



Exin CDCS Practice Questions

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Question 1

Question Type: MultipleChoice

When installing a raised floor, can we use a spirit level bar to level the floor?

Options:

- A- Yes, spirit level bars can be used as long as their length is longer than 60 cm/2 ft (the size of a typical raised floor tile).
- B- No, because using a spirit level bar, a measurement error will be transferred from pedestal to pedestal.
- C- Yes, but spirit level bars can only be used in the vertical plane.
- D- Yes, using a spirit level bar for raised floors higher than 40 cm is preferred.

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 Reference:

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 2

Question Type: MultipleChoice

You are allowed to use a calculator for this question. The total power consumption of the ICT

equipment in a rack is 6 kW. The equipment is traditional ICT equipment with a Delta-T of approximately 11 C / 20 F. Calculate the approximate CFM required to cool the equipment in the rack.

Options:

- A- Approximately 1,500 CFM
- B- Approximately 1,000 CFM
- C- Approximately 500 CFM
- D- Approximately 160 CFM

Answer:

B

Explanation:

To calculate the cooling airflow requirement for ICT equipment, you can use the formula:

$$\text{CFM} = \frac{\text{Power (kW)} \times 3160}{\Delta T (\text{F})}$$

For equipment consuming 6 kW with a Delta-T of 20F:

$$\text{CFM} = \frac{6 \times 3160}{20} = 948 \approx 1,000$$

Detailed Explanation:

This formula provides an estimate of the cubic feet per minute (CFM) of air required to cool the equipment based on its power consumption and the temperature difference (Delta-T) between intake and exhaust. The Delta-T represents the cooling effectiveness of the airflow.

EPI Data Center Specialist Reference:

EPI recommends using this calculation for determining airflow requirements in data centers, ensuring that cooling systems are adequately sized to maintain equipment within safe temperature limits.

Question 3

Question Type: MultipleChoice

You have three UPS systems connected in parallel. The UPS systems have an imbalance in the

load sharing of approximately 20%.

What should you recommend?

Options:

- A- Review the cable lengths of each UPS to the common busbar
- B- Nothing, there is no reason for any concern
- C- Review the common mode noise levels within the computer room
- D- Review the harmonics levels within the computer room

Answer:

A

Explanation:

An imbalance in load sharing between UPS systems connected in parallel can often result from unequal cable lengths to the common busbar. If the cabling from each UPS to the busbar varies significantly in length, it can lead to differences in impedance, resulting in uneven load distribution. Ensuring that cable lengths are consistent helps to balance the load sharing across the UPS systems.

Detailed Explanation:

Parallel UPS systems rely on uniform impedance to share loads evenly. Differences in cable lengths cause variations in resistance, leading to one or more UPS units carrying a disproportionate share of the load. Standardizing cable lengths ensures equal impedance, which promotes balanced load sharing and prevents one UPS from being overburdened, thus maintaining overall system reliability.

EPI Data Center Specialist Reference:

EPI guidelines recommend checking cable lengths when load imbalances occur in parallel UPS configurations. Ensuring equal lengths is a common method to resolve impedance issues that affect load distribution, which is critical for the stable operation of redundant power systems.

Question 4

Question Type: MultipleChoice

What is the advantage of using Multi-fiber Push-On (MPO) connectors?

Options:

- A- No advantage, cannot be used with OM4 fiber
- B- Allows a single connector with multiple fibers running parallel, enabling easy upgrade to 40-100 Gbit/s
- C- Made of high-quality materials, reusable without risk
- D- Very flexible, can be used for both copper and optical fiber

Answer:

B

Explanation:

MPO connectors are multi-fiber connectors that support 12, 24, or more fibers in a single connector. Their key advantage is enabling parallel optics---where multiple fibers transmit simultaneously. This makes them ideal for 40GBASE-SR4 and 100GBASE-SR10 Ethernet links.

With OM4 or OM5 fiber, MPO cabling supports short-reach high-speed links in modern data centers.

Option A is incorrect; MPO works with OM3/OM4/OM5.

Option C is misleading; all connectors degrade with repeated use.

Option D is false because MPO is optical-only.

The real advantage is parallel multi-fiber transmission in one connector, simplifying cabling for high-speed networking.

Question 5

Question Type: MultipleChoice

You are allowed to use a calculator for this question. A battery bank is rated at a total capacity of 600 Ah. Calculate how much charging current the rectifier should be able to supply as charging current.

Options:

- A- 12 Amperes
- B- 30 Amperes
- C- 60 Amperes

D- 80 Amperes

Answer:

B

Explanation:

To determine the charging current for a battery bank, a general rule of thumb is that the charging current should be 5% of the total battery capacity. For a battery rated at 600 Ah, this calculation would be:

$$600\text{Ah} \times 0.05 = 30\text{Amperes}$$

This ensures the battery is charged efficiently without overloading the rectifier or risking battery damage.

Detailed Explanation:

Battery charging current is typically set as a percentage of the battery's capacity to balance effective charging with longevity and safety. A 5% charging rate is standard for lead-acid batteries, which would be 30 Amperes for a 600 Ah battery bank.

EPI Data Center Specialist Reference:

EPI standards recommend calculating charging currents based on a percentage of the battery capacity to ensure safety and efficiency, aligning with best practices for battery management in data centers.

Question 6

Question Type: MultipleChoice

The temperature in the computer room is being increased from 18C/64F to 27C/81F.

What is the impact, if any, on the amount of gas required to suppress a fire assuming the gas is a Halocarbon?

Options:

- A- The amount of gas required will be higher
- B- The amount of gas required will not change
- C- The amount of gas required will be lower

D- The change to the amount of gas cannot be determined without knowing the change in humidity as well

Answer:

C

Explanation:

With Halocarbon fire suppression systems, as the temperature increases, the amount of gas required for effective suppression decreases. This is because Halocarbon agents are stored as a liquid and discharge as a gas, expanding more at higher temperatures. As a result, less agent is needed at higher room temperatures to achieve the desired concentration for fire suppression.

Detailed Explanation:

Halocarbons rely on specific volumetric concentrations to suppress fires. Higher temperatures cause the agent to expand more rapidly, effectively filling the protected area with less agent needed to reach the required concentration. This is in contrast to some other gases, where temperature changes might not have the same effect on discharge quantities.

EPI Data Center Specialist Reference:

EPI data center training on fire suppression indicates that understanding the physical properties of agents like Halocarbons is key for correct system sizing. As the temperature rises, the gas expands more readily, thus requiring adjustments in the amount needed for effective coverage.

Question 7

Question Type: MultipleChoice

A customer requires THDi from the UPS not to exceed 3% and wants high efficiency. The UPS has a 6-pulse SCR/thyristor rectifier and is loaded ~80%. Many ICT changes are expected in the next 3 years. What should you recommend?

Options:

- A- Nothing; the UPS will keep THDi at the right levels
- B- Install a passive harmonic filter on the UPS
- C- Install an active harmonic filter on the UPS
- D- Install an isolation transformer rated K13 or K20

Answer:

C

Explanation:

A 6-pulse thyristor rectifier typically produces 25--35% THDi at nominal load. To reach 3% THDi, an active harmonic filter (or a 12/18-pulse or IGBT rectifier UPS) is required. Passive filters are load-specific and less effective over a wide operating range---undesirable with frequent changes.

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Question 8

Question Type: MultipleChoice

A 5kW (power consumption) server keeps crashing with the message 'temperature too high'.

The intake temperature is measured at 25 C/77 F and a relative humidity (RH) level of 50%.

The exhaust temperature is 29 C/84 F and 45% RH.

The raised floor is providing an adequate amount of CFM/CMH at a reasonable velocity.

The pressure under the raised floor is approximately 25 Pa/0.1 inch HO.

Analyze the situation and indicate what the most likely cause is for this server to crash.

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Options:

A- Dust inside the server causing issues with convection-based heat transfer

B- The exhaust temperature is exceeding the ASHRAE recommended values

C- The raised floor pressure is too low and/or the raised floor tile % opening is not adequate

D- No cause could be determined as the CFM/CMH of the air conditioning equipment is not stated

Answer:

A

Explanation:

The server's repeated overheating despite adequate intake and exhaust temperatures suggests that dust buildup inside the server may be impeding heat transfer. Dust accumulation can obstruct airflow within the server, insulate components, and disrupt the convection-based cooling systems that regulate internal temperatures, leading to overheating and potential hardware failures.

Detailed Explanation:

While the intake and exhaust temperatures appear within acceptable ranges, internal dust can reduce airflow and impede cooling efficiency, causing internal components to overheat despite seemingly normal ambient conditions. Regular cleaning and maintenance are critical for preventing dust-related issues, especially in high-powered equipment like a 5kW server.

EPI Data Center Specialist Reference:

EPI emphasizes regular maintenance to prevent dust buildup in data center equipment. Dust can significantly impact cooling efficiency and lead to overheating, which underlines the importance of routine cleaning for optimal server performance.

Question 9

Question Type: MultipleChoice

What is the advantage of OM5 multimode fiber cabling?

Options:

- A- Supports SWDM, requiring fewer fibers
- B- No advantage---same as OM4
- C- Designed for cheaper LED transmitters
- D- 100 Gbit/s link for 500 m reach

Answer:

A

Explanation:

OM5 is optimized for Short Wavelength Division Multiplexing (SWDM) between 850--953 nm. This allows transmission of multiple wavelengths over a single fiber pair, reducing the number

of fibers required for high-speed links.

OM4 already supports 100 GbE to 150 m, but OM5 with SWDM extends reach and reduces cabling bulk.

Option B is false because OM5 offers distinct SWDM benefits.

Option C is incorrect---OM5 is laser-optimized, not LED-based.

Option D is misleading; OM5 doesn't extend 100 GbE to 500 m (that requires single-mode OS2 fiber).

Thus, the key advantage is SWDM support.



Question 10

Question Type: MultipleChoice

The electrical diagram of the data center shows the following UPS configuration and has a load of 80 kW.

What is the set-up in this data center?

Options:

- A- $2+N+1$
- B- $2(N+1)$
- C- $N+N(+1)$
- D- $(N+1)-(N+1)$



Answer:

B

Explanation:

A $2(N+1)$ configuration implies two independent UPS systems, each with $N+1$ redundancy. This configuration provides high availability by ensuring that each UPS system can independently support the load with an additional unit for redundancy. Given the 80 kW load, this setup implies that two separate $N+1$ systems are running, providing reliability and fault tolerance for the data center's power needs.

Detailed Explanation:

The N+1 notation denotes that each system has one additional unit beyond what is needed to carry the load, providing redundancy. With 2(N+1), there are two such setups, ensuring that if one fails, the other can still support the load without interruption, fulfilling high availability requirements.

EPI Data Center Specialist Reference:

EPI teaches that multiple redundant systems, such as 2(N+1), enhance data center reliability by ensuring that power is maintained even if a failure occurs in one system. This meets the stringent demands for uptime in critical environments.

Question 11

Question Type: MultipleChoice

The data center has been in operation for about 1 year and 2 months. The dust levels in the computer room are relatively high.

What is the most likely root cause?

Options:

- A- The cleaning crew is not doing their work properly
- B- Every computer room has high dust levels due to constant high-speed air movement
- C- Low pressure in the computer room
- D- Floorboards are most likely not fitted correctly

Answer:

D

Explanation:

High dust levels in a computer room are often due to improperly fitted floorboards. When floorboards are not securely installed or do not fit tightly, they allow dust and particles from the subfloor to enter the room. In a data center, this can lead to high levels of dust that affect air quality and equipment performance.

Detailed Explanation:

Raised floors in data centers can accumulate dust and debris, especially if the floorboards are not properly sealed. Loose or improperly fitted floorboards allow contaminants from the subfloor to enter the data center environment, increasing the dust levels over time. Proper

installation and maintenance of floor panels are essential to prevent dust infiltration and maintain clean conditions.

EPI Data Center Specialist Reference:

EPI training emphasizes proper flooring installation and maintenance to control air quality within data centers. Correctly fitted floorboards prevent dust accumulation from the subfloor, which helps protect sensitive equipment and maintains a cleaner environment.

Question 12

Question Type: MultipleChoice

EMF shielding material needs to be installed as EMF levels from the transformer room into the computer room are measured at 100 mG. The transformer room is ~10 meters away, separated by a corridor. Where should shielding be installed?

Options:

- A- It does not matter; either close to the transformer room or computer room is okay
- B- As close as possible to the transformer room
- C- As close as possible to the computer room
- D- Shielding is not required as 100 mG is within acceptable levels

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.

Question 13

Question Type: MultipleChoice

What should you consider when using raised floor tiles with air deflectors or louvers?

Options:

- A- Tiles with air deflectors or louvers can be very heavy.
- B- Tiles with air deflectors or louvers will reduce the cooling capacity of the tile.
- C- Tiles with air deflectors or louvers do not allow for a flexible cooling solution.
- D- Tiles with air deflectors or louvers can only be used to cool storage equipment.

Answer:

A

Explanation:

Raised floor tiles with air deflectors or louvers are typically heavier than standard tiles due to the additional materials and mechanisms used to direct airflow. The added weight can pose challenges for installation and adjustment, and consideration must be given to the floor's load capacity and ease of maintenance.

Detailed Explanation:

Tiles with deflectors or louvers help direct airflow, enhancing cooling efficiency by focusing cool air where needed. However, these tiles are often heavier, which can affect handling and require reinforced raised floor systems. It's essential to factor in the weight for any floor tile replacements or installations to ensure they are compatible with the raised floor's structural capacity.

EPI Data Center Specialist Reference:

EPI data center design training mentions the potential impact of heavy tiles on floor handling and load capacity. Data center operators need to plan for safe handling and load-bearing capacity when using such specialized tiles.

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