# Free Questions for CDCP by dumpssheet

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# Question 1

**Question Type:** MultipleChoice

What is a requirement for both CCTV cameras and recording equipment?

## Options:

**A-** They must be of the same brand.

**B-** Both must be placed inside the Computer room.

**C-** Both must be connected to a UPS.

**D-** CCTV cameras can only be used to cover the outside of the building, where as the recording equipment needs to be located in a secure area.

## Answer:

C

## Explanation:

A UPS (Uninterruptible Power Supply) is a device that provides backup power to electrical equipment in case of a power outage or fluctuation. A UPS is essential for both CCTV cameras and recording equipment, as it ensures that the surveillance system can continue

to operate and record without interruption or data loss. A UPS can also protect the CCTV cameras and recording equipment from damage caused by power surges or spikes. Connecting both CCTV cameras and recording equipment to a UPS is a requirement for data centres, as it enhances the security and reliability of the surveillance system.

# Question 2

**Question Type:** MultipleChoice

What is the most preferred unit of measure for cooling capacity?

## Options:

**A-** Ton

**B-** Watt

**C-** BTU

**D-** Horsepower

## Answer:

B

## Explanation:

Cooling capacity is the measure of a cooling system's ability to remove heat from a space. The most preferred unit of measure for cooling capacity is watt (W), which is the SI unit for power. Watt is defined as the amount of energy transferred or converted per unit time. One watt is equal to one joule of energy per second. Using watt as the unit of measure for cooling capacity allows for easy comparison and calculation of the cooling performance and efficiency of different cooling systems.

Other units of measure for cooling capacity are ton, BTU, and horsepower, but they are less common and less convenient than watt. Ton is a unit of measure that describes how much water at freezing temperature can be frozen in 24 hours, equivalent to 3.5 kW or 12,000 BTU/h. BTU (British Thermal Unit) is a unit of measure that describes the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit, equivalent to 0.293 W. Horsepower is a unit of measure that describes the rate at which work is done, equivalent to 746 W.

* Data Centre Professional (CDCP) Reference Materials, page 8, section 2.1.1

* Data Centre Professional (CDCP) Preparation Guide, page 11, section 2.1.1

* Cooling capacity - Wikipedia

* Air Conditioner BTU Calculator

* Air conditioning 101: Basics, working principle and sizing ... - GlobalSpec

* How is cooling capacity measured? -- Sage-Advices

* Everything You Need to Know About Cooling Capacity

# Question 3

**Question Type:** MultipleChoice

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

## Options:

**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.

## Answer:

B

## Explanation:

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 4

**Question Type:** MultipleChoice

When dealing with glass door racks, cool air is injected into the rack from:

## Options:

**A-** The rear door in a downflow direction.

**B-** The front door in a downflow direction.

**C-** The top of the rack through the fans and vents mounted inside the rack.

**D-** The bottom of the rack.

### Answer:

A

### Explanation:

Glass door racks are a type of rack that have solid glass front doors and rear door heat exchangers (RDHx). RDHx are devices that use facility coolant to absorb heat from the exhaust air of the IT equipment and return cool air to the room. RDHx can be either passive or active, depending on the fan configuration. In general, IT hardware within the rack is air-cooled and the door heat exchanger uses facility coolant to absorb heat from exhaust air to return air to the facility at or near inlet air temperature to the rack. This rear door heat exchanger can either be a passive or active solution. When dealing with glass door racks, cool air is injected into the rack from the rear door in a downflow direction. This means that the cool air flows from the top to the bottom of the rack, following the natural convection of the hot air rising. This way, the cool air can reach all the IT equipment in the rack and prevent hot spots or overheating.

## Question 5

**Question Type:** MultipleChoice

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

## Options:

**A-** Photoelectric detector

**B-** VESDA/HSSD

**C-** Ionization detector

**D-** Sprinkler bulbs

## Answer:

B

## Explanation:

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 6

**Question Type:** MultipleChoice

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

## Options:

**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.

## Answer:

C

## Explanation:

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 7

**Question Type:** **MultipleChoice**

An optical fiber cable comes with the specifications 50/125 um.

What do the numbers represent?

## Options:

**A-** The first number represents the distance for a 10 Gb/s connection; the second number represents the distance for a 1 Gb/s connection.

**B-** The first number represents the diameter of the core; the second number represents the diameter of the cladding in microns.

**C-** The first number represents the diameter of the core; the second number represents the actual diameter cable including the buffer and jacket.

**D-** The first number represents the required distance to single-phase power cabling; the second number represents the required distance to three-phase cabling.

### Answer:

B

### Explanation:

Optical fiber cables are composed of a core, a cladding, and a coating. The core is the central part of the fiber that carries the light signal. The cladding is the layer surrounding the core that reflects the light back into the core and prevents signal loss. The coating is the protective layer that covers the cladding and provides mechanical strength and environmental protection. The specifications of an optical fiber cable indicate the dimensions of the core and the cladding in microns (m), which are one millionth of a meter. For example, a 50/125 m cable has a core diameter of 50 m and a cladding diameter of 125 m. The coating diameter is usually 250 m, but it is not part of the specifications.

## Question 8

**Question Type:** MultipleChoice

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

## Options:

**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

## Answer:

A

## Explanation:

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.

1: CDCP Preparation Guide, page 21, section 2.3.5 2: Improving Data Center Management and Monitoring5, page 1, section 1 3: Guide to Data Center Monitoring6, page 1, section 1 4: Why Data Center Monitoring is Essential7, page 1, section 1

# Question 9

**Question Type:** MultipleChoice

Which type of copper wire is used for grounding the racks to the SRG?

## Options:

**A-** Thin copper cable to keep the cost low for grounding.

**B-** Thick copper cable to create better grounding.

**C-** Braided copper wire or flat copper strip.

**D-** Copper cable with plastic insulation (isolation).

## Answer:

C

## Explanation:

The type of copper wire that is used for grounding the racks to the SRG (signal reference grid) in a data centre is braided copper wire or flat copper strip, according to the CDCP Preparation Guide1 and various web sources234. Braided copper wire or flat copper strip are preferred over thin or thick copper cable for grounding purposes, because they have lower impedance and higher surface area, which allow better dissipation of electrical noise and interference. Moreover, braided copper wire or flat copper strip are more flexible and durable than copper cable, which make them easier to install and maintain. Braided copper wire or flat copper strip should be connected to the SRG using exothermic welding or other code-compliant methods, and should follow the relevant standards and codes, such as ANSI/TIA/EIA-607 and NFPA 70.

1: CDCP Preparation Guide, page 23, section 2.4.2 2: Signal Reference Grid | Enterprise Data Center Design and Methodology5, page 1, section 1 3: Grounding System Ground Rod Stacking Installation - Rain Bird6, page 1, section 1 4: SmartRack Copper Bus Grounding Bar - Eaton Website7, page 1, section 1

# Question 10

**Question Type:** MultipleChoice

Which is the most damaging type of floor load?

## Options:

**A-** Concentrated Load / Point Load (CP/ PL)

**B-** Uniformly Distributed Load (UDL)

**C-** Rolling Load (RL)

**D-** All loads are equally damaging to raised floor tiles

## Answer:

C

## Explanation:

The most damaging type of floor load for raised floor tiles in a data centre is the rolling load (RL), according to the CDCP Preparation Guide1 and various web sources234. A rolling load is the load that is applied by a moving object, such as a pallet jack, a forklift, or a rack on wheels. A rolling load can cause more stress and fatigue on the raised floor tiles than a static load, such as a concentrated load (CP) or a uniformly distributed load (UDL), because it creates dynamic forces and impacts that can crack, dent, or deform the tiles. Moreover, a rolling load can also damage the pedestals and stringers that support the tiles, and cause the tiles to become loose or misaligned. Therefore, when designing and installing a raised floor system, it is important to consider the maximum rolling load that the tiles can withstand, and to use appropriate materials and methods to enhance the strength and durability of the tiles. For example, some possible solutions include using steel or concrete-filled tiles, reinforcing the edges and corners of the tiles, and using locking or gravity-held systems to secure the tiles.

1: CDCP Preparation Guide, page 23, section 2.4.2 2: Top 5 Considerations - Selecting a Data Center Raised Floor Tile5, page 1, section 1 3: Raised Floor Systems: Explained, Improved and Reinvented6, page 1, section 1 4: Raised Floor Systems: Common Problems and Solutions7, page 1, section 1

# Question 11

**Question Type:** MultipleChoice

What should be considered when implementing hot- or cold-aisle containment in an existing computer room?

## Options:

**A-** Equipment will get too hot at the rear (back) of the rack potentially resulting in more ICT hardware failures.

**B-** The delta-T of the equipment will increase too much causing reliability issues.

**C-** It creates potential issues with the existing fire suppression system(s).

**D-** It will be more difficult to install power and network cabling in the contained area.

## Answer:

C

## Explanation:

Hot- or cold-aisle containment is a strategy to improve the cooling efficiency and reduce the energy consumption of data centers by isolating the hot exhaust air from the cold supply air. However, implementing this strategy in an existing computer room may create potential issues with the existing fire suppression system(s), such as:

* The containment barriers may interfere with the distribution and activation of the fire suppression agents, such as water, gas, or aerosol, and reduce their effectiveness in extinguishing a fire.

* The containment barriers may create pockets of high temperature and pressure that could damage the equipment or the containment structure itself in the event of a fire.

* The containment barriers may obstruct the access and visibility of the fire detection and alarm devices, such as smoke detectors, heat sensors, or manual call points, and delay the response time of the fire suppression system(s).

* The containment barriers may violate the local fire codes and regulations that specify the minimum clearance and ventilation requirements for the data center.

Therefore, when implementing hot- or cold-aisle containment in an existing computer room, it is important to consider the impact on the existing fire suppression system(s) and take appropriate measures to ensure the safety and compliance of the data center, such as:

* Consulting with the fire authorities and the fire suppression system vendor to assess the compatibility and suitability of the containment solution with the existing fire suppression system(s).

* Modifying or upgrading the existing fire suppression system(s) to accommodate the containment solution, such as relocating or adding fire suppression devices, adjusting the discharge rate and pressure, or installing a secondary fire suppression system within the contained area.

* Installing fire-rated containment barriers that can withstand high temperatures and resist the spread of fire and smoke, and that have self-closing or automatic release mechanisms in case of a fire.

* Installing fire detection and alarm devices within the contained area and ensuring their proper integration and communication with the existing fire suppression system(s).

* Conducting regular testing and maintenance of the fire suppression system(s) and the containment solution to ensure their functionality and reliability.

# Question 12

**Question Type:** **MultipleChoice**

What are the four main components of a refrigeration circuit?

## Options:

**A-** Evaporation, membrane filter, monitor sensor, pressure valve

**B-** Evaporator, compressor, condenser, expansion valve

**C-** Condenser, expansion valve, buffer tank, de-icing unit

**D-** Thermostat, monitoring interface, indoor unit, outdoor unit

## Answer:

B

## Explanation:

The four main components of a refrigeration circuit are the evaporator, the compressor, the condenser, and the expansion valve, according to the CDCP Preparation Guide1 and various web sources234. A refrigeration circuit is a system that transfers heat from a low-temperature region to a high-temperature region, using a working fluid called refrigerant. The refrigeration circuit operates in a closed loop, where the refrigerant changes its state from liquid to vapor and back to liquid, while absorbing and releasing heat. The four main components of the refrigeration circuit perform the following functions:

* The evaporator is a heat exchanger that absorbs heat from the low-temperature region, such as the data centre room, and transfers it to the refrigerant. The refrigerant enters the evaporator as a low-pressure, low-temperature liquid, and leaves the evaporator as a low-pressure, low-temperature vapor.

* The compressor is a mechanical device that increases the pressure and temperature of the refrigerant vapor. The refrigerant enters the compressor as a low-pressure, low-temperature vapor, and leaves the compressor as a high-pressure, high-temperature vapor.

* The condenser is another heat exchanger that releases heat from the refrigerant to the high-temperature region, such as the outside air or water. The refrigerant enters the condenser as a high-pressure, high-temperature vapor, and leaves the condenser as a high-pressure, low-temperature liquid.

* The expansion valve is a device that reduces the pressure and temperature of the refrigerant liquid. The refrigerant enters the expansion valve as a high-pressure, low-temperature liquid, and leaves the expansion valve as a low-pressure, low-temperature liquid. The expansion valve also controls the flow of the refrigerant into the evaporator, depending on the cooling load.

1: CDCP Preparation Guide, page 19, section 2.3.3 2: The Refrigeration Cycle5, page 1, section 1 3: Fundamentals of Cooling in Data Center6, page 1, section 1 4: The Refrigeration System, Its Four Main Components, And Their Functions7, page 1, section 1