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Topic Break Down

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QUESTION NO: 1

Sound _____ through a medium.

A. propagates

B. resounds

C. generates

D. Processes

ANSWER: A

Explanation:

Sound **propagates** through a medium. In AV-system acoustics, sound is a mechanical disturbance: a vibrating source causes adjacent particles in a material such as air, water, or a solid to oscillate. That disturbance is transmitted successively from particle to particle as a wave, carrying acoustic energy away from the source. This transmission process is called propagation. The medium does not travel with the sound wave over the full source-to-listener distance; rather, its particles move back and forth locally around their equilibrium positions while the pressure variations and energy progress through the material. The properties of the medium—including density, elasticity, temperature, and physical boundaries—affect propagation speed, attenuation, reflection, absorption, and refraction. For AV installers, understanding propagation is foundational when assessing loudspeaker coverage, room-acoustic behavior, sound isolation, and the expected arrival time of audio at different listening positions. Because a mechanical medium is required, sound cannot propagate through a vacuum. The National Aeronautics and Space Administration provides a clear overview of sound as a vibration that travels through matter in its educational resource, Sound Waves. The relationship between a sound wave and the material through which it travels is also described in the Encyclopaedia Britannica overview of sound.

QUESTION NO: 2

Which of the following are associated with sound pressure levels? (Choose all that apply.)

A. Is typically measured in decibels (dB SPL)

B. Is the ultimate method for quantifying background noise levels

C. Eliminates distortion in speech reinforcement

D. Can most accurately be measured with a Class 1 precision SPL meter

ANSWER: A D

Explanation:

“Is typically measured in decibels (dB SPL)” is correct because sound pressure level expresses the ratio between a measured root-mean-square sound pressure and the standard reference pressure in air, 20 micropascals. This logarithmic quantity is reported as dB SPL and is a fundamental measurement used during AV commissioning, verification, and troubleshooting. Weighting networks, such as dBA or dBC, may be selected for particular assessment goals, but the underlying physical measurement remains sound pressure level.

“Can most accurately be measured with a Class 1 precision SPL meter” is also correct. A Class 1 sound level meter is a precision instrument with tighter performance tolerances than lower-accuracy meter classes. It is appropriate when installation work requires dependable, repeatable acoustical measurements, such as documenting ambient levels, evaluating system output, or verifying that a space meets a project’s acoustic requirements. Proper practice also includes using a suitable calibrator, confirming calibration before and after measurements, selecting the required time weighting and frequency weighting, and documenting measurement conditions. OSHA describes sound-level measurements and decibel weighting in its noise guidance, while NIST provides technical information on sound-level-meter performance and calibration concepts. See OSHA Noise and Hearing Conservation and NIST Acoustics and Vibration.

QUESTION NO: 3

Which testing tool can detect clipped waveforms? (Choose all that apply.)

A. Piezo tweeter

B. Oscilloscope

C. Reference microphone

D. Cable tracker

ANSWER: A B

Explanation:

An **Oscilloscope** can directly detect clipping by displaying signal voltage over time. A normally undistorted sine wave has rounded positive and negative peaks; when a device is driven beyond the available voltage or current headroom, those peaks flatten or otherwise become visibly truncated. This makes the oscilloscope the definitive visual tool for identifying clipping and evaluating its severity while checking an audio signal path. See Tektronix's overview of waveform measurements at The XYZs of Oscilloscopes Primer.

A **Piezo tweeter** can also be used as a practical listening indicator for clipping in an audio system. Connected appropriately across an amplifier output, its high-frequency response makes it especially effective at revealing the added high-frequency harmonic content produced when the waveform clips. The technician can hear the resulting harsh, buzzy distortion, helping identify an overdriven signal or amplifier during commissioning and troubleshooting. Piezoelectric speakers operate by converting an applied electrical signal into mechanical vibration and sound; background on that operating principle is available from CUI Devices' piezo speaker overview.

QUESTION NO: 4

After commissioning a networked DSP, which three items should be included in the final system records? (Select three.)

A. A backup of the final DSP configuration file

B. The assigned IP address and applicable VLAN information

C. The installed DSP firmware version

D. A list of temporary test-generator settings used during commissioning

E. All administrator passwords in an unsecured rack document

ANSWER: A B C

Explanation:

The final records should include a backup of the completed DSP configuration, the assigned network information such as IP address and VLAN where applicable, and the installed firmware version. These records provide a support baseline, allow a failed device to be restored efficiently, and assist future technicians with compatibility and troubleshooting. Temporary test settings should not replace the final approved configuration, and passwords should not be written in generally accessible rack documentation; they should be transferred through the project's approved secure process.

QUESTION NO: 5

Visual Acuity is _____.

A. the visual angle of 1 minute of arc

B. the ability to perceive and assimilate visual information

C. an optotype

D. 20/20 vision

ANSWER: B

Explanation:

The ability to perceive and assimilate visual information is the best answer because visual acuity describes the visual system's capacity to distinguish detail in what is being viewed. In audiovisual design, this human-factor measure helps determine whether viewers can resolve critical image content, such as text, symbols, graphical detail, and image features, at a given viewing distance. It is therefore foundational to calculations involving image height, viewing distance, display resolution, and the size of content that must be legible to the audience.

Visual acuity is commonly quantified using standardized vision tests and angular measures, but those measurements are ways of expressing or testing the underlying ability rather than the complete definition itself. Normal visual acuity is often represented by a familiar clinical notation, yet the concept applies more broadly to the viewer's ability to perceive visual detail and make use of that information. This is why AV system designers account for audience tasks and the required level of detail when selecting displays and establishing seating or viewing zones. The National Eye Institute describes visual-acuity testing and its role in measuring how clearly a person sees: National Eye Institute: What Is Visual Acuity?. AVIXA's standards resources provide the industry context for applying human visual-performance principles in audiovisual system design: AVIXA Standards.

QUESTION NO: 6

Which of the following are limitations of an IR control system? (Choose all that apply.)

A. It does not provide feedback that commands have been executed.

B. It requires direct line of sight to the device ' s control point.

C. It may be subject to interference from ambient light.

D. It always requires batteries.

ANSWER: A B C

Explanation:

"It does not provide feedback that commands have been executed," "It requires direct line of sight to the device ' s control point," and "It may be subject to interference from ambient light" are all recognized limitations of infrared device control. An infrared emitter sends a one-way optical command that replicates a handheld remote's transmission. Because this connection is ordinarily one-way, the control system cannot inherently verify that the target device received the command, acted on it, or reached the requested operating state. Reliable operation also depends on correct placement of the emitter over the equipment's infrared receiver window, or on an unobstructed path when an external transmitter is used. Physical obstructions, misalignment, and equipment-rack doors can prevent commands from reaching the receiver. In addition, infrared receivers can be affected by optical noise, particularly strong sunlight and some artificial lighting sources, which can reduce command reliability. These practical constraints are why installed AV systems often use network, serial, relay, or other bidirectional control methods when device status and dependable feedback are required. Crestron's IR port documentation describes IR as a means of controlling devices through their IR receivers, while the Huawei support guidance on remote-control interference notes that strong light can interfere with infrared remote operation.

QUESTION NO: 7

Which three practices should be used when pulling AV cables through an approved pathway? (Select three.)

A. Inspect the pathway for obstructions and sharp edges before pulling cable.

B. Pull the cable by its connector to avoid marking the cable jacket.

C. Maintain the cable manufacturer's pulling-tension and bend-radius limits.

D. Use a compatible pulling lubricant when the cable manufacturer permits it.

E. Support excess cable temporarily from the suspended-ceiling grid.

ANSWER: A C D

Explanation:

The installer should confirm that the pathway is ready and free of obstructions, observe the manufacturer's maximum pulling-tension and bend-radius requirements, and use a pulling lubricant only when it is compatible with the cable jacket and pathway. These practices reduce the risk of crushing, stretching, kinking, or otherwise damaging the cable. Suspending cable from a ceiling grid is not an approved support method, and pulling cable by a connector can damage the termination or transfer excessive force to conductors.

QUESTION NO: 8

An analog computer video display signal has _____ parts.

A. none

B. three

C. two

D. Five

ANSWER: D

Explanation:

Five is correct because the conventional analog computer-video interface is RGBHV: three separate analog channels carry the red, green, and blue image information, while two timing signals provide horizontal sync and vertical sync. The red, green, and blue components determine the color and brightness of each displayed pixel. Horizontal sync identifies the start of each scan line, and vertical sync identifies the start of a new frame. Together, these five signal components allow an analog computer source and display device to reproduce a stable, correctly timed image. In installation work, recognizing RGBHV is important when selecting cable, connector, distribution, switching, and signal-processing solutions. Depending on the connector and equipment, the sync information may sometimes be combined or carried differently, but the standard conceptual breakdown of an analog computer display signal is the five RGBHV components. Extron's technical discussion of computer-video signal formats describes RGBHV as discrete red, green, blue, horizontal-sync, and vertical-sync signals; see Extron: RGBHV. Further connector and display-interface context is available from VESA.

QUESTION NO: 9

Why is it better to test control systems in the workshop? (Choose all that apply.)

A. It allows more time to fix problems.

B. It may provide better access to help from internal teams.

C. It allows time for longer breaks.

D. It prevents customers from asking questions.

ANSWER: A B

Explanation:

Testing control systems in the workshop provides a controlled environment in which programmers and installers can identify, isolate, and resolve faults before the equipment reaches the customer site. “It allows more time to fix problems” is correct because workshop testing can occur before the immovable constraints of an installation window, site access, commissioning deadlines, and client handover. This permits orderly troubleshooting, code revisions, retesting, and verification of device responses rather than rushed corrective work onsite.

“It may provide better access to help from internal teams” is also correct. In a workshop, technical resources such as control programmers, engineers, configuration files, spare equipment, test instruments, and colleagues familiar with the system are generally more accessible. That proximity supports faster collaboration when validating control functions, communications, user-interface operation, and integration with connected AV devices. AVIXA installation practice emphasizes completing preparation and offsite testing where practical so that onsite commissioning is more predictable and efficient. See AVIXA’s overview of the CTS-I credential at https://www.avixa.org/certification/cts-i and its standards resources at https://www.avixa.org/standards.

QUESTION NO: 10

What best describes the method of transmission of a typical wireless microphone?

A. audio frequency (AF)

B. video frequency (VF)

C. radio frequency (RF)

D. shortwave (SW)

ANSWER: C

Explanation:

radio frequency (RF) correctly describes how a typical wireless microphone transmits its signal. The microphone capsule first converts sound into an electrical audio signal. A transmitter—commonly built into a handheld microphone body or worn as a bodypack—then uses that audio signal to modulate a radio-frequency carrier. The antenna radiates the resulting RF signal through the air to a compatible receiver. At the receiver, the RF signal is selected, demodulated, and converted back into an audio output for delivery to a mixer, DSP, amplifier, or other AV system equipment.

Wireless-microphone systems operate in allocated or authorized RF spectrum, with the usable band depending on the product, country, and local spectrum regulations. Installation technicians must therefore coordinate frequencies, account for RF interference, provide suitable antenna placement and distribution where required, and verify reliable reception throughout the intended coverage area. Shure describes wireless systems as transmitting audio over radio waves from a transmitter to a receiver, and the FCC identifies wireless microphones as devices that use radio spectrum. See Shure: Wireless Microphone System Basics and FCC: Operation of Wireless Microphones.

QUESTION NO: 11

When mounting a projector to the ceiling, one must identify the center point location of the mounting assembly, because:

A. This is the point where the projector ' s weight is evenly distributed over the entire mounting plate.

B. This is where the adjustable mount support structure must be centered.

C. This is the center point of the projector ' s lens.

D. This is the projection throw distance calculation reference point.

ANSWER: B

Explanation:

This is where the adjustable mount support structure must be centered. Identifying the mounting assembly’s center point establishes the physical reference from which the projector mount is positioned and secured. The adjustable support

structure must align with that point so the mount can be installed in its intended location while retaining its full range of adjustment. Proper centering helps the installer achieve the planned projector position and permits final mechanical adjustment for image alignment without placing the support structure off its designed mounting location.

This is a mechanical-layout task performed before the projector is finally attached and aligned. The installer should use the mount manufacturer's installation instructions, including its specified mounting-hole pattern, structural-support requirements, load rating, and adjustment procedure. AVIXA's installation guidance emphasizes that installed equipment must be securely supported and that installation work must follow manufacturer requirements. Centering the adjustable support structure on the identified mounting-assembly center point supports a predictable, stable installation and provides the intended adjustment geometry for commissioning. See AVIXA's standards resources and the OSHA requirements for securing equipment and protecting workers during installation activities.

QUESTION NO: 12

What are typical applications of a distributed loudspeaker system? (Choose all that apply.)

A. Paging system at an airport

B. Background music in a restaurant

C. Public address system in an office building

D. Subwoofers in a concert hall

ANSWER: A B C

Explanation:

Distributed loudspeaker systems use multiple relatively small loudspeakers placed throughout a space so listeners receive reasonably even coverage and intelligible sound at moderate levels. This approach is particularly well suited to a **Paging system at an airport**, where announcements must reach people across concourses, gate areas, corridors, and other large, acoustically varied spaces. A **Background music in a restaurant** installation also commonly uses distributed ceiling, pendant, or surface-mount loudspeakers to provide comfortable, consistent music coverage across dining and service areas without creating excessively loud zones near a single source. Likewise, a **Public address system in an office building** typically distributes loudspeakers across offices, halls, meeting areas, and common spaces for routine announcements and emergency communications. In installation practice, these applications often use constant-voltage loudspeaker distribution, such as 70 V or 100 V systems, because it simplifies routing one amplifier channel to many loudspeakers and permits each loudspeaker's tap setting to match local coverage needs. AVIXA's standards resources provide the professional framework for audiovisual system design and installation, while Biamp's education resources discuss the practical principles of loudspeaker coverage and distributed audio design. See AVIXA Standards and Biamp Education Center.

QUESTION NO: 13

For what reasons is it important to set system gain? (Choose all that apply.)

A. To minimize distortion

B. To maximize clipping

C. To maximize S/N ratio

D. To minimize the gain structure

ANSWER: A C

Explanation:

"To minimize distortion" is correct because proper gain staging keeps the signal at each device's intended operating level and preserves headroom. Audio equipment has a finite maximum input and output level; excessive gain at a microphone preamp, DSP input, mixer bus, amplifier input, or other stage can overload that stage. Overload produces clipping or other

nonlinear distortion, which may remain audible even if the signal is subsequently turned down. Establishing appropriate nominal levels throughout the system prevents this condition while allowing the system to achieve the required program level.

“To maximize S/N ratio” is also correct. A signal that is too low relative to a device’s inherent noise floor requires excessive gain later in the chain. That later amplification raises the wanted signal and accumulated noise together, making hiss or other background noise more noticeable. Setting gain appropriately as early as practical, without overloading inputs, produces a healthy signal level and reduces the amount of downstream make-up gain required. This balance between adequate level, low noise, and sufficient headroom is the central purpose of gain structure in professional AV installation and commissioning. See Shure’s discussion of gain structure and Yamaha’s professional-audio signal-level guidance.

QUESTION NO: 14

During which phases of an AV project should performance verification be conducted? (Choose all that apply.)

A. System design

B. Pre-installation

C. Completion

D. System closeout

ANSWER: A B C D

Explanation:

Performance verification should be treated as a continuous project-quality activity rather than a test performed only at the end of installation. During **System design**, the project team establishes clear, measurable performance requirements and ensures that the design can be verified against the owner’s needs. During **Pre-installation**, verification planning is refined by confirming the test process, required tools, acceptance criteria, documentation, and coordination needed before work begins. At **Completion**, the installed system is tested against the documented performance requirements, including functional operation and the applicable measurable criteria. During **System closeout**, completed verification records, exceptions, resolutions, and final system documentation provide evidence that the delivered system meets the agreed requirements and supports turnover to the owner. Applying verification throughout these phases helps identify issues when they can be addressed efficiently and maintains traceability from design intent through final acceptance. AVIXA’s performance-verification standard provides the framework for defining and documenting this process, while AVIXA’s standards resources describe the role of standards in consistent AV project delivery. See AVIXA Standards and AVIXA 10: Audiovisual Systems Performance Verification.

QUESTION NO: 15

Who should evaluate all mounting plans and be consulted on difficult mounting situations?

A. Design consultant

B. Mechanical contractor

C. AV project manager

D. Structural engineer

ANSWER: D

Explanation:

A structural engineer should evaluate all mounting plans and be consulted for difficult mounting situations. AV equipment mounts transfer static and, in some cases, dynamic loads into a building’s structure. A qualified structural engineer can determine whether the intended supporting element has adequate capacity, identify the appropriate attachment method, account for load paths and safety factors, and specify reinforcement or alternate support where necessary. This review is

particularly important when mounting to existing construction, overhead structures, nonstandard substrates, or locations where the building drawings do not clearly establish structural capacity. The installer must also follow the mount manufacturer's instructions, applicable building codes, and the engineer's approved details; manufacturer load ratings do not by themselves establish that the building structure can safely support the installation. AVIXA installation practice emphasizes coordination with appropriately qualified construction professionals whenever the work affects structural support or requires verification beyond the installer's scope. Structural engineering services and professional practice requirements are regulated by the relevant jurisdiction, so the project team should use a properly licensed engineer where required. See the AVIXA Standards resources and the International Building Code for applicable structural and installation-code context.

QUESTION NO: 16

What should be done with empty cardboard equipment boxes?

A. Returned to the manufacturer

B. Stored in a closet

C. Discarded in the dumpster/waste container

D. Discarded where indicated by the client

ANSWER: D

Explanation:

Empty cardboard equipment boxes should be discarded where indicated by the client. At an installation site, the client or site representative controls the facility's waste-handling requirements, including the locations and procedures for recycling, landfill waste, secure disposal, and any restrictions on using loading docks or waste containers. Following those instructions maintains good site housekeeping, respects the client's environmental and facilities policies, and helps the installation team avoid leaving packaging in corridors, technical spaces, or other areas where it could obstruct work or create a safety issue. Cardboard packaging may be recyclable, but the appropriate collection point and the site's process must be confirmed by the client rather than assumed by the installer. This approach also supports professional turnover practices: the work area is left clean, packaging is removed through the approved channel, and the customer remains in control of its premises. AVIXA identifies installation work as requiring coordination with project stakeholders and adherence to site requirements; see AVIXA Standards. Maintaining orderly work areas and managing materials to prevent hazards is also consistent with OSHA housekeeping expectations: OSHA 29 CFR 1926.25, Housekeeping.

QUESTION NO: 17

In the professional AV industry, the most common direct view displays are _____.

A. video walls

B. televisions

C. monitors

D. projection systems

ANSWER: C

Explanation:

monitors is correct because a monitor is a direct-view display: the viewer looks directly at the image-producing panel rather than at light projected onto a separate screen. In installed AV applications, professional monitors commonly serve as the endpoint for content in conference rooms, classrooms, control rooms, digital-signage locations, and collaboration spaces. Modern professional monitors are typically flat-panel LCD displays, often with LED backlighting, selected according to requirements such as screen size, native resolution, brightness, viewing angle, operating hours, connectivity, control capability, and mounting method.

“Direct view” describes the display method, not simply the physical form factor or the use case. A monitor produces the visible image at its own display surface, which distinguishes it from a projection-based image system. This terminology is consistent with AVIXA’s audiovisual vocabulary, which identifies displays and monitors as core visual-display concepts, and with display-industry guidance describing professional LCD signage/display panels as self-contained visual display devices. For installation work, recognizing monitors as the prevalent direct-view category helps the technician plan appropriate power, signal transport, mounting, ventilation, and control connections. See the AVIXA AV Glossary and Samsung’s professional digital-signage display overview.

QUESTION NO: 18

Which are best practice methods for dressing a rack? (Choose all that apply.)

A. Bundle cables by signal type.

B. Use removable cable ties to secure a cable bundle.

C. Secure heavy cable bundles to lacing bars.

D. Keep power cables separate from signal cables.

ANSWER: A B C D

Explanation:

Proper rack dressing protects cable performance, simplifies service, and provides a safe, maintainable installation. **Bundle cables by signal type.** This creates orderly pathways and makes tracing, testing, and future changes more efficient. **Use removable cable ties to secure a cable bundle.** Hook-and-loop or other removable fastening methods support moves, additions, and changes without cutting ties or risking cable damage; they also help prevent excessive compression of the bundle. **Secure heavy cable bundles to lacing bars.** Lacing bars provide strain relief and a defined support point, so the weight of large bundles is not carried by equipment connectors or unsupported cable runs. **Keep power cables separate from signal cables.** Physical separation reduces the opportunity for electromagnetic interference to couple into susceptible low-voltage signal cabling and maintains clearer, safer routing within the rack. Together, these practices preserve bend radius and access, improve airflow and visual inspection, and create a professional installation that can be serviced without disrupting adjacent systems. These principles align with structured-cabling installation guidance from BICSI Standards and cable-management guidance from CommScope Cable Management.

QUESTION NO: 19

What are the limitations of a Wi-Fi network for streaming live HD video? (Choose all that apply.)

A. Lower bandwidth than wired connections

B. Expensive infrastructure

C. Potential RF interference

D. Restrictions on range

ANSWER: A C D

Explanation:

“Lower bandwidth than wired connections,” “Potential RF interference,” and “Restrictions on range” are valid limitations when Wi-Fi is used to carry live HD video. Live video needs sustained throughput, predictable latency, and minimal packet loss; unlike a switched wired Ethernet link, Wi-Fi devices share a half-duplex radio medium and contend for airtime. The usable throughput can vary substantially with the Wi-Fi standard, channel width, number of associated clients, security overhead, and retransmissions, so a nominal wireless data rate is not equivalent to dependable video transport capacity. Cisco describes how wireless capacity is constrained by shared airtime and client behavior in its wireless airtime documentation.

RF interference can increase retries, jitter, and packet loss, all of which can visibly disrupt a live stream. Range is also a practical limitation because signal attenuation, obstructions, multipath effects, and increased distance reduce signal quality and available modulation rates. These conditions make network performance less consistent as a receiver moves away from an access point. The Wi-Fi Alliance's Wi-Fi overview notes that Wi-Fi performance and coverage depend on the radio environment and deployment conditions. For critical live HD video, installers should validate coverage, channel use, interference, throughput, latency, and packet loss at the actual operating locations.

QUESTION NO: 20

Which device provides a direct physical connection between multiple nodes?

A. Bridge

B. Router

C. Switch

D. Gateway

ANSWER: C

Explanation:

Switch is correct because it is the standard network device used to provide physical Ethernet connections for multiple endpoint nodes, such as AV encoders, decoders, control processors, computers, wireless access points, and other networked AV equipment. Each node connects to a switch port through a physical network cable, allowing the devices to participate in the same local-area network. The switch receives Ethernet frames on one port and forwards them to the appropriate connected device based on learned MAC-address information. This makes a switch the central physical interconnection point in a typical star-topology AV network installation.

For CTS-I work, selecting, installing, labeling, and testing switches and their copper or fiber uplinks is fundamental to establishing reliable connectivity between AV system components. Managed switches may additionally support capabilities particularly relevant to AV systems, including VLAN segmentation, Quality of Service, multicast controls, Power over Ethernet, and port monitoring. Cisco describes switches as devices that connect devices within a network and use packet information to deliver data to its destination. See Cisco: What Is a Network Switch? and the AVIXA Standards resource for industry context.

QUESTION NO: 21

A networked AV encoder has power and its Ethernet link indicator is illuminated, but it cannot communicate with the control processor. Which three actions should be taken first? (Select three.)

A. Verify the encoder IP address, subnet mask, and gateway.

B. Confirm that the switch port is assigned to the required VLAN.

C. Verify the cable path and switch-port assignment against the documentation.

D. Factory-reset the encoder before reviewing its configuration.

E. Replace the control processor with a spare unit.

ANSWER: A B C

Explanation:

An illuminated link indicator confirms only that a physical Ethernet connection has been established. It does not confirm that the device has a valid IP configuration, is connected to the correct VLAN, or can communicate across the required network path.

The installer should verify the encoder's IP address, subnet mask, and gateway against the approved network information; confirm the switch-port VLAN and configuration; and use the project documentation to verify that the correct port and cable path are being used. Factory-resetting the encoder can remove required configuration, while replacing equipment or changing control programming is premature before basic network connectivity has been verified.

QUESTION NO: 22

Before accepting newly installed category cable intended for an AV-over-IP endpoint, which three practices provide meaningful evidence that the link meets the required cable performance? (Select three.)

A. Verify the wiremap for correct pair continuity and pairing.

B. Certify the permanent link against the required cable category.

C. Record the test result against the installed cable identifier.

D. Use a tone generator as the final cable-performance test.

E. Accept the cable when an endpoint link indicator illuminates.

ANSWER: A B C

Explanation:

A cable certification test verifies whether the installed permanent link meets the applicable performance category and test limit. The installer should also verify the wiremap, because split pairs, opens, shorts, reversals, and incorrect pair assignments can prevent reliable Ethernet operation even when connectors appear correctly terminated.

Documenting the test results against the cable identifier creates a traceable record for commissioning and future troubleshooting. A tone generator is useful for identifying a cable route, but it does not certify transmission performance. Connecting an endpoint and observing a link light is also insufficient because a link may establish while errors or marginal performance remain.

QUESTION NO: 23

If the audio digital signal processor you have to install is discontinued by the manufacturer, what should you do? (Select all that apply.)

A. Install another similar model and record the model number on the project documentation

B. Discuss the need for change with the AV designer and your project manager

C. Redline the change on the appropriate project document, send it to your project manager for submission of a formal RFI or RFC, and wait for a CO

D. Try to find the specific model through an online vendor

ANSWER: B C

Explanation:

"Discuss the need for change with the AV designer and your project manager" is correct because a discontinued DSP is a design and procurement change, not an installer-directed substitution. The designer must evaluate whether a proposed replacement satisfies the specified audio-processing functions, inputs and outputs, control integration, DSP configuration, networking requirements, power, physical fit, and overall system performance. The project manager coordinates the commercial, schedule, client-communication, and approval implications of that evaluation.

"Redline the change on the appropriate project document, send it to your project manager for submission of a formal RFI or RFC, and wait for a CO" is also correct because it creates a traceable record of the field condition and routes the proposed deviation through formal project change control. A request for information or request for change enables the design team and client to make an authorized decision, while a change order documents the approved scope, cost, and schedule impact

before work proceeds. This approach preserves configuration control and ensures that project documentation ultimately reflects the approved installed system. AVIXA's standards resources emphasize consistent AV project practices and documentation; see AVIXA Standards. Additional AVIXA professional-practice and certification resources are available at AVIXA Certification.

QUESTION NO: 24

Which three practices support effective thermal management when building an AV equipment rack? (Select three.)

A. Calculate the expected equipment heat load and confirm available cooling capacity.

B. Maintain each device's required airflow clearances and direction.

C. Use blank panels where appropriate to reduce air recirculation.

D. Cover unused ventilation openings with bundled spare cable.

E. Block rear exhaust paths to prevent dust entering the rack.

ANSWER: A B C

Explanation:

Effective rack thermal management begins with calculating the expected heat load and confirming that the room and rack ventilation can remove that heat. Equipment should be installed to maintain the airflow path required by each manufacturer, rather than assuming that all devices use the same front-to-rear cooling arrangement. Blank panels are useful where appropriate because they reduce recirculation through unused rack spaces and help direct cooling air through equipment.

Blocking ventilation openings or coiling excess cable directly over equipment exhaust paths restricts airflow and can cause overheating. Thermal planning must account for the entire installed rack, including amplifiers, power supplies, network switches, and other heat-producing devices.

QUESTION NO: 25

Which of the following information does the EDID packet contain? (Choose all that apply.)

A. Timing for audio and video sync

B. Display parameters

C. Extension flags

D. Color characteristics

ANSWER: B C D

Explanation:

EDID (Extended Display Identification Data) is display capability data communicated from a sink device, such as a monitor or projector, to a source device. **Display parameters** are a core part of the EDID base block: these identify fundamental display characteristics, including information used by the source to determine compatible output operation. EDID also includes **color characteristics**, expressed as display chromaticity coordinates, which describe the red, green, blue, and white color points of the display. In addition, the final byte of the base EDID block is an **extension flags** field (commonly called the extension-count field). It tells the source whether one or more additional EDID extension blocks follow the base block. Those extensions can advertise further capabilities, such as additional video formats, audio formats, speaker allocation, and other interface-specific features. Thus, display parameters, color characteristics, and extension flags are all defined categories of EDID information. The VESA standards organization maintains the EDID standard family; see the VESA standards overview. A technical copy of the Enhanced EDID specification also documents the base-block fields and extension-count byte: VESA Enhanced EDID Standard.

QUESTION NO: 26

A spot meter is used to take ___ light measurements.

A. projected

B. incident

C. task

D. reflected

ANSWER: D

Explanation:

Reflected is correct because a spot meter measures the light reflected from a specific, narrowly defined area within the field of view. Its tight acceptance angle lets an AV technician isolate a surface or object—such as a projection screen, display image area, wall finish, or stage subject—and determine the luminance contribution coming from that target. This is especially useful when evaluating perceived brightness and contrast, because viewers see light that has been emitted or reflected toward them rather than the total light falling onto a surface. In practical AV work, a spot meter can help verify whether a projected image is sufficiently bright at selected screen locations and identify nonuniformity across the image. The Illuminating Engineering Society describes luminance as light leaving, passing through, or reflected from a surface in a particular direction, which is the quantity commonly assessed using a spot luminance meter. Meter manufacturers likewise describe spot meters as instruments for precise reflected-light/luminance readings from a selected target area. See the Illuminating Engineering Society definition of luminance and Konica Minolta's luminance meter overview.

QUESTION NO: 27

What is a benefit of using the verification standard for system closeout? (Choose all that apply.)

A. It aligns outcome and performance expectations at an early stage in the project.

B. It reduces project risk through early identification of problems, thereby reducing the likelihood of remedial work.

C. It provides a verifiable outcome.

D. It creates a common language between all parties.

ANSWER: A B C D

Explanation:

Using a verification standard during system closeout establishes an objective, repeatable process for confirming that the installed audiovisual system meets the documented project requirements. It aligns outcome and performance expectations at an early stage in the project because the parties can agree on what will be tested, the required conditions, and the acceptable results before closeout. It reduces project risk through early identification of problems, thereby reducing the likelihood of remedial work, since discrepancies can be discovered and addressed through planned verification rather than after handover. It provides a verifiable outcome by recording measurable observations and test results against defined criteria, creating evidence that the system was evaluated. It also creates a common language between all parties by giving owners, consultants, integrators, and other stakeholders a shared framework for discussing system performance and acceptance. AVIXA's audiovisual system performance verification standard is intended to support this consistent assessment of whether an AV system performs as specified, while AVIXA's standards program promotes common practices and terminology across the industry. See AVIXA Standards and AVIXA 10: Audiovisual System Performance Verification.

QUESTION NO: 28

A logarithm can be defined as the _____.

A. one-to-one relationship between units shown and units represented

B. difference of sound pressure level from the threshold of hearing

C. intensity of sensation proportional to the intensity of the stimulus

D. number of times the numeral 10 must be multiplied by itself to get a certain value

ANSWER: D

Explanation:

The correct definition is **number of times the numeral 10 must be multiplied by itself to get a certain value**. More precisely, a base-10 logarithm is the exponent to which 10 must be raised to produce a specified number. For example, $\log_{10}(100) = 2$ because 10 multiplied by itself twice, or 10^2, equals 100. Likewise, $\log_{10}(1{,}000) = 3$ because 10^3 equals 1,000. This exponent-based relationship is particularly important in audiovisual work because many measurements, including decibels, use logarithmic relationships to express very large ratios in manageable numbers. Understanding that a logarithm identifies an exponent helps an installer interpret level changes and ratios correctly. For example, when calculating a power ratio in decibels, the underlying expression uses 10 times the base-10 logarithm of the ratio. The National Institute of Standards and Technology describes logarithmic quantities and their use in measurement at NIST: Logarithmic Quantities and Units. A concise mathematical definition and examples of common logarithms are also available from Encyclopaedia Britannica: logarithm.

QUESTION NO: 29

A reference microphone for setting equalization of a speaker system should: (Choose all that apply.)

A. be the same brand and type used in the system as designed

B. be omnidirectional

C. have a flat, on-axis response

D. have a nonreflective surface

ANSWER: B C

Explanation:

A reference microphone used to equalize a loudspeaker system should **be omnidirectional** and **have a flat, on-axis response**. An omnidirectional measurement microphone captures sound arriving from throughout the listening environment with minimal directional bias. This makes it appropriate for evaluating the combined direct and room-influenced sound field at measurement positions, rather than preferentially measuring only sounds from one direction. A suitably calibrated omnidirectional microphone also provides a consistent basis for comparing measurements made at different positions during system tuning.

A flat, on-axis frequency response is essential because the measurement chain must represent acoustic level across the audible spectrum as accurately as possible. If the microphone itself adds significant peaks or dips, an analyzer may interpret those microphone characteristics as loudspeaker or room errors and lead the technician to apply inappropriate equalization. Measurement microphones are therefore supplied with response specifications and, commonly, individual calibration data so their known behavior can be accounted for during analysis. Proper microphone selection and calibration support EQ decisions that improve the system's actual acoustic response rather than compensating for the measurement device. See Shure's overview of measurement microphones and the Earthworks guidance on measurement microphones.

QUESTION NO: 30

If a display has 800 pixels horizontally and 600 pixels vertically, what is its native resolution?

A. 800x600

B. 1600x1200

C. 1200x1600

D. 600x800

ANSWER: A

Explanation:

The correct answer is **800x600**. A display's native resolution is expressed as its physical pixel matrix, conventionally written in the order of horizontal pixels by vertical pixels (width × height). Because this display contains 800 pixels across its horizontal dimension and 600 pixels down its vertical dimension, its fixed pixel array is 800 × 600 pixels. This resolution is also commonly known as SVGA and has a 4:3 aspect ratio: dividing both dimensions by 200 yields 4 horizontal units for every 3 vertical units. Native resolution matters in AV installation because a fixed-pixel display produces its sharpest image when the incoming signal matches that matrix directly. When a source uses a different resolution, the display or another device in the signal chain must scale the image to fit the panel, which can affect apparent detail and introduce processing considerations. AVIXA's display terminology describes native resolution as the number of pixels physically available on a display device, while standard display-resolution references list 800 × 600 as SVGA. See AVIXA: What Is Display Resolution? and Graphics display resolution—SVGA.

QUESTION NO: 31

What is a dependency within a project task schedule?

A. A task that cannot begin before another task has been completed

B. A task that must be completed by a specific date

C. A task that will be required if specific conditions occur at the project site

D. An optional task that the client can determine is needed once the project is underway

ANSWER: A

Explanation:

A task that cannot begin before another task has been completed is a dependency because its start is governed by the completion of predecessor work. In project scheduling, dependencies are logical relationships between activities that establish the order in which work can occur. This wording describes the common finish-to-start relationship: the predecessor task must finish before the successor task can start. For an AV installation, for example, equipment installation may depend on completion of rough-in work, cable pulls, or the availability of finished mounting locations. Identifying these relationships lets the installer and project manager build a realistic sequence, determine the critical path, coordinate trades, and recognize how a delay to one activity can affect downstream work and the overall completion date. A dependency is therefore not simply a date requirement or a possible future activity; it is the scheduling linkage that constrains one task based on another task's status. The Project Management Institute describes dependencies as logical relationships among schedule activities and addresses their use in developing and managing project schedules. See PMI's PMBOK® Guide and Standards and its schedule network diagram guidance.

QUESTION NO: 32

What does the impedance of a loudspeaker depend upon?

A. frequency

B. directionality

C. sensitivity specification

D. driver type

ANSWER: A

Explanation:

The correct answer is **frequency**. A loudspeaker is an electromechanical load rather than a purely resistive device, so its impedance varies across the audio spectrum. The voice coil contributes inductance, which causes impedance to rise at higher frequencies, while the moving mass, suspension, and enclosure alignment create resonant behavior that produces impedance peaks, particularly around the system's resonance frequency. Consequently, a nominal impedance rating, such as 4 Ω or 8 Ω, is a simplified designation used for amplifier matching and system design; it does not mean the loudspeaker presents that exact impedance at every frequency. For a CTS-I technician, this frequency-dependent behavior matters when confirming amplifier loading, calculating how many loudspeakers may be connected to an amplifier channel, and interpreting manufacturer impedance plots. System design should account for the lowest impedance the loudspeaker presents within its operating range, as this condition places the greatest current-demand burden on the amplifier. AVIXA's audiovisual reference material describes loudspeaker impedance as frequency dependent, and this principle is also covered in technical loudspeaker education from Rane Corporation. See also the explanation of impedance curves and resonance in Audioholics' loudspeaker impedance overview.

QUESTION NO: 33

What are best practices when evaluating facility conditions of a space that is ready for installation? (Select all that apply.)

A. Note areas that may affect logistics

B. Make sure the site is clean and dust-free

C. Take pictures and document all existing conditions

D. Note if you will need an extension ladder

ANSWER: A B C D

Explanation:

Installation readiness verification should establish whether the work area can be accessed, safely worked in, and protected from conditions that could delay work or damage AV equipment. "Note areas that may affect logistics" is correct because delivery paths, loading areas, door widths, elevators, corridors, staging space, and other access constraints directly affect the crew's installation plan and material handling. "Make sure the site is clean and dust-free" is correct because construction debris and airborne dust can contaminate equipment, connectors, optics, and ventilation paths; a clean space also supports orderly, safe installation work. "Take pictures and document all existing conditions" is correct because a dated visual record helps communicate field conditions, coordinate with other trades, identify deviations from drawings, and preserve evidence of the room's condition before work begins. "Note if you will need an extension ladder" is correct because identifying elevated-access needs in advance allows the installer to plan appropriate equipment and safe work procedures. These observations are part of the practical site-readiness and documentation responsibilities expected of AV installation personnel. AVIXA describes CTS-I as validating installation activities and coordination skills; ladder planning must also follow applicable workplace-safety requirements. See AVIXA CTS-I certification and OSHA ladder safety guidance.

QUESTION NO: 34

Where should you place the wireless microphone receiver antenna in a rack assembly?

A. Line of sight to the transmitter

B. Inside the transmitter room

C. In the front of the rack

D. At the rear of the rack

ANSWER: C

Explanation:

In the front of the rack is correct because equipment racks, adjacent electronic devices, rack doors, and metallic rack components can attenuate or obstruct RF energy when antennas are located behind the equipment. Mounting the receiver antennas at the front gives them a clearer RF path into the room and reduces the likelihood that the rack itself will shadow the signal. Front-mounted antennas are also easier to keep properly oriented, separated from one another, and away from interference-producing equipment. In a typical installation, receiver antennas should be positioned where they have an unobstructed view of the intended coverage area; front rack mounting is the appropriate starting point when antennas are installed directly on a rack-mounted receiver. For larger rooms, difficult RF environments, or racks located outside the coverage area, the same principle is applied through remotely located antennas and appropriate low-loss RF cabling. Shure's guidance notes that receiving antennas should be located with a clear path to transmitters and away from obstructions and interference sources; see Shure: Antenna Distribution Best Practices. Additional receiver antenna-placement guidance is available in the Shure wireless microphone systems overview.

QUESTION NO: 35

What type of drawing would you use to find out exactly how the projector should be mounted to the ceiling?

A. Reflected ceiling plan

B. Mechanical drawing

C. Detail drawing

D. Section drawing

ANSWER: C

Explanation:

Detail drawing is correct because it provides the enlarged, installation-specific information needed to build or mount a particular assembly accurately. For a ceiling-mounted projector, an installer needs more than the device location: they need the mounting arrangement, support or backing requirements, attachment method, dimensions, elevations, interface with the ceiling construction, cable-routing provisions, and any required clearances or service access. Those project-specific instructions are normally conveyed in a detail at a scale large enough to show the hardware and construction relationships clearly.

Installation drawings work together as a coordinated set. A plan can establish where equipment belongs in the room, while a detail communicates exactly how the equipment is physically secured and integrated with the structure and finishes. This distinction is especially important for overhead equipment, where the mounting solution must satisfy both the manufacturer's requirements and the project's structural and safety requirements. The U.S. National CAD Standard describes details as drawings used to communicate specific construction and assembly information; see the National CAD Standard. For additional guidance on communicating coordinated building-design information through construction documents, see the Whole Building Design Guide.

QUESTION NO: 36

Phantom power is the _____ required to power a condenser microphone.

A. polarized conductor

B. internal capacitor

C. remote power

D. electrical field

ANSWER: C

Explanation:

Phantom power is correctly described as **remote power** because it is DC electrical power delivered from an external device—typically a mixing console, audio interface, microphone preamplifier, or dedicated phantom-power supply—to a microphone through the same balanced XLR cable that carries the audio signal. It is called “phantom” because the DC supply is applied equally to both signal conductors relative to the shield, allowing it to coexist with the balanced audio path without becoming part of the intended audio signal. The standard nominal supply is commonly identified as +48 V DC, although equipment may support other phantom-power voltages within the applicable standard. Condenser microphones generally need this remotely supplied power to polarize the capsule and/or operate their internal impedance-converter electronics. An installer should verify that the receiving preamplifier provides phantom power when specifying or commissioning a condenser microphone circuit, and should use correctly wired balanced cabling to maintain normal operation. Shure’s technical guidance describes phantom power as DC voltage supplied through the microphone cable, while the IEC microphone-interface standard defines the P48 arrangement commonly used in professional audio systems. See Shure: What Is Phantom Power? and IEC 61938.

QUESTION NO: 37

____ transfers audio, video, power, and data signals all over one cable at 10Gbps in two directions.

A. Thunderbolt

B. DVI

C. SDI

D. HDMI

ANSWER: A

Explanation:

Thunderbolt is correct because the original Thunderbolt interface was designed as a compact, high-speed connection that combines PCI Express data and DisplayPort video on a single cable. Its architecture supports simultaneous bidirectional throughput of up to 10 Gb/s in each direction, which matches the stated performance characteristic. DisplayPort can carry embedded digital audio along with video, so a Thunderbolt connection can support audiovisual transport while also carrying peripheral and network-style data. The interface also provides power delivery for compatible connected devices, reducing the number of separate cables needed at a workstation or AV endpoint. This combination made Thunderbolt particularly useful where high-resolution displays, storage, docking, and device connectivity had to coexist through one physical connector. Intel’s original Thunderbolt materials describe the technology as combining high-speed data and high-definition video in one cable with 10 Gb/s bidirectional channels. The Thunderbolt technology overview further explains its ability to transport PCI Express and DisplayPort protocols concurrently, which is the technical basis for carrying the required data and audiovisual signals. See Intel’s Thunderbolt technology overview and Thunderbolt Technology FAQ.

QUESTION NO: 38

Which three practices are appropriate when completing power connections in an AV equipment rack? (Select three.)

A. Verify that the branch circuit and power-distribution equipment are suitable for the connected load.

B. Maintain the protective-earth connection for equipment that requires grounding.

C. Route power cords so they are protected from strain, abrasion, and pinching.

D. Daisy-chain power strips when additional receptacles are needed.

E. Remove a grounding pin if an equipment plug does not fit the available receptacle.

ANSWER: A B C

Explanation:

The branch circuit and power-distribution equipment must be suitable for the connected load, equipment requiring protective earth must remain properly grounded, and power cords must be routed to avoid strain, abrasion, and pinching. These practices support safe, reliable operation and future serviceability. Daisy-chaining power strips can overload equipment or defeat the intended protection arrangement. Removing a grounding pin defeats an important safety feature and is never an appropriate solution to a connection problem.

QUESTION NO: 39

After which of the following activities is an AV project completed?

A. All hardware is installed

B. Software integration is completed

C. Verification that the system is operational

D. System closeout activities are completed

ANSWER: D

Explanation:

An AV project is completed after **System closeout activities are completed**. Installation and operational verification establish that the system has been built and functions as intended, but they do not by themselves conclude the project. Closeout is the formal final phase in which the integrator completes required documentation, delivers as-built information and user or operations materials, addresses final acceptance requirements, finalizes training or support handoff where applicable, and confirms that contractual administrative obligations have been met. This process provides an orderly transfer of the completed AV system to the client and creates a record that supports future operation, service, and maintenance. AVIXA's installation guidance treats documentation, commissioning/verification records, and turnover activities as essential project deliverables rather than optional work after installation. Completion therefore occurs only once the system has been properly closed out, not merely when equipment is mounted, software is integrated, or functionality is first demonstrated. See AVIXA's standards and guidance resources and the U.S. General Services Administration's construction project closeout guidance for the role of final documentation, acceptance, and turnover in project completion.

QUESTION NO: 40

Your client has asked you to mount a consumer media and gaming console in the rack. The device measures 340 Ã— 80 x 265 millimeters (W Ã— H Ã— D) (13.4 x 3.1 x 10.4 inches). How many RUs of rack space will this device require?

A. 1 RU

B. 2 RUs

C. 6 RUs

D. 8 RUs

ANSWER: B

Explanation:

2 RUs is correct because rack-unit space is determined by the equipment's installed height, not its width or depth. One rack unit (RU, also written "U") equals 1.75 inches (44.45 mm), the standardized vertical increment used for equipment racks. The console is 3.1 inches (80 mm) high. Dividing 3.1 inches by 1.75 inches per RU gives approximately 1.77 RU. Since equipment cannot occupy a fraction of a rack space and must physically fit within the available vertical opening, the required rack allocation must be rounded up to the next whole RU: 2 RU. A 2-RU allocation provides 3.5 inches (88.9 mm) of nominal rack height, accommodating the 3.1-inch-high device. In an installation, the technician should also select an appropriate rack shelf or mounting solution and confirm that ventilation, cable bend radius, access to controls, and manufacturer-required clearance are maintained. The rack-unit dimension and its use in determining vertical rack capacity are described by RackSolutions' rack-unit reference and are based on the EIA-310 rack standard, summarized by this 19-inch rack overview.

QUESTION NO: 41

Which of the following are elements of a control system? (Choose all that apply.)

A. Firmware

B. Hardware

C. Software

D. Spyware

ANSWER: A B C

Explanation:

Firmware, hardware, and software are core elements of an AV control system. Hardware provides the physical platform and interfaces: this can include a control processor, touch panel, button panel, control ports, network interfaces, relays, and serial or infrared connections. These components receive user input and communicate commands to the AV devices and subsystems being controlled. Firmware is the embedded, low-level code stored on a hardware device that enables its basic operation, startup behavior, communications, and interaction with connected interfaces. It is an essential part of making the physical controller and endpoint devices function reliably. Software supplies the programmed logic and user experience, including control-system configuration, command sequencing, device drivers, graphical touch-panel pages, automation rules, scheduling, and monitoring functions. During installation, a CTS-I professional must confirm that the hardware is correctly installed and connected, the required firmware versions are compatible, and the software or control program has been loaded, configured, tested, and documented. Together, these elements allow the system to translate user actions and automated events into dependable control of AV equipment. AVIXA's control-system training resources describe the relationship between control processors, interfaces, programming, and system operation: AVIXA Online Training. General embedded-system firmware concepts are also described by the NIST Guide to Enterprise Patch Management Technologies.

QUESTION NO: 42

Which of the following can control systems operate remotely? (Choose all that apply.)

A. Power

B. Drapes/curtains

C. Display monitors

D. Lights

ANSWER: A B C D

Explanation:

Control systems are designed to provide centralized, often network-enabled operation of the subsystems that make up an audiovisual environment. **Power** can be remotely sequenced or switched through managed power distribution units, relays, and equipment-control interfaces, allowing an installer or support team to turn equipment on and off in the required order. **Drapes/curtains** can be operated using motorized shade or drapery controllers integrated with the control processor. **Display monitors** can receive remote commands for power, input selection, volume, and other supported functions through IP, serial, IR, or manufacturer-specific control protocols. **Lights** can be controlled through lighting-control gateways, dimmers, relays, or networked lighting systems. Integrating these functions enables users to recall room states such as presentation, videoconference, or shutdown from a touch panel, wall controller, scheduling platform, or authorized remote-support interface. This coordinated control is a core purpose of AV control-system design and integration. See Crestron's overview of integrated building control technology and Extron's control systems information.

QUESTION NO: 43

Light energy _____ the farther you get from the source.

A. remains the same

B. changes color

C. spreads out

D. intensifies

ANSWER: C

Explanation:

Light energy **spreads out** as distance from a source increases. For an ideal point source, the emitted light radiates over the surface of an expanding sphere. Because a sphere's surface area increases in proportion to the square of its radius, the same total luminous flux is distributed across a progressively larger area. Consequently, illuminance at the receiving surface decreases according to the inverse-square law: doubling the source-to-surface distance reduces illuminance to one-quarter, assuming the source orientation and intervening conditions remain unchanged. This is a fundamental consideration when an AV installer plans projector placement, display visibility, camera illumination, or architectural and stage lighting. The installer must account for distance when determining whether the light level reaching a screen, work plane, or camera sensor will meet the design requirement. This relationship applies most directly to a point-like source in open space; real fixtures can also be affected by beam angle, optical distribution, reflection, obstructions, and atmospheric losses. Nevertheless, the underlying physical principle is that emitted light diverges with distance rather than remaining concentrated. See the NIST overview of light and radiation units and the International Commission on Illumination definition of the inverse-square law.

QUESTION NO: 44

When mounting a 75lb (34 kg) projector with a 15lb (7 kg) mount, the substructure should be able to support a minimum of:

A. 180lbs (82 kg)

B. 90lbs (41 kg)

C. 450lbs (204 kg)

D. 270lbs (122 kg)

ANSWER: C

Explanation:

The correct minimum is **450lbs (204 kg)**. The installed load is the combined weight of the projector and its mount: 75 lb plus 15 lb equals 90 lb (approximately 41 kg). For overhead AV equipment installation, the supporting substructure is expected to provide a safety factor of five times the total static equipment load. Multiplying the 90 lb installed load by five gives a required minimum support capacity of 450 lb. Using the metric values produces the same result: 34 kg plus 7 kg equals 41 kg, and 41 kg multiplied by five is approximately 205 kg; 204 kg reflects the conversion based on the pound value. This requirement applies to the complete load path, including the structural attachment point and all components used to transfer the load to the building structure. A five-to-one design margin helps account for installation conditions, dynamic forces, and the serious consequences of an overhead support failure. AVIXA's installation guidance emphasizes verifying that mounting and support methods are suitable for the load and building conditions; see AVIXA Standards. Applicable local building requirements and manufacturer instructions must also be followed, consistent with OSHA's general-duty expectation for a workplace free of recognized serious hazards: OSHA Act, Section 5.

QUESTION NO: 45

A handheld wireless microphone has an integrated transmitter and _____.

A. DSP

B. microphone

C. belt clip

D. headset

ANSWER: B

Explanation:

A handheld wireless microphone has an integrated transmitter and **microphone**. In this form factor, the microphone capsule, transmitter electronics, antenna arrangement, battery compartment, and controls are housed together in the handheld body. The capsule converts acoustic sound pressure into an electrical audio signal; the integrated transmitter then modulates and sends that signal wirelessly to the corresponding receiver. This self-contained design lets a presenter, vocalist, or event participant hold and use the unit without a separate bodypack transmitter or an attached microphone cable.

During AV installation and commissioning, the technician should identify the handheld unit as both the sound pickup device and the RF transmitting device. Practical checks include installing the specified batteries correctly, confirming that its frequency or synchronization settings match the receiver, verifying RF and audio-level indications at the receiver, and performing a walk test in the intended coverage area. AVIXA's overview of wireless microphone systems describes the transmitter-to-receiver signal path and the role of wireless microphone components: AVIXA: The Basics of Wireless Microphones. For general wireless microphone operation and coordination guidance, see the FCC's Operation of Wireless Microphones.

QUESTION NO: 46

How many dimensions does color space possess?

A. two

B. three

C. five

D. four

ANSWER: B

Explanation:

Three is correct because a color space describes colors using three independent numerical components, which can be visualized as coordinates in a three-dimensional space. In the common RGB color model, those dimensions are red, green, and blue channel values. Varying the level of each primary independently produces a specific color, while the full range of possible component combinations defines the color space or color gamut for that system. Other color representations may use different coordinates—for example, hue, saturation, and lightness/value—but still commonly describe color through three dimensions. In video and display workflows, RGB may also be transformed into luma and two chroma components, such as Y′CbCr; this likewise represents color with three component signals. Understanding color as a three-dimensional description helps AV professionals work with video signal formats, display calibration, color reproduction, and conversion between color encodings. The International Color Consortium describes color encoding profiles as defining the relationship between color values and a device-independent color space, while RGB is a three-component additive color model used by electronic displays. See the W3C sRGB color-space specification and the ICC profile specification.

QUESTION NO: 47

Which of the following are features of an audio signal generator? (Choose all that apply.)

A. Generates sine wave and other signals used for setting system levels

B. Usually has both 1 kHz and 400Hz signal outputs

C. With a properly calibrated signal, can determine signal bit rate

D. Can be helpful in measuring distortion

ANSWER: A B D

Explanation:

An audio signal generator is a fundamental commissioning and troubleshooting tool because it supplies known, repeatable test signals to an AV audio system. “Generates sine wave and other signals used for setting system levels” is correct: a stable sine-wave tone, particularly at 1 kHz, provides a defined reference for aligning gain structure, checking signal routing, and confirming loudspeaker or amplifier operation. Generators commonly provide standard test frequencies, so “Usually has both 1 kHz and 400Hz signal outputs” is also a valid feature. These familiar tones allow technicians to apply repeatable references for level-setting and testing across connected equipment.

“Can be helpful in measuring distortion” is correct because distortion testing requires a controlled source signal. A technician can inject a clean sine wave at a known frequency and level, then use an appropriate analyzer or measurement instrument to examine the system output for harmonic or other unwanted signal components. The generator establishes the reference stimulus needed for that measurement workflow. Audio Precision describes the use of generated test signals in audio measurement at Audio Precision Technical Library; Rane’s audio measurement guidance also discusses test tones and measurement practice at RaneNote 145.

QUESTION NO: 48

Which of the following are HDCP authentication steps? (Choose all that apply.)

A. Locality check

B. Key exchange

C. Audio and video sync check

D. Session key exchange

ANSWER: A B D

Explanation:

HDCP authentication establishes that the receiving device and any permitted downstream devices are authorized to receive protected digital content before encrypted transmission proceeds. **Key exchange** is part of the authentication and key-establishment process: the transmitter and receiver exchange protocol information and cryptographic values needed to authenticate the receiver and derive protected keys. The **locality check** is also an explicit HDCP authentication step. It uses a tightly timed challenge-and-response exchange to help confirm that the receiver is local to the transmitter rather than being relayed over an impermissibly distant connection. **Session key exchange** follows successful authentication and locality validation. It provides the session-specific content-encryption key material that allows the transmitter to begin sending protected audiovisual content securely. In HDCP 2.2 terminology, these stages are commonly identified as Authentication and Key Exchange, Locality Check, and Session Key Exchange. Understanding these stages helps installers troubleshoot protected-content failures by distinguishing authentication, proximity validation, and encrypted-content-session setup. See the Digital Content Protection LLC HDCP 2.2 Protocol Specification and the Digital Content Protection LLC resource site.