Free Questions for CDCS

Shared by Franco on 09-10-2024

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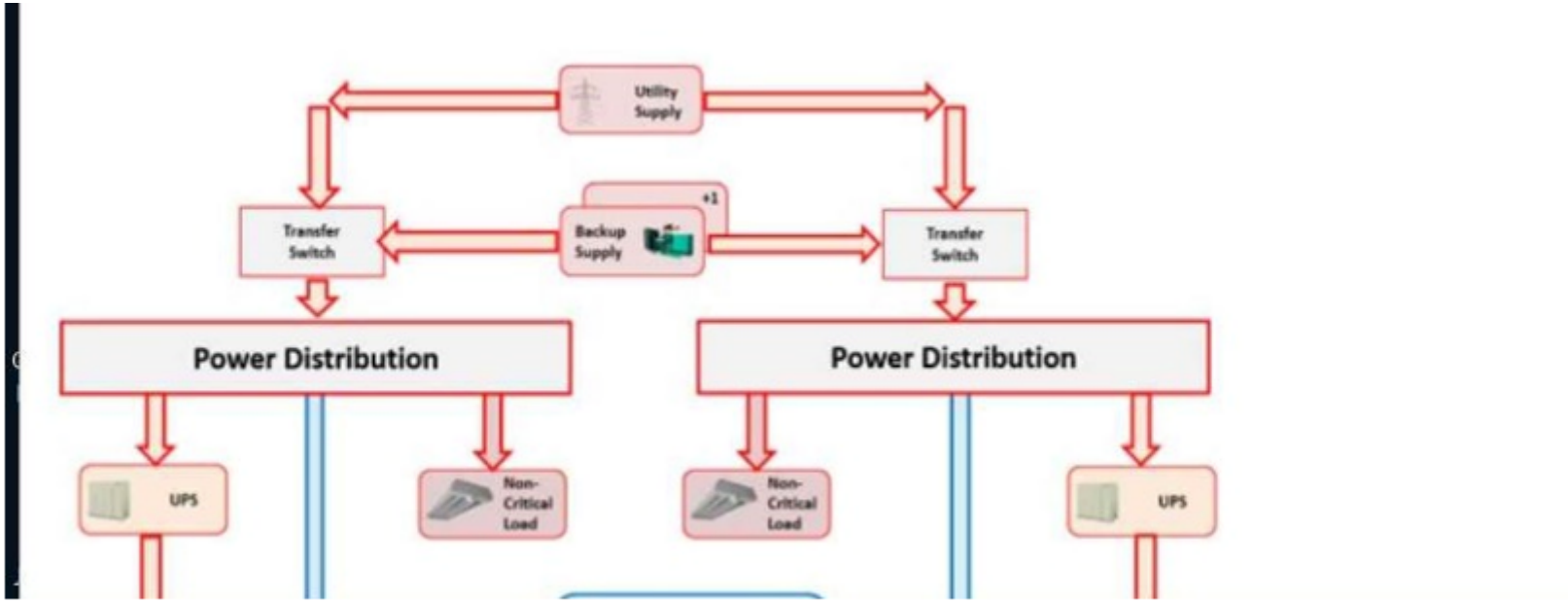
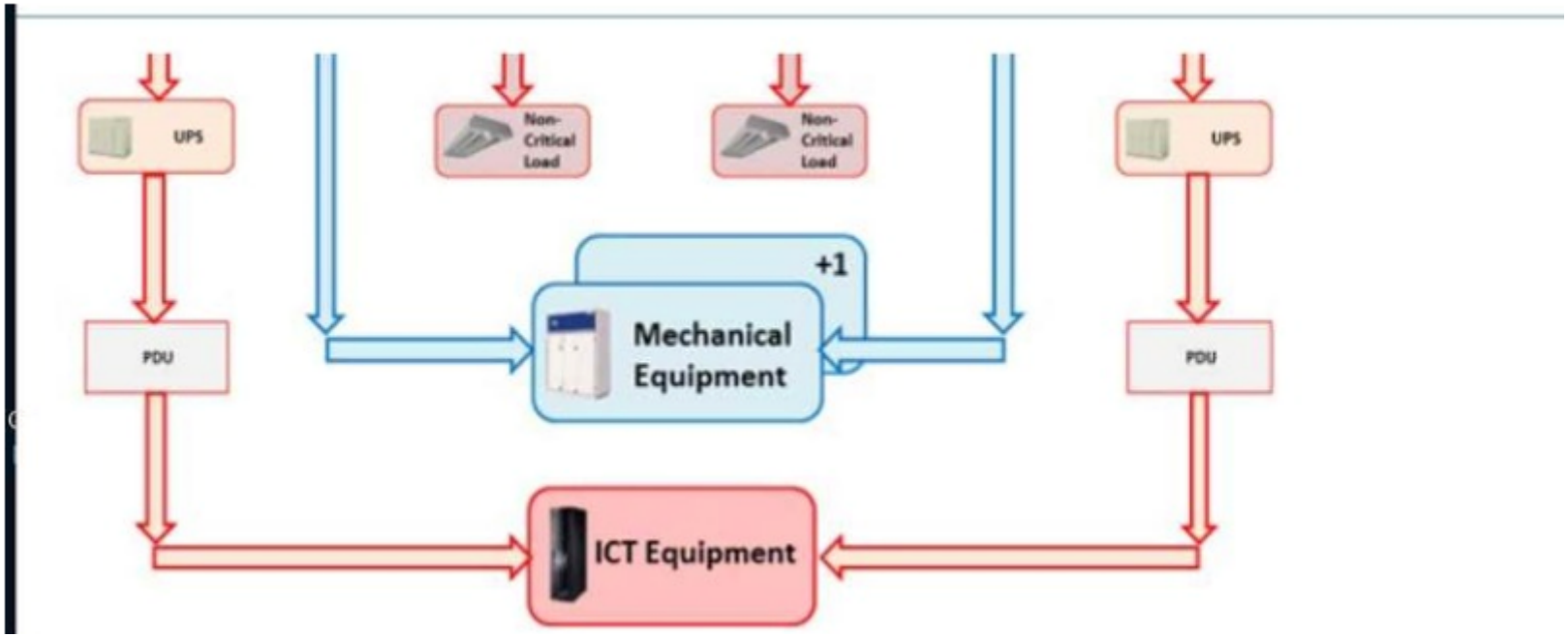
Question 1

Question Type: MultipleChoice

The logical overview of the data center looks as pictured. To what TIA-942 Rating is this design made based on electrical only?


Utility Supply
Transfer Switch
Backup Supply
+1
Transfer Switch
Power Distribution
Power Distribution
UPS
Non-Critical Load
Non-Critical Load
UPS


UPS
Non-Critical Load
Non-Critical Load
UPS
+1
PDU
Mechanical Equipment
PDU
ICT Equipment

Options:

A- Rating - 4

B- Rating - 3

C- Rating - 2

D- Rating - 1

Answer:

A

Explanation:

The electrical design shown in the diagrams represents a TIA-942 Rating-4 configuration. This design includes full redundancy and fault tolerance, as demonstrated by the dual power distribution paths from the utility supply to the critical loads. Each power distribution path is equipped with its own UPS, ensuring that the ICT equipment and mechanical equipment have uninterrupted power in case of any single point of failure.

Detailed Explanation:

A Rating-4 data center requires two independent power paths that are fully redundant and capable of supporting the load independently. In the diagrams:

There are dual feeds from the utility supply, each going through separate transfer switches and power distribution paths.

Both paths have backup sources (+1) and serve critical components through separate UPS systems, providing a completely redundant setup.

The design also includes redundant paths to the mechanical equipment and ICT equipment, which further indicates the fault-tolerant characteristics of a Rating-4 infrastructure.

This setup allows for concurrent maintainability and ensures that no single failure in power distribution or UPS can impact the data center's operation, which is characteristic of the highest Tier/Rated-4 classification.

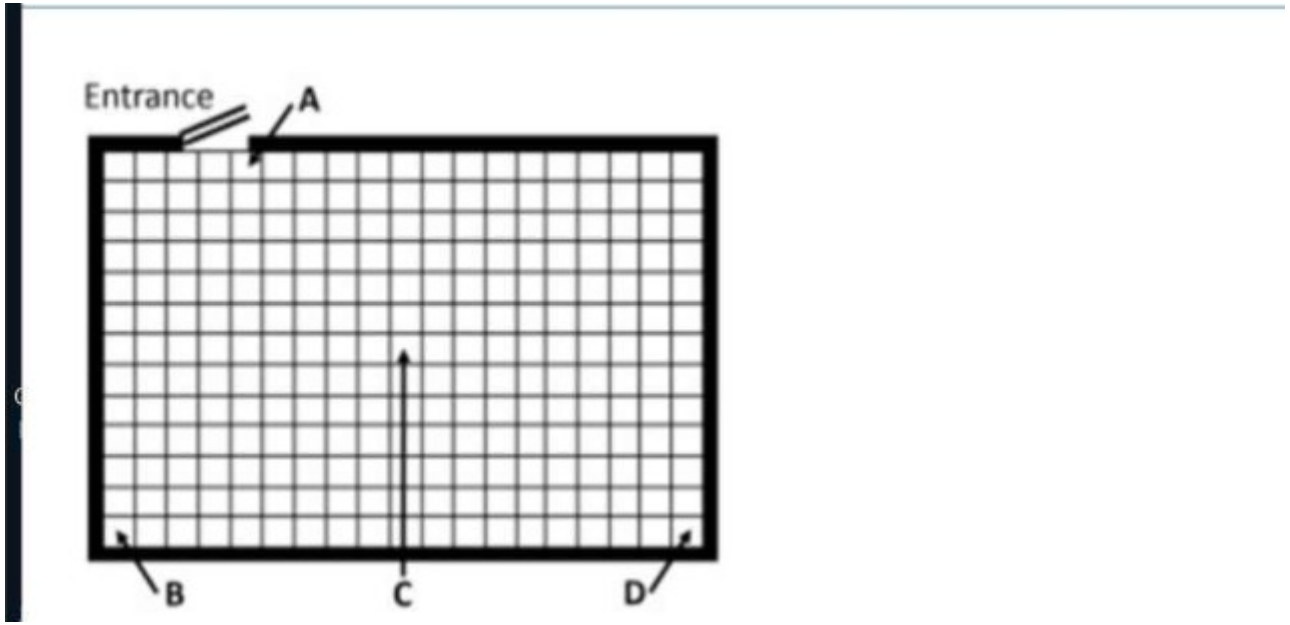
EPI Data Center Specialist References:

EPI guidelines confirm that TIA-942 Rating-4 requires full redundancy and fault tolerance for electrical infrastructure, ensuring continuous operation even during maintenance or failure events. This design meets all those requirements, thus aligning with Rating-4 standards.

Question 2

Question Type: **MultipleChoice**

From the options indicated, what is the correct starting point for the raised floor installation?



Options:

A- Point A

B- Point B

C- Point C

D- Point D

Answer:

B

Explanation:

When installing a raised floor, the best starting point is typically from the farthest corner away from the entrance, in this case, Point B. This method allows for the floor installation to progress towards the entrance, ensuring that workers can avoid walking over the newly installed tiles, thus minimizing the risk of damage and maintaining cleanliness during installation.

Detailed Explanation:

Starting at the farthest corner (Point B) and working towards the entrance (Point A) is a standard practice in raised floor installation. This approach ensures that installers do not walk over freshly laid tiles, which could lead to shifting or misalignment. Additionally, it allows for more controlled placement and alignment, as well as convenient egress when installation is complete.

EPI Data Center Specialist References:

EPI guidelines for raised floor installation emphasize beginning at the farthest point from the entrance and working back towards it, which aligns with industry best practices for efficiency and quality assurance. This method reduces potential damage and supports precise alignment across the floor area.

Question 3

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:

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

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

$$CFM = \frac{6 \times 3160}{20} = 948 \approx 1,000 \, \text{CFM}$$CFM=6316020=9481,000CFM\text{CFM} = \frac{6 \times 3160}{20} = 948 \approx 1,000 \, \text{CFM}CFM=2063160=9481,000CFM

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 References:

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 4

Question Type: **MultipleChoice**

What indicates the breaking capacity of a fuse or breaker?

Options:

A- Mechanical strength of the casing of a fuse or breaker.

B- The maximum voltage, in case of an electrical surge, that the fuse or breaker can handle without being destroyed or causing an electric damaging arc.

C- The current at which the device will trip.

D- The current that a fuse or breaker is able to interrupt without being destroyed or causing an electric damaging arc.

Answer:

D

Explanation:

The breaking capacity of a fuse or breaker indicates the maximum current it can safely interrupt without being damaged or creating a dangerous arc. This value is crucial for ensuring that the device can handle fault conditions and prevent equipment damage or fire risks due to excessive current flow.

Detailed Explanation:

The breaking capacity, also known as the interrupting rating, ensures that the fuse or breaker can safely handle fault currents up to a specified limit. Exceeding this capacity could result in the device failing to interrupt the current, potentially causing hazardous conditions like electrical arcs.

EPI Data Center Specialist References:

EPI training underscores the importance of matching fuses and breakers with appropriate breaking capacities for the anticipated fault levels in data centers to ensure reliable and safe operation.

Question 5

Question Type: MultipleChoice

The computer room has high levels of H2S gas contamination. What is the best option to resolve this issue?

Options:

A- Vacuum the whole room using a HEPA/S-Class-based filter.

B- Install air-scrubbers.

C- Clean the room and racks with a damp/wet cloth.

D- Provide more air changes per hour by adding more fresh air to the computer room.

Answer:

B

Explanation:

High levels of H2S (hydrogen sulfide) gas contamination in a computer room are best addressed by installing air-scrubbers. Air-scrubbers can effectively filter out contaminants, including corrosive gases like H2S, ensuring clean air circulation and protecting sensitive IT equipment from potential corrosion and damage.

Detailed Explanation:

Air-scrubbers are designed to remove various airborne contaminants and are particularly useful in environments where corrosive gases are present. These systems use filters or chemical reactions to neutralize harmful substances, making them ideal for data centers that need to maintain high air quality for equipment reliability.

EPI Data Center Specialist References:

EPI guidelines suggest air-scrubbing technologies to remove contaminants that pose risks to electronic equipment, maintaining air quality and reducing corrosion risk.

Question 6

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:

600Ah0.05=30Amperes600 \, \text{Ah} \times 0.05 = 30 \, \text{Amperes}600Ah0.05=30Amperes

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 References:

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.