CDCP Q&As

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QUESTION 1

From the list below, which sensor detects smoke the fastest?

A. Photoelectric detector

B. VESDA/HSSD

C. Ionization detector

D. Sprinkler bulbs

Correct Answer: B

VESDA (Very Early Smoke Detection Apparatus) or HSSD (High Sensitivity Smoke Detection) systems are the fastest smoke sensors among the options listed. These systems use a network of pipes to draw air samples from the protected area and analyze them using a laser-based detection chamber. VESDA/HSSD systems can detect smoke at very low concentrations, typically in the range of 0.005 to 20 percent obscuration per meter. This means they can provide early warning of a fire before it becomes visible or spreads. VESDA/HSSD systems are ideal for data centers and other critical facilities that require high levels of fire protection and minimal downtime.

QUESTION 2

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 3

Which one of the following is a factor that can affect Availability and Reliability?

A. Inadequate Cooling

B. Employee Salaries

C. Radio Active Waves

D. Attenuation

Correct Answer: A

Availability and reliability are two important aspects of data centre performance that measure how often the system is operational and how dependable it is. According to the EPI Data Centre Framework, availability is the percentage of time that a system or component is in an operable state, while reliability is the probability that a system or component will perform its required function under given conditions for a specified period of time. Both availability and reliability can be affected by various factors, such as design, maintenance, human error, power supply, security, etc. One of the factors that can have a significant impact on both availability and reliability is cooling. Cooling is essential for maintaining the optimal temperature and humidity levels for the IT equipment and preventing overheating, which can cause failures, downtime, and reduced lifespan. Inadequate cooling can result from insufficient capacity, poor airflow management, faulty components, or environmental conditions. Inadequate cooling can reduce the availability and reliability of the data centre by increasing the risk of thermal stress, hot spots, performance degradation, and equipment damage. Therefore, cooling is a critical factor that can affect availability and reliability in a data centre.

QUESTION 4

What should be considered when using a direct air handler for a data centre?

A. Cost of operation as power consumption on these units tend to be higher compared to traditional air conditioning technology.

B. Temperature, humidity and contamination of the outdoor environment.

C. Space available inside the computer rooms as the air handler space requirement for the inside the Computer room is quite large.

D. The availability of three-phase power due to the high power requirements of these air handler units.

Correct Answer: B

Direct air handlers are a type of cooling system that use outdoor air to cool the data centre. They draw in fresh air from outside, filter it, and supply it to the data centre at the desired temperature and humidity level. Direct air handlers can reduce the energy consumption and operating costs of data centres by eliminating the need for mechanical cooling or refrigeration. However, they also have some challenges and limitations that need to be considered. One of the main factors to consider when using direct air handlers for data centres is the temperature, humidity and contamination of the outdoor environment. Depending on the location and climate of the data centre, the outdoor air may not always be suitable for cooling the data centre. For example, if the outdoor air is too hot, too humid, or too polluted, it may not provide enough cooling capacity, or it may damage the IT equipment or cause corrosion. Therefore, direct air handlers need to have sensors and controls to monitor the outdoor air quality and adjust the airflow accordingly. They may also need to have backup cooling systems or supplementary cooling devices, such as evaporative coolers or heat exchangers, to cope with extreme weather conditions or peak loads.

QUESTION 5

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 6

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 7

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 8

What is the main risk for a data centre when the water supply fails?

A. Failure to the water supply could result in IT failure and/or denial of access to operate.

B. Failure to the water supply could result in DX cooling systems to fail.

C. Failure to the water supply could cause issues for the cooling of back-up generators.

D. Failure to the water supply could result in sudden changes of the relative humidity in the Computer room.

Correct Answer: C

Back-up generators are essential for providing power to the data centre in case of a utility outage. However, back-up generators also generate a lot of heat, which needs to be dissipated by a cooling system. The cooling system may rely on water supply, either from the municipal network or from a dedicated tank. If the water supply fails, the cooling system may not function properly, leading to overheating and potential damage to the generators. This could compromise the reliability and availability of the data centre power supply and cause downtime or data loss.

QUESTION 9

What is a requirement of an FM200 (HFC-227) installation?

A. It is a high-pressure gas; therefore nozzles must be mounted with two brackets.

B. Drainage system under the raised floor.

C. Install the gas containers (tanks) close to the data centre.

D. Install pre-action sprinklers in the same room as the FM200.

Correct Answer: A

FM200 (HFC-227) is a clean agent fire suppression system that uses a high-pressure gas to extinguish fires by reducing the oxygen concentration and absorbing the heat. FM200 is stored in cylinders at pressures of up to 42 bar (600 psi) and is released through nozzles into the protected area. Because of the high pressure, the nozzles must be mounted with two brackets to prevent them from moving or breaking during discharge. The brackets must be securely attached to the ceiling or wall and aligned with the nozzle outlet. The nozzle outlet must also be free of any obstructions that could affect the discharge pattern or distribution.

QUESTION 10

Which one of the following is an Objective of Data Center Fire Protection?

A. Information

B. Representation

C. Depression

D. Suppression

Correct Answer: D

The objective of data center fire protection is to suppress or extinguish a fire before it can cause significant damage to the equipment, personnel, or business continuity. Fire suppression systems are designed to reduce the heat, oxygen, or fuel elements of the fire triangle, and to limit the spread of fire and smoke. Fire suppression systems can be classified into two types: water-based and gas-based. Water-based systems include sprinklers, mist, and water spray systems, which use water as the extinguishing agent. Gas-based systems include inert gas, halocarbon, and clean agent systems, which use gases or chemicals as the extinguishing agent. The choice of fire suppression system depends on several factors, such as the fire risk, the type of fuel, the environmental impact, the reliability, the cost, and the compatibility with the data center equipment and operations.

References: EPI Data Centre Professional (CDCP? Preparation Guide, page 31 A Comprehensive Approach To Data Center Fire Safety

QUESTION 11

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 12

Sprinkler heads used in computer rooms activate at what temperature?

A. 57 °C (135 °F)

B. 27 °C (81 °F)

C. 70 C (158 °F)

D. Only on direct contact with a flame

Correct Answer: A

Sprinkler heads used in computer rooms activate at 57 °C (135 °F),, which is the standard temperature rating for ordinary sprinklers. This is the temperature at which the heat-sensitive element of the sprinkler head, such as a glass bulb or a fusible link, breaks or melts, allowing water to flow from the sprinkler. Sprinkler heads are designed to activate only when exposed to a fire, not to ambient temperature fluctuations. Therefore, sprinkler heads should be installed at a sufficient distance from the heat sources, such as servers, racks, or ducts, to avoid accidental activation. Sprinkler heads should also be selected and installed in accordance with the relevant standards and codes, such as NFPA 13 and NFPA 75.

QUESTION 13

What is the minimum clearance space required below water sprinkler heads and nozzles of gas-based fire suppression systems?

A. 46 cm / 18 inches

B. 64 cm / 25 inches

C. 60 cm / 24 inches

D. 120 cm / 47 inches

Correct Answer: A

The minimum clearance space required below water sprinkler heads and nozzles of gas-based fire suppression systems is 46 cm / 18 inches, according to the CDCP Preparation Guide1 and OSHA regulation 29 CFR 1910.159 ?(10)2. This clearance space is necessary to ensure that the sprinkler spray or gas discharge can reach the fire and cover the protected area effectively. Any material or obstruction below this clearance space can interfere with the sprinkler or gas distribution and reduce the fire suppression performance. Therefore, building owners and managers should ensure that all storage and objects in the data centre are kept below this clearance space, and that the clearance space is maintained at all times.

QUESTION 14

What is the main difference between an Environmental Monitoring System (EMS) and a Building Management System (BMS)?

A. An EMS provides local alarms. A BMS provides both local and remote alarms.

B. A BMS is only able to monitor dry contacts (on/off). An EMS can also monitor analog values.

C. A BMS only operates as a stand-alone system. An EMS can be configured as a redundant system.

D. An EMS monitors only. A BMS monitors and controls.

Correct Answer: D

The main difference between an Environmental Monitoring System (EMS) and a Building Management System (BMS) is that an EMS monitors only, while a BMS monitors and controls. An EMS is a system that collects and records data from various sensors and devices that measure environmental parameters, such as temperature, humidity, air quality, power, and water. An EMS provides alerts and reports based on the data, but it does not control or adjust the environmental conditions. A BMS is a system that integrates and manages various building systems, such as HVAC, lighting, security,

fire, and access. A BMS not only monitors the data from these systems, but also controls and optimizes them to achieve the desired performance and efficiency. A BMS can also communicate with an EMS to receive data and provide feedback.

QUESTION 15

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.