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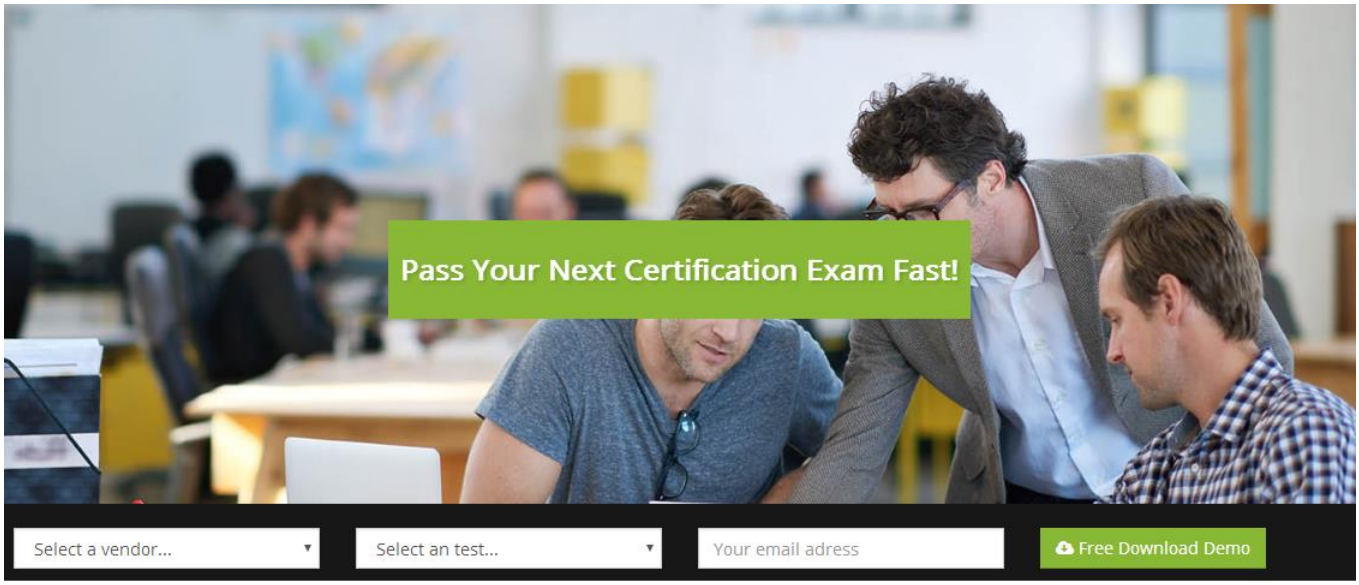

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Exam : **CDCS-JPN**

Title : EXIN EPI Certified Data Centre Specialist (CDCS日本語版)

Vendor : EXIN

Version : DEMO

QUESTION NO: 1
床を二重にしたコンピュータ室には、ホットアイルとコールドアイルの配置でラックが設置されている。
ダウンフロー型エアコンの設置場所について、どのようなことを推奨しますか？
A.冷房通路に垂直な(列の端にある)エアコン
B.ホットアイルに垂直な(列の端にある)エアコン
C.エアコンは必ず各棚列の両側に設置してください。
D.エアコンの設置場所は冷却効果や効率に影響を与えません。したがって、都合の良い場所に設置できます。
Answer: A
Explanation:
In a hot/cold aisle configuration, placing down-flow air conditioners perpendicular to the cold aisle ensures that cool air is directed efficiently into the cold aisles where server intakes are located. This layout allows for optimal cooling performance by aligning the airflow directly with the equipment intakes, minimizing hot spots and enhancing cooling efficiency.
Detailed Explanation:
With a raised floor design, cold air from the air conditioners is supplied into the cold aisle, where server intakes are located. Positioning the air conditioning units perpendicular to the cold aisles ensures that cool air is delivered directly into these aisles, preventing air mixing and optimizing cooling. This setup takes full advantage of the airflow management strategy inherent to the hot/cold aisle configuration.
EPI Data Center Specialist References:
EPI guidelines on cooling emphasize that down-flow air conditioners should be positioned to maximize the effectiveness of cold aisle delivery, which improves cooling efficiency and helps maintain consistent temperatures across server racks.

QUESTION NO: 2
データセンターは、公共電力会社から独自の電力供給を受け、建物の所有者から冷水供給を受けている。
PUEを計算する際に考慮すべき点は何ですか？
A. 建物内の冷房設備も電力を使用するため、特に問題はありません。
B. チラープラントのCOP値を考慮に入れる必要があります
C. 地域冷水については、0.4の重量係数を考慮する必要があります。
D. 共用ビルではPUE計算はできません
Answer: C
Explanation:
When calculating Power Usage Effectiveness (PUE) in a data center that uses chilled water from an external source, like from a building owner, a weight factor for district chilled water must be applied. This is because PUE calculations aim to measure the energy efficiency of the data center's own operations, and external utilities like district chilled water aren't directly powered by the data center. A weight factor of 0.4 is typically used to account for the energy consumed to produce and deliver the chilled water, reflecting the indirect impact on the data center's total energy consumption.
Detailed Explanation:

PUE is calculated as the ratio of the total facility energy to the IT equipment energy. If the cooling is provided by an external chilled water source, it's necessary to adjust the calculations to accurately reflect the energy impact. By incorporating the 0.4 weight factor, data centers can calculate a more accurate PUE, aligning with standard methods and industry best practices.
EPI Data Center Specialist References:
EPI training on PUE highlights the importance of adjusting for external energy sources, such as district cooling, in the calculations. This ensures that PUE values remain accurate and comparable across different data centers, even when external utilities are used.

QUESTION NO: 3
データセンターはANSI/TIA-942 Rated-
3規格への準拠に関する監査を受ける必要があります。ネットワークアーキテクチャはこの監査の対象となりますか？
A. いいえ、同時保守性は電気と機械にのみ適用されるためです
B.いいえ、使用されているケーブルの種類のみが監査対象となります。
C. はい、ただしネットワーク管理がANSI/TIA-606に準拠していない場合のみです。
D. はい、とりわけネットワークアーキテクチャはANSI/TIA-942のRated-
3に準拠している必要があります。
Answer: D
Explanation:
ANSI/TIA-942 defines ratings across four areas:
* Architectural
* Electrical
* Mechanical
* Telecommunications (network cabling + architecture)
A data center cannot be considered Rated-3 unless all four areas meet the concurrent maintainability criteria.
For telecom/networking, this means dual redundant backbone cabling, proper pathways, and separate routes to ensure no single point of failure.
* A and B are incorrect because they limit scope to electrical/mechanical or cabling only.
* C is incomplete: administration (ANSI/TIA-606) is part of compliance but architecture redundancy is mandatory.
References: ANSI/TIA-942-B §5.2 (Rated Levels), Annex E (Telecommunications infrastructure examples).

QUESTION NO: 4
二重床を設置する際、水平器を使って床を水平にすることはできますか？
A.
はい、水準器の棒は、長さが60cm/2フィート(一般的な床タイルのサイズ)より長ければ使用できます。
B. いいえ、水準器を使用すると、測定誤差が台座から台座へと伝わってしまうからです。
C. はい、ただし水準器のバーは垂直面でのみ使用できます。
D. はい、40cmを超える高さの床には水準器を使用することをお勧めします。
Answer: B

Explanation:
A spirit level bar should not be used for leveling a raised floor, as measurement errors are likely to propagate from one pedestal to the next. Spirit levels can introduce cumulative errors, leading to uneven floors, particularly in large installations where precise leveling is critical.
Detailed Explanation:
Using a laser level or a precision leveling device is recommended to ensure accuracy across all floor tiles.
Spirit levels, while adequate for short spans, can transfer small inaccuracies from one pedestal to another, which can cause alignment issues and floor instability over time.
EPI Data Center Specialist References:
EPI data center guidelines discourage the use of spirit levels for raised floors. Instead, they advocate for precision tools like laser levels that ensure consistency and accuracy in large-scale installations, aligning with best practices for raised floor construction.

QUESTION NO: 5
変圧器室からコンピュータ室への電磁界レベルが100mGと測定されているため、電磁界遮蔽材を設置する必要があります。変圧器室は廊下を挟んで約10メートル離れています。遮蔽材はどこに設置すべきでしょうか？
A. どちらでも構いません。変圧器室の近くでもコンピュータ室の近くでも大丈夫です。
B.変圧器室のできるだけ近く
C. コンピュータ室のできるだけ近く
D. 100 mGは許容範囲内であるため、遮蔽は不要です。
Answer: B
Explanation:
The most effective EMF mitigation is to install shielding as close as possible to the source of radiation. By blocking or redirecting magnetic flux at the origin (the transformer room walls), the overall field propagation into adjacent areas is minimized. If shielding were placed at the computer room, the field would already have spread over the intervening space, requiring more material and higher cost.
Standards such as IEEE Std 299 (EMC Shielding Effectiveness) and IEC 61000 emphasize source-based mitigation. Additionally, ANSI/TIA-942 requires EMF shielding where magnetic flux exceeds recommended ICT thresholds (generally <5 mG for sensitive tape/disk storage). Although 100 mG is often tolerated by modern equipment, legacy magnetic storage can be affected, so shielding is still prudent. Hence, the correct location is at the transformer room wall.
References: IEEE Std 299 (EMI Shielding), ANSI/TIA-942-B §6.6.4 (EMF Requirements), IEC 61000 EMC standards.

QUESTION NO: 6
エアコンユニットの電源分配ユニット(PDU)には、MCB(ミニチュア回路ブレーカー)を設置する必要があります。
どのブレーキングカーブを選択すべきでしょうか？
A. Dカーブ
B. Cカーブ

C. Bカーブ
D. Aカーブ
Answer: B
Explanation:
For an MCB (Miniature Circuit Breaker) in the PDU of an air-conditioning unit, a C-Curve is recommended.
C-Curve breakers are suitable for circuits with moderate inrush currents, such as those experienced in air conditioning units. They provide protection against overloads while accommodating the inrush without nuisance tripping.
Detailed Explanation:
C-Curve breakers trip when currents exceed 5 to 10 times the rated current, making them ideal for devices like air conditioners that experience moderate inrush currents upon startup. This characteristic provides a balance between protection and resilience against startup surges, preventing unnecessary trips while safeguarding the circuit.
EPI Data Center Specialist References:
EPI guidance for data center electrical systems specifies that C-Curve breakers are appropriate for equipment with inrush characteristics similar to air conditioning units, as they help prevent operational interruptions caused by typical surges during equipment start-up.

QUESTION NO: 7
あなたは、UPSから出力されるTHDiレベルが3%THDiを超えないことを保証することを求める顧客を担当しています。さらに、顧客は電力効率の高いデータセンターを運用したいと考えています。UPSには6パルスSCR/サイリスタ整流器が搭載されています。UPSの現在の負荷は約80%です。顧客は、今後3年間はICTインフラストラクチャに変更を加える予定はないと述べています。
何をおすすめしますか？
A. 何も問題ありません。UPSが適切なTHDiレベルを維持できます。
B. UPSにパッシブ高調波フィルタを取り付けてください
C. UPSにアクティブ高調波フィルタを取り付けてください
D. K13またはK20定格の絶縁トランスを取り付けてください。
Answer: C
Explanation:
Given the customer's requirement to limit Total Harmonic Distortion (THDi) to below 3% and the presence of a 6-pulse SCR/Thyristor-based rectifier, an active harmonic filter is the best solution. A 6-pulse rectifier typically generates higher harmonic distortion, often exceeding 3%, especially under substantial loads like
80%. An active harmonic filter dynamically monitors and compensates for harmonic distortion, effectively reducing THDi and supporting a more power-efficient operation, aligning with the customer's energy efficiency goals.
Detailed Explanation:
Passive harmonic filters can reduce harmonics but are less effective at maintaining low THDi levels under varying loads. Active filters offer real-time correction and can achieve lower THDi levels than passive filters, especially in systems with fluctuating loads or where strict harmonic limits are required. Installing an active harmonic filter will ensure compliance with the specified THDi limits and optimize power quality.

EPI Data Center Specialist References:
EPI guidance on power quality management recommends active harmonic filters for environments where strict THDi levels are necessary. Active filters offer better control over harmonic levels, supporting both compliance and operational efficiency.

QUESTION NO: 8
データセンターの機械設備の評価はRated-3、電気設備の評価はRated-4、通信設備の評価はRated-2です。総合評価はいくつですか？
A. レーティング-2
B. レーティング-4
C. 電気系統が最も重要であるため、評価は4です。
D. 建築評価による
Answer: A
Explanation:
ANSI/TIA-942 defines that the lowest rating across all four categories determines the overall facility rating. A facility cannot claim a higher overall level unless all subsystems meet or exceed that level.
In this case:
* Mechanical = Rated-3
* Electrical = Rated-4
* Telecommunications = Rated-2
Since telecommunications only meets Rated-2, the overall facility is Rated-2, regardless of higher scores elsewhere.
This ensures that weak areas (like cabling) are not ignored, because they can compromise overall availability.
References: ANSI/TIA-942-B §5.2.3 (Overall rating determination).

QUESTION NO: 9
データセンターのライフサイクルのどの段階で、テストとコミッショニングが実施されますか？
A. 設計段階
B. 実装段階
C. ステージの運用/最適化
D. ステージ引退
Answer: B
Explanation:
The data center life cycle is typically divided into four stages:
* Design (scope, architecture, planning)
* Implement (construction, installation, testing & commissioning)
* Operate/Optimize (day-to-day operations, maintenance, continuous improvement)
* Retire (decommissioning and migration)
Testing and commissioning occur in the Implement stage, after construction but before handover. This includes Integrated Systems Testing (IST), which validates that all systems (electrical, cooling, fire protection, telecom) perform to design intent and redundancy requirements.

Without commissioning, the data center cannot be certified or considered operational.
References: Uptime Institute Commissioning Guidelines, ANSI/TIA-942-B Annex F (Lifecycle), ISO/IEC
30182.

QUESTION NO: 10
ハロカーボン系ガス消火システムと不活性ガス系消火システムの重要な違いは何ですか？
A.不活性ガスは、ハロカーボンガスよりも小型のガス容器で使用できます。
B.不活性ガスは環境に害を及ぼしますが、ハロカーボンガスは害を及ぼしません。
C.
ハロカーボンガスは熱除去に基づいて作用し、不活性ガスは酸素還元に基づいて作用します。
D.
ハロカーボンガスは酸素還元に基づいて作用し、不活性ガスは熱除去に基づいて作用します。
Answer: C
Explanation:
A halocarbon gas-based fire suppression system primarily extinguishes fires through heat absorption. In contrast, an inert gas-based system works by reducing oxygen levels to a point where combustion cannot be sustained. Halocarbon agents, like FM-200, absorb heat from the fire, cooling it down, whereas inert gases, like nitrogen or argon, lower oxygen concentration.
Detailed Explanation:
Halocarbons are effective in quickly cooling flames and are suitable for electronic environments due to their fast action. Inert gases displace oxygen to suppress fires, making them ideal in occupied spaces where human safety can be managed during a fire event due to slower discharge times.
EPI Data Center Specialist References:
EPI training distinguishes between these suppression mechanisms, noting the importance of selecting the correct system based on specific needs like quick response versus oxygen displacement for environments with sensitive equipment.

QUESTION NO: 11
一般的に、効果的に消火するために、より多くのガスを必要とするのは、ハロカーボン系ガス消火システムと不活性ガス系消火システムのどちらでしょうか？
A.不活性ガスは、ハロカーボンガスに比べて少量のガスで済みます。
B.不活性ガスは、ハロカーボンガスに比べてより多くのガス量を必要とする。
C. 不活性ガスとハロカーボンガスは同じ量のガスを必要とする
D.温度がわからないと答えられない
Answer: B
Explanation:
Inert gas systems (e.g., Inergen, Argonite, Nitrogen) extinguish fire by reducing oxygen concentration, which typically requires reducing oxygen levels to ~12-15%. This means a very large volume of gas must be discharged into the room (up to 40-50% of the protected volume). Because inert gases have a low extinguishing effectiveness by weight, more total

gas is required.
Halocarbon agents (FM-200, Novec 1230) extinguish fire chemically by interrupting the combustion chain reaction. They require only a small percentage (6-9%) concentration in the room volume. As a result, the storage space for cylinders is much smaller compared to inert gas systems.
Therefore, inert gas systems generally require a larger gas volume to achieve extinguishing concentrations.
References: NFPA 2001 §5.4 (Agent Quantities), ISO 14520-1 §5.3, EXIN DCS Study Guide - Fire Suppression.

QUESTION NO: 12
新しい施設では、コンピュータ室に100Aの配電設備を設置する必要があり、その設置場所は高感度なIT機器から1m(3フィート)上です。電磁界の影響を最小限に抑えるには、どのようなシステムが最適ですか？
A.単相電源ケーブルを設置する
B.3本の独立した芯線に基づいた三相電源ケーブルを設置する
C.バスバー配線を設置する
D.複合ケーブル(例：XLPE)に基づいた三相電源ケーブルを設置する
Answer: D
Explanation:
Electromagnetic fields are generated by current-carrying conductors. To minimize stray EMF, phase conductors should be physically close and balanced. A three-phase combined cable (all phase conductors and neutral in one sheath) ensures magnetic fields cancel each other due to phase opposition.
If phases are run separately (answer B), the separation increases loop area and magnetic field leakage. Single- phase cabling (A) is even worse because current does not balance across three phases. Bus bar trunking (C) provides physical support but often separates conductors, which may worsen EMF if not specifically shielded.
Therefore, the correct solution is three-phase combined cable (often XLPE-insulated). This design reduces EMF impact to within ANSI/TIA-942 and IEEE recommendations.
References: IEEE Std 141 (Red Book - Power Distribution), ANSI/TIA-942-B §6.6.4, IEC 60364 (Wiring Systems and EMF).