ATMIC NETWORKS
YOUR GUIDE TO GLOBAL CERTIFIATION

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Question: 1

What field in an 802.11 frame identifies the frame's purpose?
A Duration
B Frame Control
C Sequence Control
D Address 1
Answer: B
Explanation:
The Frame Control field defines the frame type and subtype It indicates whether the frame is management, control, or data This field is essential for protocol interpretation.

Question: 2

Which MAC mechanism prevents collisions by requiring stations to listen before transmitting?
A CSMA/CD OFDMA CSMA/CA TDMA
B Answer: C
C Explanation:
D CSMA/CA requires devices to sense the medium before transmission If the channel is busy, the station waits This reduces collisions in shared RF environments.

Question: 3

Clear Channel Assessment determines:
A Authentication status
B Signal encryption level
C Whether the medium is busy
D Channel width selection
Answer: C
Explanation:
CCA evaluates if the channel is idle or busy before transmission It uses energy detection and carrier sensing This is a core part of CSMA/CA operation.

Question: 4

What happens when a transmitted frame is not acknowledged?
A The sender disconnects
B The frame is discarded permanently
C The sender retries after backoff
D The receiver sends a CTS
Answer: C
Explanation:
If an ACK is not received, the sender assumes a collision occurred It enters a backoff period and retries Excessive retries indicate RF or contention problems.

Question: 5

High airtime utilization most directly indicates:
A Strong RSSI
B Excessive retransmissions
C High channel availability
D Low client density
Answer: B
Explanation:
High airtime usage often results from retries and low data rates Slow transmissions consume more airtime This reduces overall WLAN efficiency.

Question: 6

What best describes the difference between data rate and throughput?
A They are identical
B Throughput includes protocol overhead
C Data rate accounts for packet loss
D Throughput ignores retransmissions
Answer: B
Explanation:
Data rate is the raw PHY speed Throughput is the actual usable data delivered Overhead, retransmissions, and contention reduce throughput.

Question: 7

Latency in a WLAN is most affected by:
A Antenna polarization
B Channel width
C Retries and contention
D Transmit power
Answer: C
Explanation:
Retries and contention delay frame delivery As collisions increase, latency rises This is especially noticeable in congested WLANs.

Question: 8

Co-channel interference occurs when:
A Channels partially overlap
B Non-Wi-Fi devices transmit
C Multiple APs share the same channel
D Channels are bonded
Answer: C
Explanation:

Co-channel interference happens when multiple devices use the same channel Devices must share airtime This reduces performance even if signals are strong.

Question: 9

Adjacent-channel interference is primarily caused by:
A Using identical channels
B Overlapping channel frequencies
C Excessive retransmissions
D High SNR values
Answer: B
Explanation:
Adjacent-channel interference occurs when channels partially overlap Energy spills into neighboring channels This degrades performance more severely than co-channel interference.

Question: 10

The hidden node problem occurs when:
A Clients roam too aggressively
B APs transmit at high power
C Two clients cannot hear each other
D Channels are bonded incorrectly
Answer: C
Explanation:
Hidden nodes cannot detect each other’s transmissions They transmit simultaneously, causing collisions at the AP RTS/CTS can help mitigate this issue.

Question: 11

Which troubleshooting approach focuses on eliminating variables systematically?
A Reactive troubleshooting
B Structured troubleshooting Opportunistic analysis Predictive surveying
C Answer: B
D Explanation:
Structured troubleshooting uses a step-by-step method Variables are isolated and tested individually This reduces guesswork and improves root-cause accuracy.

Question: 12

RF data is most useful when troubleshooting:
A Authentication failures
B Application-layer errors
C Coverage and interference issues
D DHCP misconfigurations

Answer: C
Explanation:

RF data reveals signal strength, noise, and interference These metrics directly impact coverage and reliability Packet data alone cannot expose RF problems.

Question: 13

Which symptom most strongly indicates a client-side issue?
A Multiple clients failing
B AP unreachable
C Single client experiencing poor performance
D Channel utilization at 90%
Answer: C
Explanation:
If only one client is affected, the issue is likely device-specific Driver, power-save, or hardware issues are common causes Infrastructure problems usually impact many clients.

Question: 14

After implementing a fix, what is the next best step?
A Document assumptions
B Change additional settings
C Validate performance improvement
D Reboot all APs
Answer: C
Explanation:
Validation ensures the fix resolved the issue Measurements should confirm improved performance Without validation, root causes may remain unverified.

Question: 15

Which site survey predicts RF behavior before deployment?
A Passive survey
B Active survey
C Predictive survey
D Validation survey
Answer: C
Explanation:
Predictive surveys use software models They estimate coverage and capacity before installation This helps reduce costly redesigns.

Question: 16

Passive surveys primarily measure:
A Client throughput
B Frame retransmissions
C Existing RF conditions
D Application latency
Answer: C

Explanation:
Passive surveys listen to RF activity without transmitting They capture RSSI, noise, and channel usage They are useful in live environments.

Question: 17

Signal-to-noise ratio is calculated by:
A Subtracting noise from signal
B Adding signal and noise
C Dividing signal by noise
D Averaging RSSI values
Answer: A
Explanation:
SNR is the difference between signal strength and noise floor Higher SNR indicates cleaner RF conditions Modulation success depends heavily on SNR.

Question: 18

Coverage analysis focuses on:
A Maximum data rates
B Number of users per AP
C Signal availability
D Airtime fairness
Answer: C
Explanation:
Coverage analysis ensures signal is present where needed It answers whether clients can connect Capacity analysis focuses on how many clients can perform well.

Question: 19

Capacity analysis primarily evaluates:
A Signal coverage boundaries
B Noise floor consistency
C Client density and airtime demand
D Antenna polarization
Answer: C
Explanation:
Capacity analysis determines how many clients can be supported effectively It considers airtime usage, data rates, and contention This is critical in high-density WLANs.

Question: 20

Which 802.11 mechanism prioritizes voice and video traffic?
A CSMA/CA
B WMM
C RTS/CTS

D OFDMA
Answer: B
Explanation:
Wi-Fi Multimedia prioritizes traffic into access categories Voice and video receive shorter contention windows This reduces latency and jitter.

Question: 21

Roaming delays are most affected by:
A Channel width
B Antenna gain
C Authentication and key exchange
D Guard interval length
Answer: C
Explanation:
Roaming requires authentication and security negotiation These processes add delay during handoff Faster roaming methods reduce this overhead.

Question: 22

Power-save mechanisms impact WLAN performance by:
A Increasing transmit power
B Reducing frame size
C Introducing delivery delays
D Increasing modulation rates
Answer: C
Explanation:
Clients in power-save mode sleep between transmissions Frames are buffered by the AP This can increase latency for sleeping devices.

Question: 23

Load balancing attempts to:
A Increase transmit power
B Force clients to 2.4 GHz
C Distribute clients across APs
D Reduce channel width
Answer: C
Explanation:
Load balancing spreads clients across multiple APs This prevents overloading a single AP Proper balance improves overall network efficiency.

Question: 24

Band steering encourages clients to: A Use wider channels

B Connect to 5 GHz or 6 GHz bands

C Disable power-save mode
D Increase transmit retries
Answer: B
Explanation:
Band steering guides capable clients away from congested 2.4 GHz Higher bands offer more channels and capacity This improves performance.

Question: 25

Which tool is best for identifying non-Wi-Fi interference?
A Protocol analyzer
B Wi-Fi driver logs
C Spectrum analyzer
D Packet sniffer
Answer: C
Explanation:
Spectrum analyzers display all RF energy They reveal non-802.11 sources like microwaves or Bluetooth Protocol analyzers only decode Wi-Fi frames.

Question: 26

Packet analyzers are primarily used to:
A Measure RF power
B Decode 802.11 frames
C Detect channel overlap
D Measure antenna patterns
Answer: B
Explanation:
Packet analyzers capture and decode WLAN frames They reveal protocol behavior and exchanges RF-only tools cannot provide this insight.

Question: 27

Capture files are most useful when:
A Measuring noise floor
B Validating antenna placement
C Analyzing protocol behavior
D Selecting channel widths
Answer: C
Explanation:
Capture files contain frame-level data They show retries, handshakes, and errors This helps diagnose protocol and performance issues.

Question: 28

Professional WLAN reports should prioritize:
A Technical jargon
B Raw packet dumps

C Clear findings and recommendations
D Vendor-specific terminology
Answer: C
Explanation:
Reports should communicate results clearly Stakeholders need actionable conclusions Excessive jargon reduces understanding and value.

Question: 29

Ethical WLAN analysis requires engineers to:
A Capture all traffic indiscriminately
B Ignore user privacy
C Follow authorization and legal boundaries
D Disable encryption for analysis
Answer: C
Explanation:
Wireless analysis must respect privacy and legal requirements Engineers should only analyze networks they are authorized to access Ethical practice protects users and professionals.

Question: 30

Which PHY feature allows multiple antennas to transmit simultaneously?
A OFDMA
B MIMO
C DFS
D CCA
Answer: B
Explanation:
Multiple-Input Multiple-Output uses multiple antennas to send parallel data streams This increases throughput and reliability It is common in modern WLAN standards.

Question: 31

Spatial streams directly impact:
A Channel overlap
B Airtime fairness
C Maximum data rate
D Noise floor
Answer: C
Explanation:
More spatial streams allow more data to be transmitted concurrently This increases the maximum achievable data rate Both client and AP must support them.

Question: 32

Which modulation requires the highest signal quality?
A BPSK
B QPSK
C 16-QAM
D 256-QAM
Answer: D
Explanation:
Higher-order modulation schemes pack more bits per symbol They require higher SNR to decode reliably Poor RF conditions force fallback to lower modulation.

Question: 33

Why do lower data rates consume more airtime?
A Frames are larger
B Retries are disabled
C Transmission takes longer
D Guard intervals are longer
Answer: C
Explanation:
Lower data rates transmit bits more slowly Frames remain on the air longer This increases airtime consumption and contention.

Question: 34

Intermittent interference is hardest to detect because it:
A Has low power
B Appears sporadically
C Uses Wi-Fi protocols
D Occurs only at night
Answer: B
Explanation:
Intermittent interference appears only occasionally It may not be present during testing Spectrum analyzers with time-based views help identify it.

Question: 35

Which frame type controls medium access?
A Data
B Management
C Control
D Action
Answer: C
Explanation:
Control frames manage access to the medium RTS, CTS, ACK, and Block ACK are control frames They support reliable communication.

The Duration field in an 802.11 frame is used to:
A Identify the transmitter

Question: 36

B Reserve airtime
C Encrypt payload data
D Indicate frame subtype
Answer: B
Explanation:
The Duration field tells other stations how long the medium will be busy This sets the Network Allocation Vector It helps prevent collisions.

Question: 37

Excessive retries most often indicate:
A High SNR
B Strong coverage
C Interference or contention
D Proper channel planning
Answer: C
Explanation:
Retries occur when frames are not acknowledged This is commonly caused by collisions or interference Persistent retries degrade performance.

Question: 38

Which metric best reflects user experience?
A RSSI
B Data rate
C Throughput
D Transmit power
Answer: C
Explanation:
Throughput reflects actual delivered data It accounts for overhead and retries Users experience throughput, not raw data rates.

Question: 39

Packet loss in a WLAN most directly impacts:
A RSSI values
B User-perceived performance
C Antenna patterns
D Channel availability
Answer: B
Explanation:
Packet loss forces retransmissions and reduces effective throughput Applications may experience delays or interruptions This directly degrades user experience.

Question: 40

Which scenario best describes an exposed node problem?
A Two clients collide at the AP
B A client cannot hear the AP
C A client unnecessarily defers transmission
D Multiple APs share the same SSID
Answer: C
Explanation:
An exposed node hears another transmission and defers even though it would not cause a collision This leads to underutilization of the medium Performance is reduced unnecessarily.

Question: 41

When analyzing WLAN issues, spectrum data is most valuable for identifying:
A Authentication delays
B Encryption mismatches
C RF interference sources
D IP addressing problems
Answer: C
Explanation:
Spectrum data shows all RF energy in the band It reveals both Wi-Fi and non-Wi-Fi interference This insight cannot be obtained from packet captures alone.

Question: 42

A structured troubleshooting methodology should begin with:
A Changing configuration settings
B Rebooting devices
C Defining the problem clearly
D Collecting packet captures
Answer: C
Explanation:
Clearly defining the problem prevents wasted effort Symptoms, scope, and impact must be understood first This guides efficient troubleshooting.

Question: 43

Which factor most influences roaming aggressiveness?
A Transmit power
B Client driver behavior
C AP channel width
D Antenna polarization
Answer: B
Explanation:
Roaming decisions are primarily controlled by the client Driver algorithms determine when to roam Infrastructure can influence but not dictate roaming.

A validation survey is performed to:

Question: 44

A Predict RF coverage
B Design channel plans
C Confirm post-deployment performance
D Identify legacy devices
Answer: C
Explanation:
Validation surveys verify that the deployed WLAN meets design requirements They confirm coverage, capacity, and performance This ensures deployment success.

Question: 45

Which SNR value generally supports higher-order modulation?
A Low SNR
B Moderate SNR
C High SNR
D Negative SNR
Answer: C
Explanation:
Higher-order modulation requires cleaner signals High SNR provides sufficient separation between signal and noise This allows reliable decoding.

Question: 46

Capacity planning is especially critical in environments with:
A Few static clients
B Low application usage
C High client density
D Minimal interference
Answer: C
Explanation:
High client density increases contention and airtime demand Capacity planning ensures sufficient APs and channels This prevents congestion.

Question: 47

QoS prioritization affects frame handling by:
A Increasing transmit power
B Changing antenna patterns
C Adjusting contention parameters
D Disabling encryption
Answer: C
Explanation:
QoS modifies contention window sizes and inter-frame spacing Higher-priority traffic gains faster access This improves voice and video performance.

Question: 48

Fast roaming mechanisms aim to reduce:
A Channel overlap
B Authentication delay
C Noise floor
D Airtime utilization
Answer: B
Explanation:
Fast roaming optimizes authentication and key exchange This minimizes handoff delay It is critical for real-time applications.

Question: 49

Which power-save feature allows clients to sleep between beacon intervals?
A U-APSD
B TWT
C DTIM
D RTS/CTS
Answer: C
Explanation:
Delivery Traffic Indication Messages inform clients of buffered frames Clients wake at DTIM intervals to receive data This conserves battery power.

Question: 50

Target Wake Time primarily improves:
A Transmit power levels
B Client battery efficiency
C Channel width selection
D Roaming aggressiveness
Answer: B
Explanation:
Target Wake Time schedules client wake periods This reduces unnecessary listening It improves battery life and reduces contention.

Question: 51

Load balancing may negatively impact performance when:
A Clients are evenly distributed
B APs have equal capacity
C Clients are forced to roam unnecessarily
D Channels are non-overlapping
Answer: C
Explanation:
Aggressive load balancing can cause clients to roam too often This introduces delays and instability Balance should be applied carefully.

Band steering is least effective when:
A Clients support multiple bands

Question: 52

B 5 GHz channels are available
C Clients only support 2.4 GHz
D Client density is high
Answer: C
Explanation:
Band steering requires dual-band capable clients Legacy 2.4 GHz-only devices cannot be steered Steering has no effect on them.

Question: 53

Which tool provides visibility into retry counts and frame types?
A Spectrum analyzer
B Packet analyzer
C Heatmap tool D Cable tester
Answer: B
Explanation:
Packet analyzers decode individual frames They reveal retries, acknowledgements, and frame types This is essential for protocol-level analysis.

Question: 54

Logs are most useful for identifying:
A RF waveform shapes
B Hidden node problems
C Authentication and association events
D Antenna beamwidth
Answer: C
Explanation:
Logs record system and protocol events They help identify failures during authentication and association RF tools do not capture this information.

Question: 55

When presenting analysis findings, engineers should:
A Focus on packet-level detail only
B Avoid conclusions
C Provide evidence-based recommendations
D Use vendor-specific terminology
Answer: C
Explanation:
Reports should translate findings into actionable guidance Evidence supports credibility Clear recommendations help stakeholders make decisions.

Question: 56

Professional WLAN analysis requires maintaining:
A Maximum transmit power
B Client anonymity
C Accurate documentation
D Proprietary configurations
Answer: C
Explanation:
Accurate documentation supports troubleshooting and audits It ensures consistency and accountability This is a core professional practice.

Question: 57

Which PHY standard first introduced MIMO?
A 802.11a
B 802.11g
C 802.11n
D 802.11ac
Answer: C
Explanation:
802.11n introduced MIMO technology It enabled multiple spatial streams This significantly improved throughput and reliability.

Question: 58

Which factor limits the number of usable spatial streams? A Channel width B Antenna count C Guard interval D Encryption type Answer: B Explanation:
Each spatial stream requires a dedicated antenna chain The number of antennas limits spatial streams Both AP and client must support them.

Question: 59

Why does higher noise floor reduce WLAN performance?
A It increases transmit power
B It lowers available SNR
C It widens channel bandwidth
D It improves modulation stability
Answer: B
Explanation:
Noise floor represents background RF energy As noise increases, SNR decreases Lower SNR forces lower modulation rates and reduces throughput.

Which interference source is typically intermittent?
A Continuous video transmitter
B Microwave oven
C Adjacent Wi-Fi AP D Co-channel WLAN
Answer: B
Explanation:
Microwave ovens generate RF energy only when operating This creates intermittent interference It often

Question: 60

appears as periodic bursts in the spectrum.

Question: 61

What distinguishes Wi-Fi interference from non-Wi-Fi interference?
A Signal strength B Channel width
C Recognizable 802.11 patterns
D Duty cycle
Answer: C
Explanation:
Wi-Fi signals follow defined 802.11 patterns Protocol analyzers can decode them Non-Wi-Fi interference lacks these characteristics.

Question: 62

Which frame subtype announces an AP's capabilities?
A Probe Request
B Beacon
C RTS
D ACK
Answer: B
Explanation:
Beacon frames advertise SSID, supported rates, and capabilities Clients use this information to discover networks Beacons are transmitted periodically.

Question: 63

Which control frame confirms successful frame delivery?
A CTS
B RTS
C ACK
D Block ACK Request
Answer: C
Explanation:
Acknowledgement frames confirm receipt of unicast frames If no ACK is received, retransmission occurs This ensures reliability.

Question: 64

Backoff in CSMA/CA is used to:
A Increase throughput
B Reduce collision probability
C Improve roaming speed
D Control encryption timing
Answer: B
Explanation:
Backoff introduces a random delay before transmission This reduces the chance of simultaneous transmissions It helps minimize collisions.

Question: 65

High contention environments typically result in:
A Higher data rates
B Lower latency
C Increased retries
D Lower noise floor
Answer: C
Explanation:
More devices competing for airtime increase collision risk This leads to retries and backoff delays Performance degrades as contention rises.

Question: 66

Which metric best indicates channel congestion?
A RSSI
B SNR
C Airtime utilization
D Transmit power
Answer: C
Explanation:
Airtime utilization shows how much of the channel is in use High utilization indicates congestion This limits available transmission opportunities.

Question: 67

Why is throughput lower than PHY data rate?
A Encryption overhead
B Management frames
C Retransmissions and protocol overhead
D Antenna polarization
Answer: C
Explanation:
PHY rate is the theoretical maximum Overhead, contention, and retries reduce usable throughput Real-world performance is always lower.

Question: 68

Latency-sensitive applications are most affected by:
A Channel width
B Guard interval
C Jitter and retries
D Antenna gain
Answer: C
Explanation:
Latency-sensitive traffic requires consistent delivery times Jitter and retries introduce delays This degrades voice and video quality.

Question: 69

Which condition most often causes jitter in WLANs?
A Stable RF conditions
B Consistent data rates
C Variable delay between packets
D High antenna gain
Answer: C
Explanation:
Jitter is variation in packet delay It is caused by contention, retries, and variable backoff times Realtime applications are especially sensitive to jitter.

Question: 70

Which interference type is generally less harmful to WLAN performance?
A Adjacent-channel interference Non-Wi-Fi interference Co-channel interference Continuous
B interference
C Answer: C
D Explanation:
Co-channel interference follows Wi-Fi rules Devices share airtime cooperatively Adjacent-channel and non-Wi-Fi interference are more disruptive.

Question: 71

A hidden node condition primarily increases:
A Signal strength
B Noise floor
C Frame collisions
D Channel width
Answer: C
Explanation:
Hidden nodes transmit without sensing each other This causes collisions at the receiver Collisions lead to retries and reduced throughput.

Question: 72

Which troubleshooting step should follow data collection?
A Change configuration
B Form a hypothesis
C Reboot the WLAN
D Replace hardware
Answer: B
Explanation:
After collecting data, engineers form hypotheses These are tested against evidence This structured approach avoids unnecessary changes.

Question: 73

Root cause analysis aims to:
A Treat symptoms quickly
B Identify underlying issues
C Increase transmit power
D Eliminate documentation
Answer: B
Explanation:
Root cause analysis focuses on the true source of a problem Fixing symptoms alone may not prevent recurrence Accurate identification leads to lasting solutions.

Question: 74

Which issue is best diagnosed using packet captures?
A RF absorption
B Antenna misalignment
C Authentication failures
D Multipath fading
Answer: C
Explanation:
Packet captures reveal protocol exchanges Authentication and association problems are visible at the frame level RF-only tools cannot show these details.

Question: 75

Active site surveys measure:
A Predicted RF coverage
B Live client performance
C Historical RF patterns
D Antenna beamwidth
Answer: B
Explanation:
Active surveys associate a client and measure throughput and latency They reflect real user experience Passive surveys do not transmit data.

Which metric is most useful for validating capacity designs?
A RSSI

Question: 76

B Noise floor
C Airtime utilization
D Antenna gain
Answer: C
Explanation:
Capacity depends on airtime availability High airtime usage indicates congestion This metric validates whether capacity goals are met.

Question: 77

Which QoS access category has the highest priority?
A Background
B Best effort
C Video
D Voice
Answer: D
Explanation:
Voice traffic has the highest priority It uses the shortest contention windows This minimizes latency and jitter.

Question: 78

Roaming performance is most critical for:
A File transfers
B Email applications
C Voice over WLAN
D Web browsing
Answer: C
Explanation:
Voice applications require seamless connectivity Delays during roaming cause call drops Fast roaming is essential for VoWLAN.

Question: 79

Why does multipath sometimes improve WLAN performance?
A It increases noise floor
B It reduces channel width
C It enables spatial diversity
D It causes symbol overlap
Answer: C
Explanation:
Multipath creates multiple signal paths MIMO systems use these paths for spatial diversity This can improve reliability and throughput.

Question: 80

Which environment is most likely to experience severe multipath?
A Open outdoor field
B Warehouse with metal shelving
C Rural open space
D Outdoor point-to-point link
Answer: B
Explanation:
Metal surfaces reflect RF signals strongly Warehouses create many reflective paths This leads to severe multipath conditions.

Question: 81

What primarily determines free space path loss?
A Antenna type
B Distance and frequency
C Channel width
D Modulation scheme
Answer: B
Explanation:
FSPL increases with distance and higher frequencies It represents natural signal spreading This is independent of antenna gain.

Question: 82

Increasing frequency while keeping distance constant will:
A Decrease FSPL
B Eliminate attenuation
C Increase FSPL
D Improve penetration
Answer: C
Explanation:
Higher frequencies experience greater free space path loss This reduces received signal strength Coverage typically decreases at higher frequencies.

Question: 83

Which antenna polarization mismatch causes signal loss?
A Circular to circular
B Linear to linear (same orientation)
C Vertical to horizontal
D Dual-polarized to dual-polarized
Answer: C
Explanation:
Polarization mismatch reduces received signal strength Vertical and horizontal antennas are orthogonal This causes significant signal loss.

What PHY parameter defines time between OFDM symbols?

Question: 84

A Channel width
B Guard interval
C Modulation scheme
D Spatial stream count
Answer: B
Explanation:
Guard interval separates OFDM symbols It prevents inter-symbol interference Short GI improves throughput but needs clean RF.

Question: 85

Which channel width offers the highest potential throughput?
A 20 MHz
B 40 MHz
C 80 MHz
D 160 MHz
Answer: D
Explanation:
Wider channels carry more data simultaneously 160 MHz provides the highest potential throughput It also requires very clean spectrum.

Question: 86

Why are wider channels harder to deploy?
A Lower data rates
B Increased airtime fairness
C Greater susceptibility to interference
D Reduced transmit power
Answer: C
Explanation:
Wider channels overlap more spectrum This increases interference risk Clean spectrum availability becomes limited.

Question: 87

Which feature allows simultaneous uplink transmissions in 802.11ax?
A MIMO
B OFDMA
C RTS/CTS
D WMM
Answer: B
Explanation:
OFDMA enables multiple clients to transmit simultaneously Resource units are scheduled by the AP This improves efficiency.

Question: 88

Which spectrum view best identifies duty cycle?
A FFT
B Density plot
C Waterfall
D Time-domain view
Answer: C
Explanation:
Waterfall displays signal activity over time Duty cycle is easily visible Persistent signals appear continuous.

Question: 89

Which characteristic best identifies a continuous interference source?
A Short bursts at random intervals
B Constant presence across time
C Activity only during peak hours
D Association with beacons
Answer: B
Explanation:
Continuous interference remains present over time It consistently occupies the channel This makes it easier to detect but more disruptive.

Question: 90

Which analyzer decodes MAC headers and frame exchanges?
A Spectrum analyzer
B Protocol analyzer
C Cable tester
D Heatmapping tool
Answer: B
Explanation:
Protocol analyzers capture and decode 802.11 frames They reveal MAC headers and exchanges This enables detailed protocol analysis.

Question: 91

Which management frame initiates active scanning?
A Beacon
B Probe Request
C Probe Response
D Association Request
Answer: B
Explanation:
Clients send probe requests to discover networks APs reply with probe responses This is part of active scanning.

Which frame exchange confirms network membership?

Question: 92

A Authentication only
B Association only
C Authentication and association
D Probe and beacon
Answer: C
Explanation:
Authentication verifies identity Association establishes membership Both are required for network access.

Question: 93

Which MAC feature ensures fair access to the medium?
A OFDMA scheduling
B Random backoff
C Beamforming
D Channel bonding
Answer: B
Explanation:
Random backoff reduces repeated collisions It helps distribute access opportunities This promotes fairness among stations.

Question: 94

Excessive backoff values typically indicate:
A Strong signal conditions
B Low client density
C High contention
D Proper QoS configuration
Answer: C
Explanation:
High contention increases collision probability Backoff windows grow to reduce collisions This increases delay.

Question: 95

Which metric best reflects effective capacity?
A RSSI
B Noise floor
C Airtime available
D Transmit power
Answer: C
Explanation:
Capacity depends on how much airtime remains available Even strong signals cannot overcome full airtime usage Airtime is the limiting resource.

Question: 96

Which problem is caused by overlapping channels?
A Co-channel interference
B Adjacent-channel interference
C Hidden nodes
D Exposed nodes
Answer: B
Explanation:
Overlapping channels cause adjacent-channel interference This introduces noise-like disruption It is more harmful than co-channel interference.

Question: 97

Which troubleshooting step confirms success after remediation?
A Change documentation
B Root cause analysis
C Validation testing
D Additional configuration
Answer: C
Explanation:
Validation testing confirms that fixes resolved the issue Measurements should show improvement This completes the troubleshooting cycle.

Question: 98

Which survey type is best for confirming real user experience?
A Predictive
B Passive
C Active
D Validation only
Answer: C
Explanation:
Active surveys associate and test performance They measure throughput and latency This reflects user experience.

Question: 99

Which RF metric best represents background interference?
A RSSI
B SNR
C Noise floor
D EIRP
Answer: C
Explanation:
Noise floor represents ambient RF energy present in the environment Higher noise reduces effective signal clarity It directly impacts achievable SNR.

Why is SNR more meaningful than RSSI for performance analysis?

Question: 100

A RSSI ignores antenna gain
B SNR accounts for both signal and noise
C RSSI is measured in dBm
D SNR changes less frequently
Answer: B
Explanation:
RSSI shows signal strength only SNR compares signal to noise Modulation and throughput depend primarily on SNR, not RSSI alone.

Question: 101

Which condition most limits high-order modulation usage?
A Channel reuse
B Client density
C Insufficient SNR
D Beacon interval
Answer: C
Explanation:
High-order modulation requires very clean RF conditions Low SNR causes decoding errors Devices will fall back to lower modulation schemes.

Question: 102

Which feature reduces collisions by reserving airtime?
A OFDMA
B RTS/CTS
C Beamforming
D DFS
Answer: B
Explanation:
RTS/CTS reserves the medium before transmission Other stations defer based on duration This reduces collisions, especially with hidden nodes.

Question: 103

Which scenario most benefits from RTS/CTS?
A Low-density networks
B Environments with hidden nodes
C Strong SNR conditions
D Static client environments
Answer: B
Explanation:
Hidden nodes cannot hear each other RTS/CTS coordinates access through the AP This minimizes collisions at the receiver.

Question: 104

Which MAC behavior increases delay under congestion?
A Short guard interval
B Frame aggregation
C Exponential backoff
D Beamforming
Answer: C
Explanation:
Backoff windows increase after collisions Under congestion, this adds delay Latency grows as contention increases.

Question: 105

Which performance metric is most affected by retries?
A RSSI
B Throughput
C Channel width
D Antenna gain
Answer: B
Explanation:
Retries consume airtime and delay delivery This lowers effective throughput High retry rates indicate RF or contention problems.

Question: 106

What primarily causes packet loss in WLANs?
A Encryption overhead
B RF collisions and interference
C Beacon transmission
D Channel bonding
Answer: B
Explanation:
Collisions and interference prevent successful frame delivery Lost frames must be retransmitted Persistent loss degrades performance.

Question: 107

Which troubleshooting data source best identifies contention issues?
A Heatmaps
B Packet captures
C Spectrum waterfalls
D Antenna patterns
Answer: B
Explanation:
Packet captures reveal retries, backoff, and collisions These indicators expose contention problems RF-only views cannot show protocol behavior.

Which step ensures troubleshooting changes do not introduce new problems?

Question: 108

A Immediate deployment
B Validation and monitoring
C Root cause identification
D Configuration rollback
Answer: B
Explanation:
Validation confirms improvements and checks for side effects Monitoring ensures stability over time This prevents unintended consequences.

Question: 109

Which WLAN issue is most difficult to detect without time-based analysis?
A Continuous interference
B Adjacent-channel overlap
C Intermittent interference
D Co-channel contention
Answer: C
Explanation:
Intermittent interference appears sporadically It may not be present during short tests Time-based spectrum views help reveal these patterns.

Question: 110

Which analyzer provides visibility into frame retries and acknowledgements?
A Spectrum analyzer
B Protocol analyzer
C RF power meter
D Heatmap software
Answer: B
Explanation:
Protocol analyzers decode 802.11 frames They show retries, ACKs, and frame exchanges This is essential for MAC-layer analysis.

Question: 111

Which management frame announces supported data rates and capabilities?
A Probe Request
B Beacon
C Authentication
D Deauthentication
Answer: B
Explanation:
Beacon frames advertise network parameters They include supported rates and capabilities Clients use this information to decide how to connect.

Question: 112

Which frame is sent by a client to join a WLAN?
A Association Request
B Probe Response
C Beacon
D CTS
Answer: A
Explanation:
The association request is sent by the client It requests membership in the WLAN The AP replies with an association response.

Question: 113

Which MAC feature minimizes collisions after a failed transmission?
A Short GI
B Random backoff
C Beamforming
D Frame aggregation
Answer: B
Explanation:
After a collision, stations wait a random backoff period This reduces repeated collisions It improves overall medium access fairness.

Question: 114

What is the primary effect of excessive contention?
A Higher PHY rates
B Increased latency
C Improved throughput
D Lower noise floor
Answer: B
Explanation:
Contention forces devices to wait before transmitting Backoff and retries add delay This increases latency and reduces performance.

Question: 115

Which WLAN metric best reflects congestion over time?
A RSSI
B SNR
C Airtime utilization
D Transmit power
Answer: C
Explanation:
Airtime utilization shows how busy the channel is High utilization over time indicates congestion This limits available transmission opportunities.

Which condition causes adjacent-channel interference?

Question: 116

A Identical channels in use
B Partially overlapping channels
C Low transmit power
D Strong SNR
Answer: B
Explanation:
Adjacent-channel interference occurs when channels overlap Energy spills into neighboring channels This degrades performance significantly.

Question: 117

Which troubleshooting action verifies long-term stability?
A Immediate retesting
B Hypothesis formation
C Continuous monitoring
D Configuration backup
Answer: C
Explanation:
Continuous monitoring ensures issues do not recur It validates long-term stability This is critical after remediation.

Question: 118

Which survey type is most useful before installation?
A Active survey
B Passive survey
C Predictive survey
D Validation survey
Answer: C
Explanation:
Predictive surveys model RF behavior before deployment They help plan AP placement and capacity This reduces redesign costs.

Question: 119

Which RF effect causes signal weakening as it passes through walls?
A Reflection
B Diffraction
C Absorption
D Refraction
Answer: C
Explanation:
Absorption occurs when RF energy is absorbed by materials Walls, furniture, and people absorb RF This reduces signal strength beyond the obstacle.