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36	A	B	C	D	E
37	A	B	C	D	E
38	A	B	C	D	E
39	A	B	C	D	E

PRACTICE QUESTIONS

Certified Wireless Network Professionals

CWICP

Certified Wireless IoT Connectivity Professional (CWICP-202)

EDITION

Demo

QUESTIONS

9

FORMAT

Limited Edition PDF

Before you begin

What this is

9 practice questions for Certified Wireless Network Professionals **CWICP**, each with its answer key and an explanation. Answer a question before you read its key — the explanation is worth more once you have committed.

If something looks wrong

Send us three things and we will check it:

- the exam code, **CWICP**
- the question number
- the email address on your order

Write to **support@mometrix.net**. We reply within one business day.

QUESTION 1

MULTIPLE CHOICE

Which of the following are characteristic features of the IEEE 802.11ah (Wi-Fi HaLow) amendment that make it suitable for IoT deployments? (Choose two.)

- ☒ **A** Operation in sub-1 GHz license-exempt bands with longer wavelength propagation than 2.4 GHz Wi-Fi
- ☐ **B** Mandatory support for 160 MHz channel bandwidths to maximize peak throughput
- ☒ **C** Restricted Access Window (RAW) mechanism to support large numbers of power-constrained stations
- ☐ **D** Use of the Distributed Coordination Function only, with no QoS capabilities

ANSWER A • C

WHY 802.11ah operates in sub-1 GHz license-exempt bands (such as 900 MHz), giving it better propagation through walls and longer range than 2.4/5 GHz Wi-Fi. It introduces the Restricted Access Window (RAW) mechanism, which limits the contention window for groups of stations so that very large populations of battery-powered sensors can be served efficiently. 160 MHz channels are an 802.11ac/ax feature in the 5 GHz band, not 802.11ah. 802.11ah supports modern QoS mechanisms including HCF and Target Wake Time, not DCF-only operation.

QUESTION 2

MULTIPLE CHOICE

A facility manager needs to monitor soil moisture across a 40-hectare farm with thousands of battery-powered sensors that report a few bytes every 15 minutes. Which connectivity technologies are most appropriate for this use case? (Choose two.)

- ☒ **A** LoRaWAN in the sub-1 GHz ISM band using star-of-stars topology with adaptive data rate
- ☐ **B** Bluetooth Classic (BR/EDR) in scatternet mode for streaming continuous audio from each sensor
- ☐ **C** Zigbee PRO with mesh networking on the 2.4 GHz ISM band
- ☒ **D** Wi-Fi HaLow (802.11ah) operating in sub-1 GHz bands with RAW-based access

ANSWER A - D

WHY Both LoRaWAN and 802.11ah are designed for long-range, low-power, low-throughput IoT telemetry over wide outdoor areas. LoRaWAN uses sub-1 GHz spectrum, chirp spread spectrum, and an adaptive data rate scheme optimized for sparse, infrequent uplink traffic. Wi-Fi HaLow (802.11ah) also operates in sub-1 GHz bands and adds RAW to scale to thousands of stations. Bluetooth Classic is intended for short-range cable replacement and audio, not wide-area sensor telemetry. Zigbee has limited range and a smaller practical node count for outdoor 40-hectare coverage.

QUESTION 3

SINGLE CHOICE

Which spread spectrum technique used by LPWAN IoT technologies varies the chirp rate across the channel bandwidth to encode data and uses the entire channel bandwidth at all times?

- ☐ **A** Direct Sequence Spread Spectrum (DSSS)
- ☐ **B** Frequency Hopping Spread Spectrum (FHSS)
- ☒ **C** Chirp Spread Spectrum (CSS)
- ☐ **D** Orthogonal Frequency Division Multiplexing (OFDM)

ANSWER C

WHY Chirp Spread Spectrum (CSS), used by LoRa and LoRaWAN, sweeps a chirp whose instantaneous frequency changes linearly across the channel bandwidth; data is encoded in the chirp rate and starting frequency, and the full bandwidth is always in use. DSSS multiplies data by a chip sequence. FHSS hops between narrow frequencies. OFDM divides the channel into many orthogonal subcarriers, none of which sweeps.

QUESTION 4

SINGLE CHOICE

A battery-powered irrigation valve must open only when commanded by the network server and can wait several seconds for the command. Which LoRaWAN device class is most appropriate?

- ☒ **A** Class A — bidirectional with downlink receive windows only after an uplink transmission
- ☐ **B** Class B — bidirectional with scheduled downlink ping slots synchronized by a beacon
- ☐ **C** Class C — continuously open receive window when not transmitting
- ☐ **D** Class D — reserved for multicast firmware distribution

ANSWER A

WHY Class A is the lowest-power LoRaWAN class: every downlink must be sent immediately after an uplink, in one of the two receive windows. Battery-powered actuators like irrigation valves that tolerate several seconds of command latency use Class A. Class B adds synchronized beacon-driven ping slots (more power). Class C keeps the receiver continuously open except while transmitting and is mains-powered. Class D is not an official LoRaWAN device class.

QUESTION 5

SINGLE CHOICE

In a Thread mesh network, what is the function of the Thread Border Router?

- ☐ **A** It assigns 802.15.4 channel numbers to neighboring Thread networks
- ☒ **B** It bridges the Thread mesh network to another IP network such as Ethernet or Wi-Fi
- ☐ **C** It performs Zigbee APS layer encryption for end devices
- ☐ **D** It replaces CoAP with MQTT for application-layer messaging

ANSWER B

WHY A Thread Border Router connects the 6LoWPAN-based Thread mesh to other IP networks (typically Ethernet, Wi-Fi, or cellular), enabling Thread devices to communicate with cloud services and with IP hosts on the LAN. It does not select channels for other networks, perform Zigbee APS encryption (Thread uses its own link-layer security), or substitute MQTT for CoAP.

QUESTION 6

SINGLE CHOICE

Which Bluetooth LE advertising event type is intended for both legacy and LE scanning devices, is non-connectable, and is commonly used for beacons such as iBeacon and Eddystone?

- ☐ A ADV_IND
- ☐ B ADV_DIRECT_IND
- ☒ C ADV_NONCONN_IND
- ☐ D ADV_SCAN_IND

ANSWER C

WHY ADV_NONCONN_IND is a non-connectable, non-scannable advertising packet type supported by both legacy and LE scanners, which is why it is used for beacon broadcasts where neither a connection nor a scan response is desired. ADV_IND is connectable and scannable. ADV_DIRECT_IND targets a specific initiator and is connectable. ADV_SCAN_IND allows scan requests but is not connectable and is not as widely deployed for beacons.

QUESTION 7

SINGLE CHOICE

Which mitigation most directly addresses the risk of an attacker capturing and replaying an LoRaWAN Join Request to cause a legitimate end device to be disconnected?

- ☐ A Use of a longer DevEUI so that frames cannot be addressed to the device
- ☒ B Use of a frame counter (FCnt) that is checked by the network server and rejected if it has already been seen
- ☐ C Disabling all downlink transmissions from the network server
- ☐ D Operating the gateway on a different LoRaWAN regional parameter set

ANSWER B

WHY LoRaWAN uses an uplink frame counter (FCntUp) and downlink frame counter (FCntDown) to defeat replay attacks; the network server discards any frame whose counter has already been processed or that is outside an acceptable window relative to the last value. Lengthening the DevEUI does not prevent replay of a valid session. Disabling downlinks would break LoRaWAN Class A operation. Changing regional parameters does not affect replay protection.

QUESTION 8

SINGLE CHOICE

When performing an IoT link budget calculation, which term represents the ratio (in dB) between the effective isotropic radiated power of the transmitter and the minimum signal level required at the receiver?

- ☐ A Path loss
- ☐ B Fade margin
- ☒ C Maximum allowable path loss (MAPL)
- ☐ D Noise figure

ANSWER C

WHY The Maximum Allowable Path Loss (MAPL) is the largest total path loss the link can tolerate; it is computed as EIRP plus receiver antenna gain (and any other gains) minus receiver sensitivity, minus required fade/system margins. Path loss is what is being constrained, not the ratio itself. Fade margin is the safety margin added to account for fading. Noise figure is a receiver characteristic, not the ratio.

QUESTION 9

SINGLE CHOICE

Increasing the LoRa spreading factor (SF7 → SF12) primarily affects which two link parameters?

- ☐ A Channel bandwidth and carrier frequency
- ☒ B Receiver sensitivity (improves) and time on air per packet (increases)
- ☐ C Network server join duty cycle and DevEUI length
- ☐ D MAC header encryption algorithm and key length

ANSWER B

WHY A higher LoRa spreading factor spreads each symbol over more chirps, which lowers the data rate, increases time on air, and improves receiver sensitivity (typically by about 2.5 dB per SF step) at the cost of capacity and battery life. Channel bandwidth and carrier frequency are configured independently. The LoRaWAN join procedure uses the same AppKey/NwkSKey regardless of SF. Changing SF does not change the encryption algorithm.