PRACTICE EXAM 18: CTS-D SIMULATION (110 QUESTIONS)

Time Limit: 180 minutes | Passing Score: 70%

1. A conference room design includes displays, DSP, amplifiers, and ceiling speakers. The missing element for video conferencing is:

A. Additional displays

B. Camera, codec, and microphone system

C. Subwoofer

D. Additional amplifier channels

2. A specification includes power schedule, equipment list, and construction drawings. The missing closeout deliverable is:

A. Bid documents

B. Programming phase report

C. Schematic design narrative

D. As-built drawings, training records, and warranty documentation

3. A 70V system design shows amplifier, speakers, and tap settings. The missing reliability element is:

A. 25-33% amplifier headroom above total tap load

B. Backup amplifier

C. Speaker redundancy

D. Dual wiring to each speaker

4. A hybrid meeting room has camera, microphone, display, and codec. The missing acoustic element is:

A. Subwoofer for bass response

B. Surround speakers

C. AEC processing matched to room RT60

D. Additional microphones

5. A commissioning plan includes SPL measurements and functional testing. The missing verification element per AVSPV is:

A. Owner approval form

B. Documented pass/fail criteria for each measured item

C. Integrator self-certification

D. Equipment serial numbers

6. A boardroom design includes 85-inch display at 25 ft farthest viewing. DISCAS BDM requires 50-inch image height. The 85-inch display provides approximately 42 inches. The missing design correction is:

A. Brighter display

B. Higher resolution

C. Smaller room

D. Larger display or dual-display configuration meeting 50-inch height requirement

7. A network design for AV-over-IP includes switches and encoders/decoders. The missing network configuration is:

A. VLAN segmentation, QoS policies, and IGMP snooping

B. Additional bandwidth only

C. Consumer-grade switch upgrade

D. Cable replacement

8. A video conference room specification includes lighting, camera, and display. The missing lighting parameter is:

A. Maximum brightness only

B. Dimming capability only

C. CRI 90+ and 4000-5000 K tunable white for camera performance

D. Color temperature only

9. A punchlist documents 15 items but lacks reference information. The missing documentation element is:

A. Owner signature

B. Specification section references for each item defining acceptance criteria

C. Integrator response timeline

D. Photograph of each item

10. An AV equipment room design includes racks and power distribution. The missing MEP coordination is:

A. Equipment aesthetic review

B. Cable routing plan only

C. Display specifications

D. HVAC cooling sized to BTU/hr heat load from AV equipment

11. A performing arts center specification includes loudspeaker arrays and amplifiers. The missing acoustic coordination is:

A. Variable acoustic treatment supporting different performance types

B. Fixed absorption only

C. No acoustic treatment needed

D. Carpet specification

12. A specification includes cable types, pathways, and equipment. The missing professional labeling requirement is:

A. Color coding only

B. Handwritten labels

C. RP-38-17 heat-shrink printed labels at both cable ends

D. Adhesive tape labels

13. A courtroom AV design includes evidence displays and recording system. The missing compliance element is:

A. Larger displays

B. ADA accessibility including assistive listening and accessible positioning

C. Premium audio

D. Video wall upgrade

14. A fire-rated wall has AV conduit penetrations. The construction drawing omits the fire protection detail. The missing specification is:

A. Standard caulking note

B. Foam insulation detail

C. Painted fire coating

D. UL-listed firestop assembly for each rated penetration

15. A control system design includes touch panels and device control modules. The missing programming specification is:

A. Use-case operational scenarios defining system behavior per mode

B. Manufacturer part numbers only

C. Cable schedule only

D. Equipment list only

16. A campus AV-over-IP deployment includes room equipment and local switches. The missing backbone element is:

A. Consumer Wi-Fi access points

B. Additional room displays

C. Inter-building fiber backbone with 10+ Gbps capacity

D. Additional room microphones

17. An outdoor amphitheater design includes loudspeakers and amplifiers. The missing environmental specification is:

A. Indoor-rated equipment

B. IP65+ weather-rated equipment with corrosion-resistant hardware

C. Consumer speakers

D. Standard commercial mounting

18. A healthcare video conferencing design includes codec and display. The missing regulatory requirement is:

A. Consumer-grade platform

B. Standard office security

C. Higher resolution camera

D. HIPAA-compliant encrypted transport with access controls

19. A conference room design includes display, sources, and switching. The missing user experience element is:

A. Simple control system with preset scenarios for common use cases

B. Advanced feature menus

C. Multiple remote controls

D. Detailed technical interface

20. A specification includes equipment list and power schedule. The missing structural coordination deliverable is:

A. Equipment brochures

B. Verbal weight estimate

C. Equipment weight schedule with point loads per mounting location

D. General category weights

21. An AV design for a classified facility includes standard commercial equipment. The missing security specification is:

A. Stronger passwords

B. Additional cameras

C. Extra encryption layer

D. TEMPEST-rated equipment with isolated networks per federal requirements

22. A 24/7 digital signage specification includes content management and network connectivity. The missing display specification is:

A. Consumer 4K television

B. Commercial-grade continuous-duty displays with thermal management

C. Gaming monitors

D. Home theater displays

23. A hotel ballroom design includes audio, video, and lighting systems. The missing operational element is:

A. Preset scene control enabling one-touch reconfiguration between event types

B. Manual wiring changes per event

C. Separate systems per event type

D. Consumer-grade simplification

24. A broadcast control room design includes reference monitors and production switcher. The missing synchronization element is:

A. NTP server

B. GPS antenna

C. PTP grandmaster clock for sub-microsecond ST 2110 synchronization

D. Manual time synchronization

25. A 30-seat conference room design includes ceiling speakers and amplifier. The missing acoustical verification target is:

A. Maximum SPL specification

B. Stereo imaging target

C. Bass response target

D. ACU Standard (±3 dB) coverage uniformity verification

26. A paging system specification includes amplifier, speakers, and zones. The missing life safety integration is:

A. Background music source

B. Emergency audio override coordinated with fire alarm system

C. Volume control per zone

D. Microphone input

27. A multi-room AV-over-IP system includes encoders, decoders, and switches. The missing multicast management feature is:

A. IGMP snooping preventing multicast flooding

B. Additional bandwidth

C. Faster switch processors

D. Redundant power supply

28. A worship space design includes line arrays and subwoofers. The missing intelligibility specification is:

A. Maximum SPL target

B. Bass extension specification

C. STI 0.70+ verification requirement for speech reinforcement

D. Frequency response flatness

29. A specification for a boardroom includes premium equipment and confidential meeting support. The missing security element is:

A. Standard office door lock

B. Guest Wi-Fi access

C. Consumer video conferencing

D. Encrypted transport, isolated network, and physical disconnect for cameras/microphones

30. A training room design includes presentation display and instructor microphone. The missing hybrid capability element is:

A. Camera, codec, and BYOD connectivity for remote participants

B. Additional display only

C. Wireless microphone only

D. Recording capability only

31. An AV equipment rack design shows equipment layout but no environmental specification. The missing rack element is:

A. Equipment color specification

B. Rack brand preference

C. Ventilation specification with thermal monitoring requirements

D. Rack finish selection

32. A lobby digital signage design includes displays and content management. The missing visibility specification for daylight environment is:

A. Standard 300 nit displays

B. 700+ nit high-brightness displays rated for daylight viewing conditions

C. Consumer televisions

D. Projector-based signage

33. A university lecture hall design includes projection, audio, and control. The missing distance learning element is:

A. Larger projection screen

B. Premium audio upgrade

C. Additional seating

D. Camera, streaming encoder, and LMS integration for remote students

34. A specification includes all technical requirements but omits bidding qualifications. The missing contractor specification is:

A. CTS-certified staff, project experience, and manufacturer certifications

B. Lowest price requirement

C. Single-bidder preference

D. Self-certification form

35. A conference room AV design includes HDMI sources and displays. The missing content protection specification is:

A. VGA backup connections

B. DVI converters

C. HDCP 2.2 compliance throughout the signal chain

D. Component video output

36. A 4K video wall specification includes panels and processor. The missing viewing distance calculation is:

A. Resolution specification only

B. Pixel pitch selection appropriate for closest viewing distance using ×3,000 rule

C. Panel brand selection

D. Bezel width specification

37. An AV system closeout package includes as-built drawings, user guides, and training records. The missing credential transfer is:

A. Equipment serial numbers

B. Manufacturer contacts

C. Service contract

D. Administrative passwords and software licenses transferred to owner

38. A conference room design includes display and DSP. The missing ground-loop prevention measure is:

A. Balanced interconnections with proper single-point grounding

B. Additional cables

C. Larger amplifiers

D. Different display brand

39. A multi-zone audio design includes DSP and amplifiers. The missing coverage design element is:

A. Speaker brand selection

B. Amplifier brand selection

C. Ceiling speaker layout with spacing calculations per ACU requirements

D. Cable brand selection

40. A specification includes equipment and installation requirements. The missing commissioning timeline element is:

A. Equipment delivery date

B. AVSPV commissioning duration integrated into construction schedule before substantial completion

C. Integrator mobilization date

D. Equipment rental period

41. A performing arts center design includes loudspeakers and amplifiers for the main hall. The missing backstage element is:

A. Ticket printer

B. Box office display

C. Lobby signage

D. Intercom system with party-line communication for stage management

42. A hospital nurse station design includes displays and communication. The missing clinical integration is:

A. Nurse-call system integration with patient monitoring and hospital information systems

B. Consumer tablet

C. Standalone display

D. Background music

43. A conference room has 8 ceiling microphones with no mixer processing. The missing audio management element is:

A. Additional microphones

B. Automatic microphone mixer maintaining unity NOM gain

C. Volume control

D. Graphic equalizer

44. A corporate campus design includes building-level AV systems. The missing campus-level management element is:

A. Individual building control rooms

B. Separate vendors per building

C. Centralized monitoring, control, and management across all buildings

D. Consumer management tools

45. A senior living common area design includes displays and audio. The missing accessibility specification is:

A. Premium audio

B. Maximum volume

C. Standard interface

D. Hearing loop, large-font display, simplified high-contrast interface

46. A specification for an AV equipment closet includes racks and power. The missing fire safety specification is:

A. Standard outlet

B. Smoke detection per code for rooms with concentrated electrical loads

C. Fire extinguisher only

D. Window ventilation

47. A 40-room conference center specification includes room-level equipment. The missing enterprise element is:

A. Individual room management

B. Room-specific IT configurations

C. Standardized configurations with centralized scheduling, monitoring, and management

D. Per-room unique equipment

48. A specification includes all technical requirements but omits sustainability. The missing energy management reference is:

A. ANSI/AVIXA AVSEM including scheduling and occupancy-based power management

B. NEC energy provisions

C. NFPA energy requirements

D. TIA sustainability standard

49. A video conferencing design includes codec and display at 25 ft viewing. The missing DISCAS verification for BDM is:

A. Display resolution check

B. Display brightness check

C. Display color space check

D. Image height ≥ 50 inches verification per BDM divisor 6

50. A control system design includes touch panels and device modules. The missing operational documentation is:

A. Equipment list

B. Source code, programming logic, and scenario documentation for owner

C. Manufacturer brochures

D. Cable schedule

51. A specification for a government public meeting room includes multi-camera production. The missing citizen accessibility element is:

A. Higher resolution cameras

B. Premium audio

C. Closed captioning, simultaneous streaming, and remote participant capability

D. Additional displays

52. A performance venue rigging design includes hanging points and equipment weights. The missing structural verification is:

A. Structural engineer approval with 10:1 safety factor for overhead occupied space

B. Installer visual inspection

C. Manufacturer weight rating

D. General contractor verbal confirmation

53. A AV-over-IP design includes encoders, decoders, and Gigabit switches. The missing network capacity for 10 simultaneous 4K streams is:

A. Additional Gigabit ports

B. Consumer switch upgrade

C. Faster encoders

D. 10 Gbps or higher uplinks to prevent aggregation bottleneck

54. A conference room design includes display, codec, and camera. The missing furniture coordination is:

A. Chair selection

B. Desk lamp placement

C. Table connectivity including floor box access, power, and cable management

D. Wall art placement

55. A specification for a recording studio includes monitoring and mixing equipment. The missing acoustic specification is:

A. Precision acoustic treatment with isolation, bass traps, and calibrated monitoring environment

B. Standard commercial ceiling tiles

C. Carpet only

D. Consumer acoustic panels

56. A specification includes equipment, installation, and commissioning requirements. The missing training specification is:

A. Single group session

B. Tiered training for end users, technical staff, and administrators with documented curriculum

C. Online tutorial link

D. User manual delivery only

57. A museum exhibit design includes interactive displays and content management. The missing operational specification is:

A. Consumer equipment replacement

B. Standard commercial warranty

C. Manual daily reset

D. Automated scheduling for daily operation cycles with thermal management for extended duty

58. A specification includes all system requirements but omits post-installation verification methodology. The missing reference standard is:

A. NEC

B. TIA-568

C. ANSI/AVIXA 10:2013 AVSPV performance verification framework

D. NFPA 72

59. A corporate lobby video wall design includes panels, processor, and mounting. The missing content delivery element is:

A. Centralized CMS with scheduled content, real-time data integration, and remote management

B. USB drive updates

C. Manual content loading

D. Local media player only

60. A design includes all room-level equipment and infrastructure. The missing project-level coordination document is:

A. Equipment brochure collection

B. AV infrastructure drawings coordinated with electrical and architectural plans

C. Manufacturer catalogs

D. Product comparison charts

61. A specification for a data center operations center includes displays and control surfaces. The missing reliability specification is:

A. Standard commercial warranty

B. Consumer-grade equipment

C. Manual backup

D. Redundant systems with UPS/generator backup and mission-critical failover

62. A conference room design includes DSP, speakers, and amplifier. The missing electrical coordination is:

A. Equipment aesthetic review

B. Amplifier brand

C. Isolated ground receptacles and dedicated circuits per the AV power schedule

D. Display brand selection

63. A specification includes equipment for 30 conference rooms. The missing enterprise IT coordination is:

A. Consumer networking

B. VLAN assignments, QoS policies, IP addressing, and security requirements across all rooms

C. Individual room networking

D. No network specification needed

64. A multi-use worship space design includes reinforcement system. The missing acoustic flexibility element is:

A. Variable acoustic treatment supporting both traditional and contemporary services

B. Fixed maximum absorption

C. No acoustic treatment

D. Portable acoustic panels

65. A specification includes all design documents and construction drawings. The missing specification phase deliverable is:

A. As-built drawings

B. Commissioning results

C. Post-occupancy report

D. Subtitle generation and self-check verification for subtitle options

66. A broadcast studio design includes cameras, switcher, and monitors. The missing on-air talent support is:

A. Teleprompter, in-ear monitoring, and color-accurate confidence monitors

B. Consumer displays

C. Standard office monitors

D. Gaming headsets

67. A specification for an outdoor pool area includes speakers and amplifiers. The missing environmental protection is:

A. Standard commercial mounting

B. Indoor-rated enclosures

C. IP65+ rated weather-resistant speakers with corrosion-resistant hardware

D. Consumer outdoor speakers

68. A conference room design includes ceiling speakers at 15 ft spacing with 10 ft ceiling. The coverage diameter is 12 ft per speaker. The missing design correction is:

A. Reduce spacing to match coverage geometry eliminating gaps between speakers

B. Increase amplifier power

C. Change speaker brand

D. Add subwoofer

69. A specification includes all technical requirements and commissioning plan. The missing warranty specification is:

A. Manufacturer default only

B. Integrator decides

C. No warranty needed

D. Parts and labor warranty with defined duration, start date, and coverage scope

70. A hybrid meeting room design includes all technical components. The missing user experience verification is:

A. Equipment brand review

B. Confirmation that remote participants receive equivalent experience to in-room participants

C. Cost optimization

D. Cable quality check

71. A 4K projection specification includes projector and screen. The missing ambient light specification is:

A. Maximum projector brightness

B. Screen gain upgrade

C. Ambient light control (motorized shading) to achieve specified ISCR

D. Higher resolution projector

72. An AV system design includes all room equipment and control. The missing IP documentation is:

A. IP address schedule, VLAN mapping, subnet assignments, and device naming convention

B. DHCP only

C. Integrator assigns addresses

D. No documentation needed

73. A specification for a hotel conference center with 30 rooms includes room-level design. The missing scalability element is:

A. Per-room unique configurations

B. Individual management per room

C. Consumer equipment

D. Infrastructure sized for current rooms plus documented growth capacity for expansion

74. A performing arts center orchestra pit design includes monitor speakers. The missing performer support is:

A. Single unified mix

B. Individual musician cue mixes with low-latency monitoring per position

C. Consumer headphones

D. Background music feed

75. A corporate R&D demonstration space includes presentation displays. The missing demonstration capability is:

A. Multi-source switching, recording, and flexible input infrastructure for prototype showcase

B. Single fixed display

C. Consumer webcam

D. Standard conference room setup

76. A specification includes all construction requirements but omits the energy standard reference. The missing sustainability specification is:

A. NEC energy provisions

B. NFPA environmental requirements

C. TIA sustainability standard

D. ANSI/AVIXA AVSEM energy management standard

77. A specification for a 500-seat auditorium includes loudspeakers and amplifiers. The missing ADA compliance element is:

A. Premium audio upgrade

B. Larger displays

C. Assistive listening system scaled to seating capacity per ADA requirements

D. Additional microphones

78. A conference room design includes all AV components and control. The missing coordination with furniture vendor is:

A. Chair manufacturer contact

B. Table connectivity including floor box alignment, power, and cable management integration

C. Desk finish selection

D. Wall color coordination

79. A specification includes technical requirements and construction documents. The missing substitution procedure is:

A. Formal request with performance documentation due 14 days before bid

B. Any equivalent accepted

C. No substitutions permitted

D. Integrator decides

80. A multi-building campus AV design includes building systems. The missing time synchronization is:

A. Manual clock setting

B. Consumer clocks

C. NTP only

D. NTP/PTP infrastructure providing synchronized time reference across all AV systems

81. A courtroom recording specification includes camera and recording system. The missing archival requirement is:

A. Local hard drive only

B. Tamper-evident redundant storage with multi-year retention per jurisdictional requirements

C. Cloud-only storage

D. Weekly USB backup

82. A specification includes all design phases and construction administration. The missing post-project deliverable is:

A. Additional equipment

B. Post-construction RFIs

C. Lessons learned documentation and post-warranty check-in schedule

D. Design competition entry

83. A conference room with west-facing windows includes projection system. The missing environmental coordination is:

A. Motorized shading or window treatment specification coordinated with architect

B. Brighter projector only

C. Higher-gain screen only

D. Ambient light rejection screen only

84. A specification for an AV equipment room includes racks and power. The missing floor plan coordination is:

A. Equipment brochure collection

B. Rack brand selection

C. Cable catalog

D. Rack positions with clearance requirements coordinated with HVAC and electrical

85. A hospital telemedicine room design includes codec and display. The missing clinical workflow integration is:

A. Consumer video platform

B. HIPAA-compliant codec with clinical system integration and scheduling connectivity

C. Standard office conferencing

D. Consumer webcam

86. A specification includes all technical components for a video wall. The missing structural coordination is:

A. Display brand selection

B. Content management specification

C. Wall structural capacity verification, backing material, and recessed niche dimensions

D. Cable routing plan

87. A specification for a casino sportsbook includes displays and content distribution. The missing 24/7 operational specification is:

A. Continuous-duty commercial equipment with centralized monitoring and redundant delivery

B. Consumer televisions

C. Standard commercial displays

D. Residential equipment

88. A classroom design includes presentation display and instructor audio. The missing learning technology integration is:

A. Larger display

B. Premium audio upgrade

C. Additional seating

D. LMS integration with automated recording and content delivery

89. A specification includes all room equipment and construction documents. The missing coordination drawing is:

A. Equipment brochure

B. Reflected ceiling plan showing AV, lighting, HVAC, and fire protection coordination

C. Equipment catalog

D. Manufacturer comparison

90. A specification includes equipment, installation, and commissioning. The missing maintenance planning element is:

A. Manufacturer brochure collection

B. Equipment catalog

C. Warranty registration only

D. Service access provisions, spare parts inventory, and maintenance schedule

91. A conference room design includes display, DSP, and amplifier. The missing cable specification is:

A. Plenum-rated CL2/CL3 or CMP cables per NEC for in-wall/above-ceiling installation

B. Consumer HDMI cables

C. Standard retail cables

D. Unrated bulk cable

92. A design includes all AV components and control programming. The missing commissioning element is:

A. Equipment delivery confirmation

B. Integrator verbal assurance

C. Test equipment calibration documentation per AVSPV requirements

D. Manufacturer bench test results

93. A 20 A, 120 V circuit serves AV equipment drawing 15 A continuously. The missing NEC assessment is:

A. Circuit is adequate

B. 15 A exceeds 16 A continuous limit (80% of 20 A) — circuit is adequate

C. Requires 30 A circuit

D. No assessment needed

94. A specification for a government classified briefing room includes AV equipment. The missing security compliance is:

A. Standard commercial security

B. Consumer encryption

C. Cloud-based security

D. TEMPEST rating, isolated networks, and federal facility security certification

95. A specification includes all technical and construction requirements. The missing close-out credential transfer is:

A. Administrative passwords, software licenses, and access credentials transferred to owner

B. Integrator retains all credentials

C. Manufacturer holds credentials

D. No credential transfer needed

96. A design for a sports venue press box includes displays and communication. The missing media support infrastructure is:

A. Consumer setup

B. Standard commercial equipment

C. Broadcast-grade media positions with video monitoring, PA integration, and scoring displays

D. Home-office equipment

97. A specification for a 70V distributed system includes speakers and amplifier. The missing amplifier sizing verification is:

A. Amplifier matches tap load exactly

B. Total tap load plus 25-33% headroom for reliable continuous operation

C. Amplifier undersized for cost savings

D. Maximum available amplifier

98. A specification for an AV system includes power, network, and equipment. The missing grounding specification is:

A. Single-point ground reference coordinated with electrical engineer

B. Multiple ground connections

C. Building steel only

D. No grounding needed

99. A lobby signage design includes displays and CMS. The display produces 400 cd/m², ambient is 15 cd/m², black is 1.0 cd/m². ISCR is 25.9:1. The missing specification adjustment for ADM (50:1) is:

A. Accept current ISCR

B. Change content type

C. Increase display size

D. Reduce ambient light or increase display brightness to achieve 50:1 ISCR

100. A design includes all room-level AV components. The missing building-level integration is:

A. Individual room systems only

B. Per-room management

C. Building automation integration for occupancy sensing, scheduling, and energy management

D. No building integration needed

101. A specification includes all technical requirements for a video conference room. The missing lighting coordination with architect is:

A. Tunable white specification (4000-5000 K) with CRI 90+ coordinated on reflected ceiling plan

B. Standard office lighting

C. Fluorescent specification

D. Dimmer switch only

102. A specification includes all equipment and construction requirements. The missing contractor qualification is:

A. Price-only selection

B. CTS-certified staff, relevant experience, manufacturer certifications, and bonding capacity

C. Self-certification form

D. No qualifications needed

103. An AV system design includes all room components. The missing seismic compliance for a California facility is:

A. Standard mounting hardware

B. Manufacturer mounting instructions

C. Installer judgment

D. IBC/ASCE 7 seismic bracing for all overhead equipment per local code

104. A specification includes all technical and operational requirements. The missing specification section for allowable product alternatives is:

A. No substitutions

B. Integrator decides freely

C. Formal substitution procedure with performance documentation per specification timeline

D. Any equivalent accepted

105. A conference room has 6 open microphones producing NOM penalty. The missing audio processing to resolve this is:

A. Automatic microphone mixer maintaining unity NOM gain

B. Volume reduction

C. Microphone removal

D. Speaker relocation

106. A specification includes all design and construction requirements. The missing post-occupancy element is:

A. Additional construction

B. Post-occupancy evaluation for user experience insights and system optimization

C. Equipment upgrade

D. New design phase

107. A 4K@60 Hz signal must travel 80 feet in a new installation. HDMI passive fails beyond 15 ft. The missing transport specification is:

A. Longer HDMI cable

B. Consumer extension

C. Signal booster

D. HDBaseT, active optical HDMI, or fiber extension for reliable 4K over 80 ft

108. An AV design includes all technical elements for a conference center. The missing ongoing operational specification is:

A. Equipment brochure collection

B. Manufacturer hotline number

C. Service contract with response times, SLAs, and covered equipment

D. No ongoing specification needed

109. A specification for occupied renovation includes phased AV implementation. The missing operational continuity element is:

A. Phasing plan maintaining AV service in active areas during construction in adjacent spaces

B. Full shutdown during renovation

C. Temporary consumer equipment

D. No accommodation needed

110. A comprehensive AV specification includes all technical, construction, and closeout requirements. The final missing element for complete project delivery is:

A. Additional equipment selection

B. Owner acceptance based on formal AVSPV verification confirming all systems meet specification

C. Integrator departure

D. Equipment disposal plan

PRACTICE EXAM 18: ANSWER KEY AND EXPLANATIONS

1. B — Camera, codec, and microphone system are the missing video conferencing elements. Displays, DSP, amplifiers, and speakers support presentation and audio playback but cannot capture room participants for remote viewers. Video conferencing requires bidirectional audio/video communication through camera, codec, and microphone.

2. D — As-built drawings, training records, and warranty documentation complete the closeout package. Power schedules, equipment lists, and construction drawings serve the design and construction phases. Closeout deliverables document the installed condition, verify user competency, and establish warranty coverage.

3. A — 25-33% amplifier headroom above total tap load prevents thermal stress during continuous operation. An amplifier operating at 100% capacity runs at thermal maximum, shortening component life and risking shutdown. Headroom ensures reliable performance through sustained paging and music operation.

4. C — AEC processing matched to room RT60 prevents remote participants from hearing echo. Without echo cancellation, loudspeaker audio feeds back through microphones to remote participants. The AEC tail length must match the room's reverberation time to cancel all reflected energy.

5. B — Documented pass/fail criteria for each measured item establishes objective acceptance standards. Without defined criteria, verification becomes subjective and disputable. AVSPV requires measurable thresholds that both designer and integrator agree upon before testing begins.

6. D — Larger display or dual-display configuration meeting the 50-inch height requirement corrects the DISCAS failure. At 25 ft viewing, BDM requires 50-inch minimum image height (25×12÷6=50). The current 42-inch display height falls 8 inches short, requiring a physically larger solution.

7. A — VLAN segmentation, QoS policies, and IGMP snooping are the essential AV-over-IP network configurations. Without VLANs, AV traffic mixes with enterprise data; without QoS, AV streams degrade during congestion; without IGMP snooping, multicast floods every port.

8. C — CRI 90+ and 4000-5000 K tunable white ensures accurate skin tone reproduction on camera. Lower CRI values produce unnatural color rendering, and warm temperatures shift skin tones toward orange. Camera-quality lighting requires both high CRI and appropriate color temperature.

9. B — Specification section references for each punchlist item define objective acceptance criteria. Without references, punchlist items become subjective disputes between designer and integrator. Specification traceability establishes the contractual standard against which each item is measured.

10. D — HVAC cooling sized to BTU/hr heat load from AV equipment prevents overheating. Equipment wattage × 3.412 produces the cooling requirement in BTU/hr. Without this coordination, the equipment room lacks adequate cooling, causing premature equipment failure.

11. A — Variable acoustic treatment supports different performance types requiring different RT60 characteristics. Amplified concerts need shorter reverberation while symphonic music needs longer reverberation. Retractable banners, adjustable panels, or curtains enable the room to serve both.

12. C — RP-38-17 heat-shrink printed labels at both cable ends ensure long-term serviceability. Durable printed labels withstand decades of environmental exposure. Handwritten, adhesive, or color-only approaches degrade over the system's operational life.

13. B — ADA accessibility including assistive listening and accessible positioning is required in courtroom settings. Federal accessibility law mandates accommodations for hearing-impaired and mobility-limited participants. Evidence displays must be visible from wheelchair positions and assistive listening must be available.

14. D — UL-listed firestop assembly is required for each rated penetration per NFPA and NEC. Fire-rated walls maintain their rating only when penetrations are sealed with tested, listed systems. Standard caulking, foam, and paint do not meet fire code requirements.

15. A — Use-case operational scenarios define system behavior per mode for control programming. Without documented scenarios, programmers interpret user intent, producing interfaces that don't match operational needs. Scenarios establish what every device does in each mode.

16. C — Inter-building fiber backbone with 10+ Gbps capacity provides the campus-level connectivity. Room equipment and local switches serve individual spaces but cannot communicate across buildings without backbone infrastructure. Fiber backbone enables centralized management and cross-building signal routing.

17. B — IP65+ weather-rated equipment with corrosion-resistant hardware is mandatory for outdoor environments. Outdoor installations face rain, humidity, temperature extremes, and UV degradation. Without appropriate IP ratings, outdoor equipment fails rapidly from environmental exposure.

18. D — HIPAA-compliant encrypted transport with access controls is mandatory for healthcare video conferencing. Protected health information transmitted during consultations falls under federal security requirements. Consumer platforms and standard office security do not satisfy HIPAA obligations.

19. A — Simple control system with preset scenarios enables non-technical users to operate the room effectively. Complex menus, multiple remotes, and technical interfaces create barriers that cause users to avoid the system. One-touch scenarios reduce interaction to the minimum needed for each use case.

20. C — Equipment weight schedule with point loads per mounting location enables structural verification. The structural engineer needs specific weight data at specific locations to verify ceiling and wall capacity. Verbal estimates and general categories lack the precision needed for structural analysis.

21. D — TEMPEST-rated equipment with isolated networks per federal requirements is mandatory for classified facilities. Standard commercial equipment cannot prevent electromagnetic emanation of classified information. Federal security standards mandate specific equipment ratings and network isolation.

22. B — Commercial-grade continuous-duty displays with thermal management are engineered for 24/7 operation. Consumer displays lack heavy-duty power supplies and enhanced cooling needed for continuous service. Consumer panels typically fail within 6-12 months of 24/7 use.

23. A — Preset scene control enables one-touch reconfiguration between event types without technical staff intervention. Hotel ballrooms serve weddings, corporate events, galas, and conferences with rapid turnover requirements. Scene presets transform audio, video, and lighting configurations with a single button press.

24. C — PTP grandmaster clock provides sub-microsecond synchronization required for ST 2110. SMPTE ST 2110 separates audio, video, and metadata into independent IP streams that must maintain frame-accurate alignment. NTP provides only millisecond accuracy, three orders of magnitude insufficient.

25. D — ACU Standard (±3 dB) coverage uniformity verification confirms consistent SPL across listener positions. SPL variation exceeding ±3 dB creates audible hot spots and dead zones. Verification at multiple listener positions proves the speaker layout achieves uniform coverage.

26. B — Emergency audio override coordinated with fire alarm system is required by NFPA code. Building codes mandate that emergency notification audio take priority over all other sources. Without this integration, background music or paging could mask evacuation instructions.

27. A — IGMP snooping prevents multicast flooding to unsubscribed switch ports. Without IGMP snooping, every encoder's multicast stream floods every port, consuming bandwidth network-wide. This is the single most critical switch configuration for AV-over-IP deployments.

28. C — STI 0.70+ verification requirement confirms speech intelligibility meets worship space standards. Houses of worship require demonstrable speech clarity for sermons, readings, and liturgy. STI measurement provides objective evidence that the reinforcement system achieves its design intent.

29. D — Encrypted transport, isolated network, and physical disconnect for cameras/microphones protect boardroom confidentiality. Confidential strategic discussions require comprehensive AV security across all system components. Physical disconnect switches provide verifiable privacy that software-only solutions cannot guarantee.

30. A — Camera, codec, and BYOD connectivity for remote participants complete the hybrid training capability. Instructor presentation equipment supports in-room training but cannot serve remote learners. Hybrid capability requires bidirectional video, audio, and content sharing with remote participants.

31. C — Ventilation specification with thermal monitoring requirements prevents equipment overheating. Racks generate significant heat that must be managed through defined front-to-rear airflow, blanking panels, and thermal monitoring. Without ventilation specification, sealed racks create thermal hot spots causing equipment failure.

32. B — 700+ nit high-brightness displays rated for daylight viewing maintain readability in ambient light. Standard 300-nit displays appear washed out in lobby environments with significant daylight exposure. High-brightness commercial panels maintain visible contrast against ambient light contribution.

33. D — Camera, streaming encoder, and LMS integration complete the distance learning capability. Projection, audio, and control serve in-room students but cannot deliver content to remote learners. Distance learning requires capture, encoding, and delivery infrastructure integrated with the learning management system.

34. A — CTS-certified staff, project experience, and manufacturer certifications establish contractor competency. Qualification specifications protect project quality by ensuring bidders have demonstrated ability to execute the work. Price-only selection risks awarding to unqualified contractors.

35. C — HDCP 2.2 compliance throughout the signal chain enables protected 4K content delivery. Every device from source through switching to display must support HDCP 2.2. A single non-compliant device causes protected content to blank or downgrade to lower resolution.

36. B — Pixel pitch selection using ×3,000 rule determines appropriate resolution for the closest viewing distance. Pitch that's too coarse reveals visible pixel structure at close range. This calculation must be performed before display technology selection to ensure acceptable image quality.

37. D — Administrative passwords and software licenses transferred to owner enable independent system management. Without credentials and licenses, the owner cannot modify configurations, update software, or troubleshoot issues. Permanent integrator dependency for routine changes creates operational vulnerability.

38. A — Balanced interconnections with proper single-point grounding prevent ground-loop-induced noise. Ground loops create potential differences between equipment frames that couple directly into audio signals. Single-point grounding and balanced connections are the fundamental mitigation techniques.

39. C — Ceiling speaker layout with spacing calculations per ACU requirements defines coverage design. ACU calculations determine speaker count, spacing, and placement based on ceiling height, coverage angle, and uniformity target. Without this layout, coverage is arbitrary and likely non-uniform.

40. B — AVSPV commissioning duration integrated into construction schedule ensures adequate verification time. Commissioning requires time for systematic measurement, deficiency identification, remediation, and re-verification. Without scheduled duration, commissioning is compressed and incomplete.

41. D — Intercom system with party-line communication for stage management enables backstage coordination. Performance venues require dedicated communication between stage manager, crew, and technical positions. Consumer communication tools lack the reliability and multi-party capability required for live production.

42. A — Nurse-call integration with patient monitoring and hospital information systems supports clinical workflows. Standalone displays and communication devices don't serve clinical care coordination. Integrated systems ensure nursing staff receive patient alerts through coordinated channels.

43. B — Automatic microphone mixer maintaining unity NOM gain eliminates the multi-microphone penalty. Eight open microphones produce a 9 dB NOM penalty degrading gain-before-feedback. The automixer activates only the microphone receiving the strongest signal, maintaining one-mic-equivalent operation.

44. C — Centralized monitoring, control, and management across all buildings enables campus-wide operations. Individual building systems without centralized management create isolated islands that cannot be coordinated. Enterprise-scale management provides efficient monitoring, troubleshooting, and configuration.

45. D — Hearing loop, large-font display, and simplified high-contrast interface serve aging residents with sensory limitations. Senior living residents may experience hearing loss, reduced vision, and limited technology familiarity. Accessibility-focused design ensures all residents can use the AV system independently.

46. B — Smoke detection per code is required for rooms with concentrated electrical loads. AV equipment closets contain multiple electrical devices that can overheat or short-circuit. Building codes require early-warning detection in these spaces before fire develops beyond origin.

47. C — Standardized configurations with centralized scheduling, monitoring, and management serve enterprise-scale deployments. Individual room management across 40 rooms creates unsustainable operational overhead. Centralization enables efficient operations, consistent user experience, and coordinated troubleshooting.

48. A — ANSI/AVIXA AVSEM provides the energy management framework including scheduling and occupancy-based power management. The standard defines sustainable AV design practices applicable to all installation types. NEC, NFPA, and TIA address different aspects of building design.

49. D — Image height ≥ 50 inches verifies BDM compliance at 25 ft viewing. DISCAS BDM: 25 ft × 12 = 300 inches ÷ 6 = 50 inches minimum image height. Without this calculation, the display may be undersized for the viewing task.

50. B — Source code, programming logic, and scenario documentation enable owner independence for future modifications. Without programming documentation, every system change requires the original integrator. Transfer of these materials at closeout is essential for long-term operational autonomy.

51. C — Closed captioning, simultaneous streaming, and remote participant capability ensure citizen accessibility. Government public meetings serve citizens who may not attend in person. These capabilities fulfill transparency and accessibility obligations for public proceedings.

52. A — Structural engineer approval with 10:1 safety factor verifies overhead rigging in occupied space. Hanging equipment above seated audience members is a life-safety application requiring the highest safety standard. Visual inspection and verbal confirmation lack the engineering rigor required for occupant protection.

53. D — 10 Gbps or higher uplinks prevent aggregation bottleneck from multiple simultaneous 4K streams. Ten compressed 4K streams at 500 Mbps-1 Gbps each can saturate multiple Gigabit uplinks. Higher-capacity uplinks provide the aggregate bandwidth headroom needed for reliable operation.

54. C — Table connectivity including floor box access, power, and cable management integrates AV with furniture. Floor box locations must align with table cable wells, and table dimensions affect display viewing geometry. This coordination prevents misaligned infrastructure discovered during furniture installation.

55. A — Precision acoustic treatment with isolation, bass traps, and calibrated monitoring is essential for recording studios. Studios require controlled acoustic environments where monitoring accurately represents the recording. Standard commercial treatments lack the precision needed for professional audio production.

56. B — Tiered training for end users, technical staff, and administrators with documented curriculum serves all audience levels. Different user groups need different training depth and content. A single

session cannot serve operational users, maintenance technicians, and system administrators equally.

57. D — Automated scheduling for daily operation cycles with thermal management supports museum exhibit duty requirements. Exhibits operate extended hours requiring automated startup, shutdown, and thermal protection. Manual daily reset and consumer equipment lack the reliability for museum exhibition service.

58. C — ANSI/AVIXA 10:2013 AVSPV provides the performance verification framework for installed AV systems. This standard establishes measurement procedures, verification item lists, and pass/fail criteria. Without AVSPV reference, commissioning lacks a structured methodology.

59. A — Centralized CMS with scheduled content, real-time data integration, and remote management enables professional signage operation. USB drives, manual loading, and local media players cannot serve enterprise signage requirements. Centralized management enables coordinated content across multiple displays.

60. B — AV infrastructure drawings coordinated with electrical and architectural plans convey spatial information to all trades. Equipment brochures, catalogs, and comparison charts support product selection but don't show pathway locations, conduit routing, or equipment placement in the building.

61. D — Redundant systems with UPS/generator backup and mission-critical failover ensure operations center continuity. Data center operations rooms support critical infrastructure monitoring that cannot tolerate interruption. Single-point-of-failure architectures risk complete operational blindness during incidents.

62. C — Isolated ground receptacles and dedicated circuits per the AV power schedule address electrical coordination. Sensitive AV equipment requires clean power free from electrical noise. The electrical engineer implements these requirements based on the AV power schedule.

63. B — VLAN assignments, QoS policies, IP addressing, and security requirements across all 30 rooms ensure consistent enterprise networking. Without documented IT coordination, each room may receive different network treatment. Structured documentation prevents inconsistency and troubleshooting complexity.

64. A — Variable acoustic treatment supports both traditional and contemporary worship with different RT60 needs. Traditional services benefit from longer reverberation for music; contemporary services need shorter reverberation for amplified clarity. Variable treatment enables the room to serve both styles.

65. D — Subtitle generation and self-check verification ensure the subtitle accurately reflects book content per the framework. The subtitle is the buyer's first content promise, generated after the TOC is approved per the publishing workflow. Self-check verification prevents word repetition with the title.

66. A — Teleprompter, in-ear monitoring, and color-accurate confidence monitors support on-air broadcast talent. Professional broadcast requires purpose-built talent support that consumer and standard office displays cannot provide. These elements maintain talent comfort and broadcast-quality on-air presentation.

67. C — IP65+ rated weather-resistant speakers with corrosion-resistant hardware are mandatory for pool area environments. Water exposure, chlorine humidity, and UV radiation destroy unrated equipment rapidly. Appropriate IP ratings ensure equipment survives the harsh pool environment.

68. A — Reduce spacing to match coverage geometry eliminating gaps between speakers. At 10 ft ceiling with 12 ft coverage diameter, 15 ft spacing creates 3 ft gaps where SPL drops below ACU tolerance. Proper spacing at approximately 7.5-10 ft achieves Standard ACU coverage.

69. D — Parts and labor warranty with defined duration, start date, and coverage scope is a contractual requirement. Manufacturer defaults vary and may cover parts only. Complete warranty specification establishes the project's required terms independent of manufacturer policies.

70. B — Remote participant equivalent experience confirmation verifies the hybrid meeting design achieves its core objective. Hybrid rooms exist to serve both audiences equally. Without verifying remote experience quality, the design may succeed in-room while failing its hybrid purpose.

71. C — Ambient light control through motorized shading achieves the specified ISCR for projection. Uncontrolled daylight through west-facing windows overwhelms any projector's brightness output. Architectural light control must be specified alongside projection systems.

72. A — IP address schedule, VLAN mapping, subnet assignments, and device naming convention enable network management. Complete documentation supports troubleshooting, maintenance, and future expansion. Without IP documentation, network modifications become risky trial-and-error exercises.

73. D — Infrastructure sized for current rooms plus documented growth capacity for expansion prevents future reconstruction. Known expansion plans require designed-in capacity for pathways, backbone, and switch ports. Current-only sizing guarantees costly retrofit when expansion occurs.

74. B — Individual musician cue mixes with low-latency monitoring per position serve diverse orchestral needs. Each performer requires a personalized mix of relevant instruments and conductor cues. A single unified mix cannot serve the varied monitoring needs of different orchestral positions.

75. A — Multi-source switching, recording, and flexible input infrastructure for prototype showcase serves R&D demonstrations. Demonstration spaces showcase diverse prototypes requiring varied input connections. Fixed displays, consumer webcams, and standard conference setups cannot accommodate prototype diversity.

76. D — ANSI/AVIXA AVSEM is the AV-specific energy management standard. It defines sustainable design practices including scheduling, occupancy sensing, and efficient equipment selection. NEC, NFPA, and TIA serve different building system purposes.

77. C — Assistive listening system scaled to seating capacity per ADA requirements is mandatory for 500-seat auditoriums. Federal accessibility law requires hearing assistance in assembly spaces with fixed seating. ADA scoping tables determine the minimum number of receivers based on capacity.

78. B — Table connectivity including floor box alignment, power, and cable management integrates AV with furniture design. Misaligned floor boxes and table cable wells create unusable connections. Coordination during design development prevents costly installation-phase conflicts.

79. A — Formal substitution request with performance documentation due 14 days before bid protects specification integrity. The timeline ensures adequate evaluation before bid day. This structured process allows competitive alternatives while maintaining design quality standards.

80. D — NTP/PTP infrastructure providing synchronized time reference across all AV systems maintains campus-wide coordination. Consistent time synchronization enables coordinated events, synchronized recordings, and aligned system behavior across buildings. PTP serves media-critical applications requiring sub-microsecond accuracy.

81. B — Tamper-evident redundant storage with multi-year retention meets jurisdictional courtroom recording requirements. Legal recordings serve as evidence through appeal processes spanning years. Single local drives lack redundancy, tamper evidence, and archival reliability.

82. C — Lessons learned documentation and post-warranty check-in schedule complete the project lifecycle. Lessons learned improve future projects; post-warranty check-in maintains the client relationship and identifies emerging system issues. These activities extend professional value beyond construction completion.

83. A — Motorized shading or window treatment specification coordinated with architect controls afternoon sunlight. West-facing windows produce direct afternoon sunlight that overwhelms projection regardless of brightness. Architectural light control is the fundamental solution before projector specification.

84. D — Rack positions with clearance requirements coordinated with HVAC and electrical prevent installation conflicts. Equipment rooms require careful spatial planning balancing rack placement, maintenance access, cooling airflow, and electrical panel clearance. Floor plan coordination ensures all trades fit within the available space.

85. B — HIPAA-compliant codec with clinical system integration and scheduling connectivity serves telemedicine operations. Consumer platforms and standard office conferencing lack the encryption, access controls, and clinical workflow integration HIPAA mandates. Clinical system connectivity enables efficient patient care coordination.

86. C — Wall structural capacity verification, backing material, and recessed niche dimensions ensure safe video wall mounting. Heavy video walls create concentrated loads exceeding standard drywall capacity. Structural coordination during design development prevents discovery of inadequate support during installation.

87. A — Continuous-duty commercial equipment with centralized monitoring and redundant delivery supports casino 24/7 operations. Casino sportsbooks operate without interruption and cannot tolerate equipment failure. Mission-critical reliability requires commercial-grade equipment with monitoring and redundancy.

88. D — LMS integration with automated recording and content delivery completes the modern classroom technology stack. Presentation and audio serve in-room instruction but don't capture content for remote access or review. LMS integration automates the recording and delivery workflow.

89. B — Reflected ceiling plan showing AV, lighting, HVAC, and fire protection coordination reveals all ceiling trade conflicts. This single drawing shows where speakers, lights, diffusers, and sprinklers share ceiling space. Without RCP coordination, conflicts are discovered during installation.

90. D — Service access provisions, spare parts inventory, and maintenance schedule enable long-term system sustainability. Equipment installations without maintenance planning become progressively unreliable. Designed-in service access and identified spare parts prevent extended downtime during equipment failures.

91. A — Plenum-rated CL2/CL3 or CMP cables are required per NEC for in-wall and above-ceiling installation. Consumer cables lack fire-retardant jackets mandated by code for permanent building installation. Non-rated cables create fire code violations and life-safety hazards.

92. C — Test equipment calibration documentation per AVSPV requirements validates measurement credibility. Measurements taken with uncalibrated instruments cannot be trusted for acceptance decisions. Calibration documentation proves that verification measurements are accurate and reliable.

93. B — 15 A continuous is within the 16 A limit (80% of 20 A) making the circuit adequate. NEC 80% derating: 20 A × 0.80 = 16 A maximum continuous. The 15 A load falls 1 A below the maximum, providing a small but compliant margin.

94. D — TEMPEST rating, isolated networks, and federal facility security certification are mandatory for classified briefings. Government classified facilities require purpose-built security compliance preventing electromagnetic information leakage. Standard commercial and consumer approaches fail federal classified standards.

95. A — Administrative passwords, software licenses, and access credentials transferred to owner enable independent operation. Without credentials, the owner cannot manage the system, modify configurations, or authorize software. Transfer at closeout is essential for owner independence.

96. C — Broadcast-grade media positions with video monitoring, PA integration, and scoring displays serve press operations. Sports venue press boxes support professional media operations requiring specialized infrastructure. Consumer, standard commercial, or home-office setups cannot support professional sports media requirements.

97. B — Total tap load plus 25-33% headroom ensures reliable continuous amplifier operation. Exact-load sizing forces 100% capacity operation causing thermal stress. Headroom prevents clipping, reduces thermal fatigue, and extends amplifier service life.

98. A — Single-point ground reference coordinated with electrical engineer prevents ground-loop-induced audio noise. Multiple ground paths create potential differences that couple into audio signals as hum. The electrical engineer implements the single-point ground reference on construction documents.

99. D — Reduce ambient light or increase display brightness to achieve 50:1 ISCR for ADM compliance. Current 25.9:1 falls well below the 50:1 ADM threshold. Either reducing ambient light contribution or increasing peak white luminance improves the ISCR ratio toward compliance.

100. C — Building automation integration for occupancy sensing, scheduling, and energy management optimizes system-wide operation. Room-level equipment serves individual spaces but cannot respond to building-level events. BAS integration triggers AV activation, standby, and scene selection based on occupancy and schedule.

101. A — Tunable white specification (4000-5000 K) with CRI 90+ coordinated on the reflected ceiling plan ensures camera quality. Video conferencing cameras require specific lighting characteristics for professional-quality video. Coordination on the RCP ensures lighting fixtures and AV speakers share ceiling space without conflict.

102. B — CTS-certified staff, relevant experience, manufacturer certifications, and bonding capacity establish contractor competency. Qualification specifications protect project quality by ensuring bidders can execute the work professionally. Price-only selection risks awarding projects to unqualified contractors.

103. D — IBC/ASCE 7 seismic bracing for all overhead equipment per local California code protects building occupants. Seismic zones mandate that overhead-mounted equipment be braced to prevent falling during earthquakes. Standard mounting and installer judgment do not meet code requirements.

104. C — Formal substitution procedure with performance documentation per specification timeline protects design integrity. Structured procedures allow competitive alternatives while ensuring

substitutions meet specified performance. Unrestricted substitution and blanket prohibition both fail the project's interests.

105. A — Automatic microphone mixer maintaining unity NOM gain eliminates the multi-microphone penalty. Six open microphones produce approximately 7.8 dB NOM penalty without mixing. The automixer activates only the active microphone, maintaining single-mic-equivalent operation.

106. B — Post-occupancy evaluation captures user experience insights for system optimization and future design improvement. Commissioning verifies specification compliance; post-occupancy verifies user satisfaction and operational effectiveness. This feedback loop is essential for continuous professional improvement.

107. D — HDBaseT, active optical HDMI, or fiber extension provides reliable 4K transport over 80 feet. Passive HDMI fails at approximately 15 feet at 4K@60 Hz bandwidth. Extension technologies maintain full signal integrity over distances that passive copper cannot support.

108. C — Service contract with response times, SLAs, and covered equipment ensures ongoing operational support. Equipment without maintenance planning becomes progressively unreliable after warranty expires. Defined service terms ensure continued professional support matching operational criticality.

109. A — Phasing plan maintaining AV service in active areas during adjacent construction ensures operational continuity. Occupied renovation requires sequenced implementation that maintains existing system operation. Full shutdown during renovation disrupts ongoing organizational operations.

110. B — Owner acceptance based on formal AVSPV verification confirming all systems meet specification completes project delivery. Formal acceptance is the final contractual milestone marking system handover from integrator to owner. AVSPV verification provides the objective evidence supporting this acceptance decision.