CDCP Q&As

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QUESTION 1

When having two non-synchronized power sources, the ATS / STS need to be of the type:

A. Break before make.

B. Make before break.

C. Both make before break or break before make can be used.

D. Both an ATS and STS can never handle two non-synchronized sources.

Correct Answer: A

When having two non-synchronized power sources, the ATS / STS need to be of the type break before make, which means that the switch disconnects from one source before connecting to the other source. This prevents any short circuit, back feed, or phase mismatch that could occur if the two sources were connected simultaneously. Break before make switches are also known as open transition switches, because they create a brief interruption in the power supply during the switching process. This interruption is usually acceptable for most ICT equipment, as they have internal power supplies or batteries that can handle the transient. However, if the interruption is not acceptable, then the two power sources need to be synchronized before switching, which requires a make before break switch, also known as a closed transition switch. Make before break switches connect to the second source before disconnecting from the first source, which ensures a seamless transfer of power without any interruption. However, make before break switches require that the two sources have the same voltage, frequency, and phase, which can be achieved by using a synchronization module or a phase-locked loop.

QUESTION 2

Escape route signage should be placed where?

A. Only at emergency escape doors

B. Only at the main entrance of the data centre building

C. At every door providing a pathway

D. At every door including riser doors, doors of storage closets etc.

Correct Answer: C

Escape route signage should be placed at every door providing a pathway to the exit or the assembly area, according to the CDCP Preparation Guide and the EU Safety/Health Signs Directive. Escape route signage is used to guide the occupants of the data centre fromwherever they are in the building, via a place of relative safety (the escape route), to the place of ultimate safety (the assembly area). Escape route signage should not be limited to only emergency escape doors or the main entrance of the data centre building, as these may not be accessible or visible from all locations. Escape route signage should also not include doors that do not lead to the exit or the assembly area, such as riser doors, doors of storage closets, or doors of other rooms, as these may confuse or mislead the occupants. Escape route signage should be placed at every door that provides a pathway to the exit or the assembly area, and should indicate the direction and distance of the escape route using pictograms, arrows, and words. Escape route signage should also be designed and installed in accordance with the relevant standards and codes, such as BS 5499 and ISO 7010.

QUESTION 3

Where should exit/emergency signs be located?

A. Depends on the policy of the data centre

B. At every escape door and pathways leading to doors (arrows)

C. In the Computer room only

D. At each door

Correct Answer: B

According to the EPI Data Centre Operations Standard (DCOS), exit/emergency signs should be located at every escape door and pathways leading to doors (arrows) to ensure a safe and quick evacuation in case of an emergency. This is also consistent with the best practices for data centre emergency preparedness and response, which recommend having a clear and visible signage system for emergency exits.

QUESTION 4

What is the purpose of a service corridor?

A. To create a secure and conditioned environment where media can be stored in a controlled manner.

B. It is a generic name for pathways leading to other rooms that contains facility supporting equipment like the UPS room, battery room, generator room etc.

C. It provides a safe, vented and secure area where standby generators can operate safely.

D. It provides a secure area where supporting facilities can be serviced and monitored on a 24x7 basis without disturbing the computer room.

Correct Answer: D

A service corridor is a dedicated space within or adjacent to a data centre that allows access to the supporting facilities, such as power, cooling, fire suppression, security, and cabling systems, without interfering with the computer room operations. A service corridor helps to isolate the noise, vibration, heat, and dust generated by the supporting facilities from the sensitive equipment in the computer room. A service corridor also enhances the safety and efficiency of the maintenance and monitoring activities, as well as the flexibility and scalability of the data centre design.

References: EPI Data Centre Training Framework, CDCP Preparation Guide, Service Corridors Definition | Law Insider

QUESTION 5

The UPS vendor is offering the latest model of their UPS to you. The vendor indicates that the UPS is categorized as VFD class.

Is this UPS a fit for your mission-critical data centre?

A. Yes

B. No

C. Yes, but only if you oversize the battery bank with 10%.

D. Yes, but only if they install it with a 12-pulse rectifier.

Correct Answer: B

A UPS (uninterruptible power supply) that is categorized as VFD class is not a fit for your mission-critical data centre, because it does not provide adequate protection against voltage and frequency variations. VFD stands for Voltage and Frequency Dependent, which means that the output voltage and frequency of the UPS depend on the input voltage and frequency. VFD UPSs are also known as offline, standby, or line-interactive UPSs. They typically switch to battery power only when the input power fails or goes beyond a certain threshold. However, this switching may cause a brief interruption or a transient in the output power, which can affect the performance and reliability of the ICT equipment. Moreover, VFD UPSs do not filter or regulate the input power, which means that they pass on any voltage or frequency fluctuations, harmonics, or noise to the output power. These power quality issues can also damage or degrade the ICT equipment and the data.

For your mission-critical data centre, you need a UPS that is categorized as VFI class, which stands for Voltage and Frequency Independent. VFI UPSs are also known as online, continuous, or double-conversion UPSs. They provide a constant and clean output power that is independent of the input power. VFI UPSs convert the input AC power to DC power, and then convert it back to AC power with the desired voltage and frequency. This double conversion process isolates the output power from the input power, and eliminates any power quality issues. VFI UPSs also have zero switching time, which means that they do not cause any interruption or transient in the output power when switching to battery power. VFI UPSs are designed to protect the ICT equipment and the data from any adverse effects of voltage and frequency variations, and to ensure the highest level of availability and reliability.

QUESTION 6

Which one of the following is an example of Indirect Cost?

A. Legal fees

B. Damaged brand perception

C. System recovery

D. Cost revenues

Correct Answer: B

Damaged brand perception is an example of an indirect cost because it is not directly related to a specific product or service, but rather to the overall reputation and image of the company. Damaged brand perception can result from various factors, such as poor quality, customer dissatisfaction, security breaches, or negative publicity. Damaged brandperception can affect the company\\'s ability to attract and retain customers, partners, and investors, and thus reduce its profitability and competitiveness.

QUESTION 7

Which one of the following represents the three elements (oxygen, heat and fuel) to interact in order for the fire to exist?

A. The Fire Hexagon

B. The Fire Class

C. The Fire Triangle

D. The Fire Technology

Correct Answer: C

The fire triangle is a simple model that illustrates the three elements a fire needs to ignite: heat, fuel, and an oxidizing agent (usually oxygen). A fire naturally occurs when the elementsare present and combined in the right mixture. A fire can be prevented or extinguished by removing any one of the elements in the fire triangle.

References: EPI Data Centre Professional (CDCP? Preparation Guide, page 9; Fire triangle - Wikipedia; The Fire Triangle Explained - Fire Action

QUESTION 8

systems are designed specifically to protect the structure of a building.

A. Pro-inert

B. Inergen

C. Water sprinkler

D. Total Flooding

Correct Answer: C

Water sprinkler systems are designed to protect the structure of a building from fire by suppressing or extinguishing the flames with water. Water sprinkler systems are typically installed in the ceiling or walls of a building and are activated by heat or smoke detectors. Water sprinkler systems can reduce the risk of fire spreading and causing structural damage to the building.

QUESTION 9

What is the current recommended temperature for ICT equipment as described in the ASHREA TC 9.9 guideline?

A. 8-18 C (46.4 -64.4 °F)

B. 20-40 °C (68 - 104 °F)

C. 18-27 C (64.4 - 80.6°F)

D. 25-45 °C (77 - 113 °F)

Correct Answer: C

The current recommended temperature for ICT equipment as described in the ASHRAE TC 9.9 guideline is 18-27 C (64.4 - 80.6). This is the recommended range for the dry-bulb temperature at the inlet of the servers, which is the most critical parameter for ensuring the optimal performance and reliability of the ICT equipment. The recommended range is based on the thermal specifications of the majority of the ICT equipment in the market, as well as the energy efficiency and environmental considerations of the data centre cooling systems. The recommended range is suitable for Classes A1 to A4 of the ASHRAE thermal guideline classes, which cover different types and generations of ICT equipment.

QUESTION 10

Which Class of Fires involves cooking appliances?

A. Class A

B. Class B

C. Class C

D. Class K

Correct Answer: D

According to the EPI Data Centre Professional (CDCP? Preparation Guide, Class K fires involve cooking appliances that use combustible cooking media such as vegetable or animal oils and fats (page 28). Class K fires require special extinguishing agents that can suppress the high-temperature flames and prevent re-ignition. Class K fires are different from Class B fires, which involve flammable liquids such as gasoline, oil, or paint.

QUESTION 11

What is the main advantage of busbar trunking compared to stand electrical cabling?

A. Busbar trunking is less expensive.

B. Busbar trunking has a fixed power rating.

C. Busbar trunking allows for flexibility.

D. Busbar trunking can be located both overhead and under the raised floor.

Correct Answer: C

Busbar trunking systems are a method of power distribution using rigid copper or aluminium conductors to distribute the power around a building. Busbar trunking systems have many advantages over cables, such as lower space requirements, higher short-circuit strength, lower fire load, and easier installation. One of the main advantages of busbar trunking is that it allows for flexibility in terms of power transmission and distribution. Busbar trunking systems can be easily relocated, modified, or expanded to accommodate changes in the building layout or load demand. Busbar trunking systems can also be fitted with various components, such as tap-off units, elbows, tees, and end feed units, to provide power to different locations and consumers. Busbar trunking systems can also be installed both overhead and under the raised floor, depending on the design and preference of the building.

QUESTION 12

Which one of the following is the last stage in Stages of Combustion?

A. Visible Smoke

B. Intense Heat

C. Incipient

D. Flaming Fire

Correct Answer: D

The last stage in stages of combustion is flaming fire, which occurs when the fuel vapors and oxygen are mixed in the right proportion and ignited by a flame or a spark. Flaming fire is characterized by visible flames, intense heat, and rapid oxidation. Flaming fire can cause severe damage to the data center equipment, personnel, and business continuity. Therefore, it is important to prevent or suppress flaming fire as soon as possible using appropriate fire detection and suppression systems.

QUESTION 13

Cost of Downtime can be classified as.

A. Direct and Indirect

B. Up and Down

C. Mean and Median

D. Classified and Declassified

Correct Answer: A

Cost of downtime is the total amount of money lost due to a data centre outage or disruption. It can be classified into two categories: direct and indirect. Direct costs are the immediate and measurable expenses incurred during or after an outage, such as lost revenue, lost productivity, recovery costs, compensation costs, penalties, etc. Indirect costs are the long-term and intangible impacts of an outage, such as reputation damage, customer dissatisfaction, loss of market share, legal liabilities, etc. Both direct and indirect costs can vary depending on the type, duration, and severity of the outage, as well as the industry, size, and location of the data centre.

References: EPI Data Centre Training Framework EPI Data Centre Competence Framework Understanding the Cost of Data Center Downtime Uptime Institute\\'s 2022 Outage Analysis Finds Downtime Costs and Consequences Worsening [INFOGRAPHIC] The Cost of Downtime: 21 Stats You Need to Know

QUESTION 14

What is the recommended location for the Isolation Transformer in relation to the ICT-Equipment location?

A. The isolation transformer should be as close as possible to the ICT equipment but taking into account potential EMF.

B. The isolation transformer should be as far away as possible to the ICT equipment to avoid potential EMF.

C. The isolation transformer has to be installed within the power entry point of the building due to electrical code (regulation) requirements.

D. The isolation transformer should be installed within the rack in which the ICT equipment has been installed.

Correct Answer: A

According to the EPI Data Centre Training Framework, an isolation transformer is a device that transfers electrical power from one circuit to another without changing the voltage or frequency, but providing galvanic isolation. Galvanic isolation means that there is no direct electrical connection between the input and output circuits, which can prevent

ground loops, reduce noise, and improve safety. An isolation transformer can also provide voltage stepdown or stepup, create a local ground-bonded neutral, reduce harmonic currents, and provide taps for abnormal mains voltage.

The location of the isolation transformer in relation to the ICT equipment depends on the purpose and design of the transformer. In general, the isolation transformer should be as close as possible to the ICT equipment, but taking into account potential EMF. EMF is a form of electromagnetic interference (EMI) that can affect the performance and reliability of the ICT equipment. The closer the isolation transformer is to the ICT equipment, the shorter the cable length and the lower the voltage drop and power loss4. However, the isolation transformer should also be far enough from the ICT equipment to avoid EMF, which can be reduced by using proper shielding, grounding, and spacing.

The isolation transformer should not be installed as far away as possible to the ICT equipment, as option B suggests, because this would increase the cable length and the voltage drop and power loss. The isolation transformer does not have to be installed within the power entry point of the building, as option C suggests, because this is not a requirement of the electrical code or regulation, and it may not be optimal for the data centre power system. The isolation transformer should not be installed within the rack in which the ICT equipment has been installed, as option D suggests, because this would increase the heat load and the noise level in the rack, and it may not fit in the rack space.

References: 1: EPI Data Centre Training Framework, Module 5: Power, Section 5.4.3: Isolation Transformers, Page 5-38 2: Guidelines for using isolation transformers in data center UPS systems - EEP1, Page 1 3: The Role of Isolation Transformers in Data Center UPS Systems2, Page 2 4: Data Center Transformer | Power Distribution - FGC Construction3, Page 1 5: EPI Data Centre Training Framework, Module 5: Power, Section 5.4.1: Electromagnetic Interference, Page 5-34 : Data centre transformers manufacturers - TMC Transformers4, Page 1 : The Role of Isolation Transformers in Data Center UPS Systems2, Page 25

QUESTION 15

What is the primary reason to install a monitoring system in the data centre?

A. To notice abnormalities early so that actions can be taken to avoid disasters

B. To create a proper asset database

C. To implement automated change management

D. To be able to collect data for capacity planning

Correct Answer: A

The primary reason to install a monitoring system in the data centre is to notice abnormalities early so that actions can be taken to avoid disasters, according to the CDCP Preparation Guide1 and various web sources234. A monitoring system is a system that collects and analyzes data about the power, cooling, environmental, and security conditions in the data centre, and alerts the operators or managers about any issues or threats that may affect the performance, availability, or reliability of the data centre. A monitoring system can help to prevent or minimize the impact of disasters, such as power outages, fire, water damage, overheating, equipment failure, or cyberattacks, by providing timely and accurate information that enables fast and corrective action. A monitoring system can also help to improve the energy efficiency, capacity planning, and asset management of the data centre, by providing useful insights and trends that support informed decision making.