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BICSI Data Center Design Consultant - DCDC

BICSI DCDC-002

Version Demo

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Topic Break Down

Topic	No. of Questions
Topic 1, Data Center Design	133
Topic 2, Data Center Operations	8
Total	141

QUESTION NO: 1

What is the minimum aisle width?

A. 3 feet

B. The width shouldn't exceed more than half room length

C. Arm span distance between technicians

D. Twice server cabinet depth

ANSWER: A

Explanation:

3 feet is the minimum aisle width used as the baseline access-clearance criterion for data-center equipment areas. This minimum provides a passable working path for technicians performing installation, inspection, maintenance, and emergency egress-related movement around cabinets and supporting infrastructure. It also establishes the minimum space needed to safely handle ordinary tools and service activities without creating an obstructed equipment-access route. In a data-center design, this is a minimum rather than a preferred planning target: larger aisle dimensions may be appropriate where cabinet doors, removable equipment, lifting devices, high-density deployments, or concurrent maintenance activities require more room. The final layout must also account for applicable building, fire, electrical, and occupational-safety requirements, which can impose additional clearance or egress obligations for the specific facility. BICSI's data-center design guidance addresses the need to coordinate equipment-space planning, maintainability, and access pathways as part of an integrated facility design; see BICSI Standards and Publications. For the related requirement to keep walking-working surfaces and access routes safely maintained, consult OSHA 29 CFR 1910.22.

QUESTION NO: 2

What is the clearance required between the cold aisle and the CRAC unit?

A. 2 feet

B. 4 feet

C. 6 feet

D. 8 feet

ANSWER: D

Explanation:

8 feet is the required clearance between the cold aisle and the CRAC unit for this data-center layout criterion. This distance, approximately 2.4 m, provides sufficient space for conditioned supply air to enter and distribute along the cold-aisle region without an immediate obstruction or undesirable short-circuiting of the airflow path. Maintaining this clearance supports the intended separation of supply and return air, helping the cooling system deliver air more uniformly to the intake side of IT equipment. It also gives the designer adequate room to coordinate the cooling-unit location with the aisle arrangement, equipment rows, and associated service-access requirements. The distance is a layout and airflow-management requirement; it should be coordinated with the CRAC manufacturer's required service clearances and the overall mechanical design. BICSI data-center design guidance addresses cooling architecture, equipment placement, and airflow management as integral design considerations; see BICSI Standards. For additional thermal-management context, ASHRAE provides data-processing-environment guidance at Thermal Guidelines for Data Processing Environments.

QUESTION NO: 3

what is the ANSI/TIA-942 typical range of pressure differential regarding positive pressure for data center.

A. Less than or equal to –0,1 in water column (-25 Pa)

B. More than -0,005 in wc (< -1,24 Pa), but less than or equal to +0,05in wc (+12,4 Pa)

C. More than +3in wc (> 746Pa),but less than or equaltto+6,in wc(1492 pa))

D. Less Than –4,+4 inches water column(-1000 opa ,+100 < pa >)

E. +0.01 to +0.05 in. water column (+2.5 to +12.5 Pa)

ANSWER: E

Explanation:

The typical positive-pressure differential for a data center is **+0.01 to +0.05 inches of water column (+2.5 to +12.5 Pa)**, measured relative to adjacent areas. Maintaining this modest positive pressure helps prevent unfiltered air, dust, and other contaminants from entering the computer room through door openings, construction gaps, and cable or service penetrations. This supports the cleanliness and environmental-control objectives required for reliable operation of information technology equipment. The pressure differential must be sufficient to establish airflow outward from the data center, while remaining low enough to avoid operational problems such as difficult-to-open doors or excessive uncontrolled air leakage. ANSI/TIA-942 guidance is commonly applied alongside the thermal and contamination-control guidance for data-processing environments published by ASHRAE. The stated range is therefore an intentional, controlled positive-pressure target rather than merely a condition in which the room is not negative relative to surrounding spaces. See the ANSI/TIA-942-C standard information from TIA and ASHRAE's Thermal Guidelines for Data Processing Environments for related data-center environmental design guidance.

QUESTION NO: 4

According to NEB, what is the recommended range for the low temperature in a data center?

A. 65 degrees

B. 60 degrees

C. 55 degrees

D. 70 degrees

E. 75 degrees

ANSWER: A

Explanation:

65 degrees is the recommended low-temperature value. In data-center environmental design, the temperature recommendation is applied at the equipment air inlet and is intended to provide a stable operating environment for information-technology equipment. A 65°F lower boundary supports reliable equipment operation while avoiding needless overcooling, which increases mechanical-system energy use and can complicate humidity control. The design consultant should evaluate this recommendation as part of an integrated environmental strategy that includes inlet-temperature measurement, airflow management, containment where appropriate, redundancy, and monitoring. Actual project criteria may be further constrained by the installed equipment manufacturers' requirements, the selected availability objective, and the governing owner standard; however, the stated NEB recommended low end is 65°F. This value is also broadly consistent with the lower end of commonly used data-processing environmental guidance, such as ASHRAE's recommended inlet-air envelope. For design work, the BICSI data-center standard should be used alongside equipment documentation and applicable thermal guidance rather than treating a room thermostat reading as the sole compliance measure. See the BICSI 002 data center design standard and ASHRAE's Thermal Guidelines for Data Processing Environments.

QUESTION NO: 5

What is the difference between a hot aisle and a cold aisle containment system?

A. Hot aisle containment system encloses the hot aisle to prevent mixing with the cold air while cold aisle containment system encloses the cold aisle to prevent mixing with the hot air

B. Hot aisle containment system is more efficient in terms of cooling than cold aisle containment system

C. Cold aisle containment system is more cost-effective than hot aisle containment system

D. Hot aisle containment system is more flexible and adaptable to changing needs than cold aisle containment system

ANSWER: A

Explanation:

Hot aisle containment system encloses the hot aisle to prevent mixing with the cold air while cold aisle containment system encloses the cold aisle to prevent mixing with the hot air. This states the defining distinction accurately: hot-aisle containment captures and isolates the heated exhaust air discharged from the rear of IT equipment, whereas cold-aisle containment surrounds the aisle supplying cooled intake air to the fronts of the racks. In either design, the purpose is to establish physical separation between supply and return air streams, reducing bypass air and recirculation. That separation helps ensure IT equipment receives air at a controlled inlet temperature and allows the cooling system to operate more predictably and efficiently. The choice between these approaches is a design decision influenced by the data center's cooling architecture, ceiling/plenum arrangement, fire protection strategy, rack layout, and operational requirements; neither containment type is inherently defined by universal superiority in efficiency, cost, or flexibility. ASHRAE thermal guidance emphasizes managing airflow and maintaining acceptable environmental conditions at IT-equipment inlets, which containment supports by limiting supply/return air mixing. See ASHRAE's Thermal Guidelines for Data Processing Environments and its data center design guidance.

QUESTION NO: 6

What is the recommended amount of fuel supply to be available to a class F4 data center?

A. 24 hours

B. 48 hours

C. 72 hours

D. 96 hours

ANSWER: D

Explanation:

96 hours is the recommended available on-site fuel supply for a Class F4 data center. In BICSI's data-center availability framework, F4 represents the highest facility-availability classification and is intended for critical environments that must sustain operations through extended utility outages. Fuel storage must therefore support the standby power system at the design load for four days without relying on immediate fuel deliveries. This reserve is a planning requirement: the designer should establish generator fuel-consumption rates at the applicable load profile, account for usable rather than nominal tank capacity, and provide monitoring, maintenance, environmental protection, and a documented replenishment strategy. The 96-hour reserve supports operational resilience when roads, suppliers, or local infrastructure may be disrupted during a significant incident. It also should be coordinated with the site's emergency-power architecture, including generator redundancy and the loads that are actually connected to emergency generation. BICSI's DCDC credential covers the planning and design considerations for highly available data-center facilities; see BICSI's Data Center Design Consultant certification page. Generator fuel systems must additionally comply with the applicable fire, safety, and local regulatory requirements; NFPA provides information on its standards and code-development resources at NFPA Codes and Standards.

QUESTION NO: 7

What is the distance from the bottom of the access floor to the bottom of the cable tray?

A. 6 inches

B. 7 inches

C. 8 inches

D. 9 inches

E. 10 inches

ANSWER: C

Explanation:

The required distance is **8 inches** (approximately 203 mm) from the underside of the access floor to the bottom of the cable tray. This clearance is a raised-floor coordination requirement intended to preserve usable space in the underfloor plenum while accommodating the physical depth of the tray, installed cables, supports, and the routing transitions needed at equipment and floor penetrations. Maintaining the specified separation also supports practical installation and servicing of pathway infrastructure without placing the cable tray so close to the access-floor panels that access, cable placement, or future modifications become unnecessarily difficult. In a data center, pathway placement must be coordinated with the access-floor system, airflow strategy, power distribution, grounding and bonding provisions, and any other services located in the plenum. The 8-inch dimension therefore provides a repeatable design reference for locating cable tray relative to the raised floor rather than leaving the separation to field interpretation. BICSI data-center design guidance addresses the coordinated design of telecommunications pathways and spaces; see BICSI Standards. Related data-center telecommunications infrastructure requirements are published through TIA Standards.

QUESTION NO: 8 - (SIMULATION)

what is the hydrogen maximum for a data center?

A .1 % of total room volume

B .15%of total room volume

C .20%of total room volume

D. None Of These answers

ANSWER: See the explanation for the answer

Explanation:

Answer: D. None of These answers.

The commonly used maximum allowable hydrogen concentration for a battery/UPS area is **1% by volume**, which is well below hydrogen's approximately 4% lower explosive limit (LEL). Since 1% is not one of the listed values (0.1%, 0.15%, or 0.20%), select **D**.

QUESTION NO: 9

Where should power cable be ran in an access floor?

A. Hot aisle

B. Cold aisle

C. Above the access floor

D. Below the access floor

ANSWER: B

Explanation:

Cold aisle is the correct location for power cabling when an access-floor plenum is used in a hot-aisle/cold-aisle data-center arrangement. Routing power distribution pathways beneath cold aisles supports orderly, repeatable routing to cabinet power-entry locations while preserving a defined pathway strategy. This convention also helps keep power infrastructure separated from telecommunications cabling pathways, supporting maintainability, safety, and electromagnetic-compatibility practices. The pathway must be planned so that cable bundles, whips, and containment do not unduly obstruct the underfloor supply-air plenum; cable quantities, routing, and supports should therefore be coordinated with the mechanical design and maintained as the installation changes. BICSI data-center design guidance treats cabling, power distribution, grounding, and cooling as interdependent infrastructure systems that require coordinated pathway planning. Likewise, ASHRAE's data-center thermal guidance emphasizes preserving effective airflow delivery and managing physical conditions that can impair cooling performance. See BICSI's standards resources and ASHRAE's Thermal Guidelines for Data Processing Environments.

QUESTION NO: 10

What is the recommended range for the low temperature in a data center according to ASHRAE?

A. 64.4 degrees

B. 60 degrees

C. 55 degrees

D. 70 degrees

E. 75 degrees

ANSWER: A

Explanation:

64.4 degrees is correct because it is the lower boundary of ASHRAE's recommended environmental envelope for commonly deployed air-cooled data-processing equipment. ASHRAE TC 9.9 expresses this recommended dry-bulb inlet-temperature range as 18°C to 27°C (64.4°F to 80.6°F), with the measurement taken at the IT equipment air inlet rather than at a room thermostat, return-air path, or cooling-unit sensor. Maintaining inlet conditions at or above 18°C supports reliable operation while avoiding unnecessary cooling energy use associated with operating a data center colder than the recommended envelope. In a design context, this lower value should be applied with attention to rack-level temperature variation, airflow management, containment strategy, load distribution, and the equipment manufacturers' allowable environmental specifications. The recommended envelope is a target for normal operation; ASHRAE also publishes broader allowable envelopes that may apply to specific equipment classes and operating circumstances. BICSI data-center design practice similarly emphasizes verifying conditions where the IT load actually receives air, because that is the location that determines equipment thermal exposure. See ASHRAE's Datacom Series resources and its TC 9.9 committee information for the relevant thermal-guidance context.

QUESTION NO: 11

An owner requires a secure path for receiving servers and staging them before installation, while preventing delivery personnel from entering the computer room. Which space-planning arrangement best meets this requirement?

A. A vendor storage area adjacent to the secured loading dock

B. An open storage area within the computer room

C. A staging area adjacent to the hot aisle

D. A receiving area inside the electrical room

ANSWER: A

Explanation:

A secured loading dock adjacent to secure storage and a controlled staging area provides a short, protected logistics path for delivered equipment. Assets can be received, inspected, logged, and staged before authorized personnel transfer them into the computer room. This arrangement supports chain of custody and separates delivery activity from the operational white space.

QUESTION NO: 12

What are the 3 types of Authentication for access control?

A. Type 4 - What you possess

B. Type 5 - What you desire

C. Type 6 - What you create

D. Type 2 - What you know

E. Type 1 - What you know; Type 2 - What you have; Type 3 - What you are

ANSWER: E

Explanation:

Type 1—what you know; Type 2—what you have; and Type 3—what you are correctly identifies the three traditional authentication-factor categories used for access control. A knowledge factor is information the user can recall, such as a password or PIN. A possession factor is an item under the user's control, such as a hardware token, smart card, or registered mobile authenticator. An inherence factor is a characteristic of the user, commonly verified with biometrics such as a fingerprint or facial comparison. Combining factors from different categories creates multifactor authentication, which provides stronger assurance because compromise of one factor alone does not provide the complete set of evidence needed to authenticate the user. NIST's digital identity guidance describes authentication using memorized secrets, possession-based authenticators, and biometric methods, while noting the importance of using independent factors in multifactor implementations. See NIST SP 800-63B: Authentication and Authenticator Management and CISA guidance on phishing-resistant multifactor authentication.

QUESTION NO: 13

Where should the entrance room be located within a data center?

A. In the computer room

B. In a separate building on the campus

C. Adjacent to or in a secured space within the computer room

D. Anywhere with easy access to the outside

ANSWER: C

Explanation:

Adjacent to or in a secured space within the computer room is correct because the entrance room is the controlled boundary where external telecommunications pathways and carrier facilities enter the data center and transition to the premises cabling infrastructure. Locating it adjacent to the computer room supports short, manageable backbone pathways between the entrance facility and the main distribution area, while maintaining a clear, protected demarcation for service-provider access, cable protection, grounding and bonding, and administration. Where the design places this function within the computer room footprint, it must be a separately secured area so that access by carriers and authorized personnel can be controlled without unnecessarily exposing critical IT equipment or operations. This placement also assists the design team in coordinating diverse external pathway entrances, firestopping, physical security, and future capacity for incoming services. These principles align with BICSI data-center design guidance and the telecommunications-infrastructure concepts

addressed by ANSI/TIA-942. See the BICSI 002 Data Center Design and Implementation Best Practices overview and the Telecommunications Industry Association standards information for the applicable data-center infrastructure framework.

QUESTION NO: 14

What is the minimum separation distance for redundant utility service feeds

A. 4 feet along entire route

B. 22 feet along entire route

C. 44 feet along entire route

D. 66 Feet Along the Entire Route

ANSWER: D

Explanation:

The minimum separation distance is **66 Feet Along the Entire Route**. This represents 20 m of physical separation and is intended to preserve the independence of redundant utility feeds from the point of origin through their complete routing to the data center. Maintaining this distance reduces the likelihood that a single localized event—such as excavation damage, a fire, flooding, vehicle impact, or failure within a shared utility corridor—will impair both sources at once. In a resilient data center electrical design, redundancy is meaningful only when the redundant paths do not share an unacceptable common point of failure. The separation requirement therefore applies along the entire route, rather than only at equipment entrances or at a limited portion of the pathway. This approach supports the fault-tolerance and availability objectives addressed in BICSI's data-center design guidance. BICSI publishes its data-center design requirements and best practices under ANSI/BICSI 002; see the BICSI Standards catalog and BICSI's Data Center Design Consultant certification information for the relevant design discipline and standard context.