Question 1
When reviewing a design for a voice over wireless deployment, what per-call bandwidth cost should be factored in when determining maximum calls per cell using SIP and G.711u as the codec?
A. 64 bytes
B. 8 bytes
C. 80 bytes
D. 10 bytes

Correct Answer: C
Explanation/Reference:

Question 2
Which two options can help mitigate the performance issue? Refer to the exhibit.
While testing the post-deployment WLAN network, you discover that an AP has been placed in a difficult area. The AP cannot be moved easily because of various requirements. The client performance of various Apple and Microsoft operating system-based products does not meet expectations. Which two options can help mitigate the performance issue? (Choose two.)
A. Add additional APs.
B. Increase the AP power level to maximum.
C. Rotate the AP 90 degrees to change antenna polarity.
D. Replace the AP with an AP and external antenna.
E. Change the AP location to one that is less RF hostile.

Correct Answer: AD
Explanation/Reference:

Question 3
Which option describes how the engineer should address this restriction?
An engineer is preparing for an active site survey of a warehouse and is informed that they should not enter any areas that are blocked by supplies that are difficult to move. Which option describes how the engineer should address this restriction?
A. Extrapolate restricted access areas by drawing circles for AP coverage
B. Survey hallways, common areas, and storerooms.
C. Utilize a predictive tool to define coverage in off-limits areas.

D. Educate the customer about the importance of accurate and complete measurements.

Correct Answer: C
Explanation/Reference:

Question 4
What is the most AP licenses that can be supported?
An engineer is deploying centralized wireless solution with a 5508 controller. What is the most AP licenses that can be supported?
A. 100
B. 250
C. 1000
D. 500

Correct Answer: D
Explanation/Reference:
Explanation:
You can order Cisco 5500 Series Controllers with support for 12, 25, 50, 100, 250 or 500 APs as the controller’s base capacity. You can add additional AP capacity through capacity adder licenses available at 25, 50, 100 and 250 AP capacities. You can add the capacity adder licenses to any base license in any combination to arrive at the maximum capacity of 500 APs.

Question 5
What is the reason for getting 3×3 MIMO instead of 4×4?
An engineer installed a 3702 AP and is getting power from the switch. What is the reason for getting 3×3 MIMO instead of 4×4?
A. 802.1p
B. 802.3af
C. 802.11e
D. 802.3at

Correct Answer: B
Explanation/Reference:

Question 6
Which channel must be excluded from the access points RRM calculation to avoid network disruption due to weather radar activity?
A customer is deploying a mesh outdoor wireless network based on FCC standards where spectrum analysis shows significant radar energy propagating throughout the coverage area from a local weather station. Which channel must be excluded from the access points RRM calculation to avoid network disruption due to weather radar activity?
A. 432
B. 44
C. 11
D. 36

Correct Answer: A
Explanation/Reference:
Explanation:
Weather radars operate within the 5600- to 5650-MHz band, which means that channels 124 and 128 might be affected, but also channels 120 and 132 might suffer from weather radar activity.
Reference:
Question 7
What is the coverage area from the AP if the environment and other factors are not taken into consideration?
An engineer is planning for a 24 Mbps data rate for a new installation. What is the coverage area from the AP if the environment and other factors are not taken into consideration?
A. 225 feet  
B. 80 feet  
C. 150 feet  
D. 100 feet  
Correct Answer: B  
Explanation/Reference:

Question 8
How does the WLC treat the CAPWAP QoS marking when leaving the controller interface for the respective AP and final wireless client destination?
A downstream packet that contains a DSCP value arrives at the WLC Ethernet interface from the wired source network. The WLC is configured for QoS WLAN 802.1p mapping. How does the WLC treat the CAPWAP QoS marking when leaving the controller interface for the respective AP and final wireless client destination?
A. No outer CAPWAP or inner QoS tagging is applied.  
B. The outer CAPWAP CoS is marked and capped and the inner DSCP maintains the original marking.  
C. No outer CAPWAP QoS tag is applied, but the original DSCP is maintained inside CAPWAP.  
D. The outer CAPWAP DHCP is marked and capped without any inner DSCP value.  
Correct Answer: B  
Explanation/Reference:

Question 9
Which two steps are associated with the active portion of the audit when a post-installation audit is performed with an auditing tool such as Ekahau?
Which two steps are associated with the active portion of the audit when a post-installation audit is performed with an auditing tool such as Ekahau?
(Choose two.)  
A. Check for co-channel interference by standing near an access point on one channel and watching for other access points that are on the same channel.  
B. Verify smooth roaming.  
C. Check to see if the signal level on other access points that are heard on the same channel is at least 19 dBm weaker than the access point that you are next to.  
D. Check that all channels are supported by the APs, regardless of client capabilities.  
E. Verify that the network traffic of physical data rate and packet loss meets user requirements.  
Correct Answer: BE  
Explanation/Reference:

Question 10
Which requirement should the engineer specify to overcome this restriction?
An engineer is assigned to provide wireless coverage in a provincial capital building. Due to the age and historic nature of the building, the ability to run new copper Ethernet cable to desired AP locations is limited. Which requirement should the engineer specify to overcome this restriction?
A. Deploy access points where the survey indicates and connect them via fiber optic cable, using a media adapter, and locally provide power.  
B. Deploy access points to each phone location converting two spare pairs of copper from the phone line to Ethernet and locally provide power.  
C. Deploy access point devices where limited cable can be run or exists and connect high-gain antennas and increase Tx power to increase cell size.  
D. Deploy RAP where limited cable can be run or exists, and extend coverage using MAP.  
Correct Answer: D
Question 11
What configuration would be necessary to cut down on the use of mobility tunnels for voice clients?
A customer has deployed an N+N redundant wireless infrastructure. In this deployment, the access points have been salt and peppered between controllers. What configuration would be necessary to cut down on the use of mobility tunnels for voice clients?
A. mobility anchor
B. KIS based CAC
C. media session snooping
D. re-anchor roamed voice clients
Correct Answer: D

Question 12
What does this indicate about the signal strength?
After the completion of a site survey with Ekahau Site Survey tool, using the default color palette, it is noted that multiple areas are shown as white on the heat map when viewing 5 GHz signal strength data. What does this indicate about the signal strength?
A. The area is below the minimum threshold configured on the tool.
B. The area is below the detectable level and indicates no RF signal.
C. The area is below -100 dBm at coverage cell edge.
D. The area is below -67 dBm at coverage cell edge.
Correct Answer: B

Question 13
How should the controllers be deployed to provide the least number of controllers, the highest redundancy, and the easiest management?
You have a customer that is building a new campus of four 3-story buildings that you have just completed the site survey for. The customer is interested in the mount of rack space they will need to allocate in either the building MDF or in the data center for controllers. Each building is going to require 75 APs to support voice and data. How should the controllers be deployed to provide the least number of controllers, the highest redundancy, and the easiest management?
A. Use the centralized deployment method in the data center with the N + N redundancy method.
B. Use the centralized deployment method in the data center with the N + 1 redundancy method
C. Use the centralized deployment method in the data center with the 1 + 1 redundancy method and client SSO.
D. Use the distributed deployment method in each building MDF with the N + 1 redundancy method.
E. Use the distributed deployment method in each building MDF with the N + N + 1 redundancy method.
F. Use the distributed deployment method in each building MDF with the N + N redundancy method.
Correct Answer: B

Question 14
When designing a WLAN, AP placement is important. Which option describes how to rank the density of APs needed to support location services versus data and voice services?
When designing a WLAN, AP placement is important. Which option describes how to rank the density of APs needed to support location services versus data and voice services?
A. Data services have the lowest density of APs compared to location services, which has the highest density.
B. Data services have a lower density of APs compared to location services, but more than voice.
C. Voice services have the highest density of APs over location and data services.
D. Voice and data services require a higher density of APs than location services.

Question 15
Which four major factors should be considered?
An engineer is deploying an outdoor Mesh network. Which four major factors should be considered? (Choose four.)
A. power
B. buildings
C. traffic lights
D. satellite dishes
E. line of sight
F. network connectivity
G. power lines
H. mounting

Correct Answer: ABEH
Explanation/Reference:

Question 16
Which queue must the CoS be mapped for priority queuing of the voice frames?
A network engineer is configuring QoS with a DSCP value of 46. To which queue must the CoS be mapped for priority queuing of the voice frames?
A. 1
B. 2
C. 5
D. 4
E. 3

Correct Answer: C
Explanation/Reference:

Question 17
Why do many of the legacy 802.11b/g devices have difficulty maintaining connectivity?
A hospital environment was designed to guarantee RF coverage at or better than -67 dBm in the 5 GHz spectrum. The customer mandates that RRM be used for DCA and TPC in both bands. After deployment, why do many of the legacy 802.11b/g devices have difficulty maintaining connectivity?
A. Excessive co-channel interference in the 2.4 GHz band exists.
B. Excessive overlapping channels in the 2.4 GHz band exists.
C. TPC drastically reduces Tx power in the 2.4 GHz band.
D. TCP drastically increases Tx power in the 2.4 GHz band.

Correct Answer: D
Explanation/Reference:

Question 18
Which option can be configured on the wireless controller to alert network administrators when this limit is surpassed?
A customer has a business-critical voice network and wants to be alerted whenever voice clients move out of a coverage area and experience RSSI below -67 dBm on the 5 GHz band. Which option can be configured on the wireless controller to alert network administrators when this limit is surpassed?
A. EDCA; voice optimized
B. SIP voice sample interval
C. 802.11a voice RSSI coverage threshold
D. traffic stream metrics
Correct Answer: C
Explanation/Reference:

**Question 19**
Which information should the engineer refer to when determining where APs can be installed?
An engineer must design wireless coverage in thick-walled stairwells. Which information should the engineer refer to when determining where APs can be installed?
A. Local or National Building Code
B. IEEE
C. BICSI TDMM
D. Cisco Hardware Installation Guide

Correct Answer: A
Explanation/Reference:

**Question 20**
Why is the engineer unable to locate the offending device or devices?
While performing a Layer 1 passive wireless site survey of a location an engineer detects several instances of low power frequency hopping interference, but cannot physically locate the interfering device or devices. Why is the engineer unable to locate the offending device or devices?
A. The sources are nearby narrow-beam radar and are sweeping through the facility.
B. The sources are PAN and are mobile.
C. The sources are above the ceiling file and transmit intermittently.
D. The sources are actually high-powered devices and transmit from off the site.

Correct Answer: B
Explanation/Reference:

**Question 21**
Which signal-to-noise ratio is an optimal configuration to achieve?
An engineer is determining the signal levels for the wireless cells. Which signal-to-noise ratio is an optimal configuration to achieve?
A. minimum SNR of -33 dBm
B. minimum SNR of -25 dBm
C. minimum SNR of 25 dB
D. minimum SNR of 33 dB

Correct Answer: C
Explanation/Reference:

**Question 22**
What are two advantages of conducting an active survey versus a passive survey when verifying RF coverage?
What are two advantages of conducting an active survey versus a passive survey when verifying RF coverage? (Choose two.)
A. verifies packet loss
B. verifies roaming
C. verifies SNR
D. verifies signal level
E. verifies interferers

Correct Answer: AB
Explanation/Reference:

**Question 23**
What type of messages should the phone be sending at this point?
A Cisco 7925 phone at a client's location is not registering with CUCM. The engineer analyzes a packet capture, sees that the phone receives an IP, and downloads the proper configuration file from TFTP successfully. What type of messages should the phone be sending at this point?
A. H.245
B. H.323
C. MCGP
D. SCCP

Correct Answer: D
Explanation/Reference:

**Question 24**
How should the engineer respond to the customer's requirements?
An engineer is assigned to replace an older data-grade autonomous wireless network with a Cisco controller-based wireless network to meet Voice over WLAN needs. The customer also wants all existing cable infrastructure to be reused and no new cable be specified. How should the engineer respond to the customer's requirements?
A. Implement the wireless network with the restraints and decrease the TPC neighbor threshold to increase Tx power to provide overlapping cell coverage at sufficient SNR to provide for Voice over WLAN service.
B. Implement the wireless network with the restraints and utilize high-gain antenna to provide overlapping cell coverage at sufficient SNR to provide for Voice over WLAN service.
C. Inform the customer that the network will not likely function as desired and a post install survey with the possibility of some new cable would be recommended.
D. Inform the customer that it is not possible to provide coverage and quality for Voice over WLAN using existing AP locations and an entire overbuild will be necessary.

Correct Answer: B
Explanation/Reference:

**Question 25**
Which three recommendations must be taken into consideration when an engineer is installing a new Voice WLAN?
Which three recommendations must be taken into consideration when an engineer is installing a new Voice WLAN? (Choose three.)
A. Use the Cisco wireless phone site survey client utility.
B. Use a separate Cisco Wireless Lan Controller.
C. Enable load balance on voice WLANs.
D. Maintain -67dBm as a minimal RSSI.
E. Set data for 2.4 GHz and voice for 5 GHz using separate SSIDs.
F. Enable lower data rates for 2.4-GHz data WLAN.

Correct Answer: ADE
Explanation/Reference:

**Question 26**
Which enclosure should be used to protect the APs?
An engineer is installing a wireless network in an industrial area with extreme temperatures and a significant amount of dust. Which enclosure should be used to protect the APs?
A. ACU
B. ADU
C. NEMA
D. WLSE
Correct Answer: C
Explanation/Reference:
Explanation:
Sometimes access points (APs) are located in areas where they are subject to extreme moisture, temperatures, dust and particles. These APs might need to be mounted inside a sealed enclosure. The NEMA has a rating system for these enclosures, which are generally called NEMA enclosures.

Question 27
What is the recommended minimum speed at the edge of the cells in an 802.11g network for a good Cisco VoWLAN deployment?
A. 11 Mb/s
B. 36 Mb/s
C. 12 Mb/s
D. 18 Mb/s
Correct Answer: C
Explanation/Reference:

Question 28
Which three areas is the engineer most likely expect to find sources of 2.4 GHz and 5 GHz RF noise?
A. emergency room
B. magnetic resonance imaging
C. laboratory
D. X-ray radiography
E. Gamma Knife radiation treatment
F. kitchen
Correct Answer: ACF
Explanation/Reference:

Question 29
Which three bandwidth requirements are used to calculate per client bandwidth through an 802.11n AP network?
A. 450 Mbps throughput is the client max for 5-GHz radio.
B. Channel bonding on 5 GHz is required for a client to have a 300 Mbps WiFi link.
C. 300 Mbps throughput is the client max for 2.4-GHz radio.
D. The remaining bandwidth is divided per device when more clients are connected to one AP.
E. 100 Mbps Ethernet switch port is a potential bottleneck.
F. CleanAir helps clear noise for 802.11n channel bonding to work.
Correct Answer: ACE
Explanation/Reference:

Question 30
Which three power requirements should be verified?
An engineer plugs a Cisco Aironet 2700 Series Access Point and it is running in low power. Which three power requirements should be verified? (Choose three.)
A. 802.3ac compliant
B. 802.3at compliant
C. AP requires 43 VDC to function in full power.
D. AIR-PWRINJ3 power injector should be used.
E. AP requires 57 VDC to function in full power.
F. AIR-PWRINJ4 power injector should be used.

Correct Answer: BEF
Explanation/Reference:
The access point should be powered by any 802.3at compliant device. The recommended external power supply for the access point is the Cisco AIR-PWR-B power supply. The access point can also be powered by the following optional external power sources:
- Access point power injector (AIR-PWRINJ4)
- Any 802.3af compliant power injector is supported, but in this case the access point will dynamically shift from 3×4 to 3×3.

<table>
<thead>
<tr>
<th>Input power requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>• AP2700: 44 to 57 VDC</td>
</tr>
<tr>
<td>• Power supply and power injector: 100 to 240 VAC, 50 to 60 Hz</td>
</tr>
</tbody>
</table>


Question 31
How many access points should be estimated to cover this space of roughly 38,000 square feet?
An engineer is assigned to assist a customer by estimating the number of access points needed to provide voice-grade wireless coverage in a carpeted office space. How many access points should be estimated to cover this space of roughly 38,000 square feet?
A. 17
B. 10
C. 6
D. 13

Correct Answer: D
Explanation/Reference:
The rule of thumb coverage plan is 1 AP per 5,000 square feet for data and 1 per 3,000 square feet for voice and location services.

Question 32
Which channel band results in the best 802.11n client compatibility?
An engineer is tuning RRM parameters to improve client connectivity. Which channel band results in the best 802.11n client compatibility?
A. UNII-2
B. UNII-2e
C. UNII-3
D. UNII
E. UNII-1

Correct Answer: E
Explanation/Reference:
802.11n operates on the same channel as 802.11a. For better compatibility with 802.11n clients, it is recommended to stay on lower channels (UNII-1 band).
Question 33
Which setting assists with this change?
A customer has dual-band devices that they want to use 40 MHz channels. If the customer is using Cisco 3600 Series access points with a 5508 controller. Which setting assists with this change?
A. Enable band select globally.
B. Enable aggressive load balancing.
C. Disable lower data rates on 802.11G GHz radios.
D. Disable overlapping 802.11G channels.

Correct Answer: A
Explanation/Reference:

Question 34
What is the target value for the cell edge reading?
The AP has been configured properly for a VoWLAN survey. The RF environment contains a noise of -87 to -90 dBm. What is the target value for the cell edge reading?
A. -62 dBm
B. -67 dBm
C. -60 dBm
D. -70 dBm

Correct Answer: A
Explanation/Reference:

Question 35
Which requires voice capability and location services. Which two requirements are inputs to the design?
An engineer is performing a predictive wireless design for a carpeted office space, which requires voice capability and location services. Which two requirements are inputs to the design? (Choose two.)
A. overlapping -67 dBm coverage from three access points
B. overlapping -75 dBm coverage from three access points
C. overlapping -72 dBm coverage from two access points
D. continuous -67 dBm coverage from one access point
E. continuous -72 dBm coverage from one access point

Correct Answer: A
Explanation/Reference:
Explanation:
For a voice network the APs are grouped closer together and have more overlap than a data-only installation because voice clients need to roam to a better AP before dropping packets. Generally, you should create smaller cells than for data-only networks and ensure the overlapping cell edges are at or above -67 dBm.
Reference:

Question 36
Which option is the best to reduce the negative impact of the design?
A customer has restricted the AP and antenna combinations for a design to be limited to one model integrated antenna AP for carpeted spaces and one model external antenna AP, with high gain antennas for industrial, maintenance, or storage areas. When moving between a carpeted area to an industrial area, the engineer forgets to change survey devices and surveys several APs. Which option is the best to reduce the negative impact of the design?
A. Deploy the specified access points per area type.
B. Resurvey and adjust the design.
C. Increase the Tx power on incorrectly surveyed access points.
D. Deploy unsurveyed access points to the design.

Correct Answer: B
Explanation/Reference:

**Question 37**
Which three options are benefits of U-APSD?
Which three options are benefits of U-APSD? (Choose three.)
A. optimized power-save mode periods
B. increased call capacity
C. bandwidth reservation
D. synchronization of the transmission and reception of voice frames
E. efficient roaming
F. priority bandwidth and polling

Correct Answer: ABD
Explanation/Reference:

Explanation:
Unscheduled automatic power-save delivery (U-APSD) is a feature that has two key benefits:
. The primary benefit of U-APSD is that it allows the voice client to synchronize the transmission and reception of voice frames with the AP, thereby allowing the client to go into power-save mode between the transmission/reception of each voice frame tuple. The WLAN client frame transmission in the access categories supporting U-APSD triggers the AP to send any data frames queued for that WLAN client in that AC. A U-APSD client remains listening to the AP until it receives a frame from the AP with an end-of-service period (EOSP) bit set. This tells the client that it can now go back into its power-save mode. This triggering mechanism is considered a more efficient use of client power than the regular listening for beacons method, at a period controlled by the delivery traffic indication map (DTIM) interval, because the latency and jitter requirements of voice are such that a WVoIP client would either not be in power-save mode during a call, resulting in reduced talk times, or would use a short DTIM interval, resulting in reduced standby times. The use of U-APSD allows the use of long DTIM intervals to maximize standby time without sacrificing call quality. The UAPSD feature can be applied individually across access categories, allowing U-APSD can be applied to the voice ACs in the AP, but the other ACs still use the standard power save feature.
. The secondary benefit of this feature is increased call capacity. The coupling of transmission buffered data frames from the AP with the triggering data frame from the WLAN client allows the frames from the AP to be sent without the accompanying interframe spacing and random backoff, thereby reducing the contention experience by call.


**Question 38**
Which three pieces of equipment should be included?
An engineer is preparing for an indoor wireless LAN survey and is provisioning a survey kit. Which three pieces of equipment should be included? (Choose three.)
A. external connector access point
B. integrated antenna access point
C. coax low-loss cable
D. battery operated power supply
E. range finder
F. Yagi antennas

Correct Answer: BDE
Explanation/Reference:

**Question 39**
Which benefit of using wireless mesh addresses these concerns?
A customer wants to implement a wireless network in a historic location, but is concerned about the structural and aesthetic impact to the facility. Which benefit of using wireless mesh addresses these concerns?
A. Power is required only at the installation location.
B. The APs do not have LED lights.
C. More wireless channels can be supported.
D. APs do not need network connections.

Correct Answer: D
Explanation/Reference:

**Question 40**
Which two types of information must be included in the installation inventory portion of the post-installation report?

Which two types of information must be included in the installation inventory portion of the post-installation report? (Choose two.)
A. all AP, controller, and MSE administrator credentials
B. the names, locations, IP addresses, MAC addresses, etc. for every AP, controller, and MSE in the WLAN
C. a layout of the rack that the equipment is installed
D. results of the coverage audit performed with the site survey mapping tool
E. the number and type of all WLAN clients and tags

Correct Answer: AB
Explanation/Reference: