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Certified Data Centre Specialist (CDCS)

GAQM CDCS-001

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QUESTION NO: 1

Which of the following are valid reasons for maintaining accurate rack and cable labels? (Choose 3)

A. Supporting faster fault isolation

B. Reducing the risk of disconnecting the wrong service

C. Improving change-management accuracy

D. Increasing network bandwidth

E. Replacing approved work procedures

ANSWER: A B C

Explanation:

Supporting faster fault isolation, **reducing the risk of disconnecting the wrong service**, and **improving change-management accuracy** are valid reasons for maintaining accurate labels. Clear identification of racks, patch panels, ports, power circuits, and cable routes enables technicians to work more safely and efficiently in a complex data-center environment.

Labels do not increase network bandwidth or replace the need for current documentation and approved work procedures. Structured cabling administration supports identification, records, and management of telecommunications infrastructure. See TIA standards resources.

QUESTION NO: 2

Which of the following practices help reduce hot-air recirculation at IT equipment intakes? (Choose 3)

A. Install blanking panels in unused rack spaces

B. Use hot-aisle or cold-aisle containment

C. Seal unused cable openings

D. Direct server exhaust toward equipment intakes

E. Remove rack side panels from all cabinets

ANSWER: A B C

Explanation:

Blanking panels, **hot-aisle or cold-aisle containment**, and **sealing cable openings** help control the path of conditioned supply air and hot exhaust air. Blanking panels prevent hot air from passing through unused rack spaces. Containment separates supply and return air streams, and sealing openings in raised floors or other air barriers reduces bypass airflow.

These measures improve the delivery of cooling air to equipment inlets and reduce mixing of hot exhaust with supply air. ASHRAE provides data-center thermal-management resources through its Datacom Series.

QUESTION NO: 3

What is the term for the distance a signal propagates during one cycle?

A. amplitude

B. frequency

C. wavelength

D. period

ANSWER: C

Explanation:

Wavelength is the spatial distance a periodic signal travels while completing one full cycle. For an electromagnetic signal, wavelength is related to propagation velocity and frequency by the relationship λ = v/f, where λ is wavelength, v is the signal's velocity in the transmission medium, and f is frequency. In free space, electromagnetic waves travel at approximately the speed of light, so a higher-frequency signal has a shorter wavelength and a lower-frequency signal has a longer wavelength. This distinction is important in data-centre cabling and wireless communications because signal frequency, medium properties, and physical path length affect transmission design and performance. The term describes distance rather than elapsed time: one complete oscillation occupies a particular length along the direction in which the wave propagates. The National Institute of Standards and Technology defines wavelength as the distance between successive corresponding points of a wave, such as adjacent crests, which represents one cycle. See NIST's explanation of wavelength and Encyclopaedia Britannica's wavelength reference.

QUESTION NO: 4

The distance that a signal's energy can travel in the time it takes for one cycle to occur is called the signal's:

A. amplitude

B. frequency

C. wavelength

D. period

ANSWER: C

Explanation:

The correct term is **wavelength**. A wave completes one full repeating cycle over one wavelength, so wavelength is the physical distance the wave propagates during the time required for one cycle. This relationship is expressed as λ = v/f, where λ is wavelength, v is the propagation velocity in the relevant medium, and f is frequency. Equivalently, because the period is the duration of one cycle, wavelength equals propagation velocity multiplied by period.

For electromagnetic signals travelling in a vacuum, the propagation velocity is the speed of light, so wavelength can be calculated as c/f. In practical data-centre cabling and optical-fibre contexts, the velocity may differ from the vacuum speed of light because the transmission medium affects propagation. Nevertheless, the defining principle remains the same: wavelength identifies the spatial length of one complete cycle. This is important in optical communications because optical wavelengths are commonly specified in nanometres, including operating regions around 850 nm, 1310 nm, and 1550 nm. NASA provides an overview of wavelength as the distance between equivalent points on successive waves in its electromagnetic-spectrum guide. The frequency–wavelength relationship is also documented in the NIST SI units reference.

QUESTION NO: 5

Which of the following should be included in a planned maintenance procedure for critical data-center infrastructure? (Choose 3)

A. Defined scope of work

B. Risk and impact assessment

C. Documented back-out plan

D. Undocumented switching steps

E. Removal of all alarm monitoring

ANSWER: A B C

Explanation:

A planned maintenance procedure should include a **defined scope of work**, **risk and impact assessment**, and a **documented back-out plan**. The scope identifies the equipment and intended work. Risk assessment identifies possible effects on redundancy and critical loads. A back-out plan provides defined actions for returning the system to a safe condition if the work does not proceed as expected.

These controls reduce the likelihood that maintenance activity will cause an avoidable outage. NIST operational controls address maintenance and controlled changes in NIST SP 800-53.

QUESTION NO: 6

Which of the following are important functions of an equipment grounding system? (Choose 3)

A. Providing a low-impedance fault-current path

B. Bonding exposed conductive equipment enclosures

C. Supporting operation of protective devices during a fault

D. Carrying normal load current

E. Replacing the neutral conductor

ANSWER: A B C

Explanation:

Providing a low-impedance fault-current path, **bonding exposed conductive equipment enclosures**, and **supporting operation of protective devices during a fault** are important grounding-system functions. If an energized conductor contacts a metallic enclosure, the equipment grounding path carries fault current back toward the source so that the applicable overcurrent protective device can operate promptly.

An equipment grounding system is not intended to carry normal load current or replace the neutral conductor. Proper grounding and bonding reduce electrical-shock hazards and help ensure predictable fault-clearing performance. See OSHA Electrical Safety—Grounding and OSHA 29 CFR 1910.304.

QUESTION NO: 7

Which component detects smoke particles by measuring changes in the amount of light reaching a sensing chamber?

A. Heat detector

B. Photoelectric smoke detector

C. Manual call point

D. Sprinkler head

ANSWER: B

Explanation:

A **photoelectric smoke detector** detects smoke by using a light source and a sensing chamber. When smoke particles enter the chamber, they scatter light toward the sensor, changing the detected light level and initiating an alarm condition. This type of detector is commonly used as part of an automatic fire-detection system.

Fire detection provides early warning so that personnel and automated systems can respond before a fire grows. A heat detector responds to temperature or rate-of-rise conditions rather than smoke particles. See NFPA 72, National Fire Alarm and Signaling Code.

QUESTION NO: 8

Which type of circuit breaker uses an electromagnetic coil to trip the switch when the current exceeds safe limits?

A. Thermal

B. Magnetic

C. Pull

D. Static

ANSWER: B

Explanation:

Magnetic is correct because a magnetic circuit breaker uses an electromagnet, typically a coil or solenoid carrying the load current, as its instantaneous overcurrent-sensing mechanism. Under normal current, the magnetic force is insufficient to operate the trip linkage. If current rises sharply beyond the breaker's designed threshold, such as during a short circuit or severe fault, the coil's magnetic field becomes strong enough to pull an armature or plunger into the trip mechanism. The mechanism then releases the breaker contacts, rapidly interrupting the circuit and limiting the duration of fault current. This fast response is especially important in data-centre electrical distribution, where high available fault current can damage conductors, switchgear, power-distribution equipment, and connected IT loads. Magnetic trip elements are often incorporated with thermal elements in thermal-magnetic breakers: the magnetic portion provides rapid short-circuit protection, while the thermal portion responds to sustained overload current. The essential identifying feature in the question is therefore the electromagnetic coil acting directly to initiate tripping. Schneider Electric describes magnetic tripping as a short-circuit protection function in its circuit-breaker FAQ. Additional electrical-safety context on overcurrent protective devices is available from OSHA's wiring-methods requirements.