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## Question: 1

A technician needs to limit the amount of broadcast traffic on a network and allow different segments to communicate with each other. Which of the following options would satisfy these requirements?

- A. Add a router and enable OSPF.
- B. Add a layer 3 switch and create a VLAN.
- C. Add a bridge between two switches.
- D. Add a firewall and implement proper ACL.

**Answer: B**

Explanation:

We can limit the amount of broadcast traffic on a switched network by dividing the computers into logical network segments called VLANs.

A virtual local area network (VLAN) is a logical group of computers that appear to be on the same LAN even if they are on separate IP subnets. These logical subnets are configured in the network switches. Each VLAN is a broadcast domain meaning that only computers within the same VLAN will receive broadcast traffic.

To allow different segments (VLAN) to communicate with each other, a router is required to establish a connection between the systems. We can use a network router to route between the VLANs or we can use a 'Layer 3' switch. Unlike layer 2 switches that can only read the contents of the data-link layer protocol header in the packets they process, layer 3 switches can read the (IP) addresses in the network layer protocol header as well.

## Question: 2

The network install is failing redundancy testing at the MDF. The traffic being transported is a mixture of multicast and unicast signals. Which of the following would BEST handle the rerouting caused by the disruption of service?

- A. Layer 3 switch
- B. Proxy server
- C. Layer 2 switch
- D. Smart hub

**Answer: A**

Explanation:

The question states that the traffic being transported is a mixture of multicast and unicast signals. There are three basic types of network transmissions: broadcasts, which are packets transmitted to every node on the network; unicasts, which are packets transmitted to just one node; and multicasts, which are packets transmitted to a group of nodes. Multicast is a layer 3 feature of IPv4 & IPv6. Therefore, we would need a layer 3 switch (or a router) to reroute the traffic. Unlike layer 2 switches that can only read

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### Question: 3

Which of the following network devices use ACLs to prevent unauthorized access into company systems?

- A. IDS
- B. Firewall
- C. Content filter
- D. Load balancer

**Answer: B**

Explanation:

A firewall is a system designed to prevent unauthorized access to or from a private network. Firewalls are frequently used to prevent unauthorized Internet users from accessing private networks connected to the Internet, especially intranets. Firewalls use ACLs (access control lists) to determine which traffic is allowed through the firewall. All traffic entering or leaving the intranet passes through the firewall, which examines each message and blocks or allows the message depending on rules specified in the ACL. The rules in the ACL specify which combinations of source IP address, destination address in IP port numbers are allowed.

### Question: 4

Which of the following is used to define how much bandwidth can be used by various protocols on the network?

- A. Traffic shaping
- B. High availability
- C. Load balancing
- D. Fault tolerance

**Answer: A**

Explanation:

If a network connection becomes saturated to the point where there is a significant level of contention, network latency can rise substantially.

Traffic shaping is used to control the bandwidth used by network traffic. In a corporate environment, business-related traffic may be given priority over other traffic. Traffic can be prioritized based on the ports used by the application sending the traffic. Delayed traffic is stored in a buffer until the higher priority traffic has been sent.

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### Question: 5

Which of the following is used to authenticate remote workers who connect from offsite? (Select TWO).

- A. OSPF
- B. VTP trunking
- C. Virtual PBX
- D. RADIUS
- E. 802.1x

**Answer: D,E**

Explanation:

D: A RADIUS (Remote Authentication Dial-in User Service) server is a server with a database of user accounts and passwords used as a central authentication database for users requiring network access. RADIUS servers are commonly used by ISP's to authenticate their customer's Internet connections.

Remote users connect to one or more Remote Access Servers. The remote access servers then forward the authentication requests to the central RADIUS server.

E: 802.1X is an IEEE Standard for Port-based Network Access Control (PNAC). It provides an authentication mechanism to devices wishing to attach to a network.

802.1X authentication involves three parties: a supplicant, an authenticator, and an authentication server. The supplicant is a client that wishes to attach to the network. The authenticator is a network device, such as an Ethernet switch, wireless access point or in this case, a remote access server and the authentication server is the RADIUS server.

### Question: 6

Which of the following provides accounting, authorization, and authentication via a centralized privileged database, as well as, challenge/response and password encryption?

- A. Multifactor authentication
- B. ISAKMP
- C. TACACS+
- D. Network access control

**Answer: C**

Explanation:

TACACS+ (Terminal Access Controller Access-Control System Plus) is a protocol that handles authentication, authorization, and accounting (AAA) services. Similar to RADIUS, TACACS+ is a centralized authentication solution used to provide access to network resources. TACACS+ separates the authentication, authorization, and accounting services enabling you to host each service on a separate server if required.

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### Question: 7

A technician needs to set aside addresses in a DHCP pool so that certain servers always receive the same address. Which of the following should be configured?

- A. Leases
- B. Helper addresses
- C. Scopes
- D. Reservations

**Answer: D**

Explanation:

A reservation is used in DHCP to ensure that a computer always receives the same IP address. To create a reservation, you need to know the hardware MAC address of the network interface card that should receive the IP address.

For example, if Server1 has MAC address of 00:A1:FB:12:45:4C and that computer should always get 192.168.0.7 as its IP address, you can map the MAC address of Server1 with the IP address to configure reservation.

### Question: 8

Joe, a network technician, is setting up a DHCP server on a LAN segment. Which of the following options should Joe configure in the DHCP scope, in order to allow hosts on that LAN segment using dynamic IP addresses, to be able to access the Internet and internal company servers? (Select THREE).

- A. Default gateway
- B. Subnet mask
- C. Reservations
- D. TFTP server
- E. Lease expiration time of 1 day
- F. DNS servers
- G. Bootp

**Answer: A,B,F**

Explanation:

The question states that the client computers need to access the Internet as well as internal company servers. To access the Internet, the client computers need to be configured with an IP address with a subnet mask (answer B) and the address of the router that connects the company network to the Internet. This is known as the 'default gateway' (answer A).

To be able to resolve web page URLs to web server IP addresses, the client computers need to be configured with the address of a DNS server (answer F).

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## Question: 9

A technician just completed a new external website and setup access rules in the firewall. After some testing, only users outside the internal network can reach the site. The website responds to a ping from the internal network and resolves the proper public address. Which of the following could the technician do to fix this issue while causing internal users to route to the website using an internal address?

- A. Configure NAT on the firewall
- B. Implement a split horizon DNS
- C. Place the server in the DMZ
- D. Adjust the proper internal ACL

**Answer: B**

Explanation:

Split horizon DNS (also known as Split Brain DNS) is a mechanism for DNS servers to supply different DNS query results depending on the source of the request. This can be done by hardware-based separation but is most commonly done in software.

In this question, we want external users to be able to access the website by using a public IP address. To do this, we would have an external facing DNS server hosting a DNS zone for the website domain. For the internal users, we would have an internal facing DNS server hosting a DNS zone for the website domain. The external DNS zone will resolve the website URL to an external public IP address. The internal DNS server will resolve the website URL to an internal private IP address.

## Question: 10

When configuring a new server, a technician requests that an MX record be created in DNS for the new server, but the record was not entered properly. Which of the following was MOST likely installed that required an MX record to function properly?

- A. Load balancer
- B. FTP server
- C. Firewall DMZ
- D. Mail server

**Answer: D**

Explanation:

A mail exchanger record (MX record) is a DNS record used by email servers to determine the name of the email server responsible for accepting email for the recipient's domain.

For example a user sends an email to recipient@somedomain.com. The sending user's email server will query the somedomain.com DNS zone for an MX record for the domain. The MX record will specify the hostname of the email server responsible for accepting email for the somedomain.com domain, for example, mailserver.somedomain.com. The sending email server will then perform a second DNS query

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to resolve mailserver.somedomain.com to an IP address. The sending mailserver will then forward the email to the destination mail server.

### Question: 11

Which of the following protocols uses label-switching routers and label-edge routers to forward traffic?

- A. BGP
- B. OSPF
- C. IS-IS
- D. MPLS

**Answer: D**

Explanation:

In an MPLS network, data packets are assigned labels. Packet-forwarding decisions are made solely on the contents of this label, without the need to examine the packet itself.

MPLS works by prefixing packets with an MPLS header, containing one or more labels.

An MPLS router that performs routing based only on the label is called a label switch router (LSR) or transit router. This is a type of router located in the middle of a MPLS network. It is responsible for switching the labels used to route packets. When an LSR receives a packet, it uses the label included in the packet header as an index to determine the next hop on the label-switched path (LSP) and a corresponding label for the packet from a lookup table. The old label is then removed from the header and replaced with the new label before the packet is routed forward.

A label edge router (LER) is a router that operates at the edge of an MPLS network and acts as the entry and exit points for the network. LERs respectively, add an MPLS label onto an incoming packet and remove it off the outgoing packet.

When forwarding IP datagrams into the MPLS domain, an LER uses routing information to determine appropriate labels to be affixed, labels the packet accordingly, and then forwards the labelled packets into the MPLS domain. Likewise, upon receiving a labelled packet which is destined to exit the MPLS domain, the LER strips off the label and forwards the resulting IP packet using normal IP forwarding rules.

### Question: 12

Which of the following is MOST likely to use an RJ-11 connector to connect a computer to an ISP using a POTS line?

- A. Multilayer switch
- B. Access point
- C. Analog modem
- D. DOCSIS modem

**Answer: C**

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Explanation:

Before ADSL broadband connections became the standard for Internet connections, computers used analog modems to connect to the Internet. By today's standards, analog modems are very slow typically offering a maximum bandwidth of 56Kbps.

An analog modem (modulator/demodulator) converts (modulates) a digital signal from a computer to an analog signal to be transmitted over a standard (POTS) phone line. The modem then converts (demodulates) the incoming analog signal to digital data to be used by the computer.

An analog modem uses an RJ-11 connector to connect to a phone line (POTS) in the same way a phone does.

### Question: 13

An administrator notices an unused cable behind a cabinet that is terminated with a DB-9 connector. Which of the following protocols was MOST likely used on this cable?

- A. RS-232
- B. 802.3
- C. ATM
- D. Tokenring

**Answer: A**

Explanation:

A DB-9 connector is used on serial cables. Serial cables use the RS-232 protocol which defines the functions of the 9 pins in a DB-9 connector. The RS-232 standard was around long before computers. It's rare to see a new computer nowadays with a serial port but they were commonly used for connecting external analog modems, keyboards and mice to computers.

### Question: 14

Which of the following connection types is used to terminate DS3 connections in a telecommunications facility?

- A. 66 block
- B. BNC
- C. F-connector
- D. RJ-11

**Answer: B**

Explanation:

A DS3 (Digital Signal 3) is also known as a T3 line with a maximum bandwidth of 44.736 Mbit/s. DS3 uses 75 ohm coaxial cable and BNC connectors.

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### Question: 15

An F-connector is used on which of the following types of cabling?

- A. CAT3
- B. Single mode fiber
- C. CAT5
- D. RG6

**Answer: D**

Explanation:

An F connector is a coaxial RF connector commonly used for terrestrial television, cable television and universally for satellite television and cable modems, usually with RG-6/U cable or, in older installations, with RG-59/U cable.

### Question: 16

CORRECT

TEXT

You have been tasked with testing a CAT5e cable. A summary of the test results can be found on the screen.


Step 1: Select the tool that was used to create the cable test results.

Step 2: Interpret the test results and select the option that explains the results. After you are done with your analysis, click the 'Submit Cable Test Analysis' button.

## Cable Test

Step 1: Select the tool that was used to create the cable test results.

Cable Test Result			
1, 2	Open	7ft	
3, 6	Short	7ft	
4, 5	Open	7ft	
7, 8	Open	7ft	



Tool Choices	
<input type="checkbox"/>	Crimper
<input type="checkbox"/>	Cable Certifier
<input type="checkbox"/>	Multimeter
<input type="checkbox"/>	Punch Down Tool
<input type="checkbox"/>	Protocol Analyzer
<input type="checkbox"/>	OTDR
<input type="checkbox"/>	Toner Probe

**Answer:**

## Cable Test

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<input type="checkbox"/>	Multimeter
<input type="checkbox"/>	Punch Down Tool
<input type="checkbox"/>	Protocol Analyzer
<input type="checkbox"/>	OTDR
<input type="checkbox"/>	Toner Probe

Step 2: Interpret the test results and select the option that explains the results.

After you are done with your analysis, click the 'Submit Cable Test Analysis' button.

- ☐ Correctly crimped cable
- ☐ Incorrectly crimped cable

Submit Cable Test Analysis

A Cable Certifier provides "Pass" or "Fail" information in accordance with industry standards but can also show detailed information when a "Fail" occurs. This includes shorts, the wire pairs involved and the distance to the short. When a short is identified, at the full length of the cable it means the cable has not been crimped correctly.

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