professional handling of non-responsive networked AV devices?

A. Replacing the device immediately

B. Systematic troubleshooting starting with network connectivity (ping), power, physical connection, then device-specific diagnostics

C. Rebooting the entire system

D. Reinstalling firmware on all devices

87. Which approach best ensures appropriate equipment heat management in racks?

A. Using front-to-back airflow with adequate intake and exhaust, blanking panels, temperature monitoring, and cooling capacity sized for heat loads

B. Using top-mounted exhaust only

C. Ignoring heat management

D. Using sealed rack without ventilation

88. Which represents best practice for projector image alignment?

A. Using default keystone correction

B. Manual adjustment without tools

C. Precise physical alignment minimizing digital correction, with verification using test patterns

D. Positioning based on room geometry only

Domain D — Perform Systems Close-Out

89. Which approach best ensures complete system verification at project closeout?

A. Testing only critical systems

B. Systematic verification per ANSI/AVIXA 10:2013 A-Level, B-Level, and C-Level items

C. Relying on user acceptance testing only

D. Manufacturer testing only

90. Which represents best practice for punch list management?

A. Ignoring minor items

B. Addressing only critical items

C. Documenting all deficiencies with priority and tracking to resolution

D. Distinguishing substantive from cosmetic deficiencies, documenting both with tracking and resolution

91. Which approach best ensures appropriate as-built documentation?

A. Capturing actual installed configuration including changes, with drawings, wiring updates, and configuration records

B. Copying original drawings unchanged

C. Minimal documentation for service

D. Only if problems occur

92. Which best demonstrates professional end-user training delivery?

A. Comprehensive reference manuals without sessions

B. Single training session with all users

C. Brief focused sessions on essential operations with hands-on practice and take-home reference materials

D. Video training without instructor

93. Which approach best ensures appropriate warranty documentation?

A. Verbal confirmation of warranty terms

B. Documenting warranty effective dates, coverage terms, and service contacts tied to substantial completion

C. Relying on manufacturer documentation alone

D. Client-prepared warranty documentation

94. Which represents best practice for client sign-off at project completion?

A. Signature of any client representative

B. Lead installer signature only

C. Electronic acknowledgment without detailed review

D. Formal sign-off by authorized client representative with review of completed work and acceptance

95. Which approach best ensures appropriate service agreement proposal?

A. Defined response times, scheduled preventive maintenance, priority service, and remote support matched to client needs

B. Generic service agreements for all clients

C. Offering only reactive repair

D. No service agreement discussion

96. Which best demonstrates professional project closeout deliverables?

A. Only equipment manuals

B. Only as-built drawings

C. Comprehensive package including as-builts, manuals, warranty documentation, training materials, and verification reports

D. Only warranty registration

97. Which approach best ensures appropriate substantial completion documentation?

A. Verbal agreement

B. Formal certificate documenting substantial completion milestone with beneficial use confirmation

C. Email acknowledgment

D. Invoice serving as documentation

98. Which represents best practice for preventive maintenance planning?

A. Annual baseline with more frequent visits for high-use environments, integrated with service agreement

B. Monthly visits for all installations

C. Only reactive repair

D. Quarterly visits universally

99. Which approach best ensures appropriate quick reference guide delivery?

A. Detailed technical manuals for all users

B. No reference materials

C. Manufacturer documentation only

D. Essential functions with screenshots and simple instructions distributed at training

100. Which best demonstrates professional walk-through for substantial completion?

A. Installer alone

B. Installer, client representative, and general contractor when applicable, with formal documentation

C. Client alone

D. Quick informal review

101. Which approach best ensures comprehensive system verification documentation?

A. Pass/fail only

B. Performance confirmation without detail

C. Verbal acknowledgment

D. Detailed verification report documenting tests performed, results, and any exceptions

102. Which represents best practice for warranty effective date establishment?

A. Tied to substantial completion when the client takes beneficial use

B. Tied to contract signing

C. Tied to equipment delivery

D. Tied to final payment

Domain E — Conducting Ongoing Project Responsibilities

103. Which approach best ensures appropriate documentation of field engineering decisions?

A. Verbal report to project manager

B. Notes in personal notebook

C. Written documentation in daily reports with updates to as-built drawings

D. Photographic documentation only

104. Which best demonstrates professional daily progress reporting?

A. Weekly summary reports only

B. Systematic daily reports documenting activities, labor, materials, issues, and coordination items

C. Reporting only problems

D. Reporting only when requested

105. Which approach best ensures appropriate scope management during installation?

A. Absorbing all changes to maintain schedule

B. Ignoring small scope changes

C. Accepting scope changes informally

D. Routing scope changes through change order process with project manager coordination and formal approval

106. Which represents best practice for trade coordination during installation?

A. Active participation in coordination meetings with the general contractor's superintendent and structured communication with other trades

B. Avoiding other trades entirely

C. Direct trade-to-trade communication without oversight

D. Delegating all coordination to project manager

107. Which approach best ensures appropriate RFI (Request for Information) submission?

A. Informal email questions

B. Verbal questions during site visits

C. Formal written RFI documenting the question, field conditions, and proposed resolution if applicable

D. Waiting for design team discovery

108. Which best demonstrates professional handling of field-discovered design issues?

A. Field improvisation without notification

B. Formal reporting through appropriate channels for engineering review and authorized resolution

C. Waiting for design team to discover

D. Documenting only for as-builts

109. Which approach best ensures appropriate jobsite cleanup management?

A. Continuous "clean as you go" practice throughout the day with continuous debris management

B. End-of-day cleanup only

C. Weekly cleanup

D. Cleanup only at project completion

110. Which represents best practice for construction debris management?

A. AV firm's dedicated dumpster

B. Client's regular building trash

C. Personal installer disposal

D. Coordinated through the general contractor's construction waste management system

111. Which approach best ensures appropriate delay reporting?

A. Waiting until a milestone is missed

B. Reporting only at coordination meetings

C. Proactive reporting to project manager as soon as potential delay is identified

D. Reporting only when the cause is confirmed

112. Which best demonstrates professional handling of trade conflicts?

A. Direct confrontation with the other trade

B. Reporting through the project manager who can coordinate with the general contractor

C. Ignoring the conflict

D. Filing formal grievance

113. Which approach best ensures appropriate safety management during installation?

A. Safety orientation, daily briefings, appropriate PPE, fall protection compliance, and hazard reporting

B. OSHA minimums only

C. Reacting to incidents

D. Relying on general contractor safety alone

114. Which represents best practice for silica-generating activity management?

A. Standard N95 dust masks

B. Performing outdoors only

C. Using carbide blades

D. Water suppression, local exhaust ventilation, or respiratory protection per OSHA silica standard

115. Which approach best ensures appropriate firestopping on AV penetrations?

A. Any silicone caulk

B. Deferring all firestopping to general contractor

C. Either performing firestopping with materials matching wall ratings or coordinating with qualified firestop contractor

D. Temporary firestopping

116. Which best demonstrates professional handling of asbestos discovery?

A. Continuing with PPE

B. Immediate work stoppage and contact with qualified asbestos abatement personnel

C. Capping and continuing

D. Notifying client only

117. Which approach best ensures appropriate root-cause analysis after service incidents?

A. Systematic investigation to understand why the failure occurred, documented resolution, and recurrence prevention measures

B. Replacing failed components

C. Determining crew responsibility

D. Reporting only to insurance

118. Which represents best practice for end-of-life installation planning?

A. Waiting for catastrophic failure

B. Automatic replacement after fixed periods

C. Continuing until equipment fails

D. Monitoring end-of-life indicators and proactive refresh planning with client budgeting support

119. Which approach best ensures appropriate decommissioned equipment handling?

A. Manufacturer return for all equipment

B. Donation without modification

C. Factory reset or data wipe of configuration data, coordinated with RoHS/WEEE disposal approach

D. Storage in client facility

120. Which best demonstrates professional handling of BIM coordination conflicts?

A. Field improvisation without notification

B. Structured resolution through design team, general contractor, and affected trades

C. Ignoring the conflict

D. Cancelling the installation

121. Which approach best ensures appropriate change order submission?

A. Verbal agreement with project manager

B. Informal email confirmation

C. Delayed submission until project end

D. Formal change order documenting scope modification, cost impact, schedule impact, and obtaining client approval

122. Which represents best practice for unauthorized work prevention?

A. Rigorous change order compliance with no work performed outside original contract without authorized change orders

B. Absorbing small changes

C. Performing work and invoicing later

D. Flexible scope management

123. Which approach best ensures appropriate long-term client relationships?

A. One-time installation only

B. Limited post-installation contact

C. Service agreements, preventive maintenance, proactive communication, and continuous relationship management through service life

D. Contact only when problems occur

124. Which best demonstrates professional handling of delay causation determination?

A. Absorbing all delays regardless of cause

B. Documenting causation carefully with supporting evidence to support appropriate allocation of responsibility

C. Claiming all delays as trade-caused

D. Blaming other parties

125. Which approach best ensures appropriate installation service life management?

A. Ongoing service relationship, preventive maintenance, component tracking, refresh planning, and eventual decommissioning coordination

B. Single installation event

C. Reactive repair only

D. No ongoing involvement

PRACTICE EXAM 13: ANSWER KEY WITH FULL ANSWER EXPLANATIONS

Questions 1–125

Domain A — Conducting Pre-Installation Activities

1. B — Using a systematic checklist-driven survey with documentation and photographs. Systematic checklists prompt the surveyor through every observation category, preventing the common failure of focusing on obvious areas while missing others. Documentation through written findings and photographs preserves the objective record that supports later reference and stakeholder distribution. Memory-based surveys consistently miss categories that checklists catch, so professional practice relies on the systematic approach.

2. D — Document the discrepancy and request clarification from the design team. Drawing discrepancies between trades indicate coordination issues that the design team must resolve because only they know which drawing represents the current design intent. Selecting one drawing unilaterally, even based on recency or detail, risks installing to an obsolete or incorrect specification. Professional practice routes these decisions back to design authority, which preserves design integrity and protects the installer from liability for installing to the wrong drawing.

3. A — Coordinating pathways with other trades to avoid conflicts and ensure code compliance. Cable pathway decisions affect multiple installation parameters including total cable lengths, pulling feasibility, NEC fill compliance, and conflicts with MEP infrastructure. Coordination with other trades identifies conflicts before installation when resolution is inexpensive; discovering conflicts after installation produces expensive rework. The shortest route often creates conflicts, and individual installer judgment rarely captures all the coordination requirements.

4. C — Calculating run distance plus service loops plus contingency margin. Accurate take-off calculations include the physical pathway length, service loops at rack and device ends, and contingency margin (typically 10-15%) for routing variations and termination waste. Ordering only the calculated length risks shortages; doubling the order wastes resources and creates disposal concerns. Bulk orders without specific calculations produce either shortages or substantial waste depending on the project.

5. B — Holding a formal meeting covering schedule, scope, access, safety, and communication. Comprehensive pre-installation meetings establish shared understanding across all aspects of the upcoming work before any work begins. Partial coverage missing key topics leaves gaps that produce conflicts during installation; skipping meetings entirely creates larger problems when expectations diverge. This formal alignment prevents the majority of installation-phase disputes.

6. A — Comprehensive safety planning including PPE, training certifications, and site-specific hazard assessment. Professional safety management combines multiple elements that work together — PPE protects against specific hazards, training certifications document competence, and site-specific assessment identifies conditions not covered by general guidance. Each element alone is insufficient; OSHA minimums establish floor requirements but may not address site-specific hazards. Comprehensive planning is substantially more effective than individual elements in isolation.

7. D — Coordinating formal substitution request or alternative procurement approach with design team. Equipment timeline issues require coordination because the design team knows why specific equipment was specified — performance, compatibility, and integration factors. Unilateral substitution bypasses this engineering judgment; proceeding with installation defers rather than solves the problem; delegating to the client avoids the installer's professional responsibility. Formal coordination preserves design integrity and establishes clear authorization.

8. C — Systematically reviewing project scope and generating item-by-item calculations. Accurate hardware lists require systematic review of project scope against specific item requirements, with calculations documented for verification. Standard templates miss project-specific requirements; experience alone produces gaps on unusual projects; generic kits rarely match specific project needs. Systematic calculation produces the complete hardware list that supports smooth installation.

9. B — Written report with photographs and detailed findings distributed to stakeholders. Professional documentation creates an objective record that can be referenced, preserved, and distributed to stakeholders. Verbal summaries fail to capture detail; personal notes are not accessible to others; audio recordings require transcription before utility. Written reports with photographs provide the durable record that supports the project throughout its lifecycle.

10. A — Applying productivity factors that account for site conditions, trade coordination, and other factors affecting efficiency. Productivity factors adjust baseline labor estimates for conditions that affect installation efficiency — occupied buildings, evening shifts, restricted access, weather, and coordination complexity. Historical averages without specific adjustments produce systematic estimation errors; flat percentages apply the same adjustment to dissimilar conditions; no adjustments produce unrealistic schedules that cannot be met. Applied productivity factors align estimates with realistic performance.

11. D — Identifying fire-rated walls, verifying firestop materials match wall ratings, and coordinating with firestop contractor. Life-safety fire protection requires proper matching of firestop materials to specific wall ratings, with installation methods tested to achieve the rating. Using any fire-rated material regardless of wall rating compromises the rating; single-product standardization may not match all wall types; ignoring firestopping during planning produces code violations. Coordination with qualified firestop contractors ensures appropriate application.

12. C — Coordinating FCC-compliant frequencies considering local spectrum conditions and reassignments. Wireless microphone frequency selection must comply with current FCC regulations, which change as spectrum is reallocated. Using the same frequencies across projects ignores local conditions; manufacturer defaults may not be FCC-compliant in all regions; testing with any available frequency risks legal exposure and interference. Coordination with regional spectrum conditions produces compliant, functional deployments.

13. B — Participating in coordination meetings, submitting schedule requirements, and establishing communication protocols. Effective general contractor coordination requires active participation across multiple touchpoints — meetings for real-time coordination, schedule submissions for planning integration, and established protocols for ongoing communication. Working independently creates conflicts; reactive communication misses proactive coordination opportunities; delegation to project manager disconnects the installation team from coordination authority.

14. A — Systematic review of all drawings, specifications, and schedules for accuracy and completeness. Complete project documentation review encompasses drawings (multiple types), specifications (defining quality and performance), and schedules (defining sequence and timing). Reviewing only wiring schedules misses architectural context; reviewing only architectural drawings misses AV-specific requirements; skipping review creates problems during installation when uncovered issues surface.

15. D — Considering room acoustics, microphone placement, and coordinating with acoustic designers when available. Acoustic considerations affect system quality significantly — room acoustics determine microphone effectiveness, loudspeaker response, and overall audio quality. Ignoring acoustics produces systems that don't achieve their potential; default specifications miss room-specific requirements; standard templates cannot address unique acoustic environments. Professional practice integrates acoustic consideration into planning.

16. C — Documenting the conflict and requesting design team resolution. Specification conflicts between documents require design team resolution because only they know which specification represents the current design intent. Selecting either specification unilaterally, or using whichever cable is available, bypasses the design authority and may install to incorrect specifications. This is consistent professional practice for all design document conflicts.

17. B — Early engagement with the client's IT department for network integration planning. Modern AV systems integrate with client networks, requiring coordination for VLAN assignments, IP addressing, QoS configuration, and security policies. Early engagement during pre-installation allows infrastructure preparation; skipping coordination creates integration problems during installation; late engagement during installation produces schedule pressure and inadequate solutions. Proactive coordination supports smooth integration.

18. A — Systematic evaluation of project hazards with documented mitigation strategies. Professional hazard assessment systematically evaluates the specific project conditions, identifies hazards, and documents mitigation strategies. Personal assessment misses hazards that systematic approaches catch; standard checklists may not address project-specific conditions; performing assessments only when required treats safety as compliance rather than professional practice. Documented assessments support both immediate work and future reference.

19. D — Maintaining complete project documentation for the installation's service life. Project documentation supports the installation throughout its service life — service work, modifications, expansions, and eventual decommissioning. Discarding documents loses this support resource; keeping only physical drawings misses the complete documentation set; invoices alone don't support future work. Comprehensive retention is professional practice that supports long-term client relationships.

20. C — Inventorying quantities and model numbers against specifications upon receipt. Delivery verification catches shipment errors before they affect installation — wrong quantities, wrong models, damaged items, or missing components. Verification during delivery acceptance only catches visible damage; verifying only problematic equipment requires problem identification first; assumptions produce installation delays when verification reveals discrepancies. Systematic verification upon receipt catches issues earliest.

21. B — Documenting schedule implications and proposing alternatives with impact assessment. Professional handling of unreasonable demands respects both the client relationship and project reality — documentation captures the issue, alternatives provide solutions, and impact assessment quantifies consequences. Accepting unreasonable demands damages quality, schedule, and profitability; refusing projects damages client relationships; attempting without coordination produces failures. Professional documentation and alternatives preserves relationships while protecting project viability.

22. A — Verifying circuit requirements, grounding provisions, and coordination with electrical engineer before installation. Pre-installation electrical coordination addresses specific AV electrical requirements that differ from general commercial electrical — dedicated circuits, grounding specifications, voltage regulation. Proceeding without coordination produces equipment reliability problems; existing circuits without verification may be inadequate or shared with non-AV loads; coordination only with general contractor misses electrical engineering expertise.

23. D — Establishing change order processes, RFI protocols, and communication pathways for field-discovered issues. Proactive establishment of change management processes before installation enables efficient handling of inevitable changes. Assuming no changes will occur produces inadequate response capacity; reactive change management produces schedule disruption; hoping changes can be absorbed creates unauthorized scope expansion. Pre-established processes support professional change handling.

24. C — Coordinating with structural engineer for substantial loads and verifying adequate blocking or structural attachment. Structural considerations for substantial AV loads require engineering input to verify adequate support, particularly when existing conditions don't clearly provide it. Installing without verification creates safety and reliability concerns; drywall anchors alone cannot support substantial loads; general contractor is typically not the structural expert. Professional structural coordination prevents mounting failures that have serious consequences.

25. B — Inter-vendor coordination through project manager or general contractor. Multiple AV vendors on a project require coordinated interaction through appropriate authority to manage schedule, access, scope boundaries, and potential conflicts. Working independently creates conflicts; direct vendor-to-vendor coordination lacks structure and authority; avoiding other vendors doesn't resolve shared scope issues. Professional coordination through project management handles multi-vendor complexity.

26. A — Considering temperature, humidity, dust, and equipment cooling requirements before installation. Environmental considerations affect equipment reliability, service life, and performance significantly. Ignoring environmental factors produces shortened equipment life and reliability problems; portable climate control provides short-term solutions that aren't appropriate for permanent installations; building HVAC without specific planning may not address AV equipment room requirements. Professional planning integrates environmental consideration.

27. C — Planning J-hooks, cable trays, or conduit with attachment to structural members appropriate for loads and code compliance. Cable support planning requires matching support method to load, code requirements, and attachment to appropriate structure. Using any support method may compromise installation; relying on ceiling grid exceeds the grid's capacity; adhesive supports fail under sustained load. Professional support planning addresses all requirements simultaneously.

28. A — Using a systematic labeling scheme applied at both ends of every cable, coordinated with wiring schedule. Professional cable labeling applies consistent identifiers at both ends of every cable, matching the wiring schedule nomenclature. Labeling only one end limits tracing capability; labeling only trunk cables creates gaps; random labels without systematic approach produces identification confusion. Complete systematic labeling supports service work throughout the installation's life.

Domain B — Conducting Site Rough-In/First-Fix

29. D — Coordinated crew positioning, appropriate lubrication, tension monitoring, and bend angle compliance. Professional cable pulling requires coordinated crew positioning (feeder, middle, puller), appropriate lubrication to reduce friction, active tension monitoring to avoid damage, and attention to cumulative bend angles. Rapid pulling increases damage risk; skipping lubrication increases tension dramatically; uncoordinated crews produce pulling errors. The combination of techniques produces successful pulls.

30. A — Fall protection through guardrails, personal fall arrest, or other OSHA-compliant methods. OSHA construction standards require fall protection at 6 feet or greater through recognized methods. Safety shoes alone do not constitute fall protection; spotters cannot substitute for physical fall protection; reducing pace may help but does not eliminate the hazard. Professional practice selects appropriate OSHA-compliant methods based on the specific work situation.

31. C — Maintaining minimum 4× cable diameter bend radius during installation per manufacturer specifications. Cable manufacturer specifications typically require minimum 4× cable diameter bend radius during installation (tighter during pulling) and 8× in final position. Pulling without bend radius consideration damages internal cable geometry; sharp bends for routing cause permanent performance degradation; tighter bends don't improve signal performance — they harm it through geometry distortion.

32. B — Coordinating proper firestop assembly matching wall rating, either performing firestopping correctly or coordinating with firestop contractor. Fire-rated wall penetrations require firestop assemblies tested to preserve the wall's rating. Any firestop material isn't sufficient — the assembly must match the specific wall rating. The installer must either perform the work correctly with proper materials and training, or coordinate with qualified firestop contractors. Temporary measures don't satisfy code requirements.

33. D — Selecting fasteners appropriate to the wall material (wood studs, metal studs, concrete, masonry). Different wall types require different fastener types matched to the material's engagement characteristics. Universal fasteners fail to develop required capacity in most materials; plastic anchors lack capacity for substantial loads; adhesive mounting fails under sustained load. Professional practice matches fastener type to specific wall material for reliable attachment.

34. A — Stopping the pull and investigating the cause before continuing. High cable pulling tension indicates the cable is approaching or exceeding damage thresholds. Continuing the pull risks invisible internal damage that degrades cable performance permanently; increasing tension accelerates damage; pulling faster doesn't resolve the underlying resistance source. Stopping to investigate protects cable integrity and identifies the actual cause for proper resolution.

35. C — Water suppression, local exhaust ventilation, or respiratory protection per the silica standard. OSHA's silica standard (29 CFR 1926.1153) specifies these engineering and administrative controls matched to exposure level. Standard N95 dust masks are insufficient for silica exposure;

outdoor work alone doesn't eliminate exposure in ventilated spaces; carbide blades don't reduce silica generation. The specific OSHA-required controls provide the protection needed.

36. B — Stopping work and contacting qualified asbestos abatement personnel. Asbestos exposure causes diseases (mesothelioma, asbestosis) emerging 20-50 years later, requiring specialized handling by qualified personnel with specific training, equipment, and protocols. Continuing with respiratory protection is insufficient for asbestos; capping and continuing doesn't address the exposure; client notification alone without stopping work continues the exposure.

37. A — Plenum-rated supports attached to structural members above the ceiling. Plenum installations require materials with appropriate fire ratings, including supports that won't contribute to smoke or flame spread in air-handling spaces. Attachment must be to structural members designed to support the loads, not ductwork, ceiling grid, or ceiling tiles. This combination provides code-compliant, reliable cable support.

38. D — Personal fall arrest attached to designated platform anchor. Boom lifts can experience whipping motion that ejects workers over guardrails, so OSHA requires personal fall arrest in addition to guardrails. The fall arrest must attach to the platform's designated anchor point, not to ground or adjacent structures. Safety shoes and guardrails alone, or adjacent structure anchors, don't provide adequate protection for boom lift operation.

39. C — Minimum 5:1 safety factor for overhead loads per industry standard. Overhead loads above occupied areas have greater failure consequences than non-overhead loads, warranting the higher 5:1 safety factor. No safety factor or inadequate factors create serious life-safety risks; manufacturer recommendations alone may not incorporate appropriate safety margins; 2:1 factors are inadequate for overhead applications. The 5:1 factor provides appropriate margin for dynamic loads, fatigue, and installation imperfections.

40. B — Coordinating blocking installation with general contractor or framing trade during construction to span multiple studs. Structural blocking must be installed during framing, before walls close with drywall. Coordination with the general contractor ensures blocking is in place when needed; installing after drywall is inadequate; metal plates on drywall don't engage studs; adhesive mounting provides inadequate capacity. The blocking must span multiple studs to distribute loads.

41. A — Positioning at 4-to-1 ratio, extending 3 feet above landing, securing against movement. Professional ladder use combines multiple requirements: the 4-to-1 rule for stable angle, 3-foot extension above landing for stable transition, and securing against movement during use. Flexibility in angle compromises stability; relying on ladder design without proper positioning creates falls; worker preference doesn't produce consistent safety. All three elements work together for safe ladder use.

42. D — Using plenum-rated materials throughout and maintaining plenum integrity. Plenum spaces require complete plenum-rated material use — cables, supports, tapes, ties, and firestops — to

prevent smoke and flame spread in air-handling spaces. Mixed materials create fire safety gaps; non-plenum materials violate code; any available materials ignores fire safety requirements. Consistent plenum-rated materials maintain code compliance and fire safety.

Domain C — Installing Audiovisual Systems

43. B — Systematic rack design with equipment placement planning, airflow management, cable management, and power distribution planning. Professional rack builds integrate multiple design considerations — equipment placement for airflow and service access, cable management for maintenance, and power distribution for reliability. Installing in any order or by delivery sequence creates poor outcomes; any mounting hardware may not properly secure equipment. Systematic design produces reliable, serviceable racks.

44. A — Systematic approach with proper cable routing, strain relief, labeled cables, and maintained bend radius. Professional cable management combines multiple practices — routing to avoid interference, strain relief to prevent connector damage, labeling for identification, and bend radius maintenance for signal integrity. Ad-hoc cable management or improper techniques (electrical tape, unsupported runs) create maintenance problems and signal issues.

45. C — Maintaining front-to-back airflow paths with blanking panels and proper equipment spacing. Professional airflow management matches the rack's designed airflow pattern with appropriate blanking panels preventing hot exhaust recirculation and equipment spacing supporting proper cooling. Tight packing prevents airflow; rear-mounted fans alone don't address airflow paths; room air conditioning cannot compensate for rack-level airflow problems.

46. D — Using XLR connectors, balanced cables with shield, proper pin assignments per AES convention. Professional balanced audio requires coordinated implementation — XLR connectors for reliable connection, balanced cables with proper conductor count and shield, and correct pin assignments (Pin 1 ground, Pin 2 hot, Pin 3 cold). Unbalanced connections lose noise rejection; inadequate shielding allows interference; incorrect pin assignments can reverse polarity.

47. B — Providing 48V DC through balanced audio cables with compatible microphone verification. Phantom power delivery requires matching microphone requirements (some don't need phantom power or can be damaged by it), correct voltage (48V DC standard), and proper cable type (balanced audio cables). Unverified phantom power can damage certain microphones; 24V DC may not adequately power some microphones; providing phantom only when required after testing delays verification.

48. A — Sizing amplifier at approximately 125% of total tap load with transformer at each loudspeaker. Professional 70V systems provide amplifier headroom at 125% of tap load (or tap load at 80% of amplifier capacity) with transformers at each loudspeaker stepping 70V down to loudspeaker voltage. 100% matching leaves no headroom; series connections don't support 70V systems; 200% tap load exceeds amplifier capacity causing damage.

49. C — Maintaining 0.5-inch maximum untwist at termination with proper termination tools and verification. Cat6A termination requires preserving cable pair geometry through specific untwist limits (0.5 inches maximum), proper termination tools matching the jack manufacturer, and verification through certification testing. Excessive untwist degrades high-frequency performance; Cat5e procedures don't meet Cat6A requirements; untested terminations may not meet specification.

50. B — Using 75-ohm cable for video applications with appropriate compression terminations. Video applications require 75-ohm coaxial cable with compression terminations providing weatherproof mechanical retention. Using any coaxial type may cause impedance mismatches; RJ45 terminations don't work with coaxial cable; splicing without connectors produces unreliable connections. Professional video coaxial installation uses the specific combination appropriate for video.

51. D — Cat6A cable within 100-meter specification with verified category performance. HDBaseT specifications require Cat6A cable within 100-meter distance with verified category performance for reliable 4K60 transmission. Lower category cable may work at reduced bandwidth; exceeding 100 meters produces signal problems; unterminated cables cannot be used; verified performance through certification confirms specification compliance.

52. A — Verifying all devices in the signal path support compatible HDCP versions matching the content requirements. HDCP compatibility requires end-to-end matching — every device in the path must support the required HDCP version for the specific content. One non-compliant device breaks the entire path; assuming all modern equipment supports HDCP 2.2 is incorrect; end-to-end testing without path verification misses the fundamental compatibility requirement.

53. C — Allowing automatic EDID exchange via DDC with troubleshooting capability if mismatches occur. Modern EDID systems work automatically through the DDC channel, with troubleshooting capability when automatic exchange produces incompatibilities. Manual entry requires specific device capability; disabled EDID prevents automatic adjustment; default EDID may not match specific displays. Automatic EDID with troubleshooting support handles most scenarios effectively.

54. B — Selecting fiber type (OM3, OM4, single-mode) per distance and bandwidth, proper cleaning, bend radius maintenance, and certification testing. Professional fiber installation requires multiple integrated practices — matching fiber type to application, maintaining cleanliness critical for optical performance, respecting bend radius to preserve glass geometry, and verifying performance through certification testing. Missing any element compromises installation quality.

55. D — Dedicated or properly segmented network with appropriate QoS and switch configuration. Dante audio networking requires low-latency, reliable network delivery achieved through dedicated networks or proper QoS segmentation, with switch configuration supporting timing requirements. General-purpose Ethernet without QoS produces audio dropouts; any existing

network may lack capability; wireless networks have latency and reliability issues for professional audio.

56. B — Coordinating VLANs, IP addressing, QoS, and security with client IT department. AV network integration with client infrastructure requires IT coordination across multiple technical dimensions. Sharing general office networks produces traffic conflicts; wireless connections may not support requirements; default DHCP doesn't address network architecture needs. Professional IT coordination produces integrated, secure, performant networks.

57. A — Matching baud rate, data bits, parity, stop bits between controller and device. RS-232 serial communication requires matching these four parameters between connected devices. Any serial cable may not be correct; Ethernet substitution requires different physical connections; default settings may not match specific device requirements. Matching the four parameters is fundamental to RS-232 communication.

58. C — Calibrating to D65 white point, gamma 2.2 for standard video content, verified with measurement equipment. Professional video calibration uses industry-standard targets (D65, gamma 2.2) with measurement verification. Default display settings vary and may not match standards; manufacturer recommendations may not match content calibration standards; maximum brightness compromises color accuracy. Standard calibration with measurement produces predictable, accurate display.

59. D — Calculating throw distance using throw ratio, accounting for keystone, aligning with screen. Professional projector installation requires throw ratio calculation for positioning, keystone consideration for image geometry, and screen alignment for proper presentation. Arbitrary throw distances produce wrong image sizes; brightness maximization compromises color and contrast; physical access considerations must balance with image quality requirements.

60. B — Using measurement microphones, room analysis, and systematic equalization approach. Professional audio calibration combines objective measurement (calibrated measurement microphones) with room analysis and systematic equalization based on measurement data. Calibrating at loud levels produces hearing damage and inaccurate results; preset equalization ignores specific room response; ear-based adjustments without measurement produce inconsistent outcomes.

61. A — Establishing reference levels, maintaining unity gain through the chain, and calibrating with measurement. Professional audio level management establishes reference levels matching content, maintains unity gain through processing (avoiding cumulative gain errors), and verifies through measurement. Loud signals produce distortion; quiet signals have poor signal-to-noise ratio; inconsistent levels throughout the signal chain produce unpredictable output.

62. D — AEC calibration accounting for room acoustics, microphone placement, and loudspeaker positioning. Professional AEC setup requires calibration matched to specific room conditions — acoustics, microphone placement affecting pickup patterns, and loudspeaker positioning affecting

reference signals. Disabled AEC produces echo for far-end participants; default settings don't match specific rooms; microphone mute alternatives don't provide continuous conferencing.

63. C — Systematic certification of Cat6A cabling testing insertion loss, return loss, NEXT, ANEXT, and other parameters. Professional Cat6A installation verification requires parametric certification testing demonstrating compliance with category specifications. Testing only when problems occur catches issues after installation; untested cables may work marginally and fail later; continuity-only testing doesn't verify high-frequency performance. Parametric certification provides confidence in performance.

64. B — Selecting cable infrastructure supporting the required bandwidth for the content format. Digital video bandwidth requirements vary substantially between resolutions and formats (1080p60 8-bit at 4.5 Gbps vs. 4K60 10-bit HDR at 24 Gbps). Using any HDMI cable may not support the bandwidth; lower-grade cable produces signal failure with high-bandwidth content; assuming cable support without verification creates unreliable systems.

65. A — Matching PoE source and device power classes (basic PoE, PoE+, PoE++) with verification. Professional PoE deployment matches source class to device requirements with verification of adequate power delivery through cable losses. Mismatched classes result in underpowered or undelivered power; higher-class sources waste capacity; unregulated power can damage devices. Matched classes with verification produce reliable operation.

66. D — Integration with bidirectional IP-based control, tested user interface, appropriate programming. Professional control system installation integrates bidirectional IP control (supporting status feedback), tests the user interface from the user perspective, and applies programming appropriate to the specific system. Any control protocol may not match system needs; IR-only misses status feedback; defaults may not match specific requirements.

67. C — VLANs coordinated with IT, with appropriate QoS, security, and traffic isolation. Professional AV network segmentation uses VLANs coordinated with client IT, providing traffic isolation, appropriate QoS for real-time AV, and security matching policies. Mixed traffic creates performance and security problems; flat networks don't provide needed segmentation; separate physical networks cost more and may not be necessary.

68. B — Coordinating gain stages to avoid clipping while maintaining signal-to-noise ratio. Professional audio gain structure balances the competing needs of avoiding clipping (distortion from excessive levels) and maintaining signal-to-noise ratio (avoiding excessive noise from inadequate signal). Maximum gain at every stage produces clipping; maximum input trim alone doesn't address throughout the chain; single gain stage misses gain management opportunities.

69. A — Systematic verification of source-destination routing against design documentation. Professional signal routing verification compares actual routing against design documentation systematically. Trial and error is inefficient and may miss issues; verifying only final output misses

intermediate routing issues; problem-driven verification handles only reported issues. Systematic verification catches issues proactively.

70. D — Waveform monitor and vectorscope verification of amplitude, sync, and chrominance against standards. Professional video signal verification uses measurement instruments to verify amplitude (waveform monitor), chrominance (vectorscope), and sync against standards. Visual inspection misses parametric issues; problem-driven testing doesn't establish baseline; specification sheets don't verify installed performance. Measurement verification confirms actual performance.

71. C — Verifying parallel/series configuration maintains amplifier-compatible impedance. Professional loudspeaker impedance matching verifies that series or parallel configurations produce impedance within the amplifier's operating range. Connecting without verification can produce below-minimum impedance damaging amplifiers; highest impedance may not match specific systems; mixing impedances creates unpredictable results.

72. B — Maintaining cable resistance below 5% of loudspeaker impedance through gauge selection. Professional loudspeaker cable selection ensures cable resistance stays below 5% of loudspeaker impedance (0.40 ohms for 8-ohm loudspeaker), achieved through appropriate wire gauge for the cable length. Any gauge may produce excessive resistance; lightest gauge produces highest resistance; generic speaker cable without consideration of distance and gauge may be inadequate.

73. D — Single-point grounding connection to building ground system. Professional rack grounding uses single-point grounding connected to the building ground system, providing consistent ground reference and avoiding ground loops. Outlet-only grounding may not provide adequate AV grounding; floating grounds create safety issues; multiple grounds create ground loops that produce noise.

74. A — 10 Gbps Ethernet for SDVoE, appropriate switches, QoS, multicast configuration, and IT coordination. Professional SDVoE installation requires 10 Gbps Ethernet infrastructure, switches supporting multicast with appropriate configuration, QoS for video traffic, and coordination with IT. Lower speeds cannot carry uncompressed 4K60 video; unconfigured switches cannot handle multicast video; wireless lacks needed bandwidth.

75. C — Calibrating to D65 (6500K) per video content standards. D65 is the international standard for video content calibration, matching the color temperature under which content is created. 5500K and 9300K don't match video content standards; maximum brightness compromises color accuracy. D65 calibration produces accurate color reproduction matching content creators' intent.

76. C — Proper fiber cleaning kits and procedures before every termination and inspection. Professional fiber work requires proper cleaning with appropriate kits before every termination and inspection. Paper towels and compressed air alone are inadequate; skipping cleaning produces signal problems. Cleanliness is critical for fiber optic performance because contamination on polished connectors causes insertion loss and reflection.

77. B — Summing all loudspeaker taps and sizing amplifier at 125% of total load. Professional 70V tap load calculation sums all loudspeaker tap selections and sizes amplifier at 125% of the total (or tap load at 80% of amplifier) for operating headroom. Unlimited loudspeaker count can exceed amplifier capacity; 100% matching leaves no headroom; 200% exceeds amplifier capacity.

78. A — Following the schedule's specified cable types, routes, sources, and destinations with verification. Professional wiring schedule execution follows all specified parameters — cable types matching the schedule, routes as designed, and sources/destinations as documented, with verification confirming accurate execution. Using available cable types may miss specific requirements; installer-preferred routing bypasses design intent; source-destination-only execution misses cable type requirements.

79. C — Using appropriate fiber type (OM3, OM4, single-mode) matching distance and bandwidth requirements. Different fiber types suit different applications — OM3 for 300m 10Gbps, OM4 for 400m 10Gbps, single-mode for longer distances. Any available fiber may not meet specific needs; single-mode for short distances wastes capability and cost; multi-mode for long distances cannot support longer runs. Matching fiber type to application produces reliable, cost-effective installations.

80. C — Coordinating environmental conditions, power, and network integration with adjacent data infrastructure. AV racks adjacent to data infrastructure require coordination on shared environmental conditions (HVAC, humidity), power systems, and network integration. Separated grounds create ground loop issues; network-only consideration misses power and environmental factors; complete separation may miss coordination opportunities.

81. B — Coordinating with acoustic consultants or applying fundamental acoustic principles for room use. Professional acoustic treatment matches room use through consultant coordination or application of acoustic principles matched to use. Ignoring acoustics produces poor audio experience; maximum absorption produces dead rooms inappropriate for most uses; reflective surfaces alone produce problematic acoustics.

82. D — Ensuring adequate signal levels through gain staging and verifying noise floor through measurement. Professional signal-to-noise ratio verification combines adequate signal levels (through gain staging) with low noise floor (verified through measurement). Maximum signal levels produce distortion; minimum signal levels produce poor SNR; default levels without verification produce unknown performance.

83. A — Proper AEC calibration, ceiling microphone placement, appropriate loudspeaker positioning, and gain structure. Professional audio conferencing installation integrates AEC calibration, microphone placement optimizing pickup, loudspeaker positioning supporting AEC reference, and coordinated gain structure. Default settings don't match specific rooms; arbitrary microphone placement compromises pickup; auto-gain alone misses the integrated system design.

84. C — Precise mechanical alignment, color matching across displays, appropriate processor configuration. Professional video wall installation combines mechanical precision (eliminating visible gaps), color matching across displays (avoiding tile-visible differences), and video processor configuration for proper content display. Single-display alternatives may not meet requirements; manual alignment lacks precision; mismatched displays produce visible tiling.

85. D — Systematic labeling scheme at both ends with consistent format and coordination with documentation. Professional cable identification uses systematic labeling at both ends of every cable, with consistent format coordinated with wiring schedule and documentation. Color coding alone has limited identification capacity; manufacturer markings don't identify the specific cable in the installation; verbal identification doesn't persist; systematic labeling supports service work throughout the installation.

86. B — Systematic troubleshooting starting with network connectivity (ping), power, physical connection, then device-specific diagnostics. Professional troubleshooting of non-responsive networked devices follows a systematic sequence addressing most common causes first — network connectivity via ping, power, physical connections, then device-specific diagnostics. Immediate replacement skips diagnosis; system reboots address symptoms without root cause; firmware reinstallation is invasive and premature.

87. A — Using front-to-back airflow with adequate intake and exhaust, blanking panels, temperature monitoring, and cooling capacity sized for heat loads. Professional rack heat management integrates multiple practices — designed airflow, blanking panels preventing recirculation, temperature monitoring for awareness, and cooling capacity matching heat loads. Top exhaust alone doesn't establish front-to-back pattern; ignoring heat produces equipment failure; sealed racks trap heat.

88. C — Precise physical alignment minimizing digital correction, with verification using test patterns. Professional projector alignment prioritizes physical alignment because digital correction (keystone, geometry) always reduces image quality. Test patterns verify alignment across the full image. Default keystone correction may be visible; manual adjustment without tools lacks precision; room-geometry positioning may not support optimal alignment.

Domain D — Perform Systems Close-Out

89. B — Systematic verification per ANSI/AVIXA 10:2013 A-Level, B-Level, and C-Level items. The ANSI/AVIXA 10:2013 verification framework provides structured verification appropriate to installation complexity through A-Level (essential), B-Level (specialized), and C-Level (unique) items. Testing only critical items misses the structured verification; user acceptance alone doesn't verify technical performance; manufacturer testing focuses on individual components rather than integrated system.

90. D — Distinguishing substantive from cosmetic deficiencies, documenting both with tracking and resolution. Professional punch list management addresses both deficiency types while

distinguishing their priority — substantive deficiencies affect system function, cosmetic affect appearance. Ignoring or selective focus leaves deficiencies unresolved; documentation without priority distinction treats all items equally. Professional practice produces complete resolution with appropriate prioritization.

91. A — Capturing actual installed configuration including changes, with drawings, wiring updates, and configuration records. Professional as-built documentation captures the installation as actually built, including all changes from original design, updated drawings reflecting actual routing, and configuration records for settings and software. Copying original drawings unchanged misrepresents the installation; minimal documentation doesn't support service; waiting for problems produces gaps in documentation.

92. C — Brief focused sessions on essential operations with hands-on practice and take-home reference materials. Professional end-user training uses brief focused sessions (better retention than extended sessions), hands-on practice (better retention than observation), and take-home materials (supporting use after training). Reference manuals alone don't develop operational skill; single sessions miss role-specific needs; video training without instructor lacks customization.

93. B — Documenting warranty effective dates, coverage terms, and service contacts tied to substantial completion. Professional warranty documentation records specific dates, coverage scope, and service contact information, with warranty effective dates tied to substantial completion. Verbal confirmation lacks durability; manufacturer documentation alone doesn't record installation-specific dates; client-prepared documentation lacks installer information.

94. D — Formal sign-off by authorized client representative with review of completed work and acceptance. Professional client sign-off requires authorized representative (with formal signing authority), reviewed work (with walk-through), and documented acceptance. Any representative without signing authority may not bind the client organization; installer signatures don't represent client acceptance; electronic acknowledgment without review lacks the review component.

95. A — Defined response times, scheduled preventive maintenance, priority service, and remote support matched to client needs. Professional service agreements combine multiple elements tailored to specific client needs. Generic agreements may not match specific situations; reactive-only repair misses preventive value; skipping service agreement discussion misses continuing relationship opportunity.

96. C — Comprehensive package including as-builts, manuals, warranty documentation, training materials, and verification reports. Complete project closeout delivers all materials supporting the installation's service life — as-built documentation, operation manuals, warranty terms, training support, and performance verification. Partial packages leave support gaps; individual elements alone don't support the full range of future needs.

97. B — Formal certificate documenting substantial completion milestone with beneficial use confirmation. Professional substantial completion documentation includes formal certificate

confirming the milestone and beneficial use status. Verbal agreements lack durability; email acknowledgment may not capture all required elements; invoices address billing rather than milestone achievement. Professional practice uses formal documentation.

98. A — Annual baseline with more frequent visits for high-use environments, integrated with service agreement. Professional preventive maintenance uses annual baseline (capturing most preventive needs cost-effectively) with adjustment for high-use environments and integration with service agreements. Monthly visits produce excessive cost for most installations; reactive-only misses preventive value; universal quarterly may be excessive or insufficient depending on application.

99. D — Essential functions with screenshots and simple instructions distributed at training. Professional quick reference guides provide essential function coverage with visual support (screenshots) and accessible writing, distributed during training when users benefit from immediate availability. Technical manuals overwhelm most users; no reference materials leave users without ongoing support; manufacturer documentation typically doesn't match installation-specific operation.

100. B — Installer, client representative, and general contractor when applicable, with formal documentation. Professional walk-throughs include all relevant parties — installer (demonstrating work), client representative (reviewing), and general contractor (when construction-context work is involved). Single-party walk-throughs miss other perspectives; formal documentation supports the milestone record.

101. D — Detailed verification report documenting tests performed, results, and any exceptions. Professional verification documentation records specific tests, measured results, pass/fail status, and any exceptions requiring attention. Pass/fail only doesn't support troubleshooting or future reference; performance confirmation without detail lacks specificity; verbal acknowledgment doesn't create durable record.

102. A — Tied to substantial completion when the client takes beneficial use. Warranty effective dates tied to substantial completion align coverage with system service commencement. Earlier dates (contract signing, equipment delivery) reduce client warranty value by counting warranty time before system service; final payment tying creates timing misalignment with system use.

Domain E — Conducting Ongoing Project Responsibilities

103. C — Written documentation in daily reports with updates to as-built drawings. Professional field engineering documentation uses written daily reports capturing decisions, with updates flowing to as-built drawings for permanent record. Verbal reports don't persist; personal notes aren't accessible to others; photographs alone don't capture decision reasoning. Written documentation with as-built updates creates durable, accessible record.

104. B — Systematic daily reports documenting activities, labor, materials, issues, and coordination items. Professional daily progress reports systematically capture all project activity categories —

work performed, labor expended, materials consumed, issues encountered, and coordination items. Weekly summaries miss daily detail; problem-only reporting doesn't create work record; request-only reporting creates gaps when reports aren't requested.

105. D — Routing scope changes through change order process with project manager coordination and formal approval. Professional scope management routes changes through formal processes — project manager coordination, cost and schedule impact assessment, and client approval before implementation. Absorbing changes produces unauthorized scope expansion; ignoring changes may miss legitimate needs; informal acceptance lacks authorization.

106. A — Active participation in coordination meetings with the general contractor's superintendent and structured communication with other trades. Professional trade coordination actively participates in structured coordination mechanisms. Avoiding other trades doesn't eliminate coordination needs; unsupervised direct communication lacks coordination authority; complete delegation disconnects installation team from coordination.

107. C — Formal written RFI documenting the question, field conditions, and proposed resolution if applicable. Professional RFI submission uses formal written format capturing the question, supporting field information, and installer's proposed resolution where applicable. Informal emails don't create structured records; verbal questions don't capture the exchange; waiting for discovery leaves issues unresolved and undocumented.

108. B — Formal reporting through appropriate channels for engineering review and authorized resolution. Professional handling of field-discovered design issues reports through appropriate channels (typically RFI or field change order) for engineering review and authorized resolution. Field improvisation bypasses design authority; waiting for discovery leaves the issue unresolved; as-built-only documentation doesn't address the underlying design question.

109. A — Continuous "clean as you go" practice throughout the day with continuous debris management. Professional jobsite cleanup integrates debris management into ongoing installation work rather than batch cleanup. End-of-day cleanup allows significant accumulation; weekly cleanup creates worse accumulation; project-completion-only cleanup creates major cleanup burden and throughout-project safety/aesthetic issues.

110. D — Coordinated through the general contractor's construction waste management system. Professional construction debris management uses the GC's waste infrastructure designed for construction waste volumes and types. The GC's system typically handles general waste, recyclables, and hazardous materials appropriately. Self-provided dumpsters create coordination issues; regular trash service isn't appropriate for construction waste volumes.

111. C — Proactive reporting to project manager as soon as potential delay is identified. Professional delay management reports proactively as soon as potential delay is identified, even before impact is fully quantified. Proactive reporting enables mitigation planning; waiting for missed milestones

eliminates response options; meeting-only reporting may be too late; cause-confirmation delays produce surprise schedule impacts.

112. B — Reporting through the project manager who can coordinate with the general contractor. Professional handling of trade conflicts routes through appropriate coordination authority — the project manager who can coordinate with the general contractor. Direct confrontation damages working relationships; ignoring conflicts doesn't resolve them; formal grievances are inappropriate for routine coordination issues.

113. A — Safety orientation, daily briefings, appropriate PPE, fall protection compliance, and hazard reporting. Professional safety management combines multiple integrated practices addressing training, ongoing awareness, physical protection, specific hazard mitigation, and reporting. OSHA minimums establish floors but may not address site-specific hazards; reactive safety responds to incidents rather than preventing them; relying on general contractor alone doesn't satisfy installer's professional responsibility.

114. D — Water suppression, local exhaust ventilation, or respiratory protection per OSHA silica standard. OSHA silica standard (29 CFR 1926.1153) requires specific engineering and administrative controls matched to exposure level. Standard N95 masks are insufficient; outdoor performance alone doesn't address all work; carbide blades don't reduce silica generation. The specific OSHA-required controls provide appropriate protection.

115. C — Either performing firestopping with materials matching wall ratings or coordinating with qualified firestop contractor. Professional firestopping on AV penetrations requires proper materials matching wall ratings, installed correctly. The installer must either have the training, materials, and authority to firestop correctly, or coordinate with qualified firestop contractors. Generic silicone doesn't meet code; complete deferral without coordination may leave penetrations unaddressed; temporary measures violate code.

116. B — Immediate work stoppage and contact with qualified asbestos abatement personnel. Professional response to asbestos discovery stops work immediately and contacts qualified abatement contractors. Asbestos exposure causes diseases emerging decades later, making specialized handling by qualified personnel essential. PPE-only approach, capping, or client-only notification all continue or compound exposure.

117. A — Systematic investigation to understand why the failure occurred, documented resolution, and recurrence prevention measures. Professional root-cause analysis seeks fundamental causes, documents complete resolution, and implements recurrence prevention. Component replacement may address symptom without cause; responsibility determination doesn't prevent recurrence; insurance-only reporting misses learning opportunity.

118. D — Monitoring end-of-life indicators and proactive refresh planning with client budgeting support. Professional end-of-life management monitors indicators (service frequency, reliability, parts availability) and plans refresh proactively with client budgeting support. Waiting for

catastrophic failure creates service disruption; fixed-period replacement may be premature or late; continuing until failure produces emergency situations.

119. C — Factory reset or data wipe of configuration data, coordinated with RoHS/WEEE disposal approach. Professional decommissioning includes data protection (factory reset/data wipe of configuration data to prevent sensitive information exposure) combined with environmentally-appropriate disposal per RoHS/WEEE guidance. Manufacturer return may not handle data; donation doesn't address data security; storage delays proper disposal.

120. B — Structured resolution through design team, general contractor, and affected trades. Professional BIM coordination conflict resolution uses structured process involving all relevant parties. Field improvisation bypasses coordination authority; ignoring conflicts delays resolution; project cancellation is inappropriate response to coordination issues that should be resolvable.

121. D — Formal change order documenting scope modification, cost impact, schedule impact, and obtaining client approval. Professional change order submission captures all change elements formally with explicit client approval. Verbal agreements don't create durable records; informal emails may miss elements; delayed submission creates documentation gaps and payment risk.

122. A — Rigorous change order compliance with no work performed outside original contract without authorized change orders. Professional unauthorized work prevention requires rigorous change order discipline — no work performed beyond contract scope without formal change order authorization. Absorbing small changes establishes precedent for scope creep; deferred invoicing may not be recoverable; flexible scope management typically produces unauthorized work.

123. C — Service agreements, preventive maintenance, proactive communication, and continuous relationship management through service life. Professional long-term client relationships integrate multiple elements — service agreements providing structured service, preventive maintenance sustaining equipment, proactive communication building trust, and relationship management through full service life. One-time installation missing ongoing service; limited contact misses relationship opportunities; problem-only contact creates transactional rather than relational engagement.

124. B — Documenting causation carefully with supporting evidence to support appropriate allocation of responsibility. Professional delay causation determination produces careful documentation with supporting evidence enabling appropriate allocation. Absorbing all delays sacrifices cost recovery; claiming all trade-caused creates disputes; blaming other parties damages relationships without evidence. Documented causation supports appropriate resolution.

125. A — Ongoing service relationship, preventive maintenance, component tracking, refresh planning, and eventual decommissioning coordination. Professional service life management spans the complete installation lifecycle with ongoing service, preventive maintenance, component tracking, refresh planning, and decommissioning coordination. Single installation event approach misses

service life opportunities; reactive-only misses preventive value; no ongoing involvement severs the professional relationship that sustains business.