Question 1
Which two benefits does using virtual PortChannel technology provide?
Which two benefits does using virtual PortChannel technology provide? (Choose two).
A. vPC eliminates spanning-tree blocked ports.
B. vPC allows a dual-homed server to operate in active-standby mode.
C. vPC significantly reduces latency.
D. vPC uses all uplink bandwidth.
E. vPC supports VLAN-based load balancing.
Correct Answer: AD
Explanation/Reference:

Question 2
Which three actions can you take to allow this visibility?
You must measure the amount of traffic that a mobile packet gateway produces when mobile phones access the service provider’s internal applications, rather than the Internet. Backbone queuing can be properly designed as a result of this analysis. This traffic is in the multiple Gigabits per second order of magnitude. Which three actions can you take to allow this visibility? (Choose three.)
A. Poll OID that is configured for internal servers with SNMP.
B. Collect traffic information that is related to internal server IP addresses with NetFlow.
C. Measure traffic characteristics of known internal servers with IP SLA.
D. Collect information about traffic to the service provider marked with IP precedence with NetFlow.
E. Analyze traffic volumes with deep packet inspection.
Correct Answer: BDE
Explanation/Reference:

Question 3
Which three other tools or techniques should be employed to achieve your requirements?
You are a network designer who must fine tune the convergence of an IS-IS network. The failure detection mechanism has been addressed with reliable loss-of-signal at the interface level. Which three other tools or techniques should be employed to achieve your requirements? (Choose three.)
A. Use prefix prioritization techniques.
B. Use BFD on point-to-point links.
C. Speed up LSP generation.
D. Disable LDP-IGP synchronization.
E. Speed up the initial link state computation.
F. Eliminate the time that the overload bit is advertised to neighbors.
Correct Answer: ACE
Explanation/Reference:

Question 4
Which two features should you enable as part of this design?
To improve the stability of the network and protect it from intrusions, you must design control plane security. Which two features should you enable as part of this design? (Choose two.)
A. SNMP security
B. uRPF
C. IPsec
D. IP receive ACL
E. control plane policing
F. role-based CLI access
Correct Answer: DE
Explanation/Reference:

Question 5
Which option is the most appropriate multicast group source discovery design consideration for this design?
You are auditing the network design of a PIM BiDir multicast network. Which option is the most appropriate multicast group source discovery design consideration for this design?
A. A phantom RP advertises the multicast group sources.
B. Source discovery is not applicable to PIM BiDir.
C. Subscribers discover the multicast group sources via DNS.
D. Subscribers are statically configured with specific sources.
E. MSDP is used to discover multicast group sources.
Correct Answer: B
Explanation/Reference:

Question 6
Which two places in the network can summarization be applied to maximum effect?
The network architect wants to reduce the OSPF database in the network by using summarization techniques. In which two places in the network can summarization be applied to maximum effect? (Choose two.)
A. on the OSPF links of all ABR routers
B. on the OSPF links of all ASBR routers
C. on the OSPF links of all backbone routers
D. on the routing process of all ABR routers
E. on the routing process of all ASBR routers
F. on the routing process of all backbone routers
Correct Answer: DE
Explanation/Reference:

Question 7
Which technique can be used to deploy IPv6 services in an IPv4-only routed backbone network?
Which technique can be used to deploy IPv6 services in an IPv4-only routed backbone network?
A. NAT64 at the peering locations
B. 6PE in the backbone network
C. 6RD on CE routers and 6RD border relays at the peering locations
D. dual-stack lite and NAT44 at the peering locations
Correct Answer: C
Explanation/Reference:

Question 8
Which two mechanisms can anycast RPs use to share multicast state information with other RPs? (Choose two.)
A. MSDP
B. PIM anycast RP sets
C. IGMPv3
D. MLD
E. static mroutes
Correct Answer: AB
Explanation/Reference:

Question 9
Why is it recommended that VLANs are confined on a single access switch rather than span across multiple access switches?
In a routed access hierarchical campus design, the access-to-distribution Layer 2 uplink trunks are replaced with Layer 3 point-to-point routed links. Why is it recommended that VLANs are confined on a single access switch rather than span across multiple access switches?
A. to allow for better convergence time
B. to prevent the occurrence of Layer 2 loops
C. to allow for fault isolation
D. to prevent routing black holes
Correct Answer: D
Explanation/Reference:

Question 10
Which two features should the new switches support to provide good multicast performance?
The Database team will deploy a new clustering technology that uses IPv4, multicast-based data replication, where the servers listen and transmit at the same time on multiple groups. Multicast is not being run on the current network and there are no plans to enable it. New Layer 2 switches will be purchased to connect new servers in order to keep multicast traffic off the existing network. Which two features should the new switches support to provide good multicast performance? (Choose two.)
A. IGMP snooping
B. PIM snooping
C. MLD snooping
D. IGMP querier
E. Bidirectional PIM
Correct Answer: AD
Explanation/Reference:

Question 11
Which option is the fastest down detection and failover solution for this HSRP environment?
A financial services company runs HSRP at the edge of its network to allow for redundancy for the default gateway for its servers. The CTO of the company is concerned that the failover time for HSRP is too slow and a different mechanism should be used. The network engineer disagrees and believes that HSRP can provide the required fast down detection and failover for the edge of the network. Which option is the fastest down detection and failover solution for this HSRP environment?
A. Limit the Layer 2 broadcast domain.
B. Decrease the HSRP timers.
C. Implement BFD.
D. Migrate from IEEE 802.1D to 802.1w.
E. Implement HSRP preemption.

Correct Answer: C
Explanation/Reference:

Question 12
What are two design characteristics of GETVPN?
What are two design characteristics of GETVPN? (Choose two.)
A. It uses GDOI to distribute keys.
B. It supports private addresses over public Internet.
C. It requires multicast replication at the hub.
D. It uses tunnel-less technology.
E. It supports dynamic partial- or full-mesh tunnels.

Correct Answer: AD
Explanation/Reference:

Question 13
What are two DMVPN characteristics?
On a large-scale DMVPN network design, what are two DMVPN characteristics? (Choose two.)
A. DMVPN can interoperate with other vendors' equipment.
B. DMVPN supports multicast replication at the hub.
C. DMVPN supports non-IP protocols.
D. DMVPN supports dynamic partial- or full-mesh tunnels.

Correct Answer: BD
Explanation/Reference:

Question 14
Which low-cost, simple technology do you recommend to Company Y to ensure the fastest convergence times in a ring topology?
Company Y is a mobile backhaul provider that uses microwave rings in their network. Which low-cost, simple technology do you recommend to Company Y to ensure the fastest convergence times in a ring topology?
A. sub-second IGP hello and dead timers
B. MPLS Traffic Engineering
C. Remote Loop-Free Alternate
D. IP Event Dampening
E. hub and spoke with ECMP

Correct Answer: C
Explanation/Reference:

Question 15
What are two reasons to choose L2TPv3 over other technologies for a VPN solution?
What are two reasons to choose L2TPv3 over other technologies for a VPN solution? (Choose two.)
A. The VPN solution does not contain MPLS on the network core.
B. The VPN solution should support Frame Relay to Ethernet pseudowire connections.
C. The VPN solution requires multipoint Ethernet LAN service.
D. The VPN solution should be industry-standard.

Correct Answer: AD
Explanation/Reference:

Question 16
What are three advantages of using ISATAP?
What are three advantages of using ISATAP? (Choose three.)
A. It is easier to set up than other tunneling mechanisms, such as 6RD and 6to4.
B. It is supported on many platforms, such as Linux, Windows, and Cisco IOS Software.
C. It works with both private and public addressing spaces.
D. It is a point-to-multipoint tunneling mechanism.
E. It does not require any changes on the underlying IPv4 network to operate.

Correct Answer: BCE
Explanation/Reference:

Question 17
What are the two main reasons for using a core layer in this design?
In a network design, there are three distribution layers and one data center. What are the two main reasons for using a core layer in this design? (Choose two.)
A. The use of a core layer provides Layer 3 capabilities to the campus.
B. The core layer reduces the number of ports that are needed in the distribution layers.
C. The core layer is needed when there are two or more distribution layers that are to be connected.
D. The core layer would fulfill core network functions such as DPI and security policies.
E. The core layer is capable of faster forwarding than any other layer or module in the network.

Correct Answer: BC
Explanation/Reference:

**Question 18**
When designing IP addressing for route summarization, which consideration is true?
A. Summarization can be applied regardless of the network topology if the IP addressing scheme is structured.
B. Suboptimal routing is commonly caused by the information that is hidden in the summary route.
C. Summary metrics are constant, regardless of the instabilities of the summary components.

Correct Answer: C
Explanation/Reference:

**Question 19**
Which redesign action will overcome this issue with minimal operational burden?
In a rented office, workers are not assigned to specific cubes. The facility just began to use IEEE 802.1X authentication for the tenants. When workers have previously logged in to a PC, it works correctly, but when they move to another PC that has never been used before, they are unable to log in.
A. Use machine authentication.
B. Establish a “Bring Your Own Device” portal.
C. Disable and re-enable network authentication when a new worker logs in to a new machine.
D. Enable MAC Authentication Bypass.

Correct Answer: A
Explanation/Reference:

**Question 20**
Which three tasks are common network management practices?
Which three tasks are common network management practices? (Choose three.)
A. Ensure that all network devices have their clocks synchronized.
B. Collect SNMP poll information for future regression analysis.
C. Capture both ingress and egress flow-based packets, while avoiding duplication of flows.
D. Look at average counters instead of instantaneous counters for inconsistent and bursty KPIs, such as CPU utilization and interface utilization.
E. Validate data plane health, and application and services availability, with synthetic traffic.

Correct Answer: ADE
Explanation/Reference:

**Question 21**
What are three design criteria to consider when you choose how many classes to implement in a DiffServ policy?
What are three design criteria to consider when you choose how many classes to implement in a DiffServ policy? (Choose three.)
A. Service provider support capabilities, which include SLA, PHB, and marking criteria
B. The ability to group applications and their requirements into classes
C. Baseline expectations and projected growth of RSVP sessions
D. The ability to leverage single-rate and dual-rate token bucket policers for different classes
E. The total queue depth on the corresponding devices in the network
F. Different capabilities in the network to apply PHBs and queue structures, and the ability to map multiple service classes to PHB

Correct Answer: ABF
Explanation/Reference:

**Question 22**
Which three statements are correct for route filtering?
Which three statements are correct for route filtering? (Choose three.)
A. The OSPF router LSA can be filtered with route maps so they are not installed on the OSPF database.
B. Route filtering can create suboptimal routing, thus increasing latency in the network.
C. Inbound route filtering affects outbound traffic flow.
D. By default, EIGRP filters topology information at every hop in the network.
E. IS-IS filters reachability information from the Level 1 to Level 2 domain.
F. By default, EIGRP filters the reachability information at every hop in the network.

Correct Answer: BCD
Explanation/Reference:

**Question 23**
Which two statements are correct about Layer 3 fast convergence?
Which two statements are correct about Layer 3 fast convergence? (Choose two.)
A. Switch routed interfaces converge faster than SVI interfaces.
B. Routing protocol timers that are tuned aggressively increase the control plane’s CPU utilization.
C. Layer 3 down detection is faster than Layer 1 and Layer 2 mechanisms.
D. Interface dampening with routing protocol timers that are tuned low improve convergence time.
E. Fiber cable provides faster convergence than UTP cable.

Correct Answer: AB
Explanation/Reference:

Question 24
Which statement is correct about policy-based routing?
A. It can create microloops during network reconvergence.
B. It should be implemented at both ends of a GRE tunnel.
C. It can limit the network scalability.
D. It decreases failure detection time.

Correct Answer: A
Explanation/Reference:

Question 25
Which two statements are correct about route redistribution? (Choose two.)
A. IBGP is used within the AS to carry eBGP attributes that otherwise would be lost if eBGP was redistributed into IGP.
B. The unequal cost multipath load-balancing characteristic is lost when redistributing OSPF into EIGRP.
C. Mutual redistribution at multiple points can create a routing loop.
D. Redistributing the entire BGP table from the Internet works well when using multiple OSPF areas.
E. IS-IS does not support Layer 2 routes leaking into a Layer 1 domain.

Correct Answer: AC
Explanation/Reference:

Question 26
Which statement is correct about route reflector design?
A. Route reflectors should be placed to find the best exit point from the AS.
B. The EIGRP unequal cost, load-balancing characteristic facilitates route reflector placement.
C. Route reflectors should not be placed on the data path.
D. Route reflectors help find the closest exits from the AS.

Correct Answer: C
Explanation/Reference:

Question 27
Which two options are considered risks or concerns when both the Internet and VPN service functions are on the same PE router? (Choose two.)
A. Internet-based attacks can affect VPN customers.
B. BGP cannot simultaneously run on the PE router that runs MPLS.
C. MP-BGP prefixes increase routers’ global routing tables, which affects network convergence.
D. Failure on the PE router affects both VPN and Internet services.
E. Customer performance can be affected by VPN traffic if Internet-based traffic is not prioritized on the PE.

Correct Answer: AD
Explanation/Reference:

Question 28
Which routing protocol supports unequal cost, multipath load balancing?
A. RIPv2
B. EIGRP
C. OSPFv3
D. IS-IS

Correct Answer: B
Explanation/Reference:

Question 29
Which technology fulfills this requirement?
To meet specific business requirements, QoS-marked traffic must be sent over a dedicated link. Which technology fulfills this requirement?
A. MPLS
B. Q-in-Q tunneling
C. policy-based routing
D. traffic policing

Correct Answer: C
Explanation/Reference:
Question 30
Which link type will still form an OSPF adjacency even if there are subnet mask mismatches?
You are redesigning an OSPF v2 network and must migrate some links. You are concerned that there are different subnet masks. Which link type will still form an OSPF adjacency even if there are subnet mask mismatches?
A. broadcast
B. point-to-multipoint
C. non-broadcast
D. point-to-point
Correct Answer: D
Explanation/Reference:

Question 31
Which way is QoS information transmitted across an AToM pseudowire when tunneling Frame Relay traffic?
A customer with a dedicated Frame Relay network plans to move its circuits onto a service provider converged MPLS network. Instead of moving to Ethernet access links right away, the customer wants to tunnel the Frame Relay information across the converged network. In which way is QoS information transmitted across an AToM pseudowire when tunneling Frame Relay traffic?
A. QoS information cannot be transported through a pseudowire and is dropped.
B. QoS information is preserved in the Frame Relay header and encapsulated into the pseudowire frame.
C. QoS information is carried in a control word that is attached to the MPLS frame.
D. QoS information is translated into ToS bits in the Ethernet header.
Correct Answer: C
Explanation/Reference:

Question 32
Which VPN technology supports multivendor interoperability on a network design?
Which VPN technology supports multivendor interoperability on a network design?
A. VTI
B. DMVPN
C. Easy VPN
D. IPsec VPN
Correct Answer: D
Explanation/Reference:

Question 33
Which mechanism can you use to improve network performance over PPPoE, IPsec, and GRE networks?
Which mechanism can you use to improve network performance over PPPoE, IPsec, and GRE networks?
A. Path MTU Discovery
B. Simple Service Discovery Protocol
C. ICMP Router Discovery Protocol
D. Bidirectional Forwarding Detection
Correct Answer: A
Explanation/Reference:

Question 34
Which two OSPF network type combinations can you use in the design of a Phase 3 DMVPN that requires spoke-to-spoke direct traffic?
Which two OSPF network type combinations can you use in the design of a Phase 3 DMVPN that requires spoke-to-spoke direct traffic? (Choose two.)
A. hub as point-to-multipoint and spokes as non-broadcast
B. hub as point-to-multipoint and spokes as point-to-point
C. hub as broadcast and spokes as non-broadcast
D. hub as point-to-point and spokes as point-to-point
Correct Answer: BC
Explanation/Reference:

Question 35
Why is H-VPLS considered more scalable than flat VPLS?
Why is H-VPLS considered more scalable than flat VPLS?
A. It minimizes signaling overhead by building two separate layers pseudowire meshes.
B. It minimizes signaling overhead by only requiring a full pseudowire mesh among N-PEs.
C. It eliminates signaling overhead on core devices.
D. It eliminates signaling overhead between the N-PE and U-PE.
Correct Answer: A
Explanation/Reference:

Question 36
Which ISAKMP feature could be used within your design recommendation to reduce device CPU load in a small scale setup for known active ISAKMP security associations?
Which ISAKMP feature could be used within your design recommendation to reduce device CPU load in a small scale setup for known active ISAKMP security associations?
A. main mode
B. IKEv2
C. Dead Peer Detection (DPD)
D. Security Parameter Index (SPI)

Correct Answer: C
Explanation/Reference:

Question 37
What is the purpose of dynamically created tunnels using IPv6 multicast?
A. multicast source registration to the RP
B. bypass of the RPF check to the RP
C. transport of all IPv6 multicast traffic to the RP
D. first-hop router registration to the RP

Correct Answer: D
Explanation/Reference:

Question 38
What is a characteristic of traffic shaping?
A. It minimizes traffic transmission intervals.
B. It remarks excess packets above the committed rates.
C. It delays and can drop excess traffic.
D. It classifies traffic based on certain characteristics.

Correct Answer: C
Explanation/Reference:

Question 39
When you design a network that uses IPsec, where can you reduce MTU to avoid network fragmentation?
A. on both ends of the TCP connection
B. on the side closest to the client
C. on the side closest to the server
D. in the WAN

Correct Answer: A
Explanation/Reference:

Question 40
What is your primary design and security concern?
You are designing an IEEE 802.1X solution for a customer, where the network supports a large number of IP phones and printers. You plan to configure MAC address bypass for the phones and printers. What is your primary design and security concern?
A. the additional AAA traffic on the network
B. the placement of the AAA server
C. the potential of MAC address spoofing
D. the scaling of the MAC address database

Correct Answer: C
Explanation/Reference:

Question 41
Which two features can be used to optimize multicast traffic forwarding in this situation?
Refer to the exhibit.
Assume that no multicast optimization is done on LAN switches A and B. Which two features can be used to optimize multicast traffic forwarding in this situation? (Choose two.)

A. Enable IGMP snooping querier on both switches.
B. Configure a static MAC entry for the multicast server.
C. Disable IGMP snooping on both switches.
D. Disable the IGMP query election process.
E. Enable PIM snooping on both switches.

Correct Answer: AC
Explanation/Reference:

Question 42
Which two design considerations will allow you to achieve this symmetric routing?
Refer to the exhibit.

You are designing an MPLS network with Layer 3 VPNs, where the traffic path must be the same in both directions inside the MPLS network to ensure that symmetric routing occurs. The sites are connected to two PE routers. Which two design considerations will allow you to achieve this symmetric routing? (Choose two.)

A. When MPLS TE is used, the bidirectional TE tunnel automatically provides symmetric routing.
B. The MPLS TE tunnels should be set up in both directions so that the same path is used.
C. There should not be any equal cost paths for IGP inside the MPLS backbone, the IGP routing should use the same path in both directions, and the BGP routing does not matter.
D. There should not be any equal cost paths for BGP inside the MPLS backbone, the BGP routing should use the same path in both directions, and the IGP routing does not matter.
E. There should not be any equal cost paths for the IGP and the BGP inside the MPLS backbone, and both IGP and BGP routing should use the same path in both directions.

Correct Answer: BE
Explanation/Reference:

Question 43
Which three requirements would make you decide to deploy an IPS sensor in inline mode?
While designing a security solution, which three requirements would make you decide to deploy an IPS sensor in inline mode? (Choose three.)

A. The solution should be resistant to sensor failure.
B. The solution should allow for stream normalization.
C. The solution should not impact jitter and latency for voice traffic.
D. The solution should allow for signature-based pattern matching.
E. The solution should allow denying packets inline.

Correct Answer: BDE
Explanation/Reference:
Question 44
Which two reasons describe why the implementation of link-state summarization will minimize the effect of the instability in this network? Refer to the exhibit.

This OSPF network has just been deployed with four areas, but the hub-and-spoke area frequently flaps. You must fix this design failure. Which two reasons describe why the implementation of link-state summarization will minimize the effect of the instability in this network? (Choose two.)
A. It lowers CPU utilization on ABR routers.
B. It allows for a more scalable network.
C. It separates the data center area from the hub-and-spoke area.
D. It runs a partial SPF on the campus area when any link of the hub-and-spoke flaps.
E. It minimizes the number of prefixes that are advertised to other areas.

Correct Answer: CD
Explanation/Reference:

Question 45
Which two technologies can be deployed to resolve the design failure?
In an MPLS-based network, there is a link that constantly flaps. This flapping makes the network constantly reconverge and causes it to become unstable. Which two technologies can be deployed to resolve the design failure? (Choose two.)
A. IP Event Dampening
B. BFD
C. Carrier Delay
D. IP Routing Protocol Route Purge

Correct Answer: AC
Explanation/Reference:

Question 46
What are three tools for ongoing monitoring and maintenance of a voice and video environment?
What are three tools for ongoing monitoring and maintenance of a voice and video environment? (Choose three.)
A. active monitoring via synthetic probes to measure loss, latency, and jitter
B. passive monitoring via synthetic probes to measure loss, latency, and jitter
C. flow-based analysis to measure bandwidth mix of applications and their flows
D. flow-based analysis with PTP time-stamping to measure loss, latency, and jitter
E. call management analysis to identify CAC failures and call quality issues

Correct Answer: ACE
Explanation/Reference:

Question 47
What is the definition of the FCAPS framework?
What is the definition of the FCAPS framework?
A. an ISO framework that establishes a model for network management and contains guidelines for managing objects, the management database, and the application entity
B. a five-volume framework for service management that covers design, transition, and delivery of service, and from which the ISO 20000 was
developed
C. a series of tools for process improvement that uses statistical methods to reduce defects in processes and manufacturing
D. a framework for enterprise architecture that provides a comprehensive approach for designing, planning, implementing, and governing an enterprise information architecture
E. a framework for enterprise IP Address Management (IPAM) based on the IANA trusted IP lease allocation scheme

Correct Answer: A
Explanation/Reference:

Question 48
Which two QoS design options that should be implemented on the customer side will meet the requirement?
A large retail bank is designing a unified communications solution to be deployed to its 200 branches. Its current network traffic consists of a web-based portal, Internet browsing, and general file server access. Each branch has between 15 and 20 users. The current WAN is based on Layer 3 MPLS and the customer manages its own CE routers. The WAN circuit interface to the service provider is Gigabit Ethernet, although the MPLS service that is contracted from the service provider is 10 Mb/s. The design is to use a DSCP-based four-class QoS policy to manage traffic demands. From the options below, which two QoS design options that should be implemented on the customer side will meet the requirement? (Choose two.)
A. Shape traffic to 10 Mb/s on the CE router.
B. Police traffic to drop outbound traffic that exceeds 10 Mb/s.
C. Classify DSCP value EF for call signaling and voice packets, and place traffic in a strict priority queue.
D. Priority queue traffic to demand up to 80% of total bandwidth.
E. Enable DSCP-based WRED on all AF classes.

Correct Answer: AE
Explanation/Reference:

Question 49
What is the most secure and easiest way for the two service providers to interconnect?
Refer to the exhibit. Service Provider A has offered to help Service Provider B to provide local connectivity for a customer who has a business operation in North America and recently opened an office in Asia. The service to be offered for the customer is a Layer 3 MPLS VPN. Service Provider A and Service Provider B have never shared any business dealings or interconnected their networks. What is the most secure and easiest way for the two service providers to interconnect?

A. carrier supporting carrier
B. eBGP VPNv4 multihop between route reflectors
C. back-to-back VRF
D. VPNv4 peering between ASBRs

Correct Answer: C
Explanation/Reference:

Question 50
Which two options are IDS or IPS modes of operation?
On a large enterprise security solution, which two options are IDS or IPS modes of operation? (Choose two.)
A. transparent mode
B. promiscuous mode
C. traffic discovery mode
D. routed mode
E. inline mode

Correct Answer: BE
Explanation/Reference:

Question 51
Which cost-conscious redesign action will fix the issue?
Refer to the exhibit. After this new OSPF design with per-packet load balancing was implemented, Host A reported that large file downloads from Server A became slow and sometimes failed. The operations team discovered that packets are arriving out of order on R1. Which cost-conscious
A redesign action will fix the issue?

A. Upgrade all links to 10 Gb/s.
B. Adjust MTU sizes to 1500 on all interfaces.
C. Adjust the OSPF auto-cost reference bandwidth on R4.
D. Adjust the OSPF auto-cost reference bandwidth on all routers.

Correct Answer: D
Explanation/Reference:

Question 52
Which option will meet the fast convergence requirement and not break any OSPF neighbor adjacencies when this redesign is implemented?

A customer is running OSPF on a broadcast network type in a DMVPN single-hub, single-cloud topology and dynamically routes from the data center to the branch networks. The customer wants to speed up convergence and to avoid having to elect DRs by changing the network type to point-to-multipoint at the data center and to point-to-point at the branches. Which option will meet the fast convergence requirement and not break any OSPF neighbor adjacencies when this redesign is implemented?
A. The OSPF area containing the branch office routers should be set to stubby.
B. The OSPF neighbors should be set manually at the data center router.
C. The OSPF hello and dead timers should be adjusted at the data center router to match the timers at the remote sites.
D. The OSPF database should be cleared manually for the new network types to take effect.
E. The interface MTU sizes should be increased on all routers.

Correct Answer: C
Explanation/Reference:

Question 53
Which three options are important functions of IPv6 first-hop security?

Which three options are important functions of IPv6 first-hop security? (Choose three.)
A. implements a broadcast-control mechanism
B. limits IPv6 route advertisement in the network
C. suppresses excessive multicast neighbor discovery
D. prevents IPv6 packet fragmentation
E. prevents rogue DHCP servers from assigning IPv6 addresses

Correct Answer: BCE
Explanation/Reference:

Question 54
DRAG DROP

Drag the design requirements on the left to the appropriate tool and protocols on the right. Not all tools and protocols will be used.
Select and Place:

Correct Answer:
Drag the design requirements on the left to the appropriate tools and protocols on the right. Not all tools and protocols will be used.

<table>
<thead>
<tr>
<th>Chargeback Billing</th>
<th>IP Applications Quality Assurance</th>
<th>Average Link Utilization Monitoring</th>
<th>Event Collection and Correlation</th>
<th>VoIP Call Quality Monitoring</th>
</tr>
</thead>
</table>

**Question 55**

**DRAG DROP**

Drag the fast convergence mechanisms on the left and drop them into the objectives that they accomplish.

Select and Place:

- Link-State Partial SPF
- IP Event Dampening
- BFD
- Link-State Incremental SPF
- Link-State Exponential Backoff

**Correct Answer:**

- Fast Detection Target
- Slow Network Reaction When Events Occur Rapidly Target
- Fast Route Calculation Target

**Explanation/Reference:**

**Question 56**

**DRAG DROP**

A company recently had an outage after an employee plugged a switch into the corporate network, causing a change in the root bridge selection. You have been tasked to redesign the network to avoid such outages in the future. Drag the Rapid PVST+ features (on the left) that will prevent reoccurrences of this incident and drop them into their definitions on the right.

Select and Place:

- Fast Detection
- Link-State Partial SPF
- Link-State Incremental SPF
- BFD
- IP Event Dampening
- Link-State Exponential Backoff

**Explanation/Reference:**
A company recently had an outage after an employee plugged a switch into the corporate network, causing a change in the root bridge selection. You have been tasked to redesign the network to avoid such outages in the future. Drag the Rapid PVST+ features (on the left) that will prevent occurrences of this incident and drop them into their definitions on the right.

<table>
<thead>
<tr>
<th>Drag and Drop</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Root Guard</td>
<td>A deterministic method to set the root bridge and the backup root bridge for each segment.</td>
</tr>
<tr>
<td>BPDU Guard</td>
<td>Prevents switches from propagating old or corrupt VLAN information through the L network.</td>
</tr>
<tr>
<td>DTP</td>
<td>Puts the interface into an ineligible state if a connected device attempts to participate in STP.</td>
</tr>
<tr>
<td>VTP Set to Transparent</td>
<td>A preventive method of protecting an interface from accepting a superior BPD.</td>
</tr>
<tr>
<td>PortFast</td>
<td></td>
</tr>
<tr>
<td>Spanning-Tree Priority Changed from Default</td>
<td></td>
</tr>
</tbody>
</table>

Correct Answer:

A company recently had an outage after an employee plugged a switch into the corporate network, causing a change in the root bridge selection. You have been tasked to redesign the network to avoid such outages in the future. Drag the Rapid PVST+ features (on the left) that will prevent occurrences of this incident and drop them into their definitions on the right.

<table>
<thead>
<tr>
<th>Drag and Drop</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spanning-Tree Priority Changed from Default</td>
<td></td>
</tr>
<tr>
<td>VTP Set to Transparent</td>
<td></td>
</tr>
<tr>
<td>DTP</td>
<td></td>
</tr>
<tr>
<td>BPDU Guard</td>
<td></td>
</tr>
<tr>
<td>Root Guard</td>
<td></td>
</tr>
<tr>
<td>PortFast</td>
<td></td>
</tr>
</tbody>
</table>

**Explanation/Reference:**

**Question 57**

**DRAG DROP**

**DRAG DROP**

Drag the QoS tools on the left and drop each into its corresponding function on the right.

Select and Place:

<table>
<thead>
<tr>
<th>Drag and Drop</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Policing</td>
<td>Addresses congestion that is due to speed mismatches when CIR is not exceeded.</td>
</tr>
<tr>
<td>Marking</td>
<td>Drops traffic to ensure that the committed or offered rate are not exceeded.</td>
</tr>
<tr>
<td>Buffering</td>
<td>Allows drops to be minimized based on traffic classification when CIR is exceeded.</td>
</tr>
<tr>
<td>WRED</td>
<td>Allows for consistent classification within a DiffServ domain.</td>
</tr>
<tr>
<td>Shaping</td>
<td>Avoids congestion via selective traffic dropping within the network.</td>
</tr>
<tr>
<td>ECN</td>
<td>Avoids congestion by end hosts reducing their traffic rates when congestion is detected.</td>
</tr>
</tbody>
</table>

Correct Answer:
Question 58
Which two VPN technologies leverage replication in the network core and provide for efficient bandwidth optimization?
You are deploying a nationwide intranet solution for a company with 4 data centers and 400 remote branches connected via a provider-based solution. As part of the network design, you must ensure efficient content distribution of training material to remote sites. Which two VPN technologies leverage replication in the network core and provide for efficient bandwidth optimization? (Choose two.)
A. VPLS
B. EoMPLS
C. MPLS Layer 3 VPN
D. GRE
E. GET VPN
Correct Answer: CE
Explanation/Reference:

Question 59
When combined, can achieve high availability so that two RPs within the same network can act in a redundant manner?
A multicast network is using bidirectional PIM. Which two actions, when combined, can achieve high availability so that two RPs within the same network can act in a redundant manner? (Choose two.)
A. Use Anycast RP based on MSDP peering between the two RPs.
B. Use a phantom RP address.
C. Advertise routes for the two RPs with the same subnet mask through the unicast routing protocol.
D. Advertise routes for the two RPs with different subnet mask lengths through the unicast routing protocol.
E. Manipulate the administrative distance of the unicast routes to the two RPs.
F. Manipulate the multicast routing table by creating static mroutes to the two RPs.
Correct Answer: BD
Explanation/Reference:

Question 60
Which two options about the use of Constrained Route Distribution for BGP/MPLS VPNs are true?
You are performing a BGP design review for a service provider that offers MPLS-based services to their end customers. The network is comprised of several PE routers that run iBGP with a pair of route reflectors for all BGP address families. Which two options about the use of Constrained Route Distribution for BGP/MPLS VPNs are true? (Choose two.)
A. This feature must be enabled on all devices in the network at the same time.
B. The RR must advertise the default route target filter toward the PE routers.
C. The RRs do not need to advertise any route target filter toward the PE routers.
D. Both PE and RR routers must support this feature.
Correct Answer: BD
Explanation/Reference:

Question 61
Which two design solutions provide this service?
Currently a service provider provides IPv4 traceroute services between MPLS PE routers. The provider wants to implement IPv6 with MPLS 6PE/6VPE and then provide parallel IPv6 traceroute services between MPLS PE routers. Which two design solutions provide this service? (Choose two.)
A. The P routers must support ICMPv6.
B. The PE routers must support ICMPv6.
C. The P routers must support full IPv6.
D. The PE routers must support full IPv6.
Correct Answer: BD
Explanation/Reference:

Question 62
Which two factors can significantly affect the OSPF network convergence time?
Which two factors can significantly affect the OSPF network convergence time? (Choose two.)
A. the tuning of OSPF LSA timers  
B. the number of OSPF routes  
C. the diameter of the OSPF network  
D. different processor capabilities of devices  

Correct Answer: AD  
Explanation/Reference:

**Question 63**  
Which three areas should the service provider monitor related to these services?  
A large service provider offers VoIP and Video services to business customers. Which three areas should the service provider monitor related to these services? (Choose three.)  
A. bandwidth utilization  
B. service response time  
C. packet loss  
D. jitter  
E. latency  
F. availability  

Correct Answer: CDE  
Explanation/Reference:

**Question 64**  
Which two link types will still form an OSPF adjacency even if there are subnet mask mismatches?  
You are redesigning an OSPF v2 network and must migrate some links. You are concerned that there are different subnet masks. Which two link types will still form an OSPF adjacency even if there are subnet mask mismatches? (Choose two.)  
A. virtual  
B. broadcast  
C. point-to-multipoint  
D. non-broadcast  
E. point-to-point  

Correct Answer: AE  
Explanation/Reference:

**Question 65**  
Which two options are two advantages of summarizing networks at the aggregation layer rather than at the core?  
Which two options are two advantages of summarizing networks at the aggregation layer rather than at the core? (Choose two.)  
A. It prevents the core from having unnecessary routes.  
B. It no longer needs a core layer.  
C. It prevents black hole routing.  
D. It avoids network-wide impact upon VLAN changes local to the aggregation devices.  

Correct Answer: AD  
Explanation/Reference:

**Question 66**  
Which three methods allow storage access across an IP network?  
Which three methods allow storage access across an IP network? (Choose three.)  
A. FCIP  
B. Fiber Channel over GRE  
C. Fiber Channel over L2TPv3  
D. iSCSI  
E. NFS  

Correct Answer: ADE  
Explanation/Reference:

**Question 67**  
Which two features can be used on the LAN access ports to support this design requirement?  
Acme Corporation wants to minimize the risk of users plugging unauthorized switches and hubs into the network. Which two features can be used on the LAN access ports to support this design requirement? (Choose two.)  
A. BPDU Guard  
B. PortFast  
C. Loop Guard  
D. Port Security  
E. UDLD  

Correct Answer: AD  
Explanation/Reference:

**Question 68**  
Which two features will improve STP stability within the network design?  
Refer to the exhibit.
Your company designed a network to allow server VLANs to span all access switches in a data center. In the design, Layer 3 VLAN interfaces and HSRP are configured on the aggregation switches. Which two features will improve STP stability within the network design? (Choose two.)

A. BPDU guard on access ports  
B. Edge port on access ports  
C. Root guard on access ports  
D. BPDU guard on the aggregation switch downlinks toward access switches  
E. Root guard on the aggregation switch downlinks toward access switches  
F. Access switch pairs are explicitly determined to be root and backup root bridges

Correct Answer: AE
Explanation/Reference:

Question 69
Which two design aspects should a metro service provider consider when planning to deploy REP for his backbone?

Which two design aspects should a metro service provider consider when planning to deploy REP for his backbone? (Choose two.)

A. Two REP segments can be connected redundantly at two points, one connection will be blocked as per the STP defined in IEEE 802.1d.  
B. UDLD can be enabled on REP interfaces to detect unidirectional failures.  
C. The guaranteed convergence recovery time is less than 50 ms for the local segment.  
D. A REP segment is limited to a maximum of seven devices.  
E. VLAN load balancing for optimal bandwidth usage is supported in any REP segment.

Correct Answer: BE
Explanation/Reference:

Question 70
Which two options are two characteristics of the single-tier headend architecture for DMVPN designs? Refer to the exhibit.
Which two options are two characteristics of the single-tier headend architecture for DMVPN designs? (Choose two.)

A. The mGRE and crypto functions are on the same router.
B. Each DMVPN cloud has two different headend routers for high availability purposes.
C. It is used in dual-cloud topologies for spoke-to-spoke connectivity.
D. It only supports hub-and-spoke connectivity.
E. Spokes cannot be used as RP in multicast deployments.

Correct Answer: AC
Explanation/Reference:

**Question 71**

Which three reasons to deploy an IDS sensor in promiscuous mode when you design a security solution are true?

Which three reasons to deploy an IDS sensor in promiscuous mode when you design a security solution are true? (Choose three.)

A. Solution should be resistant to sensor failure.
B. Solution should allow for stream normalization.
C. Solution should not impact jitter and latency for voice traffic.
D. Solution should allow for signature-based pattern matching.
E. Solution should allow to deny packets inline.

Correct Answer: ACD
Explanation/Reference:

**Question 72**

Which two mechanisms can you use to isolate the data center area from the hub-and-spoke area without losing IP connectivity?

Refer to the exhibit.
This new OSPF network has four areas, but the hub-and-spoke area experiences frequent flapping. You must fix this design failure. Which two mechanisms can you use to isolate the data center area from the hub-and-spoke area without losing IP connectivity? (Choose two.)

A. Make the DC area totally stub.
B. Make the DC area an NSSA.
C. Convert the DC area to EIGRP protocol.
D. Deploy a prefix summarization on router D.
E. Use OSPF distribute-list filtering on router A.

Correct Answer: AD

**Explanation/Reference:**

**Question 73**
Which two options will minimize the impact of the trusted NMS polling your network in this situation?
You need to redesign your NMS system so that it can collect information without causing adverse effects in the network, such as high CPU utilization on network devices and network instability. Which two options will minimize the impact of the trusted NMS polling your network in this situation? (Choose two.)

A. Implement SNMP community restrictions that are associated with an ACL.
B. Unload unused MIBs from the network devices.
C. Prevent polling of large tables through the use of SNMP OID restrictions.
D. Disable unused OIDs and MIBs on the NMS systems.

Correct Answer: CD

**Explanation/Reference:**

**Question 74**
Which two interconnect technologies support MACsec?
You have been tasked with designing a data center interconnect to provide business continuity. You want to encrypt the traffic over the DCI using IEEE 802.1AE MACsec to prevent the deployment of any firewall or IPS. Which two interconnect technologies support MACsec? (Choose two.)

A. EoMPLS
B. MPLS Layer 3 VPN
C. DMVPN
D. OTV
E. VPLS
F. GET VPN

Correct Answer: AE

**Explanation/Reference:**

**Question 75**
Which two technologies allow for FCoE via lossless Ethernet or data center bridging?
You have been tasked with designing a data center interconnect as part of business continuity. You want to use FCoE over this DCI to support synchronous replication. Which two technologies allow for FCoE via lossless Ethernet or data center bridging? (Choose two.)

A. EoMPLS
B. DWDM
C. Multichassis EtherChannel over Pseudowire
Question 76
Which two options will accomplish this scenario?
Refer to the exhibit.

Service Provider A and Service Provider B have agreed to a strategic interconnect relationship that will allow them access into each other’s geographies by using an inter-AS eBGP VPNv4 multihop between route reflectors. Which two options will accomplish this scenario? (Choose two.)
A. RR 1 and RR 2 peer using multihop eBGP VPNv4 to exchange prefixes.
B. ASBR 1 and ASBR 2 act as inline route reflectors that set themselves as the next-hop.
C. An LSP is formed between ASBR 1 and ASBR 2 using eBGP IPv4.
D. An LSP is formed between ASBR 1 and ASBR 2 using eBGP VPNv4.
E. RR 1 and RR 2 peer using multihop eBGP IPv4 to exchange prefixes.

Correct Answer: AC
Explanation/Reference:

Question 77
Which two options are characteristics of firewall transparent mode operations in a firewall solution design?
Which two options are characteristics of firewall transparent mode operations in a firewall solution design? (Choose two.)
A. The firewall acts like a router hop in the network.
B. OSPF adjacencies can be established through the firewall.
C. Changes in the existing IP addressing and subnets are required.
D. Multicast traffic can traverse the firewall.
E. The firewall can participate actively on spanning tree.

Correct Answer: BD
Explanation/Reference:

Question 78
Which two options provide the best loop protection in this topology, regardless of a bridged domain configuration?
Refer to the exhibit.

Which two options provide the best loop protection in this topology, regardless of a bridged domain configuration? (Choose two.)
A. PVRSTP on all switches
B. REP on all switches
C. MST on all switches
D. BPDU guard on Switch A and Switch D
E. 8032 on ring A-B-C-D
Correct Answer: BE
Explanation/Reference:

**Question 79**
Which three factors slow down network convergence? (Choose three.)
A. constant interface flapping
B. lack of redundant paths
C. inconsistent topology states between routers
D. transport network failing to generate LoS
E. wrong summarization in ABRs

Correct Answer: ACD
Explanation/Reference:

**Question 80**
Which two mechanisms can be used to improve convergence time during a failure? (Choose two.)
A. incremental SPF
B. route filtering
C. graceful restart
D. BFD

Correct Answer: AD
Explanation/Reference:

**Question 81**
Which three design components are recommended to guarantee connectivity and redundancy between the two networks? (Refer to the exhibit.)
Company A is running a single-area OSPF, and Company B is running RIP as the IGP with no overlapping IP address spaces. Company A has just acquired Company B and both networks must be merged. Which three design components are recommended to guarantee connectivity and redundancy between the two networks? (Choose three.)
A. Enable mutual redistribution between OSPF and RIP on one border router.
B. Enable mutual redistribution between OSPF and RIP on Router A and Router B using route tags.
C. Increase the administrative distance to 130 for the OSPF external prefixes on Router A and Router B.
D. Implement an ACL on Router A and Router B to prevent OSPF external routes from being installed in the OSPF database.
E. Filter external routes on Router A and Router B based on route tags.

Correct Answer: BCE
Explanation/Reference:

**Question 82**
Which three options apply to the use of the echo function in BFD? (Choose three.)
A. It can be used with asynchronous mode.
B. BFD control packets are not required.
C. It can be enabled individually in each direction.
D. It has the advantage of testing the forwarding path on the remote system.
E. The rate of periodic transmission of BFD control packets should be increased.

Correct Answer: ACD
Explanation/Reference:

**Question 83**
Which three options about the Overload Bit are true? (Choose three.)
The Customer X network consists of an MPLS core, IS-IS running as IGP, a pair of BGP route reflectors for route propagation, and a few dozens of MPLS-TE tunnels for specific tactical traffic engineering requirements. The customer engineering department has some questions about the use of the Overload Bit in the IS-IS networks and how it could be used to improve their current network design. Which three options about the Overload Bit are true? (Choose three.)
A. It is not recommended on BGP route reflectors.
B. It only affects the use of the respective node as a transit node, and networks advertised within the LSPs of the node are still reachable.
C. It can be set on a router during the startup process for a fixed period of time.
D. It forces the mid-point MPLS-TE node to reoptimize the primary tunnels going through the OL node.
E. It can be set on a router until other interacting protocols have signaled convergence.

Correct Answer: BCE
Explanation/Reference:

Question 84
Which two key aspects should be taken into account?
Refer to the exhibit.

Four customer sites are connected through an EoMPLS-based VPLS over an MPLS provider. You are migrating from OSPF to multi-level IS-IS as the routing protocol to run on the four CE routers, and connectivity between all four sites is required. You want to control which CE or CEs will be elected as the Designated Intermediate System. Which two key aspects should be taken into account? (Choose two.)
A. The DIS role for Level1 and Level2 can be performed by different routers.
B. The CE with the second highest priority will be elected as the backup DIS on the LAN segment.
C. One of the CE routers will be elected as the DIS based on interface priority then highest MAC address.
D. It is recommended to use point-to-point link type on the CE.
E. If a new CE router is added to the VPLS cloud with a lower interface priority it will become the DIS.

Correct Answer: AC
Explanation/Reference:

Question 85
What are two issues that you should address as part of the design?
To improve the stability of a global network, you have been tasked with changing the design to include link-state topology summarization. What are two issues that you should address as part of the design? (Choose two.)
A. slow convergence
B. suboptimal routing
C. traffic black-holing
D. packet reordering

Correct Answer: BC
Explanation/Reference:

Question 86
Which two statements describe how including Cisco IPoDWDM proactive protection in an optical design would minimize packet loss in the event of a fiber cut?
Which two statements describe how including Cisco IPoDWDM proactive protection in an optical design would minimize packet loss in the event of a fiber cut? (Choose two).
A. It uses the FEC field on the OTN frame to trigger protection.
B. It uses a “not to exceed” predefined BER threshold to cause traffic redirection.
C. It reroutes the optical circuit after an event that impacts service.
D. It is effective both when you have redundant and nonredundant Layer 3 MPLS paths.

Correct Answer: AB
Explanation/Reference:

Question 87
Which two network threats is SNMPv3 effective against?
A customer wants to understand the benefits of a proposed network design that utilizes SNMPv3. Which two network threats is SNMPv3 effective against? (Choose two.)
A. modification of information threats

B. masquerade threats
C. denial of service threats
D. traffic analysis threats

Correct Answer: AB
Explanation/Reference:

**Question 88**
Which two statements could you recommend to allow for the appropriate level of bandwidth allocation?

The Service Provider you work for wants to deploy CoS functionality on the P routers of the MPLS core, to provide a complete CoS solution to all customers that purchase services such as dedicated Internet access, MPLS Layer 3 VPN, and Layer 2 VPN (pseudowire). The design requirements are:

- The network supports four service queues with equal treatment for delay, jitter, and packet loss.
- Queues are numbered 0–3, where 0 is the default queue.
- Three queues have one treatment, whereas the other queue has either one or two treatments.
- The Service Provider manages control traffic, whereas the customers manage business critical and best effort.

Which two statements could you recommend to allow for the appropriate level of bandwidth allocation? (Choose two.)

A. Control plane 10%, Real Time 30%, Business Critical 40%, Best Effort 20%
B. Control plane 80%, Real Time 10%, Business Critical 5%, Best Effort 5%
C. Control plane 90%, Real Time 5%, Business Critical 5%, Best Effort 0%
D. Control plane 20%, Real Time 40%, Business Critical 30%, Best Effort 10%

Correct Answer: AD
Explanation/Reference:

**Question 89**
Which two headend router scalability factors should be considered when designing a DMVPN network solution that uses a hub-and-spoke topology?

(Choose two.)

A. the required aggregated packet per second
B. the amount of bandwidth necessary to terminate all the remote tunnels
C. the routing protocol chosen for the data plane routing
D. the maximum number of tunnels supported by the headend router
E. the CPU and memory of the headend router

Correct Answer: AD
Explanation/Reference:

**Question 90**
Which three concepts will be supported with the implementation G.8032?

A Service Provider network designer is considering the use of the G.8032 Ethernet Ring Protection mechanism in order to provide resiliency in the network. Which three concepts will be supported with the implementation G.8032? (Choose three.)

A. Ring Protection Link (RPL)
B. Ring Automatic Protection Switching (R-APS)
C. Multi-Router Automatic Protection Switching (MR-APS)
D. Automatic Protection Switching (APS) Channel

Correct Answer: ABD
Explanation/Reference:

**Question 91**
Which two options do you recommend?

You are the lead IP network designer for a new service provider called XYZ, and you are working closely with the CTO to finalize design requirements. The CTO informs you that they want to transport IPv6 prefixes of customers through the XYZ network at this time; however, they need your advice on whether to deploy dual stack or MPLS 6PE/6VPE. Which two options do you recommend? (Choose two.)

A. Build a dual-stack network. Enable BGP in the core. Redistribute EBGP routes into IGP.
B. Use MPLS 6PE to simplify the operation and keep a BGP-free core. When the LDPv6 becomes available, change to 4PE or keep the core using both IPv4 and IPv6. The main goal is to keep the core BGP-free and ensure that IPv4, IPv6, VPNv4, and VPNv6 are all label-switched.
C. Use MPLS 6VPE to simplify the operation and keep a BGP-free core. When the LDPv6 becomes available, change to 4PE or keep the core using both IPv4 and IPv6. The main goal is to keep the core BGP-free and ensure that IPv4, IPv6, VPNv4, and VPNv6 are all label-switched.
D. Prepare the dual-stack infrastructure from the beginning, even if BGP prefixes would have to be announced via IPv4 in case you decide to maintain the BGP-free core.

Correct Answer: CD
Explanation/Reference:

**Question 92**
Which three principles would you apply in order to maximize the wireless network capacity?

You have been asked to design a high-density wireless network for a university campus. Which three principles would you apply in order to maximize the wireless network capacity? (Choose three.)

A. Increase the number of SSIDs to load-balance the client traffic.
B. Choose a high minimum data rate to reduce the duty cycle.
C. Make use of the 5-GHz band to reduce the spectrum utilization on 2.4 GHz when dual-band clients are used.
D. Enable 802.11ag channel bonding on both 2.4 GHz and 5 GHz to increase the maximum aggregated cell throughput.
E. Use directional antennas to achieve better sector separation channel reuse.
F. Implement a four-channel design on 2.4 GHz to increase the number of available channels.
Question 93
Which statement about the behavior of OSPF on a hub-and-spoke topology is true?
A. Additional host routes are added to the routing table on a NBMA network type.
B. The DR and BDR election occurs regardless of the underlying OSPF network type.
C. The DR election is a challenge unless a point-to-point network type is used.
D. Traffic does not need to traverse the hub to reach the spokes.
Correct Answer: C
Explanation/Reference:

Question 94
Which of the following design options meet the requirement to provide IPv6 interdomain multicast?
A. MSDP
B. PIM SSM
C. Auto-RP
D. PIM dense mode
Correct Answer: B
Explanation/Reference:

Question 95
Which option is a BFD design consideration?
A. BFD should not be used with RSVP-TE backup tunnels.
B. BFD echo mode may reduce convergence time.
C. BFD does not support sessions over MPLS LSPs.
D. BFD is supported on indirectly connected peers.
Correct Answer: B
Explanation/Reference:

Question 96
Which technology can be enabled while conforming to the design requirements?
Refer to the exhibit.
You are asked to design this OSPF network to converge within 60 ms for unicast packets after a topology change due to a single link failure. Which technology can be enabled while conforming to the design requirements?
A. Loop-Free Alternates
B. BFD
C. IGP neighbor timer tuning
D. IGP SPF timer tuning
E. RSVP-TE Fast Reroute
Correct Answer: A
Explanation/Reference:

Question 97
Which technology fulfills this requirement?
To meet specific business requirements, QoS-marked traffic must be sent over a dedicated link. Which technology fulfills this requirement?
A. MPLS
B. Q-in-Q tunneling
C. policy-based routing
D. EIGRP with modified metrics

Correct Answer: C
Explanation/Reference:

**Question 98**
Which multicast technology provides a large, many-to-many connectivity for a new application while minimizing load on the existing network infrastructure?
Which multicast technology provides a large, many-to-many connectivity for a new application while minimizing load on the existing network infrastructure?
A. Bidirectional PIM
B. PIM Sparse Mode
C. Any-source Multicast
D. Source Specific Multicast

Correct Answer: A
Explanation/Reference:

**Question 99**
Which QoS mechanism should be used to ensure low packet loss toward the service provider network?
Your company will attach to a new Gigabit Ethernet-based wide area network from the local service provider for remote connectivity. Each connection will have a 150 Mb/s committed information rate. For the design of this new service, which QoS mechanism should be used to ensure low packet loss toward the service provider network?
A. shaping
B. policing
C. CBWFQ
D. RED

Correct Answer: A
Explanation/Reference:

**Question 100**
What should be taken into consideration when designing IPsec networks using Authentication Header (AH)?
What should be taken into consideration when designing IPsec networks using Authentication Header (AH)?
A. NAT
B. transform set
C. crypto maps
D. ISAKMP

Correct Answer: A
Explanation/Reference:

**Question 101**
Which feature can be used to optimize multicast traffic forwarding in this situation?
Refer to the exhibit.
Assume that no multicast optimization is done on LAN switches A and B. Which feature can be used to optimize multicast traffic forwarding in this situation?
A. Enable IGMP snooping querier on both switches.
B. Configure a static MAC entry for the multicast server.
C. Disable IGMP snooping on both switches.
D. Disable the IGMP query election process.
E. Enable PIM Snooping on both switches.
Correct Answer: B
Explanation/Reference:

**Question 102**
What is the definition of the ITIL framework?

A. an ISO framework that establishes a model for network management and contains guidelines for managing objects, the management database, and the application entity
B. a five-volume framework for service management that covers design, transition, and delivery of service, and from which the ISO 20000 was developed
C. a series of tools for process improvement that uses statistical methods to reduce defects in processes and manufacturing
D. a framework for enterprise architecture that provides a comprehensive approach for designing, planning, implementing, and governing an enterprise information architecture
E. a framework for enterprise IP Address Management (IPAM) based on the IANA trusted IP lease allocation scheme

Correct Answer: B
Explanation/Reference:

**Question 103**
Which option describes the employed protection design?
Refer to the exhibit.

In the DWDM network, a ring topology carries multiple services between two sites. Which option describes the employed protection design?

A. Y-cable protection
B. Splitter protection
C. Client protection
D. UDLD
E. FEC protection

Correct Answer: C
Explanation/Reference:

**Question 104**
Which design option eliminates potential tunnel down events on the spoke routers due to the holding time expiration?

You are designing a large-scale DMVPN network with more than 500 spokes using EIGRP as the IGP protocol. Which design option eliminates potential tunnel down events on the spoke routers due to the holding time expiration?

A. Increase the hold queue on the tunnel interface of the spoke routers.
B. Increase the hold queue on the physical interface of the spoke routers.
C. Increase the hold queue on the physical interface of the hub router.
D. Increase the hold queue on the tunnel interface of the hub router.
E. Apply QoS for pak_priority class.

Correct Answer: D
Explanation/Reference:
Question 105
Which cost-conscious redesign action will fix the issue?
Refer to the exhibit.

After this new OSPF design with per-packet load balancing was implemented, Host A reported that large file downloads from Server A became slow and sometimes failed. The operations team discovered that packets are arriving out of order on R1. Which cost-conscious redesign action will fix the issue?
A. Upgrade all links to 10 Gbps.
B. Add an IP SLA probe on R1 and R4.
C. Adjust the OSPF auto-cost reference bandwidth on R4.
D. Adjust the OSPF auto-cost reference bandwidth on all routers.
Correct Answer: D
Explanation/Reference:

Question 106
How can you redesign this network to improve manageability and increase scalability?
Company A has grown nationwide in the U.S., and each new remote branch has a Metro Ethernet circuit provisioned back to the data center at the headquarters on the West Coast. The operations team says that it cannot manage hundreds of circuits as the company continues to grow. You review the topology and notice that many of the branches are close to each other in geographical zones. How can you redesign this network to improve manageability and increase scalability?
A. Add an aggregation layer router in each geographical zone.
B. Add a redundant data center on the East Coast to serve some of the traffic there.
C. Add a default route in each branch toward the data center on the West Coast.
D. Use Optimized Edge Routing at the data center.
E. Build an overlay MPLS network with Layer 3 VPN.
Correct Answer: A
Explanation/Reference:

Question 107
How can you accomplish this task?
Refer to the exhibit.

A customer runs OSPF with Area 5 between its aggregation router and an internal router. When a network change occurs in the backbone, Area 5 starts having connectivity issues due to the SPF algorithm recalculating an abnormal number of times in Area 5. You are tasked to redesign this network to increase resiliency on the customer network with the caveat that Router B does not support the stub area. How can you accomplish this task?
A. Set Area 5 to stubby at the ABR anyway.
B. Increase the bandwidth on the connection between Router A and Router B.
C. Turn on LSA throttling on all devices in Area 5.
D. Implement LSA filtering on the ABR, allowing summary routes and preventing more specific routes into Area 5.
E. Create a virtual link to Area 0 from Router B to the ABR.
Correct Answer: D
Explanation/Reference:

Question 108
Which mechanism provides a Layer 2 fault isolation between data centers?
Which mechanism provides a Layer 2 fault isolation between data centers?
Question 109
Which protocol or mechanism provides the shortest traffic outage if the link marked with “X” fails?
Refer to the exhibit.

This Layer 2 ring has 10 VLANs with 1000 MAC addresses in each VLAN. Which protocol or mechanism provides the shortest traffic outage if the link marked with “X” fails?
A. PVRST
B. REP
C. MST
D. G.8031
E. BFD

Correct Answer: B
Explanation/Reference:

Question 110
Which technology is the simplest solution to avoid microloops without enabling a new protocol in the network?
Refer to the exhibit.

On this MPLS-based network ring, links have failed between router A and router E. These failures formed microloops while the network converged, when A forwarded traffic to B but B forwards it back to A. Which technology is the simplest solution to avoid microloops without enabling a new protocol in the network?
A. TE Fast ReRoute
B. IP Fast ReRoute
C. Loop-Free Alternate
D. Remote Loop-Free Alternate
Correct Answer: D
Explanation/Reference:

Question 111
Which design mechanism will stabilize the network and avoid constant reconvergences?
There is an MPLS-enabled link constantly flapping on an MPLS VPN network. Given that the network runs OSPF as the IGP protocol, which design mechanism will stabilize the network and avoid constant reconvergences?
A. BFD
B. IP Event Dampening
C. OSPF fast hellos
D. partial SPF
Correct Answer: B
Explanation/Reference:

Question 112
Which option is a benefit of using N-Port Virtualization?
A. reduces the amount of domain IDs that are used in the fabric
B. does not need to create zoning
C. reduces latency when using local switching on Fibre Channel ports
D. allows trunking to the upstream switch
E. does not need to configure the upstream switches
Correct Answer: A
Explanation/Reference:

Question 113
Which action will improve performance in a cost-effective manner?
You are using iSCSI to transfer files between a 10 Gigabit Ethernet storage system and a 1 Gigabit Ethernet server. The performance is only approximately 700 Mb/s and output drops are occurring on the server switch port. Which action will improve performance in a cost-effective manner?
A. Use a WRED random drop policy.
B. Increase the queue to at least 1 GB.
C. Enable the TCP Nagle algorithm on the receiver.
D. Change the protocol to CIFS.
Correct Answer: A
Explanation/Reference:

Question 114
Which service provider recommendation is the most scalable?
An MPLS service provider is offering a standard EoMPLS-based VPLS service to Customer A, providing Layer 2 connectivity between a central site and approximately 100 remote sites. Customer A wants to use the VPLS network to carry its internal multicast video feeds, which are sourced at the central site and consist of 20 groups at 5 Mb/s each. Which service provider recommendation is the most scalable?
A. EoMPLS-based VPLS already carries multicast traffic in a scalable manner.
B. Replicate the multicast traffic on the P routers.
C. Replace VPLS with a Layer 3 MVPN solution to carry the streams between sites.
D. Use GRE tunnels to carry the streams between sites.
Correct Answer: C
Explanation/Reference:

Question 115
Which design change will prevent the multicast traffic from being unnecessarily flooded throughout the campus network?
Refer to the exhibit.
A new IPv4 multicast-based video-streaming service is being provisioned. During the design-validation tests, you realize that the link between the two buildings is carrying multicast traffic even when there are no receivers connected to the switch in Building B and despite IGMP snooping being enabled on both Layer 2 switches and IGMPv2 runs on the hosts. Which design change will prevent the multicast traffic from being unnecessarily flooded throughout the campus network?

A. Enable PIM snooping on both Layer 2 switches.
B. Enable multicast storm control on the link between Switch 1 and Switch 2.
C. Use static Layer 2 MAC forwarding entries on Switch 1.
D. Change the IPv4 multicast group address such that it excludes the usage of link-local MAC addresses.
E. Ensure that Switch 1 is an IGMP querier.

Correct Answer: D

Explanation/Reference:

Question 116
Which option shows one-way latency, packet loss, and jitter measurements that ensure acceptable voice quality?

On a VoIP solution design, which option shows one-way latency, packet loss, and jitter measurements that ensure acceptable voice quality?

A. Latency: 110 ms Packet loss: 1% Jitter: 40 ms
B. Latency: 130 ms Packet loss: 0.5% Jitter: 30 ms
C. Latency: 150 ms Packet loss: 1.25% Jitter: 20 ms
D. Latency: 170 ms Packet loss: 0.75% Jitter: 10 ms

Correct Answer: B

Explanation/Reference:

Question 117
Which virtualization technology could be deployed quickly to achieve the business objective?

Two medium-sized companies recently merged and would like to share their two campus buildings as soon as possible. Employees should be able to sit and work in either building. If the IP addresses in the networks overlap, which virtualization technology could be deployed quickly to achieve the business objective?

A. MPLS-VPN
B. VRF-LITE
C. EoMPLS
D. L2TPv3

Correct Answer: B

Explanation/Reference:

Question 118
Which Layer 2 tunneling technology do you recommend?

A company would like to distribute a virtual machine (VM) hosting cluster between three data centers with the capability to move VMs between sites. The connectivity between data centers is IP only and the new design should use the existing WAN. Which Layer 2 tunneling technology do you recommend?

A. VPLS
B. L2TPv3
C. OTV
D. AToM

Correct Answer: C

Explanation/Reference:

Question 119
What is the effect on the routing table if the WAN interfaces are configured as point-to-multipoint?

You are designing a large Frame Relay WAN for a customer. The routing protocol is OSPF. What is the effect on the routing table if the WAN interfaces are configured as point-to-multipoint?

A. Only a route for the DR will be present in the routing table.
B. Configuring point-to-multipoint has no effect on the routing table. The route that is configured with the area command will be seen in the routing table.
C. Multipoint interfaces dynamically add the network of the connected interface.
D. Multipoint interfaces dynamically add a /32 route for each neighbor in the WAN.

Correct Answer: D

Explanation/Reference:

Question 120
Which VLAN must be trunked back to the Clean Access Server from the access switch?

You are designing an Out of Band Cisco Network Admission Control, Layer 3 Real-IP Gateway deployment for a customer. Which VLAN must be trunked back to the Clean Access Server from the access switch?

A. untrusted VLAN
B. user VLAN
C. management VLAN
D. authentication VLAN

Correct Answer: A

Explanation/Reference:
Question 121
Which option describes how you can design this Layer 2 network while using untagged interfaces between both switches? Refer to the exhibit.

You are designing a network using the Multiple Spanning Tree Protocol for loop avoidance. VLAN trunking is not allowed due to security requirements. Which option describes how you can design this Layer 2 network while using untagged interfaces between both switches?
A. Assign VLAN 100 and VLAN 200 to the IST instance.
B. Assign VLAN 100 and VLAN 200 to instance 1.
C. Assign VLAN 100 to instance 1 and VLAN 200 to instance 2.
D. Assign VLAN 100 to the IST instance and VLAN 200 to instance 1.

Correct Answer: C
Explanation/Reference:

Question 122
Which technology ensures the quickest RP convergence?
You are designing an IPv4 any source multicast redundancy solution. Which technology ensures the quickest RP convergence?
A. Auto-RP
B. Embedded RP
C. bootstrap router
D. MSDP anycast RP

Correct Answer: D
Explanation/Reference:

Question 123
Which address family translation design solution should be recommended?
A company supports IPv4 and IPv6 addresses, and they need to be able to support flow-based translations for multiple IPv6 devices to a single IPv4 address. Which address family translation design solution should be recommended?
A. stateful NAT-PT
B. NAT-PT
C. stateless NAT64
D. stateful NAT64

Correct Answer: D
Explanation/Reference:

Question 124
Which of the following will have the most negative impact on the delay of the packet?
You are tasked with implementing a 1000-phone remote access solution, where phone calls will traverse a WAN edge router. Assuming all of the following features are supported in a hardware-assisted manner, which of the following will have the most negative impact on the delay of the packet?
A. encryption
B. stateful firewall
C. MPLS encapsulation
D. GRE encapsulation

Correct Answer: A
Explanation/Reference:

Question 125
Which Layer 2 services should be considered to address this design feature?
A Mobile Service Provider would like to design and deploy an Ethernet service which has similar physical link failover/failback characteristics on the active/backup links as the APS/MSP SONET properties. Which Layer 2 services should be considered to address this design feature?
A. Port-Channel
B. MLPPP
C. Flex Link
D. Ethernet Pseudowires

Correct Answer: C
Explanation/Reference:
Question 126
Which is the most scalable solution to provide this type of VRF Selection process on the CE edge device?
A Service Provider is designing a solution for a managed CE service to a number of local customers using a single CE platform and wants to have logical separation on the CE platform using Virtual Routing and Forwarding (VRF) based on IP address ranges or packet length. Which is the most scalable solution to provide this type of VRF Selection process on the CE edge device?
A. Static Routes for Route Leaking
B. Policy Based Routing
C. Multi-Protocol BGP
D. OSPF per VRF Instance
Correct Answer: B
Explanation/Reference:

Question 127
Which of the following would need to be reviewed to ensure stability in their network?
A Tier-3 Service Provider is evolving into a Tier-2 Service Provider due to the amount of Enterprise business it is receiving. The network engineers are re-evaluating their IP/MPLS design considerations in order to support duplicate/overlapping IP addressing from their Enterprise customers within each Layer 3 VPN. Which of the following would need to be reviewed to ensure stability in their network?
A. Assigning unique Route Target ID’s
B. Assigning unique Route Distinguishers
C. Assigning unique IP address space for the Enterprise NAT/Firewalls
D. Assigning unique VRF ID’s to each Layer 3 VPN
Correct Answer: B
Explanation/Reference:

Question 128
Which of the following design solutions accomplishes these requirements?
Refer to the exhibit.

![Network Diagram](image)
You must ensure that both core A and core B devices have only the minimum information required for reaching the spoke routers yet maintain full reachability during network failures. Which of the following design solutions accomplishes these requirements?
A. Route summarization, with specific route leaking on hubs A and B
B. Route summarization, with GRE tunnel on hubs A and B
C. Implement PerH to enhance communication on hubs A and B.
D. Implement ODR for hub-to-spoke routing.
Correct Answer: B
Explanation/Reference:

Question 129
Which single design aspect should be configured on the ABRs to reduce the impact of WAN upgrades for spoke routers on the core of the network?
Refer to the exhibit.
Question 130
Which single design aspect should be configured on the ABRs to reduce the impact of WAN upgrades for spoke routers on the core of the network?
A. route summarization
B. stub area
C. route filtering
D. not-so-stubby area

Correct Answer: A
Explanation/Reference:

Question 131
What is a key benefit of a layered network design?
A. cost savings
B. increased security
C. increased flexibility
D. decreased broadcast

Correct Answer: C
Explanation/Reference:

Question 132
Which technology could be used in this design to provide link recovery and high traffic capacity?
Refer to the exhibit.
Which technology could be used in this design to provide link recovery and high traffic capacity?
A. Rapid PVST
B. MST
C. PAgP
D. Flex Links

Correct Answer: C
Explanation/Reference:

Question 133
Which solution will improve access speed?
In an OSPF network, users in a particular OSPF non-backbone area are complaining about slow access speeds to a shared corporate resource in another OSPF area. Traceroutes show that the users are taking a suboptimal default route to the destinations. Which solution will improve access speed?
A. Make the area totally stubby so that the default can be followed along the best path.
B. Create a virtual link between the areas so that traffic can shortcut directly between them.
C. Implement policy routing to channel the traffic in the optimal direction.
D. Leak specific summaries on the ABRs for the remote subnets in addition to the default.

Correct Answer: D
Explanation/Reference:

Question 134
When developing a multicast network design, SSM should be used for which type of source and receiver distribution?

When developing a multicast network design, SSM should be used for which type of source and receiver distribution?
Select and Place:

Correct Answer:

Explanation/Reference:

Question 135
What is the definition of jitter, and how must network designers compensate for jitter so an IP network can carry real-time VoIP traffic?

What is the definition of jitter, and how must network designers compensate for jitter so an IP network can carry real-time VoIP traffic?
Select and Place:
**What is the definition of jitter, and how must network designers compensate for jitter so an IP network can carry real-time VoIP traffic?**

| Jitter is the actual delay between the time a packet is expected to transmit and when it actually transmits. | Definition of jitter |
| Jitter is the variation between the time a packet is expected to arrive and when it actually arrives. | |
| Jitter is the variation between the time a packet is expected to drop and when it actually drops. | |
| Set up a play-in buffer to play back the voice stream in a smooth fashion and avoid discontinuity in the voice stream. | |
| Set up a play-out buffer to play back the voice stream in a smooth fashion and avoid discontinuity in the voice stream. | |

**Correct Answer:**

| Jitter is the actual delay between the time a packet is expected to transmit and when it actually transmits. | Definition of jitter |
| Jitter is the variation between the time a packet is expected to arrive and when it actually arrives. |
| Jitter is the variation between the time a packet is expected to drop and when it actually drops. |
| Set up a play-in buffer to play back the voice stream in a smooth fashion and avoid discontinuity in the voice stream. |

**Explanation/Reference:**

**Question 136**

**DRAG DROP**

**DRAG DROP**

Drag the IT standards on the left to their network design application on the right. Not all applications will be used.

Select and Place:

<table>
<thead>
<tr>
<th>FCAps</th>
<th>Change management</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIL</td>
<td>Governance framework</td>
</tr>
<tr>
<td>CBIP</td>
<td>OSI-specified network management protocol</td>
</tr>
<tr>
<td>ITIN</td>
<td>Telecommunications systems management framework</td>
</tr>
</tbody>
</table>

**Correct Answer:**

<table>
<thead>
<tr>
<th>FCAps</th>
<th>Change management</th>
</tr>
</thead>
<tbody>
<tr>
<td>ITIL</td>
<td>Governance framework</td>
</tr>
<tr>
<td>CBIP</td>
<td>OSI-specified network management protocol</td>
</tr>
<tr>
<td>ITIN</td>
<td>Telecommunications systems management framework</td>
</tr>
</tbody>
</table>

**Explanation/Reference:**

Question 137
DRAG DROP
A service provider offers Layer 2 multipoint services to their customers. Drag the protocol on the left to the target on the right to indicate the protocols that can be used to signal pseudowires.
Select and Place:

<table>
<thead>
<tr>
<th>Protocols Left</th>
<th>Protocols Right</th>
</tr>
</thead>
<tbody>
<tr>
<td>LDP</td>
<td></td>
</tr>
<tr>
<td>RSVP</td>
<td></td>
</tr>
<tr>
<td>BGP</td>
<td></td>
</tr>
<tr>
<td>L2TPv3</td>
<td></td>
</tr>
</tbody>
</table>

Correct Answer:

<table>
<thead>
<tr>
<th>Protocols Left</th>
<th>Protocols Right</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RSVP</td>
</tr>
<tr>
<td>LDP</td>
<td></td>
</tr>
<tr>
<td>BGP</td>
<td></td>
</tr>
<tr>
<td>L2TPv3</td>
<td></td>
</tr>
</tbody>
</table>

Explanation/Reference:

Question 138
What would you advise your team to do so that you can interconnect the two SANs while minimizing disruption?

You work for a large company that has just acquired another smaller company. You have been asked to lead a group of SAN experts from both companies to design the integration plan that will be used to interconnect the SANs and migrate the data from the newly acquired company to the main storage arrays. The first thing that the team discovers is that the two SANs have the same domain IDs.

As the SAN team lead, what would you advise your team to do so that you can interconnect the two SANs while minimizing disruption?
A. Use FCIP with Write Acceleration and IVR version 1 with a transit VSAN to expedite the data transfer between the two SANs.
B. Change the domain IDs on both SANs so that they are both unique and then connect ISLs between the SANs.
C. Use IVR NAT with a transit VSAN between the SANs.
D. The two SANs cannot be merged without disruption.

Correct Answer: C
Explanation/Reference:

Question 139
Which two adjustments can you make to the network design so that the appliance is added into the traffic path?

A company wants to use an external appliance between its data center and WAN to optimize email and HTTP communications. The traffic flow must pass this appliance in both directions. The appliance is connected with only one interface to a Cisco IOS router and has a single IP address. Which two adjustments can you make to the network design so that the appliance is added into the traffic path? (Choose two.)
A. Configure static routes to route the traffic to the appliance.
B. Adjust the dynamic routing to route the traffic to the appliance.
C. Configure NAT to force the traffic to the appliance.
D. Configure a route map at the data center-side interface to forward the traffic to the appliance IP address.
E. Configure a route map at the appliance-facing interface to forward the traffic to the appliance IP address.
F. Configure a route map at the WAN-side interface to forward the traffic to the appliance IP address.

Correct Answer: DF
Explanation/Reference:

Question 140
Which technology allows a switch to support multiple Fibre Channel IDs per fabric port?

For a storage area network design, which technology allows a switch to support multiple Fibre Channel IDs per fabric port?
A. N-Port Identifier Virtualization
B. Inter-Virtual Storage Area Network Routing
C. Zoning
D. Fabric Port Trunking
E. Node Port Virtualization
F. Expansion Port Trunking

Correct Answer: A
Explanation/Reference:
Question 141
Which address type is appropriate for the ACL that will govern the sources of traffic entering the tunnel in the inside interface?
Your company plans to implement an Internet gateway router that is performing NAT. This same gateway will be terminating various IPsec tunnels to other remote sites. Which address type is appropriate for the ACL that will govern the sources of traffic entering the tunnel in the inside interface?
A. inside local
B. inside global
C. outside local
D. outside global

Correct Answer: B
Explanation/Reference:

Question 142
Which three options describe reasons to use the MPLS-TP standard in your design?
You have been hired by a startup company to provide optical services using MPLS-TP. Which three options describe reasons to use the MPLS-TP standard in your design? (Choose three.)
A. MPLS-TP is a newer packet transport technology that replaces SONET/SDH.
B. MPLS-TP includes extensions to native MPLS OAM for fault detection, monitoring, and propagation.
C. MPLS-TP requires a routing protocol.
D. MPLS-TP uses an IANA assigned label 13 for OAM.
E. MPLS-TP uses Ethernet Y.1731 OAM.

Correct Answer: ABD
Explanation/Reference:

Question 143
Which IGP is considered to scale better for a hub-and-spoke topology?
Acme Corporation indicates that their network design must support the ability to scale to support a high number of remote sites. Which IGP is considered to scale better for a hub-and-spoke topology?
A. BGP
B. OSPF
C. IS-IS
D. EIGRP

Correct Answer: D
Explanation/Reference:

Question 144
Which two features describe CWDM?
A junior engineer is implementing one of your optical designs and asks about CWDM (Coarse Wavelength Division Multiplexing). Which two features describe CWDM? (Choose two.)
A. typically used over long distances, but requires optical amplification
B. allows up to 32 optical carriers to be multiplexed onto a single fiber
C. shares the same transmission window as DWDM
D. uses the 850-nm band
E. Passive CWDM devices require no electrical power.

Correct Answer: CE
Explanation/Reference:

Question 145
How will they adjust the design to reduce the flooding of update packets?
Refer to the exhibit.
A service provider using IS-IS has designed this network with all core links at the Layer 2 control plane. How will they adjust the design to reduce the flooding of update packets?

A. Change the area type of the links to be level-1-2 to allow level-1 updates.
B. Change the network type of the links from broadcast to point-to-point.
C. Use IS-IS mesh groups.
D. Configure SPF timers to be more aggressive so that updates are more quickly cleared from the queue.

Correct Answer: C

Explanation/Reference:

Question 146
Which two design principles would you follow to increase the location accuracy with the least possible impact on the current setup?
You have been asked to design a wireless network solution that will implement context-aware services on an existing network that was initially deployed for data traffic only. Which two design principles would you follow to increase the location accuracy with the least possible impact on the current setup? (Choose two.)
A. Use directional antennas to provide better cell separation.
B. Add access points along the perimeter of the coverage area.
C. Install additional APs in monitor mode where the cochannel interference would otherwise be affected.
D. Increase the AP density to create an average interference point distance of less than 40 ft.
E. Fine tune the access points radio configuration to have a higher average transmission power to achieve better coverage.

Correct Answer: BC

Explanation/Reference:

Question 147
How will you prevent transit traffic over the backup links?
You have been asked to establish a design that will allow your company to migrate from a WAN service to a Layer 3 VPN service. In your design, you are keeping some WAN links between critical sites as a backup for this service. You plan to use OSPF as your IGP and BGP for the PE-CE protocol. When the Layer 3 VPN service is available, how will you prevent transit traffic over the backup links?
A. Redistribute routes at the CE as external type 1.
B. Redistribute routes at the CE as external type 2.
C. Use conditional advertisement only when the Layer 3 service is down.
D. Manually turn off the backdoor link when the Layer 3 service is up.

Correct Answer: D

Explanation/Reference:

Question 148
Which two aspects will manage the flow of the traffic to meet these design considerations?
You are designing an 802.11 wireless network to include a controller as a central configuration point and access points across several remote sites. Which two aspects will manage the flow of the traffic to meet these design considerations? (Choose two.)
A. WLAN local switching with VLAN mapping requires that VLAN ID that is mapped on the AP to match a dynamic interface that is configured on the wireless LAN controller.
B. Layer 3 roaming is not supported for locally switched WLANs.
C. The 802.1x authentication for a client associated to an AP on a locally switched WLAN is always handled at the wireless LAN controller side.
D. The access point can receive multicast traffic in the form of multicast packets from the WLC.
E. WLAN access lists can be applied only to centrally switched WLANs.

Correct Answer: BE
**Question 149**
When a multiprotocol environment is designed to have several routers redistribute among the routing domains, how can routing loops be avoided?
A. by using the AS-PATH attribute
B. by using route tags
C. by activating split horizon
D. by implementing spanning tree

Correct Answer: B

**Explanation/Reference:**

**Question 150**
Which VLAN must be trunked back to the Clean Access Server from the access switch?
You are designing a NAC OOB Layer 3 Real-IP Gateway deployment for a customer. Which VLAN must be trunked back to the Clean Access Server from the access switch?
A. untrusted VLAN
B. user VLAN
C. management VLAN
D. authentication VLAN

Correct Answer: A

**Explanation/Reference:**

**Question 151**
What will happen to your EIGRP neighbors if there is an LCP failure once your network is implemented?
You have designed a network to support two offices connected by a T1. Your router serial interfaces will be configured with encapsulation PPP. What will happen to your EIGRP neighbors if there is an LCP failure once your network is implemented?
A. Your neighbors will drop after the EIGRP timers expire.
B. Your neighbors will stay up because the link has not gone down.
C. Your neighbors will drop immediately.
D. Your neighbors will drop and EIGRP will begin the query process.

Correct Answer: D

**Explanation/Reference:**

**Question 152**
Which two methods could be utilized?
Your firm has been awarded a contract to design a Criminal Justice Information Services Version 5.0-compliant network utilizing advanced authentication policies. Which two methods could be utilized? (Choose two.)
A. biometric
B. PKI
C. UKI
D. password

Correct Answer: AB

**Explanation/Reference:**

**Question 153**
Which limitation is valid when using route reflectors in this design?
An IBGP mesh design is being scoped, and in the discussions, one of the design engineers proposes the use of route reflectors. Which limitation is valid when using route reflectors in this design?
A. The configuration complexity on the routers will be increased.
B. Route reflectors will limit the total number of routes in the topology.
C. Multipath information is difficult to propagate in a route reflector topology.
D. Route reflectors will cause an opportunity to create routing loops.

Correct Answer: C

**Explanation/Reference:**

**Question 154**
Which information will be added to the DHCP request?
As part of the security protocol for your network design, you have designated that option 82 is enabled for DHCP snooping. When option 82 is enabled, which information will be added to the DHCP request?
A. switch MAC address and VLAN, module, and port
B. remote ID and circuit ID
C. switch IP address and VLAN, module, and port
D. switch MAC address and switch IP address

Correct Answer: B

**Explanation/Reference:**
Question 155
What are two functions of an NSSA in an OSPF network design?
A. It overcomes issues with suboptimal routing when there are multiple exit points from the area.
B. It allows ASBRs to inject external routing information into the area.
C. An ASBR advertises Type 7 LSAs into the area.
D. An ABR advertises Type 7 LSAs into the area.
E. It uses opaque LSAs.
Correct Answer: BC
Explanation/Reference:

Question 156
Which security option must be configured on the switches?
Your design client has requested that you ensure that the client devices are not dynamically configured with incorrect DNS information. When finalizing the network design, which security option must be configured on the switches?
A. IGMP snooping
B. DHCP snooping
C. root guard
D. DNS snooping
Correct Answer: B
Explanation/Reference:

Question 157
Which three factors should you consider when you adjust the timer values?
A senior network designer suggests that you should improve network convergence times by reducing BGP timers between your CE router and the PE router of the service provider. Which three factors should you consider when you adjust the timer values? (Choose three.)
A. access bandwidth
B. service provider agreement to support tuned timers
C. number of routes on the CE router
D. number of VRFs on the PE router
E. service provider scheduling of changes to the PE
Correct Answer: ABC
Explanation/Reference:

Question 158
Which mode of Unicast RPF would you recommend as the lead network designer?
The network administrator of a branch office network has decided to deploy Unicast RPF at the access layer. He insists that the design must guarantee that all the packets arriving on the router interfaces are assigned to the same interface subnet.
Which mode of Unicast RPF would you recommend as the lead network designer?
A. uRPF strict mode
B. uRPF loose mode
C. uRPF VRF mode
D. RPF feasible mode
Correct Answer: A
Explanation/Reference:

Question 159
Which three mechanisms can be used to improve Layer 2 down detection and thereby reduce routing convergence time?
In a network design using Carrier Ethernet, which three mechanisms can be used to improve Layer 2 down detection and thereby reduce routing convergence time? (Choose three.)
A. BFD
B. Ethernet port debounce timers
C. link-state tracking
D. object tracking
E. fast IGP hello
Correct Answer: ADE
Explanation/Reference:

Question 160
Which option would eliminate the risk of high CPU utilization across the network?
You are designing a solution to eliminate the risk of high CPU utilization on a core network composed of CRS-1 devices. Which option would eliminate the risk of high CPU utilization across the network?
A. Use Local Packet Transport Services (LPTS) to manage hardware SNMP flow rate.
B. Use the in-band control plane policy feature to reduce the SNMP flow rate.
C. Use the control plane policy feature and reduce SNMP flow rate.
D. Use control-plane management-plane in-band and reduce the SNMP flow rate.
E. Use the control-plane management-plane out-of-band feature to reduce the SNMP flow rate.
Correct Answer: A
Explanation/Reference:
Question 161
What are two benefits of using BFD for failure detection in the design of a network?
What are two benefits of using BFD for failure detection in the design of a network? (Choose two.)
A. BFD can provide failure detection in less than one second.
B. BFD can be used as a generic and consistent failure detection mechanism for EIGRP, IS-IS, and OSPF.
C. BFD eliminates router protocol hello notification.
D. BFD can be used for all types of network interfaces.
E. BFD is independent of the network protocol.

Correct Answer: AB
Explanation/Reference:

Question 162
Which two areas would you provide guidance to the network management team?
Your company experienced a number of network incidents that had a significant impact on business operations. Because a root cause cannot be identified, your CTO asks you to help the network management team implement the FCAPS framework. On which two areas would you provide guidance to the network management team? (Choose two.)
A. change management
B. accounting management
C. service level management
D. fault management

Correct Answer: BD
Explanation/Reference:

Question 163
Which two of these actions would reduce that delay?
A network design includes a long signaling delay in notifying the Layer 3 control plane that an interface has failed. Which two of these actions would reduce that delay? (Choose two.)
A. Enable lower data link layer recovery systems to have an opportunity to restore the interface.
B. Increase the notification of interface flaps.
C. Reduce the time for the network to reconverge.
D. Increase network stability.

Correct Answer: AC
Explanation/Reference:

Question 164
Which tool should the designer recommend to validate quality of service mappings and use?
A designer is working with a large bank to redesign their network. The designer wants to minimize complaints regarding slow application response times across the WAN. It is suspected that currently traffic is not being classified and marked correctly somewhere in the network. Which tool should the designer recommend to validate quality of service mappings and use?
A. SNMP
B. IPFIX
C. IP SLA
D. protocol analyzer
E. NBAR

Correct Answer: B
Explanation/Reference:

Question 165
Which two methods would you use to improve lost peer detection?
Your company requires two diverse multihop External Border Gateway Protocol peerings to a partner network. Which two methods would you use to improve lost peer detection? (Choose two.)
A. Use Bidirectional Forwarding Detection for the peers.
B. Use Selective Address Tracking and match the peers.
C. Use subsecond keepalives for the peers.
D. Use subsecond hold timers for the peers.
E. Use Fast Peering Session Deactivation for the peers.
F. Use subsecond minimum route advertisement Interval timers for the peers.

Correct Answer: BE
Explanation/Reference:

Question 166
Which traffic monitoring technique would you recommend to place the least amount of burden on the network infrastructure?
You are designing a traffic monitoring and analysis system for a customer. Which traffic monitoring technique would you recommend to place the least amount of burden on the network infrastructure?
A. SPAN monitor ports
B. NetFlow
C. IP NBAR
D. passive taps
Correct Answer: D
Explanation/Reference:

**Question 167**
What should be changed for the design inside AS100 for prefixes received from AS200?
AS100 and AS200 each have two peering points in different parts of their network. AS100 would like to use one of the links and keep the other link as backup. What should be changed for the design inside AS100 for prefixes received from AS200?
A. MED  
B. weight  
C. AS-PATH  
D. local preference
Correct Answer: D
Explanation/Reference:

**Question 168**
When combined, fulfill the requirement?
Your company needs to baseline web traffic on a per-session basis for network application reporting. Which two mechanisms, when combined, fulfill the requirement? (Choose two.)
A. Flexible Netflow  
B. Remote Monitoring  
C. Cisco IOS IP Service Level Agreement  
D. Class-Based Quality of Service Management Information Base  
E. Network-Based Application Recognition
Correct Answer: AE
Explanation/Reference:

**Question 169**
Which parameter is included in your design to manage the traffic?
You are creating a network design that will influence the traffic path across the MPLS core on a virtual private LAN. Which parameter is included in your design to manage the traffic?
A. Deploy MPLS traffic engineering and modify the path using the preferred path.  
B. Deploy MPLS traffic engineering and modify the path using auto-route, static routing, or PBR.  
C. Create an MPLS traffic engineering tunnel and modify the path using a static route.  
D. Create an MPLS traffic engineering tunnel and modify the path using auto-route announce.
Correct Answer: A
Explanation/Reference:

**Question 170**
Which method should be used to collect the data?
Your company is designing a service provider network management solution in which customers are billed for 95th percentile network utilization. The service provider requires that an IETF standard be utilized to collect the data. Which method should be used to collect the data?
A. IPFIX  
B. NETFLOW  
C. RMON  
D. IPFLOW  
E. NBAR
Correct Answer: A
Explanation/Reference:

**Question 171**
How would you redesign the network to improve availability of the routers 1A and 1B at the core site?
Refer to the exhibit.
How would you redesign the network to improve availability of the routers 1A and 1B at the core site?
A. Enable Graceful Restart Helper for OSPF
B. Use link bundles over multiple slots
C. Use APS Ethernet circuits and redundant interfaces
D. Create a multichassis system with the two routers

Correct Answer: D
Explanation/Reference:

Question 172
Which feature should be used to meet this design requirement?
ACME Corporation is deploying a new HR application that requires the network infrastructure to monitor and react to certain conditions in the network.
Which feature should be used to meet this design requirement?
A. Cisco IOS Embedded Event Manager
B. IP SLA
C. reflexive ACLs
D. route maps
E. SOAP
F. exit status

Correct Answer: A
Explanation/Reference:

Question 173
Which two OSPF design considerations should you implement to support the eventual growth of a network, so that CPU and memory are unaffected by the size and complexity of the link-state database in a large service provider network?
Which two OSPF design considerations should you implement to support the eventual growth of a network, so that CPU and memory are unaffected by the size and complexity of the link-state database in a large service provider network? (Choose two.)
A. Turn on route dampening.
B. Create network summaries.
C. Turn on the Incremental SPF feature.
D. Add more memory.
E. Turn on packet pacing.
F. Add redundancy between critical locations.

Correct Answer: CE
Explanation/Reference:

Question 174
Which version of NetFlow records is required to export this information?
As part of the network design, ACME Corporation requires the ability to export IPv6 information to better manage its network. Which version of NetFlow records is required to export this information?
A. 5
B. 6
C. 7
D. 8
E. 9

Correct Answer: E
Explanation/Reference:

Question 175
When designing an MPLS-based LAN extension between DC-1 and DC-2, what are three advantages of deploying VSS?
Refer to the exhibit.
When designing an MPLS-based LAN extension between DC-1 and DC-2, what are three advantages of deploying VSS? (Choose three.)

A. Layers 2, 3, and 4 flow-based load balancing
B. native VSS and MEC failover without using scripts
C. sub-second failover
D. required to configure VPLS
E. failover time depends on Cisco IOS EEM and STP convergence
F. limited VLAN-based VPLS traffic hashing

Correct Answer: ABC
Explanation/Reference:

Question 176
Where 0 is the default queue.
You are the lead network designer hired by Service Provider XYZ to deploy CoS functionality on the core MPLS network (P routers). The goal of the network design is to provide a complete CoS solution to all customers that purchase services such as dedicated Internet access, MPLS L3VPN, and L2VPN (pseudowire). Service Provider XYZ has these design requirements:
The network supports four service queues with equal treatment for delay, jitter, and packet loss.
Queues are numbered 0-3, where 0 is the default queue.
Three queues have one treatment.
One queue has either one or two treatments.
If your design includes eight CoS queues on the Service Provider XYZ MPLS PE router ingress (CE facing) interface, how will customer traffic be classified as it enters the MLS P routers?
A. The eight CoS queues in the MPLS P router are remapped to the eight CoS queues.
B. Traffic is classified on the MPLS PE routers on core facing interface. The DSCP value is mapped into EXP field where multiple EXP settings (2+) will be assigned to a single queue throughout the MPLS P routers.
C. Discard the traffic from the eight CoS queues that does not match the four CoS queues of the MPLS P routers.
D. The 8 CoS queues in the MPLS P router are remapped to four 4 flow-label queues.

Correct Answer: B
Explanation/Reference:

Question 177
When network summaries are created for access networks in a network design, how does it change the behavior of the Shortest Path First (SPF) running in a backbone area?

A. There would be fewer incremental SPFs.
B. There would be fewer partial SPFs.
C. There would be fewer full SPFs.
D. There would be no change with the SPFs.

Correct Answer: B
Explanation/Reference:

Question 178
Which QoS policy should be recommended?
You are tasked to design a QoS policy for a service provider so they can include it in the design of their MPLS core network. If the design must support an MPLS network with six classes, and CEs will be managed by the service provider, which QoS policy should be recommended?
A. map DSCP bits into the Exp field
B. map IP precedence bits into the DSCP field
C. map flow-label bits into the Exp field
D. map IP CoS bits into the IP Precedence field
E. map IP ToS bits into the Exp field

Correct Answer: A
Explanation/Reference:

Question 179
How should multiple OSPF areas be designed when deployed on a classic three-layer (core/distribution/access) network hierarchy?
How should multiple OSPF areas be designed when deployed on a classic three-layer (core/distribution/access) network hierarchy?
A. The OSPF flooding domain boundary should be at the edge of the core layer.
B. The OSPF flooding domain boundary should be within the distribution layer.
C. OSPF should generally be deployed in a three-layer domain hierarchy to align with the physical three-layer hierarchy.
D. OSPF flooding domain boundaries should be placed with route aggregation in mind.

Correct Answer: D
Explanation/Reference:

Question 180
Which two architectures could be used to ensure that IP QoS is implemented properly?
You are designing a network that includes IP QoS. Which two architectures could be used to ensure that IP QoS is implemented properly? (Choose two.)
A. Differentiated Services, where the user, with the assistance of the RSVP signaling protocol, reserves the resources end to end before sending the data
B. Integrated Services, where the user, with the assistance of the RSVP signaling protocol, reserves the resources end to end before sending the data
C. Integrated Services, which relies on the information carried within each packet to make resource-allocation decisions at each network node
D. Differentiated Services, which relies on the information carried within each packet to make resource-allocation decisions at each network node
E. Integrated Services, where the user, with the assistance of the DSCP signaling protocol, reserves the resources end to end before sending the data

Correct Answer: BD
Explanation/Reference:

Question 181
What limitations exist in this design, given that the access layer devices are expected to steadily increase by two devices per week for the next year?
Refer to the exhibit.

A. scalability
B. serviceability
C. redundancy
D. resiliency

Correct Answer: A
Explanation/Reference:

Question 182
Which technique would you advise them to implement?
Your customer asks you to assist with their traffic policy design. They want to guarantee a minimum amount of bandwidth to certain traffic classes. Which technique would you advise them to implement?
A. Modular QoS CLI
B. committed accessrRate
C. policy-based routing
Question 183
What is a key role for the access layer in a hierarchical network design?
A. The access layer provides a security, QoS, and policy trust boundary.
B. The access layer provides an aggregation point for services and applications.
C. The access layer serves as a distribution point for services and applications.
D. The access layer can be used to aggregate remote users.
Correct Answer: A
Explanation/Reference:

Question 184
What is a key design aspect to be considered when designing an IP network that will be carrying real-time VoIP traffic?
A. Minimizing total bidirectional end-to-end delay to 0-150 ms
B. Minimizing total unidirectional end-to-end delay to 150-500 ms
C. Minimizing total bidirectional end-to-end delay to 0-50 ms
D. Minimizing total unidirectional end-to-end delay to 0-150 ms
Correct Answer: D
Explanation/Reference:

Question 185
What design issues should be considered when creating the summarization?
In a redesign of a multiple-area network, it is recommended that summarization is to be implemented. For redundancy requirements, summarization is done at multiple locations for each summary. Some customers now complain of higher latency and performance issues for a server hosted in the summarized area. What design issues should be considered when creating the summarization?
A. Summarization adds CPU overhead on the routers sourcing the summarized advertisement.
B. Summarization prevents the visibility of the metric to the component subnets.
C. Summarization creates routing loops.
D. Summarization causes packet loss when RPF is enabled.
Correct Answer: B
Explanation/Reference:

Question 186
When designing a WAN that will be carrying real-time traffic, what are two important reasons to consider serialization delay?
When designing a WAN that will be carrying real-time traffic, what are two important reasons to consider serialization delay? (Choose two.)
A. Serialization delays are variable because they depend on the line rate of the interface and on the type of the packet being serialized.
B. Serialization delay depends not only on the line rate of the interface but also on the size of the packet.
C. Serialization delays are invariable because they depend only on the line rate of the interface.
D. Serialization delays are variable because they depend only on the size of the packet being serialized.
E. Serialization delay is the time required to transmit the packet on the physical media.
Correct Answer: BE
Explanation/Reference:

Question 187
Which two techniques are used in a network design to slow down the distribution of topology information caused by a rapidly flapping link?
Which two techniques are used in a network design to slow down the distribution of topology information caused by a rapidly flapping link? (Choose two.)
A. Bidirectional Forwarding Detection
B. IP event dampening
C. link-state incremental SPF
D. link-state partial SPF
E. LSA throttling
F. SPF throttling
Correct Answer: BE
Explanation/Reference:

Question 188
Which option can meet this design requirement?
As a service provider you must support a Layer 2 virtualization protocol that does not include the use of label switching. Which option can meet this design requirement?
A. VPLS
B. VRF-Lite
C. QinQ
D. 802.3ad
Correct Answer: C
Explanation/Reference:

**Question 189**
Which protocol minimizes unicast flooding during TCN in a Layer 2 switched network with many VLANs?

While reviewing an existing network design, you are discussing the characteristics of different STP versions. Which protocol minimizes unicast flooding during TCN in a Layer 2 switched network with many VLANs?
A. STP  
B. MST  
C. PVRSTP  
D. PVSTP+

Correct Answer: D
Explanation/Reference:

**Question 190**
When adding an IPSec headend termination device to your network design, which two performance indicators are the most accurate to determine device scalability?
When adding an IPSec headend termination device to your network design, which two performance indicators are the most accurate to determine device scalability? (Choose two.)
A. CPU capabilities  
B. bandwidth capabilities  
C. packets per second capabilities  
D. maximum tunnel termination capabilities

Correct Answer: CD
Explanation/Reference:

**Question 191**
When creating a network design, which one of these options provides for basic Layer 2 client isolation to prevent broadcast traffic exposure?
When creating a network design, which one of these options provides for basic Layer 2 client isolation to prevent broadcast traffic exposure?
A. SVI  
B. VLAN  
C. routed port  
D. edge port

Correct Answer: B
Explanation/Reference:

**Question 192**
Which two aspects are considered when designing a dual hub/dual DMVPN cloud topology?
Which two aspects are considered when designing a dual hub/dual DMVPN cloud topology? (Choose two.)
A. recommended for high availability  
B. requires all sites to have dual Internet connections  
C. spoke-to-spoke traffic will transit the hub unless spokes exchange dynamic routing directly  
D. hub sites must connect to both DMVPN clouds  
E. will only work with single-tier headend architecture

Correct Answer: AE
Explanation/Reference:

**Question 193**
When a design calls for spanning VLANs across a campus network, what are two issues that need to be addressed in the design?
When a design calls for spanning VLANs across a campus network, what are two issues that need to be addressed in the design? (Choose two.)
A. network convergence  
B. network accessibility  
C. fault isolation  
D. application scalability  
E. user experience

Correct Answer: AC
Explanation/Reference:

**Question 194**
What three ways will the network design handle the fragmentation in three different possible network configurations?
Refer to the exhibit.
You are planning the design of an encrypted WAN. IP packets will be transferred over encrypted GRE tunnels between routers B and C. The packet size is limited to a maximum of 1500 bytes inside the WAN between routers B and C. If endpoint 1 tries to send 1500-byte IP packets to endpoint 2, in what three ways will the network design handle the fragmentation in three different possible network configurations? (Choose three.)

A. When router B fragments packets after the encryption, router C must reassemble these fragmented packets.
B. When router B fragments packets before the encryption, router C must reassemble these fragmented packets.
C. When router B fragments packets after the encryption, the endpoint 2 must reassemble these fragmented packets.
D. When router B fragments packets before the encryption, endpoint 2 must reassemble these fragmented packets.
E. When router A fragments packets, router C must reassemble these fragmented packets.
F. When router A fragments packets, endpoint 2 must reassemble these fragmented packets.

Correct Answer: ADF
Explanation/Reference:

**Question 195**
Which multicast address should be used, according to best practices outlined in RFC 2365?
A many-to-many enterprise messaging application is using multicast as a transport mechanism. As part of the network design for this application, which multicast address should be used, according to best practices outlined in RFC 2365?

A. 224.0.0.60
B. 232.192.0.60
C. 239.128.0.60
D. 239.193.0.60

Correct Answer: D
Explanation/Reference:

**Question 196**
Which design concern should be accounted for in all Layer 3 virtualization technologies?

A. Layer 3 redundancy
B. packet sizing
C. application usage
D. Layer 3 stability

Correct Answer: B
Explanation/Reference:

**Question 197**
What is the disadvantage when two multicast applications are using the multicast IP addresses 234.17.4.5 and 234.145.4.5 inside the same network?
A company plans to establish a new network using Cisco Catalyst switches for its multicast applications. What is the disadvantage when two multicast applications are using the multicast IP addresses 234.17.4.5 and 234.145.4.5 inside the same network?

A. Multicast packets from both applications are flooded to all Layer 2 ports in a segment where a multicast receiver is located.
B. Multicast packets from both applications are flooded to ports where one multicast receiver from one application is located.
C. Only one multicast stream is received at the port where the receivers from both applications are located.
D. Both multicast senders will always receive the multicast packets from the other multicast application.
E. The routers doing PIM-SM cannot distinguish between the two multicast applications.

Correct Answer: B
Explanation/Reference:

**Question 198**
What was not taken into account prior to implementing the solution?
After the recent implementation of a new design that incorporated GRE tunnels into the network, the network operations staff is seeing the following syslog message in multiple routers on the network – %TUN-5-RECURDOWN: Tunnel0 temporarily disabled due to recursive routing.
From a design perspective, what was not taken into account prior to implementing the solution?

A. The neighboring routers cannot respond within the specified hold time.
B. The interface on the router that is the source of the tunnel is down.
C. The interface on the neighboring router that is the source of the tunnel is down.
D. The router is learning the route to the tunnel destination address using the tunnel interface.
E. The tunnel interface on the router is not receiving any keepalives within the specified hold time.

Correct Answer: D
Explanation/Reference:
Question 199
Which feature should be enabled at the Layer 2 access edge for host-only ports?
You are asked to design a large campus network that will be using multicast for data transport. Which feature should be enabled at the Layer 2 access edge for host-only ports?
A. PortFast
B. BPDU guard
C. PIM-SM
D. PIM query interval
Correct Answer: A
Explanation/Reference:

Question 200
Which two features can be used to extend VRFs across a campus?
Which two features can be used to extend VRFs across a campus? (Choose two.)
A. 802.1q trunks
B. LDP
C. MPLS TE
D. GRE
E. port channels
Correct Answer: AD
Explanation/Reference:

Question 201
Which technique can you use to detect forwarding path failures at a uniform rate, and reconvergence times will be consistent and predictable when your routers are in the same broadcast domain?
Which technique can you use to detect forwarding path failures at a uniform rate, and reconvergence times will be consistent and predictable when your routers are in the same broadcast domain?
A. Enable BFD on your routers.
B. Configure your routers with IP-SLA to ping the peer router.
C. Configure your routers with IP-SLA and track to ping the peer and switch to a default route if the pings fail.
D. Tune your routing protocol timers.
Correct Answer: A
Explanation/Reference:

Question 202
How would you redesign the network VPN headend devices to prevent this from happening again in the future?
A network administrator is in charge of multiple IPsec VPN headend devices that service thousands of remote connectivity, point-to-point, IPsec/GRE tunnels. During a recent power outage, in which it was found that a backup power supply in one of those headend devices was faulty, one of the headend routers suffered a complete shutdown event. When the router was successfully recovered, remote users found intermittent connectivity issues that went away after several hours. Network operations staff accessed the headend devices and found that the recently recovered unit was near 100% CPU for a long period of time. How would you redesign the network VPN headend devices to prevent this from happening again in the future?
A. Move the tunnels more evenly across the headend devices.
B. Implement Call Admission Control.
C. Use the scheduler allocate command to curb CPU usage.
D. Change the tunnels to DMVPN.
Correct Answer: B
Explanation/Reference:

Question 203
Which three points must be considered regarding DR and BDR when different router platforms are used?
A company is planning to connect its 30 sites with a VPLS WAN backbone. A router at each site should establish neighborships with all other routers using the OSPF routing protocol. Which three points must be considered regarding DR and BDR when different router platforms are used? (Choose three.)
A. It is a best practice that the routers with the most powerful hardware should take the role of the DR and BDR.
B. If the IP OSPF priority is the same for all routers, the highest loopback IP address and router ID will decide which routers will take the DR and BDR role during the selection process.
C. To select the DR and BDR, the IP OSPF priority must be set to a higher value than the default value at the DR and BDR during the selection process.
D. To select the DR and BDR, the IP OSPF priority must be set to a lower value than the default value at the DR and BDR during the selection process.
E. The role for the DR and BDR will be selected when a new OSPF router comes up.
F. To force two routers to become a DR and a BDR, the IP OSPF priority can be set to zero at all other OSPF routers.
Correct Answer: ABF
Explanation/Reference:

Question 204
Which restriction prevents a designer from using a GDOI-based VPN to secure traffic that traverses the Internet?
Which restriction prevents a designer from using a GDOI-based VPN to secure traffic that traverses the Internet?
A. Enterprise host IP addresses are typically not routable.
B. GDOI is less secure than traditional IPsec.

C. Network address translation functions interfere with tunnel header preservation.  
D. The use of public addresses is not supported with GDOI.  

Correct Answer: C  
Explanation/Reference:  

Question 205  
Which two OSPF network types should the designer use to establish OSPF neighborship between OSPF routers through the ATM network?  
A company wants a design that would support OSPF through a service provider ATM network. Which two OSPF network types should the designer use to establish OSPF neighborship between OSPF routers through the ATM network? (Choose two.)  
A. A broadcast network will always work through ATM networks.  
B. A broadcast network will work when the broadcast support is explicitly configured at the ATM network.  
C. Explicit neighbor statements are required when a nonbroadcast network is configured.  
D. Explicit neighbor statements are required when a point-to-multipoint network is configured.  
E. A nonbroadcast network does not require DR selection.  

Correct Answer: BC  
Explanation/Reference:  

Question 206  
When would you need to configure QoS preclassify?  
You are designing the QoS features for a large enterprise network that includes DMVPN. When would you need to configure QoS preclassify?  
A. when you are marking packets with the DSCP bits  
B. when you are marking packets with the TOS bits  
C. when your service provider requires the DSCP bits be set  
D. when the QoS policy cannot be based on DSCP ToS bits  

Correct Answer: D  
Explanation/Reference:  

Question 207  
Which IETF standard technology can provide this requirement?  
A green data center is being deployed and a design requirement is to be able to readily scale server virtualization. Which IETF standard technology can provide this requirement?  
A. Transparent Interconnection of Lots of Links  
B. fabric path  
C. data center bridging  
D. unified fabric  

Correct Answer: A  
Explanation/Reference:  

Question 208  
How does a GDOI-based VPN eliminate the additional tunnel and routing overhead found in DMVPN?  
You are designing a multisite VPN solution for a customer and you are concerned with the additional overhead of point-to-point tunnels and the associated overlay routing with DMVPN. How does a GDOI-based VPN eliminate the additional tunnel and routing overhead found in DMVPN?  
A. The GDOI-based VPN requires overlaying a secondary routing infrastructure through the tunnels.  
B. In a GDOI-based VPN, all group members share a common security association.  
C. The GDOI-based VPN requires the provisioning of a complex connectivity mesh.  
D. The GDOI-based VPN leverages the routing protocol to find its peer for tunnel setup.  

Correct Answer: B  
Explanation/Reference:  

Question 209  
You have been tasked to create a Layer 2 network design that uses vPC to provide resiliency and avoid loops. vPC removes Layer 2 loops while providing redundancy through which mechanism?  
You have been tasked to create a Layer 2 network design that uses vPC to provide resiliency and avoid loops. vPC removes Layer 2 loops while providing redundancy through which mechanism?  
A. dual-active detection  
B. address synchronization  
C. strict forwarding rules  
D. Bridge Assurance  

Correct Answer: C  
Explanation/Reference:  

Question 210  
Which L3VPN feature needs to be configured on the PE routers to support the design requirement?  
Refer to the exhibit.
You are designing an IPv4 unicast Layer 3 VPN load-balancing solution. Which L3VPN feature needs to be configured on the PE routers to support the design requirement?
A. nonmatching route distinguishers
B. matching route target values
C. disable split horizon on PE2 and PE3
D. matching route distinguishers

Correct Answer: A
Explanation/Reference:

**Question 211**
Which two aspects must be considered before the network design is finalized?
A metro service provider is planning Resilient Ethernet Protocol for his backbone. Which two aspects must be considered before the network design is finalized? (Choose two.)
A. Two Resilient Ethernet Protocol segments can be connected redundantly at two points. One connection will be blocked, using the Spanning Tree Protocol defined in IEEE 802.1D.
B. UniDirectional Link Detection Protocol can be enabled on Resilient Ethernet Protocol interfaces to detect unidirectional failures.
C. The guaranteed convergence recovery time is less than 50 ms for the local segment.
D. A Resilient Ethernet Protocol segment is limited to a maximum of seven devices.
E. VLAN load balancing for optimal bandwidth usage is supported in any Resilient Ethernet Protocol segment.

Correct Answer: BE
Explanation/Reference:

**Question 212**
What is the effect of configuring an identical set of route targets for a particular VRF, but then configuring nonidentical route distinguisher across multiple PE devices?
In an MPLS-VPN environment, what is the effect of configuring an identical set of route targets for a particular VRF, but then configuring nonidentical route distinguisher across multiple PE devices?
A. The routes will be correctly handled by the control plane, but there will be instances where routes take up twice as much memory.
B. The routes will propagate to the remote PE, but the PE will never install them in its forwarding table.
C. The routes will be rejected by the remote PE because they have a different RD than its routes.
D. The routes will not even be sent to any remote PE with a different RD.

Correct Answer: A
Explanation/Reference:

**Question 213**
Which Spanning Tree Protocol should be used to support the design requirements?
Tesla Radio GmbH is going to build a new research lab network based on a set of switches that would connect to their existing enterprise network. They are considering a design that would guarantee loop-free behavior within the set of switches. The design would also allow the group of switches to seem like a single switch to the enterprise network, because it is owned by a separate administrative group. Which Spanning Tree Protocol should be used to support the design requirements?
A. IEEE 802.1w
B. IEEE 802.1D
C. IEEE 802.1s
D. IEEE 802.1p
Question 214
Which measure helps protect encrypted user traffic from replay attacks?
You are designing a Group Encrypted Transport Virtual Private Network solution consisting of 30 group members. Which measure helps protect encrypted user traffic from replay attacks?
A. counter-based anti-replay
B. time-based anti-replay
C. nonce payload
D. RSA-encrypted nonce
E. digital certificates
Correct Answer: B
Explanation/Reference:

Question 215
Which IEEE 802.1w capability should be used?
If a network design must support rapid convergence on half-duplex interfaces, which IEEE 802.1w capability should be used?
A. root guard
B. proposal-agreement handshake
C. loop guard
D. UplinkFast
Correct Answer: B
Explanation/Reference:

Question 216
Which deployment technique allows for this functionality?
When creating a design plan for IPv6 integration, you decide to use stateless encapsulation of IPv6 packets into IPv4 tunnels between subscriber CPEs and a border relay. Which deployment technique allows for this functionality?
A. 6rd
B. Dual-Stack Lite
C. 4rd
D. DSTM
Correct Answer: A
Explanation/Reference:

Question 217
Which mechanism should be added to a network design to identify unidirectional Spanning Tree Protocol failures through BPDU loss?
Which mechanism should be added to a network design to identify unidirectional Spanning Tree Protocol failures through BPDU loss?
A. UDLD
B. loop guard
C. BPDU guard
D. root guard
Correct Answer: B
Explanation/Reference:

Question 218
What three multicast solutions should be enabled?
You are the lead IP/MPLS network designer of a service provider called XYZ. You are leading a design discussion regarding IPv6 implementation in the XYZ MPLS network, using MPLS 6PE/6VPE techniques. Currently, XYZ provides IPv4 multicast services over an MPLS network by using MVPN, and would like to provide parallel IPv6 multicast services. Which three multicast solutions should be enabled? (Choose three.)
A. native IPv6, only for multicast services
B. MPLS 6PE, because it provides IPv6 multicast support by default
C. an overlay model using Layer 2 MPLS tunnels
D. PIM-DM to enable IPv6 multicast in conjunction with MPLS 6PE/6VPE
E. MVPN for IPv6 multicast service
Correct Answer: ACE
Explanation/Reference:

Question 219
What additional aspect of the design should be adjusted to mitigate the chance of connectivity issues to the peer data center when the connection takes place?
Network designers plan to interconnect two geographically separated data centers using an Ethernet-over-MPLS pseudowire. Within that design, the link between the sites is stable, there are no apparent loops in the topology, and the root bridges for the respective VLANs are stable and unchanging. What additional aspect of the design should be adjusted to mitigate the chance of connectivity issues to the peer data center when the connection takes place?
A. Enable 802.1d on one data center, and 802.1w on the other.
B. Ensure that the spanning tree diameter for one or more VLANs is not too large.
C. Enable UDLD on the link between the data centers.
D. Enable root guard on the link between the data centers.

Correct Answer: B
Explanation/Reference:

**Question 220**
Which two IPv6 integration technologies support IPv6 multicast?
ACME Corporation is integrating IPv6 into their network, which relies heavily on multicast distribution of data. Which two IPv6 integration technologies support IPv6 multicast? (Choose two.)
A. 6VPE
B. 6PE
C. dual stack
D. ISATAP
E. 6to4
F. IPv6inIP

Correct Answer: CF
Explanation/Reference:

**Question 221**
Which technology would allow for the restore of a network connection without informing the Layer 3 protocol?
A network designer wants to improve a company network design due to multiple network crashes. Which technology would allow for the restore of a network connection without informing the Layer 3 protocol?
A. Bidirectional Forwarding Detection
B. automatic protection switching
C. UniDirectional Link Detection
D. Ethernet OAM

Correct Answer: B
Explanation/Reference:

**Question 222**
What is a design aspect regarding multicast transport for MPLS Layer 3 VPNs using the Rosen Draft implementation?
What is a design aspect regarding multicast transport for MPLS Layer 3 VPNs using the Rosen Draft implementation?
A. LDP is the multicast control plane protocol.
B. Multicast traffic is forwarded over GRE tunnels.
C. Multicast traffic is forwarded over LDP or RSVP signaled LSPs.
D. Using the MDT SAFI in BGP ensures that PIM can be disabled in the core.

Correct Answer: B
Explanation/Reference:

**Question 223**
Which packets should the IPS forward for BFD to work under all circumstances?
A company plans to use BFD between its routers to detect a connectivity problem inside the switched network. An IPS is transparently installed between the switches. Which packets should the IPS forward for BFD to work under all circumstances?
A. IP packets with broadcast IP source addresses
B. IP packets with identical source and destination IP addresses
C. fragmented packets with the do-not-fragment bit set
D. IP packets with the multicast IP source address
E. IP packets with the multicast IP destination address
F. IP packets with the destination IP address 0.0.0.0

Correct Answer: B
Explanation/Reference:

**Question 224**
Which two ways can the mapping be done when these applications send IGMPv2 join messages?
A company wants to use SSM as the multicast routing protocol inside its network. Some of its multicast applications do not support IGMPv3. In which two ways can the mapping be done when these applications send IGMPv2 join messages? (Choose two.)
A. The Layer 2 switches can send a request to a DNS server.
B. The Layer 3 multicast routers can send a request to a DNS server.
C. The mapping can be done statically at the Layer 2 switches.
D. The mapping can be done statically at the Layer 3 multicast routers.
E. The Layer 2 switches can transform the IGMPv2 join to an IGMPv3-lite join.
F. The Layer 3 multicast routers can transform the IGMPv2 join to an IGMPv3-lite join.

Correct Answer: BD
Explanation/Reference:

**Question 225**
Which two ways will interface dampening benefit your overall network design?
In order to meet your service level agreement, your network designer created a design solution that includes interface dampening. In which two ways will interface dampening benefit your overall network design? (Choose two.)
A. Interface dampening uses an exponential backoff algorithm to suppress event reporting to the upper-level protocols.
B. When the interface is dampened, further link events are not reported to the upper protocol modules.
C. When the interface is dampened, further link events are reported to the upper protocol module.
D. Periodic interface flapping that affects the routing system as a whole should have a period shorter than the system convergence time.

Correct Answer: AB
Explanation/Reference:

**Question 226**
When developing an MVPN design, which performance and scalability consideration must be taken into account?

A. CE end-to-end PIM adjacency establishment
B. multicast data sent to all PE routers on the default MDT
C. RP placement in the multicast VRF
D. RP placement in the customer network

Correct Answer: B
Explanation/Reference:

**Question 227**
Which four routing protocols can you use to facilitate this?

A. EIGRP
B. IS-IS
C. BGP
D. static
E. RIP

Correct Answer: ABCD
Explanation/Reference:

**Question 228**
Which two ways can NPIV be used in your proposed design?

You are the SAN designer for the ABC Company. Due to budget constraints, there is increased pressure by management to further optimize server utilization by implementing virtualization technologies on all servers and increase virtual machines density. Faced with some SAN challenges, the server team requests your help in the design and implementation of the SAN in the new virtualized environment.

In which two ways can NPIV be used in your proposed design? (Choose two.)

A. NPIV is used to assign multiple FCIDs to a single N Port.
B. NPIV is used to define and bind multiple virtual WWNs (VWNs) to a single physical pWWN.
C. You recommend NPIV so that hosts can be members of different zones.
D. NPIV can be used to allow multiple applications on the same port to use different IDs in the same VSAN.

Correct Answer: AD
Explanation/Reference:

**Question 229**
Which two ways will you leverage a wavelength-switched optical network solution in your network design?

You are designing an optical network. Your goal is to ensure that your design contains the highest degree of resiliency. In which two ways will you leverage a wavelength-switched optical network solution in your network design? (Choose two.)

A. a wavelength-switched optical network assigns routing and wavelength information
B. a wavelength-switched optical network takes linear and nonlinear optical impairment calculation into account
C. a wavelength-switched optical network guarantees restoration based strictly on the shortest path available
D. a wavelength-switched optical network eliminates the need for dispersion compensating units in a network

Correct Answer: AB
Explanation/Reference:

**Question 230**
What is the best method to decrease duty cycle (radio frequency utilization) and increase overall wireless LAN client performance for this design?

You are designing a wireless LAN with the following components:

- High-density indoor access point deployment
- 2.4-GHz and 5-GHz radios
- 802.11a, 802.11g, and 802.11n mode wireless LAN clients

Site survey results show negligible foreign WiFi and non-WiFi interference. What is the best method to decrease duty cycle (radio frequency utilization) and increase overall wireless LAN client performance for this design?

A. Disable all data rates below 12 Mb/s on all access points.
B. Decrease radio transmit power on all access points that report a high duty cycle.
C. Increase radio transmit power on all access points that report a high duty cycle.
D. Disable all data rates above 12 Mb/s on all access points.
E. Increase radio transmit power on all access points.

Correct Answer: A
Explanation/Reference:
Question 231
Which solution meets these requirements?
A company has these requirements for access to their wireless and wired corporate LANs using 802.1x:
Client devices that are corporate assets and have been joined to the Active Directory domain are allowed access.
Personal devices must not be allowed access.
Clients and access servers must be mutually authenticated.
Which solution meets these requirements?
A. Protected Extensible Authentication Protocol/Microsoft Challenge Handshake Authentication Protocol Version 2 with user authentication
B. Extensible Authentication Protocol-Transport Layer Security with machine authentication
C. Extensible Authentication Protocol-Transport Layer Security with user authentication
D. Protected Extensible Authentication Protocol/Microsoft Challenge Handshake Authentication Protocol Version 2 with machine authentication
Correct Answer: B
Explanation/Reference:

Question 232
Which switch security option should you investigate to ensure that authorized ARP responses take place according to known IP-to-MAC address mapping?
You have been hired by Acme Corporation to evaluate their existing network and determine if the current network design is secure enough to prevent man-in-the-middle attacks. When evaluating the network, which switch security option should you investigate to ensure that authorized ARP responses take place according to known IP-to-MAC address mapping?
A. ARP rate limiting
B. DHCP snooping
C. Dynamic ARP Inspections
D. IP Source Guard
Correct Answer: C
Explanation/Reference:

Question 233
Which technology would you recommend to enhance security by limiting traffic that could originate from a hacker compromising a workstation and redirecting flows at the servers?
You are a network designer and have been asked to consult with your server operations team to further enhance the security of the network. The operations team provides you with these details about the network:
A pool of servers is accessed by numerous data centers and remote sites.
The servers are accessed via a cluster of firewalls.
The firewalls are configured properly and are not dropping traffic.
The firewalls occasionally cause asymmetric routing of traffic within the server data center.
Which technology would you recommend to enhance security by limiting traffic that could originate from a hacker compromising a workstation and redirecting flows at the servers?
A. Access control lists to limit sources of traffic that exit the server-facing interface of the firewall cluster
B. Poison certain subnets by adding static routes to Null0 on the server farm core switches.
C. Unicast Reverse Path Forwarding in strict mode
D. Unicast Reverse Path Forwarding in loose mode
Correct Answer: D
Explanation/Reference:

Question 234
What is your design recommendation?
Your enterprise customer has asked where they should deploy flow monitoring in their network to monitor traffic between branch offices. What is your design recommendation?
A. at the edge of the network so that user traffic will be seen
B. at the central site, because all traffic from the remotes will be seen there.
C. in the core, because all traffic will be seen there
D. in the data center, because all user traffic will be seen there
Correct Answer: B
Explanation/Reference:

Question 235
What three key performance indicators would you use to track media quality?
You are identifying performance management requirements for a VoIP migration. What three key performance indicators would you use to track media quality? (Choose three.)
A. delay
B. trunk group usage
C. jitter
D. packet loss
E. call processing (call detail records)
F. call processing (performance counters)
G. echo
H. crosstalk
Correct Answer: ACD
Explanation/Reference:
Question 236
Which two threshold-crossing metrics should you include in this report?

As part of a new network design, you are helping the Network Management Team to develop a proactive report to identify places in the network where problems may happen. The network management tool can poll the network devices only via SNMP GET operations. Which two threshold-crossing metrics should you include in this report? (Choose two.)

A. packet loss
B. CPU utilization
C. heat dissipation
D. IP reachability
E. energy consumption
F. link bandwidth utilization

Correct Answer: BF
Explanation/Reference:

Question 237
How would you design your solution to map the DSCP value properly so that the traffic is assigned to the respective queues in the Service Provider XYZ MPLS core network?

You are the lead network designer hired by Service Provider XYZ to deploy CoS functionality on the core MPLS network (P routers). The goal of the network design is to provide a complete CoS solution to all customers that purchase services such as dedicated internet access, MPLS L3VPN, and L2VPN (pseudowire). Service Provider XYZ has these design requirements:

The network supports four service queues with equal treatment for delay, jitter, and packet loss.

Three queues have one treatment.

One queue has either one or two treatments.

How would you design your solution to map the DSCP value properly so that the traffic is assigned to the respective queues in the Service Provider XYZ MPLS core network?

A. Classify traffic according to DSCP value into appropriate P router queues.
B. Map the appropriate DSCP value into the EXP field based on the number of queues in the MPLS P routers.
C. Map the appropriate DSCP value into the EXP field based on the number of queues in the MPLS PE routers.
D. Based on the DSCP value, traffic is mapped automatically into appropriate queues in the MPLS CE routers.

Correct Answer: C
Explanation/Reference:

Question 238
Which two ways is IPv4 and IPv6 traffic handled in a network design that uses QoS deployment options?

In which two ways is IPv4 and IPv6 traffic handled in a network design that uses QoS deployment options? (Choose two.)

A. IPv6 and IPv4 traffic is treated in the same way by using a single QoS policy that classifies and matches on both protocols.
B. IPv6 traffic is treated differently than IPv4 by using the flow-label field, which is built into the IPv6 packet header.
C. IPv6 traffic does not require QoS because it uses the flow-label field, which classifies and matches on the IPv6 protocol.
D. IPv6 traffic is treated differently than IPv4 by using two different QoS policies.
E. IPv6 traffic is treated differently than IPv4 because it uses only the DSCP value and not the IP precedence.

Correct Answer: AD
Explanation/Reference:

Question 239
How will a router function if the QoS mechanism of congestion avoidance is integrated into the existing network design?

You have been hired to redesign a network due to issues with congestion. How will a router function if the QoS mechanism of congestion avoidance is integrated into the existing network design?

A. the router handles the overflow of traffic by using FIFO
B. the router handles the possible buildup of congestion by using WRED
C. the router forces inbound and outbound traffic to stay within a defined profile by using rate limiting
D. the router separates packets based on certain characteristics by using NBAR
E. the router marks packets based on certain characteristics by using PBR

Correct Answer: B
Explanation/Reference:

Question 240
What two ways can the MP-BGP be removed from the MPLS P core routers and still provide dedicated Internet access and MPLS L3VPN services?

Service provider XYZ plans to provide dedicated Internet access and MPLS L3VPN services to business customers. XYZ has these design specifications:

MP-BGP running on the core MPLS P routers with external Internet routes.
The core network will include 16 Point of Presence IP POPs throughout the Asia-Pacific region.
An additional nine non-P routers will use EBGP peering with multiple providers for Internet traffic.
An additional 50 PE routers will provide end customers with dedicated Internet access and L3VPN services throughout the Asia-Pacific region.
In what two ways can the MP-BGP be removed from the MPLS P core routers and still provide dedicated Internet access and MPLS L3VPN services? (Choose two.)

A. Disable BGP from the MPLS core P routers and have the MPLS core P routers run OSPF and LDP.
B. Enable separate BGP control plane routers using a route reflector server concept that will be fully meshed with peer route reflector servers and have clients as MPLS PE routers and EBGP peering routers.
C. Enable all EBGP routers as route reflector servers and MPLS PE routers as their clients.

D. It is not possible to disable BGP from the MPLS core P routers without impacting the dedicated Internet access and MPLS L3VPN services.

Correct Answer: BC
Explanation/Reference:

Question 241
Which feature could be used in the MPLS VPN service provider network to support the design requirement by ensuring that during normal operation, intersite traffic will only use the MPLS VPN service and not the old Frame Relay service?
Refer to the exhibit.

An enterprise is migrating its single-area OSPF network from a Frame Relay WAN service to an MPLS L3VPN service. Frame Relay will remain in only a few sites that require increased resiliency via two different WAN connections.

Which feature could be used in the MPLS VPN service provider network to support the design requirement by ensuring that during normal operation, intersite traffic will only use the MPLS VPN service and not the old Frame Relay service?
A. virtual links
B. sham links
C. multiple stub areas
D. super backbone

Correct Answer: B
Explanation/Reference:

Question 242
When creating a network design that routes an IGP over L2VPNs, with which device does the remote CE router form an IGP adjacency?

When creating a network design that routes an IGP over L2VPNs, with which device does the remote CE router form an IGP adjacency?
A. the hub site PE router
B. the hub site CE router
C. the directly connected PE router
D. The IGP will not establish adjacency over the MPLS network.

Correct Answer: B
Explanation/Reference:

Question 243
Which feature can be used to simplify the network design?
A company wants to connect two data centers using a hub-and-spoke design with 2000 remote sites. One design consideration is the requirement to transfer MPLS packets over the public Internet. In addition, one router at each site should be used, and the MPLS packets must be encapsulated inside IP packets because the public Internet cannot transfer native MPLS packets. Which feature can be used to simplify the network design?
A. GET VPN can be used to encrypt the MPLS packets with IPsec.
B. DMVPN can be used to build up GRE tunnels dynamically with MPLS encapsulation inside.
C. L2TPv3 can be used to encapsulate the MPLS packets.
D. Site-to-site IPsec without GRE can be used to encapsulate the MPLS packets.
E. PPPoE can be used to encapsulate the MPLS packets.

Correct Answer: B
Explanation/Reference:

Question 244
Which VPN solution will support these design requirements?
You are working on a network design plan for a company with approximately 2000 sites. The sites will be connected using the public Internet. You plan to use private IP addressing in the network design, which will be routed without NAT through an encrypted WAN network. Some sites will be connected to the Internet with dynamic public IP addresses, and these addresses may change occasionally. Which VPN solution will support these design requirements?
A. GET VPN must be used, because DMVPN does not scale to 2000 sites.
B. DMVPN must be used, because GET VPN does not scale to 2000 sites.
C. GET VPN must be used, because private IP addresses cannot be transferred with DMVPN through the public Internet.
D. DMVPN must be used, because private IP addresses cannot be transferred with GET VPN through the public Internet.
E. GET VPN must be used, because DMVPN does not support dynamic IP addresses for some sites.
F. DMVPN must be used, because GET VPN does not support dynamic IP addresses for some sites.

Correct Answer: D
Explanation/Reference:
Question 245
What tunneling technology would work in this scenario?

Company X will be integrating an IPv6 application into their network and wants to develop a test environment to evaluate application performance across the network. This application will require both unicast and multicast communications. The company can do this implementation only in certain areas of its existing IPv4-only network, but wants all areas to communicate with each other. When developing the design to provide connectivity between these testing locations, what tunneling technology would work in this scenario?

A. ISATAP
B. 6to4
C. DMVPN
D. 6vPE
E. 6PE

Correct Answer: C
Explanation/Reference:

Question 246
Which aspect should be changed in the design of the virtual connection?

A network designer has provisioned a router to use IPsec to encrypt the traffic over a GRE tunnel going to a web server at a remote location. From the router, the network designer can ping the web server, although the users in the office comment that they are unable to reach it. (Note: The DF bit is not set.) Which aspect should be changed in the design of the virtual connection?

A. IP addresses of the GRE tunnel endpoints
B. IPsec configuration
C. MTU size on the GRE tunnel
D. encapsulation of the GRE tunnel

Correct Answer: C
Explanation/Reference:

Question 247
Which statement is true about configuring keepalives for multipoint GRE tunnels?

You are designing a network using multipoint GRE tunnels and need to be able to detect when connectivity between the GRE tunnel endpoints is broken. Which statement is true about configuring keepalives for multipoint GRE tunnels?

A. The keepalive timer values on the routers must have the same value.
B. Both routers must support GRE tunnel keepalives.
C. No configuration is required to detect when connectivity is broken between the GRE tunnel endpoints.
D. GRE tunnel keepalives will not detect when connectivity is broken between the GRE tunnel endpoints.

Correct Answer: D
Explanation/Reference:

Question 248
Which two design considerations should be implemented for the pseudowires between the NPE and U-PE routers?

Refer to the exhibit.

You are designing a loop-free hierarchical VPLS service. Which two design considerations should be implemented for the pseudowires between the NPE and U-PE routers? (Choose two.)

A. Disable split horizon toward the N-PE routers.
B. Disable split horizon toward the U-PE router.
C. Enable split horizon toward the U-PE router.
D. Enable split horizon toward the N-PE routers.
E. Disable MAC learning on the U-PE route.
F. Disable MAC learning on the N-PE routers.

Correct Answer: BD
Explanation/Reference:

Question 249
Which additional routing protocol would you use for the overlay routing between the group members?

You are designing a Group Encrypted Transport virtual private network solution for an existing branch network. The existing network has the following characteristics:

50 remote sites (with an additional 30 remote sites expected over the next 3 years)
Connectivity between all sites is via Multiprotocol Label Switching Layer 3 virtual private network service from a single provider. The customer edge routers will become group members performing the encryption between sites. Which additional routing protocol would you use for the overlay routing between the group members?

A. Open Shortest Path First (with a different process ID)
B. Enhanced Interior Gateway Routing Protocol
C. No additional protocol is necessary.
D. External Border Gateway Protocol
E. Routing Information Protocol Version 2
F. Next Hop Resolution Protocol

Correct Answer: C

Question 250
Which of the following will have the most detrimental impact on the delay of the packet? You are tasked with implementing a 1000-phone remote access solution, where phones will traverse a WAN edge router. Assuming all of the following features are supported in a hardware-assisted manner, which of the following will have the most detrimental impact on the delay of the packet?

A. encryption
B. stateful firewall
C. MPLS encapsulation
D. GRE encapsulation

Correct Answer: A

Question 251
What is a potential problem with using GETVPN for this design solution? Your organization is working on a design solution for a new Internet-based remote access virtual private network that has 1000 remote sites. A network administrator recommends GETVPN as the model because the network of today uses DMVPN, which results in a lot of background NHRP control traffic. What is a potential problem with using GETVPN for this design solution?

A. GETVPN would require a high level of background traffic to maintain its IPsec SAs.
B. GETVPN is not scalable to a large number of remote sites.
C. GETVPN and DMVPN will not interoperate.
D. GETVPN key servers would be on public, hacker-reachable space and need higher security.

Correct Answer: D

Question 252
Which two responses should you give? You are the lead network designer for an enterprise company called ABC, and you are leading design discussions regarding IPv6 implementation into their existing network. A question is raised regarding older Layer 2 switches that exist in the network, and if any changes are required to these Layer 2 switches for successful IPv6 implementation. Which two responses should you give? (Choose two.)

A. IPv6 is transparent on Layer 2 switches, so there is no need to make any changes to the Layer 2 switches.
B. If IPv6 anycast deployment is planned, then make sure that Layer 2 switches support ICMPv6 snooping at Layer 2 switches.
C. If IPv6 anycast deployment is planned, then make sure that Layer 2 switches support DHCPv6 snooping at Layer 2 switches.
D. If IPv6 multicast deployment is planned, then make sure that Layer 2 switches support MLD snooping at Layer 2 switches.

Correct Answer: AD

Question 253
When designing a network, which two security features should be added to the design to protect hosts from potential IPv6 neighbor discovery denial of service attacks at the access layer? When designing a network, which two security features should be added to the design to protect hosts from potential IPv6 neighbor discovery denial of service attacks at the access layer? (Choose two.)

A. SEND
B. RA Guard
C. IKEv2
D. IPsec
E. DMVPNv6

Correct Answer: AB

Question 254
Which transport feature does the network designer need to apply to the interconnecting firewall to ensure that Source-Active messages between the MSDP peers can be sent in both enterprise networks? During a corporate merger, a network designer is asked for a solution that will provide connectivity between the two enterprise networks. The solution must have the ability to support video sessions so that the CEO can message merger activities to the employees. The designer decides to consider multicast as a transport with MSDP to provide redundancy. Which transport feature does the network designer need to apply to the interconnecting firewall to ensure that Source-Active messages between the MSDP peers can be sent in both enterprise networks?
A. unicast over a UDP connection  
B. multicast over a UDP connection  
C. unicast over a TCP connection  
D. multicast over a TCP connection  

Correct Answer: C
Explanation/Reference:

Question 255
Which one of these addresses would the ACL need for traffic sourced from the inside interface, to match the source address of the traffic?  
Your network operations team is deploying Access Control Lists (ACLs) across your Internet gateways. They wish to place an ACL inbound on the Internet gateway interface facing the core network (the “trusted” interface). Which one of these addresses would the ACL need for traffic sourced from the inside interface, to match the source address of the traffic?  
A. inside local  
B. outside local  
C. inside global  
D. outside global  

Correct Answer: A
Explanation/Reference:

Question 256
In which two ways can this routing be achieved?  
A data center provider has designed a network using these requirements:  
Two data center sites are connected to the public Internet.  
Both data centers are connected to different Internet providers.  
Both data centers are also directly connected with a private connection for the internal traffic, and public Internet traffic can also be routed at this direct connection.  
The data center provider has only one /19 public IP address block.  
Under normal conditions, Internet traffic should be routed directly to the data center where the services are located. When one Internet connection fails, the complete traffic for both data centers should be routed by using the remaining Internet connection. In which two ways can this routing be achieved? (Choose two.)  
A. The data center provider must have an additional public IP address block for this routing.  
B. One /20 block is used for the first data center and the second /20 block is used for the second data center. The /20 block from the local data center is sent out with a higher BGP weight at both sites.  
C. One /20 block is used for the first data center and the second /20 block is used for the second data center. The /20 block from the local data center is sent out without path prepending and the /20 block from the remote data center is sent out with path prepending at both sites.  
D. One /20 block is used for the first data center and the second /20 block is used for the second data center. Each /20 block is only sent out locally. The /19 block is sent out at both Internet connections for the backup case to reroute the traffic through the remaining Internet connection.  
E. One /20 block is used for the first data center and the second /20 block is used for the second data center. The /20 block from the local data center is sent out with a low BGP local preference and the /20 block from the remote data center is sent out with a higher BGP local preference at both sites.  
F. BGP will always load-balance the traffic to both data center sites.  

Correct Answer: CD
Explanation/Reference:

Question 257
When designing a large full mesh network running OSPF, how would you reduce LSA repetition?  
When designing a large full mesh network running OSPF, how would you reduce LSA repetition?  
A. Elect a DR and BDR.  
B. Use access control lists to control outbound advertisements.  
C. Choose one or two routers to re-flood LSA information.  
D. Put each of the point-to-point links in your full mesh networking into a separate area.  

Correct Answer: C
Explanation/Reference:

Question 258
Which of these conditions should be avoided in the design that could otherwise cause the peers to flap continuously?  
A planned EBGP network will use OSPF to reach the EBGP peer addresses. Which of these conditions should be avoided in the design that could otherwise cause the peers to flap continuously?  
A. An ACL blocks TCP port 179 in one direction.  
B. IP addresses used to peer are also being sent via EBGP.  
C. The OSPF area used for peering is nonbackbone (not area 0).  
D. The routers are peered by using a default route sent by OSPF.  

Correct Answer: B
Explanation/Reference:

Question 259
How is this accomplished without creating routing loops?  
Your design plan includes mutual redistribution of two OSPF networks at multiple locations, with connectivity to all locations in both networks. How is this accomplished without creating routing loops?  
A. Use route maps on the ASBRs to allow only internal routes to be redistributed.  
B. Use route maps on the ASBRs to allow internal and external routes to be redistributed.  

Correct Answer: A
Explanation/Reference:
C. Use route maps on the ASBRs to set tags for redistributed routes.
D. Use route maps on the ASBRs to filter routes with tags so they are not redistributed.

Correct Answer: D
Explanation/Reference:

Question 260
How do you plan to prevent infected devices on your network from sourcing random DDoS attacks using forged source addresses?
You are a network designer and are responsible for ensuring that the network you design is secure. How do you plan to prevent infected devices on your network from sourcing random DDoS attacks using forged source addresses?
A. ACL-based forwarding
B. ACL filtering by destination
C. Unicast RPF loose mode
D. Unicast RPF strict mode

Correct Answer: D
Explanation/Reference:

Question 261
What is likely to happen when you enable IPv6 routing on the link from R3 to R2?
Refer to the exhibit.

Integrated IS-IS
You are developing a migration plan to enable IPv6 in your IPv4 network. Starting at R3 and assuming default IS-IS operations, what is likely to happen when you enable IPv6 routing on the link from R3 to R2?
A. Only R3 and R2 have IPv4 and IPv6 reachability.
B. R2 receives an IPv6 default route from R3.
C. Loopback reachability between all routers for IPv4 is lost.
D. All routers except R2 are reachable through IPv4.
E. R3 advertises the link from R3-R2 to R1, R4 and R5 only.

Correct Answer: C
Explanation/Reference:

Question 262
What is the next hop for 10.1.1.0/24 on R8 and R7?
Refer to the exhibit.
In this BGP design, what is the next hop for 10.1.1.0/24 on R8 and R7?
A. The next hop for 10.1.1.0/24 on R7 is R8 and the next hop for R8 is R7.
B. The next hop for 10.1.1.0/24 on R7 is R5 and the next hop for R8 is R6.
C. The next hop for 10.1.1.0/24 on R7 is R6 and the next hop for R8 is R5.
D. The next hop for 10.1.1.0/24 on R7 is R3 and the next hop for R8 is R4.

Correct Answer: A

Explanation/Reference:

Question 263
Which two ways will this network be impacted if there is link instability between R1 and R2?
Refer to the exhibit.

This diagram depicts the design of a small network that will run EIGRP on R1 and R2, and EIGRP Stub on R3. In which two ways will this network be impacted if there is link instability between R1 and R2? (Choose two.)
A. R1 will have routes in its routing table that originate from R2 and R3.
B. R3 will have routes in its routing table that originate from R1 and R2.
C. R2 will have routes in its routing table that originate from R1 and R3.
D. R3 will be transit for traffic between R1 and R2.
E. R3 will not be transit for traffic between R1 and R2.

Correct Answer: B, E

Explanation/Reference:

Question 264
Which two main factors will you address to improve network convergence?
You are designing a network to support data, voice and video. Which two main factors will you address to improve network convergence? (Choose two.)
A. event propagation delay
B. failure detection delay
C. forwarding engine update delay
D. routing table recalculations delay

Correct Answer: BD
Explanation/Reference:

**Question 265**
Which three components would you recommend in your design proposal?
You are hired to design a solution that will improve network availability for users on a campus network with routed access. If the budget limits you to three components, which three components would you recommend in your design proposal? (Choose three.)
A. redundant power supplies in the access routers
B. standby route processors for SSO in the core routers
C. standby route processors for SSO in the distribution routers
D. standby route processors for SSO in the access routers
E. replace copper links between devices with fiber links

Correct Answer: ADE
Explanation/Reference:

**Question 266**
Which technology allows link-state routing protocols to calculate paths to destination prefixes that are functionally similar to feasible successors in Enhanced Interior Gateway Routing Protocol?
You are evaluating convergence characteristics of various interior gateway protocols for a new network design. Which technology allows link-state routing protocols to calculate paths to destination prefixes that are functionally similar to feasible successors in Enhanced Interior Gateway Routing Protocol?
A. Incremental Shortest Path First
B. Cisco Multiprotocol Label Switching Traffic Engineering Fast Reroute
C. Loop-Free Alternate Fast Reroute
D. partial route calculation
E. Fast-Flooding

Correct Answer: C
Explanation/Reference:

**Question 267**
Which two ways is a network design improved by the inclusion of IP Event Dampening?
In which two ways is a network design improved by the inclusion of IP Event Dampening? (Choose two.)
A. reduces processing load
B. provides sub-second convergence
C. improves network stability
D. prevents routing loops
E. quickly detects network failures

Correct Answer: AC
Explanation/Reference:

**Question 268**
Which two mechanisms ensure that a network design provides fast path failure detection?
Which two mechanisms ensure that a network design provides fast path failure detection? (Choose two.)
A. BFD
B. fast hello packets
C. UDLD
D. IP Cisco Express Forwarding

Correct Answer: AB
Explanation/Reference:

**Question 269**
What is the next-hop router for CE3, and why?
Refer to the exhibit.
Your junior design engineer presents this configuration design. What is the next-hop router for CE3, and why?

A. CE1. BGP weight is higher than CE2.
B. CE2. EBGP administrative distance is lower than RIP.
C. CE2. The link between CE2 and PE1 has more bandwidth than CE1-to-PE1.
D. CE1. HSRP on CE1 is in active state.

Correct Answer: D
Explanation/Reference:

**Question 270**
What would be two effects of additionally implementing MPLS-TE?

A service provider creates a network design that runs MPLS in its WAN backbone using OSPF as the IGP routing protocol. What would be two effects of additionally implementing MPLS-TE? (Choose two.)

A. MPLS-TE is required to reroute traffic within less than 1 second in case of a link failure inside the backbone.
B. MPLS-TE is required to route different MPLS QoS service classes through different paths.
C. MPLS-TE and OSPF cannot be used together inside one MPLS network.
D. MPLS-TE cannot use OSPF for the traffic path calculation.
E. MPLS-TE is required to create backup paths independently from the IGP.

Correct Answer: BE
Explanation/Reference:

**Question 271**
What will be configured on the links between the networks to support their design requirements?

A company requests that you consult with them regarding the design of their production, development, and test environments. They indicate that the environments must communicate effectively, but they must be kept separate due to the inherent failures on the development network. What will be configured on the links between the networks to support their design requirements?

A. IBGP
B. EBGP
C. OSPF
D. static routes

Correct Answer: B
Explanation/Reference:

**Question 272**
How would you adjust the design to improve convergence on the network?

Refer to the exhibit.
How would you adjust the design to improve convergence on the network?
A. Add an intra-POP link between routers 1A and 1B, and enable IP LFA FRR.
B. Use an IP SLA between the end stations to detect path failures.
C. Enable SSO-NSF on routers 1A and 1B.
D. Use BGP to connect the sites over the WAN.

Correct Answer: A
Explanation/Reference:

Question 273
How will the routes learned from the WAN be seen on the core devices?
Refer to the exhibit.

The design is being proposed for use within the network. The CE devices are OSPF graceful restart-capable, and the core devices are OSPF graceful restart-aware. The WAN advertisements received from BGP are redistributed into OSPF. A forwarding supervisor failure event takes place on CE A.

During this event, how will the routes learned from the WAN be seen on the core devices?
A. via CE A and CE B
B. via CE A
C. via CE B
D. no WAN routes will be accessible

Correct Answer: C
Explanation/Reference:

Question 274
Which two networking issues need to be addressed to ensure stability with the new design?

A large enterprise customer is migrating thousands of retail offices from legacy TDM circuits to an Ethernet-based service. The network is running OSPF and has been stable for many years. It is now possible to backhaul the circuits directly to the data centers, bypassing the regional aggregation routers. Which two networking issues need to be addressed to ensure stability with the new design? (Choose two.)
A. Nothing will change if the number of offices is the same.
B. Nothing will change if the number of physical interfaces stays the same.
C. The RIB will increase significantly.
D. The FIB will increase significantly.
E. The amount of LSA flooding will increase significantly.
F. The size of the link-state database will increase significantly.

Correct Answer: EF
Explanation/Reference:
Question 275
What would be the impact of having additional ABRs per area?
During a network design review, it is recommended that the network with a single large area should be broken up into a backbone and multiple nonbackbone areas. There are differing opinions on how many ABRs are needed for each area for redundancy. What would be the impact of having additional ABRs per area?
A. There is no impact to increasing the number of ABRs.
B. The SPF calculations are more complex.
C. The number of externals and network summaries are increased.
D. The size of the FIB is increased.
Correct Answer: C
Explanation/Reference:

Question 276
How would you redesign the network to improve stability?
In a large enterprise network with multiple data centers and thousands of access devices, OSPF is becoming unstable due to link flapping. The current design has the access devices multihomed to large aggregation routers at each of the data centers. How would you redesign the network to improve stability?
A. Add a layer of regional Layer 3 aggregation devices, but leave the ABR function on the data center aggregation routers.
B. Add a layer of regional Layer 2 aggregation devices, but leave the ABR function on the data center aggregation routers.
C. Add a layer of regional Layer 3 aggregation devices and move the ABR function to the regional aggregation device.
D. Add a layer of regional Layer 2 aggregation devices and move the ABR function to the regional aggregation device.
Correct Answer: C
Explanation/Reference:

Question 277
What are two benefits of following a structured hierarchical and modular design?
What are two benefits of following a structured hierarchical and modular design? (Choose two.)
A. Each component can be designed independently for its role.
B. Each component can be managed independently based on its role.
C. Each component can be funded by different organizations based on its role.
D. Each component can support multiple roles based on the requirements.
E. Each component can provide redundancy for applications and services.
Correct Answer: AB
Explanation/Reference:

Question 278
Where should summarization occur to provide the best summarization and optimal paths during a single-failure incident as well as during normal operation?
Refer to the exhibit.

In this network design, where should summarization occur to provide the best summarization and optimal paths during a single-failure incident as well as during normal operation?
A. a single identical summary for all the branch offices placed on routers 1A, 1B, 2A, and 2B
B. two summaries on 1A and 1B, and two summaries on 2A and 2B
C. a single identical summary on 3A and 3B
D. a single summary on each aggregation device for the branches connected to them

Correct Answer: C
Explanation/Reference:

**Question 279**
When you design a network, when would it be required to leak routes into a Level 1 area?
A. when a multicast RP is configured in the nonbackbone area
B. when MPLS L3VPN PE devices are configured in the Level 1 areas
C. when equal cost load balancing is required between the backbone and nonbackbone areas
D. when unequal cost load balancing is required between the backbone and nonbackbone areas

Correct Answer: B
Explanation/Reference:

**Question 280**
Which three techniques can be used to improve fault isolation in an enterprise network design? (Choose three.)
A. aggregate routing information on an OSPF ABR
B. fully meshed distribution layer
C. Equal-Cost Multipath routing
D. EIGRP query boundaries
E. multiple IS-IS flooding domains
F. tuned Spanning Tree Protocol timers

Correct Answer: ADE
Explanation/Reference:

**Question 281**
What are three key design principles when using a classic hierarchical network model? (Choose three.)
A. The core layer controls access to resources for security.
B. The core layer should be configured with minimal complexity.
C. The core layer is designed first, followed by the distribution layer and then the access layer.
D. A hierarchical network design model aids fault isolation.
E. The core layer provides server access in a small campus.
F. A hierarchical network design facilitates changes.

Correct Answer: BDF
Explanation/Reference:

**Question 282**
Which technology would provide for the best use of resources to provide end-to-end Layer 2 connectivity?

In this design, which technology would provide for the best use of resources to provide end-to-end Layer 2 connectivity?
A. MSTP
B. PAgP
C. Multichassis EtherChannel
D. LACP

Correct Answer: C
Explanation/Reference:
Question 283
What are two design advantages to using virtual port channel?
What are two design advantages to using virtual port channel? (Choose two.)
A. enhanced system availability through multiple systems
B. reduced Spanning Tree Protocol convergence time
C. loop management without use of Spanning Tree Protocol
D. ability to use Spanning Tree Protocol blocked ports to forward traffic
E. enhanced ability to recover from Spanning Tree Protocol changes
Correct Answer: AC
Explanation/Reference:

Question 284
What can the customer do so that multicast traffic is NOT flooded to all sites?
A customer is using a service provider to provide a WAN backbone for a 30-site network. In establishing the network, the customer must work within these constraints:
The customer has a self-managed MPLS backbone.
The VPLS WAN backbone of the service provider does not support PIM snooping.
Multicast VPN must be used for multicast support inside some VRFs.
What can the customer do so that multicast traffic is NOT flooded to all sites?
A. Configure static GRE tunnels and run the MPLS and multicast VPN inside these GRE tunnels.
B. Use Label Switched Multicast for the multicast transport.
C. Use PIM-SSM as the multicast routing protocol with IETF Rosen Draft multicast VPN.
D. Configure a static mapping between multicast addresses and MAC addresses.
E. Use GET VPN to encrypt the multicast packets inside the WAN.
Correct Answer: A
Explanation/Reference:

Question 285
What impact will their choice have on the existing multicast design?
A new video multicast application is deployed in the network. The application team wants to use the 239.0.0.1 multicast group to stream the video to users. They want to know if this choice will impact the existing multicast design. What impact will their choice have on the existing multicast design?
A. Because 239.0.0.1 is a private multicast range, a flood of PIM packets that have to be processed by the CPU and hosts will be sent by the routers in the network.
B. Because 239.0.0.1 is a private multicast range, the rendezvous point has to send out constant group updates that will have to be processed by the CPU and hosts.
C. The multicast application sends too many packets into the network and the network infrastructure drops packets.
D. The 239.0.0.1 group address maps to a system MAC address, and all multicast traffic will have to be sent to the CPU and flooded out all ports.
Correct Answer: D
Explanation/Reference:

Question 286
Which two protocols are needed on the LAN switch?
Refer to the exhibit.
Acme Corporation hired you as a network designer to upgrade their network so that it supports IPv4 and IPv6 multicast. Which two protocols are needed on the LAN switch? (Choose two.)
A. PIM sparse mode
B. IGMP snooping
C. PIM snooping
D. Source Specific Multicast
E. MLD snooping
Correct Answer: BE

Question 287
What will be the impact on convergence if there is a break in the end-to-end Layer 2 connectivity within the service provider network?
You are designing a network that will run EIGRP over a Metro Ethernet service that does not employ a link-loss technology. What will be the impact on convergence if there is a break in the end-to-end Layer 2 connectivity within the service provider network?
A. The routers will immediately lose their adjacencies and converge.
B. The routing protocol will not converge until the hold timers have expired.
C. The switch ports connected to the router will go down and the routers will immediately converge.
D. The VLAN on the switches will go inactive, the ports associated on the switch will go down, and the routers will immediately converge.
Correct Answer: B

Question 288
Which two design solutions can be applied to ensure that your access routers will be able to reach all devices in your network?
You work as a network designer for a company that is replacing their Frame Relay WAN with an MPLS VPN service, where the PE-to-CE routing protocol is BGP. The company has 3000 routes in their distribution routers, and they would like to advertise their access routers through the MPLS network. Their service provider, however, only supports 1000 prefixes per VRF. Which two design solutions can be applied to ensure that your access routers will be able to reach all devices in your network? (Choose two.)
A. Use prefix lists on your distribution routers to control which routes are sent to the MPLS network.
B. On your distribution routers, configure null routes and aggregate routes for the prefixes in your network.
C. Configure your distribution routers to send a default route to the MPLS network.
D. Summarize the routes on the MPLS WAN interfaces of your distribution routers.
Correct Answer: BC

Question 289
Which traffic design consideration would have the most impact on the voice traffic when both links are active?
Voice traffic between two campus enterprise networks is growing. The network designers decide to add a second 10-Mb Metro Ethernet service parallel to their original 10-Mb service in order to provide more bandwidth and diversity. The QoS profile will be the same on the new 10-Mb service due to the voice stability on the first Metro Ethernet link. When the second link is added to the OSPF domain, which traffic design consideration would have the most impact on the voice traffic when both links are active?
A. per-destination IP address basis
B. per-flow basis
C. per-packet basis
D. per-source IP address basis
Correct Answer: C

Question 290
Which two technologies and features will you investigate to integrate into your network design?
You have created a network design that has two point-to-point Metro Ethernet circuits extending a single production VLAN between two data centers. Under normal circumstances, one circuit will carry traffic and spanning tree will block the other. If the company wants you to make use of both circuits to carry production traffic, which two technologies and features will you investigate to integrate into your network design? (Choose two.)
A. EtherChannel
B. MST
C. Multichassis EtherChannel
D. PVST+
Correct Answer: AC

Question 291
Which three ways should the design of the STP domain be optimized for server and application performance?
Refer to the exhibit.
Your company designed a network to allow server VLANs in a data center to span all access switches. In the design, Layer 3 VLAN interfaces and HSRP are configured on the aggregation switches. In which three ways should the design of the STP domain be optimized for server and application performance? (Choose three.)

A. Use loop guard on access ports.
B. Use PortFast on access ports.
C. Use root guard on access ports.
D. Align Layer 2 and Layer 3 forwarding paths.
E. Use BPDU Skew Detection on access ports.
F. Explicitly determine root and backup root bridges.

Correct Answer: BDF
Explanation/Reference:

Question 292
How can this be done without producing any Layer 2 loops within the network design?
A service provider has a Resilient Ethernet Protocol ring running as a metro backbone between its locations in one city. A customer wants to connect one site with one box redundant to the Resilient Ethernet Protocol ring at two different service provider locations. How can this be done without producing any Layer 2 loops within the network design?

A. Spanning tree at the service provider side only must be enabled.
B. Spanning tree at the customer side only must be enabled.
C. Flex Links at the service provider side only must be enabled.
D. Flex Links at the customer side only must be enabled.
E. EtherChannel at the service provider side and the customer side must be enabled.
F. Spanning tree at the service provider side and the customer side must be enabled.
G. Flex Links at the service provider side and the customer side must be enabled.

Correct Answer: D
Explanation/Reference:

Question 293
What are two locations where spanning-tree root can be placed to ensure the least-disruptive Layer 2 failover for clients within VLANs 3 and 4? Refer to the exhibit.
If IEEE 802.1w is in use for this network design, what are two locations where spanning-tree root can be placed to ensure the least-disruptive Layer 2 failover for clients within VLANs 3 and 4? (Choose two.)
A. Switch A
B. Switch B
C. Switch C
D. Switch D
Correct Answer: CD
Explanation/Reference:

Question 294
Which design allows for a stable network when there is a risk of interference from the manufacturing hardware in use on the factory floor?
A switched network is being designed to support a manufacturing factory. Due to cost constraints, fiber-based connectivity is not an option. Which design allows for a stable network when there is a risk of interference from the manufacturing hardware in use on the factory floor?
A. Design the network to include UDLD to detect unidirectional links and take them out of service.
B. Design the network to include EtherChannel bundles to prevent a single-link failure from taking down a switch interconnection point.
C. Design the network to include loop guard to prevent a loop in the switched network when a link has too much interference.
D. Design the network to include BackboneFast on all devices to accelerate failure convergence times.
Correct Answer: A
Explanation/Reference:

Question 295
Which feature could be implemented in the design to allow the Spanning Tree Protocol on the switches to be protected?
A network designer is redesigning an enterprise campus network to ensure that Ethernet switches proactively attempt to reconnect after a fiber cut. In the design, they will have to address areas where fiber cuts exist on campus from past troubleshooting, where a single fiber is disconnected in the fiber pair, leading to looping. Which feature could be implemented in the design to allow the Spanning Tree Protocol on the switches to be protected?
A. loop guard
B. UniDirectional Link Detection
C. UniDirectional Link Detection aggressive mode
D. root guard
Correct Answer: C
Explanation/Reference:

Question 296
Which two of these options would result in a trouble-free spanning-tree network design? Refer to the exhibit.
You are designing a spanning-tree network for a small campus. Which two of these options would result in a trouble-free spanning-tree network design? (Choose two.)
A. Convert all ports to trunk ports, prune off the VLANs that you do not require, and minimize the number of blocking ports.
B. Introduce Layer 3 VLANs (SVIs) and prune off the VLANs that you do not require.
C. Convert all the ports to trunk and enable BackboneFast.
D. Convert all the ports to trunk and enable UplinkFast between all the links.

Correct Answer: AB
Explanation/Reference:

Question 297
Which of these components does LACP use to create the system ID?
A network designer is working with a company to improve convergence at the Layer 2 control plane and decides to use LACP. Which of these components does LACP use to create the system ID?
A. LACP system priority and switch MAC address
B. LACP port priority and switch MAC address
C. LACP port priority and port number
D. LACP system priority and port number

Correct Answer: A
Explanation/Reference:

Question 298
Which solution will ensure that interface down detection is reported as quickly as possible to the IGP?
A network design shows two routers directly connected to an Ethernet switch using optical connections. There is an OSPF adjacency between the routers. In this design, which solution will ensure that interface down detection is reported as quickly as possible to the IGP?
A. optimized OSPF SPF timers
B. Bidirectional Forwarding Detection
C. automatic protection switching
D. optimized OSPF LSA timers
E. Ethernet OAM CFM monitoring

Correct Answer: B
Explanation/Reference:

Question 299
Which two of these ways can you design this solution?
Refer to the exhibit.
A service provider would like to use Ethernet OAM to detect end-to-end connectivity failures between SP-SW1 and SP-SW2. In which two of these ways can you design this solution? (Choose two.)
A. Enable Y.1731 Connectivity Fault Management on the SP switches.
B. E-LMI PDUs must be forwarded over VPLS.
C. Cisco Discovery Protocol PDUs must be forwarded over VPLS.
D. Use upward maintenance endpoints on the SP switches.
E. Enable IEEE 802.1ag Connectivity Fault Management on the SP switches.

Correct Answer: DE
Explanation/Reference:
Question 300
Which two ways do NSF and BFD work together when different hardware platforms are compared?
A company plans to include Nonstop Forwarding and Bidirectional Forwarding Detection as a part of their network redundancy plan. In which two ways do NSF and BFD work together when different hardware platforms are compared? (Choose two.)
A. During supervisor engine or routing engine failover, the NSF feature will always ensure that the BFD at the peer router will not trigger a link down independent of the used hardware platform.
B. At some hardware platforms, BFD and NSF are not supported together. During supervisor engine or routing engine failover, the BFD at the peer router will trigger a link down.
C. To ensure that BFD at the peer router will not trigger a link down during NSF, the BFD packets must be processed fast enough, and, during supervisor engine or routing engine failover, by processing the BFD independent from the supervisor engine or routing engine.
D. Because BFD is always processed at the line cards (not at the supervisor engine or routing engine), a supervisor engine or routing engine failover will not affect the BFD peer router.
E. Because BFD is always processed at the supervisor engine or routing engine, a supervisor engine or routing engine failover will always trigger a link down at the peer router.

Correct Answer: BC
Explanation/Reference: