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CCNA 3 (v5.0.3 + v6.0) Chapter 1 Exam Answers Full

1. **What are two expected features of modern enterprise networks? (Choose two.)**
   - **support for converged network traffic***
   - support for distributed administrative control
   - support for 90 percent reliability
   - **support for critical applications***
   - support for limited growth

   All modern enterprise networks are expected to support critical applications, converged network traffic, diverse business needs, and provide centralized administrative control. Users expect enterprise networks to be up 99.999 percent of the time (not 90 percent.). Support for limited growth is not a usual network design criterion.

2. **Which type of information is displayed by the show ip protocols command that is issued from a router command prompt?**
   - the routed protocol that is enabled and the protocol status of interfaces
   - **the configured routing protocols and the networks that the router is advertising***
   - interfaces with line (protocol) status and I/O statistics
   - interface information, including whether an ACL is enabled on the interface

   The show ip protocols command displays information about the routing protocols that are configured, the networks the router is advertising, and the default administrative distance. The show interfaces command displays interfaces with line (protocol) status, bandwidth, delay, reliability, encapsulation, duplex, and I/O statistics. The show ip interfaces command displays interface information, including protocol status, the IP address, whether a helper address is configured, and whether an ACL is enabled on the interface. The show protocols command displays information about the routed protocol that is enabled and the protocol status of interfaces.

3. **Which action should be taken when planning for redundancy on a hierarchical network design?**
   - immediately replace a non-functioning module, service or device on a network
   - implement STP portfast between the switches on the network
   - continually purchase backup equipment for the network
   - **add alternate physical paths for data to traverse the network***

   One method of implementing redundancy is path redundancy, installing alternate physical paths for data to traverse the network. Redundant links in a switched network supports high availability and can be used for load balancing, reducing congestion on the network.

4. **In the Cisco Enterprise Architecture, which two functional parts of the network are combined to form a collapsed core design? (Choose two.)**
   - **distribution layer***
   - enterprise edge
   - access layer

- **core layer***
- provider edge

5. **What are two ways to access a Cisco switch for out-of-band management? (Choose two.)**
   - **a connection that uses the AUX port*a connection that uses the AUX port***
   - a connection that uses HTTP
   - a connection that uses Telnet
   - **a connection that uses the console port***
   - a connection that uses SSH

6. **How can an enterprise network be designed to optimize bandwidth?**
   - by installing devices with failover capabilities
   - by deploying a collapsed core model
   - **by organizing the network to control traffic patterns***
   - by limiting the size of failure domains

7. **Refer to the exhibit. Which devices exist in the failure domain when switch S3 loses power?**
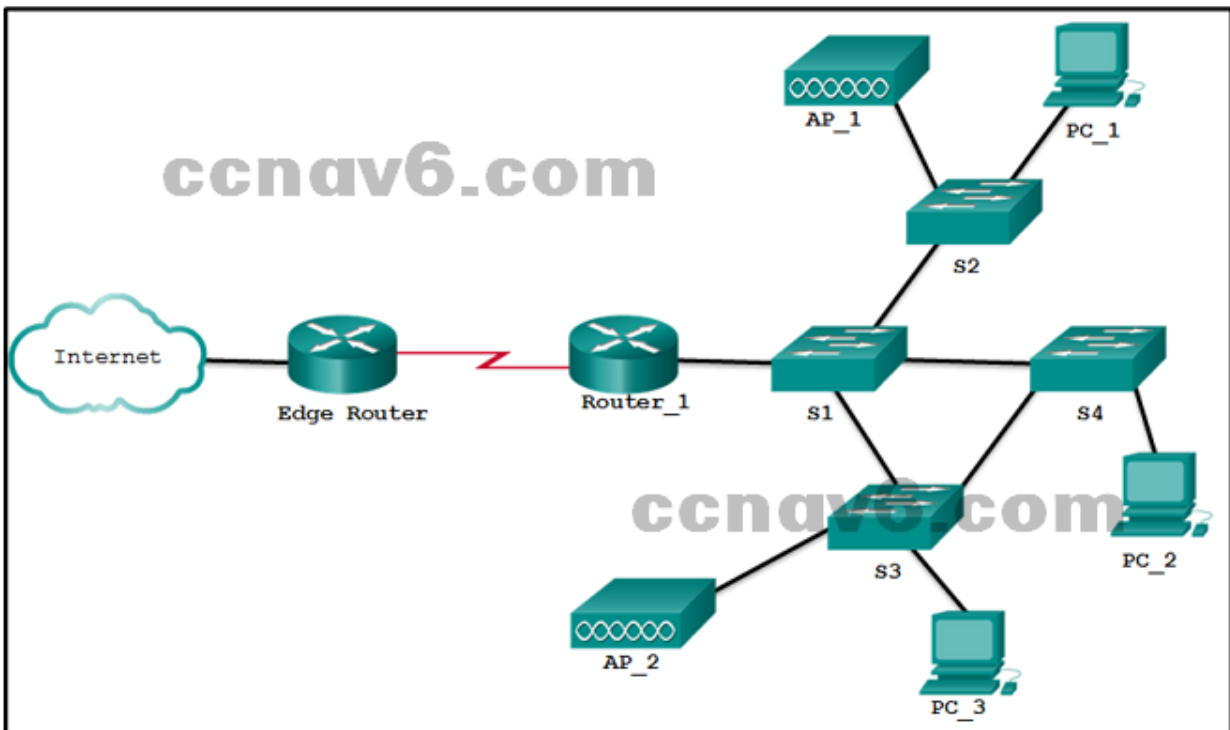
   - S4 and PC_2
   - **PC_3 and AP_2***
   - AP_2 and AP_1
   - PC_3 and PC_2
   - S1 and S4

   A failure domain is the area of a network that is impacted when a critical device such as switch S3 has a failure or experiences problems.

8. **As the network administrator you have been asked to implement EtherChannel on the corporate network. What does this configuration consist of?**
   - **grouping multiple physical ports to increase bandwidth between two switches***
   - providing redundant links that dynamically block or forward traffic
   - grouping two devices to share a virtual IP address

- providing redundant devices to allow traffic to flow in the event of device failure

9. **What term is used to express the thickness or height of a switch?**
   - **rack unit***
   - domain size
   - port density
   - module size

10. **What is the function of ASICs in a multilayer switch?**
    - **They streamline forwarding of IP packets in a multilayer switch by bypassing the CPU.***
    - They aggregate multiple physical switch ports into a single logical port.
    - They prevent Layer 2 loops by disabling redundant links between switches.
    - They provide power to devices such as IP phones and wireless access points through Ethernet ports.

11. **Which design feature will limit the size of a failure domain in an enterprise network?**
    - the use of a collapsed core design
    - **the use of the building switch block approach***
    - the installation of redundant power supplies
    - the purchase of enterprise equipment that is designed for large traffic
    - volume

    In order to best limit the of a failure domain, routers or multilayer switches can be deployed in pairs. The failure of a single device should not cause the network to go down. Installing redundant power supplies may protect a single device from a power failure, but if that device suffers from another type of problem, a redundant device would have been a better solution. Purchasing enterprise equipment that handles large flows of traffic will not provide extra reliability in times of an outage. If a collapsed core design is used, the core and distribution are collapsed into a single device, increasing the chance of a devastating outage.

12. **A network administrator is planning redundant devices and cabling in a switched network to support high availability. Which benefit will implementing the Spanning Tree Protocol provide to this design?**
    - Multiple physical interfaces can be combined into a single EtherChannel interface.
    - **Redundant paths can be available without causing logical Layer 2 loops.***
    - Network access can be expanded to support both wired and wireless devices.
    - Faster convergence is available for advanced routing protocols.

    With the implementation of redundant devices and links, redundant paths will exist in the network. This may cause a Layer 2 loop, and Spanning Tree Protocol (STP) is used to eliminate switching loops while maintaining reliability. STP is not required to combine multiple physical interfaces into a single EtherChannel interface. STP does not provide faster convergence or an expanded network that uses wired or wireless connectivity.

13. **What are two benefits of extending access layer connectivity to users through a wireless medium? (Choose two.)**
    - **increased flexibility***
    - decreased number of critical points of failure
    - **reduced costs***
    - increased bandwidth availability
    - increased network management options

Wireless connectivity at the access layer provides increased flexibility, reduced costs, and the ability to grow and adapt to changing business requirements. Utilizing wireless routers and access points can provide an increase in the number of central points of failure. Wireless routers and access points will not provide an increase in bandwidth availability.

14. **Which two features of enterprise class equipment assists an enterprise network in maintaining 99.999 percent up-time? (Choose two.)**
   - **failover capabilities***
   - collapsed core
   - **redundant power supplies***
   - failure domains
   - services module

Enterprise class equipment is designed with features such as redundant power supplies and failover capabilities. A failure domain is an area of a network that is impacted when a critical device fails. A collapsed core is a two-tier hierarchical design where the core and distribution layers are collapsed into a single layer. This reduces cost and complexity but does not provide redundancy and uptime.

15. **A network technician needs to connect a PC to a Cisco network device for initial configuration. What is required to perform this device configuration?**
   - HTTP access
   - Telnet access
   - at least one operational network interface on the Cisco device
   - **terminal emulation client***

Because the device needs to be initially configured, a network connection is unavailable yet on this device, hence the need for an out-of-band management method. A configuration that uses out-of-band management requires a direct connection to a console or AUX port, and a terminal emulation client.

16. **What network design would contain the scope of disruptions on a network should a failure occur?**
   - the reduction in the number of redundant devices and connections in the network core
   - the configuration of all access layer devices to share a single gateway
   - the installation of only enterprise class equipment throughout the network
   - **the deployment of distribution layer switches in pairs and the division of access layer switch connections between them ***

One way to contain the impact of a failure on the network is to implement redundancy. One way this is accomplished is by deploying redundant distribution layer switches and dividing the access layer switch connections between the redundant distribution layer switches. This creates what is called a switch block. Failures in a switch block are contained to that block and do not bring down the whole network.

17. **What are three access layer switch features that are considered when designing a network? (Choose three.)?**
   - speed of convergencefailover capability
   - broadcast traffic containment
   - **forwarding rate***
   - **Power over Ethernet***

- **port density***

The port density of a switch (the number of ports available on a single switch), forwarding rate (how much data the switch can process per second), and Power over Ethernet (the ability of the switch to deliver power to a device over the existing Ethernet cabling) are access layer switch features to be considered when designing a network. Failover capability, speed of convergence, and broadcast traffic containment are distribution layer features.

18. **What are two functions of a router? (Choose two.)**
    - **It connects multiple IP networks.***
    - It controls the flow of data via the use of Layer 2 addresses.
    - **It determines the best path to send packets.***
    - It manages the VLAN database.
    - It increases the size of the broadcast domain.

    Routers connect multiple networks in an organization to provide interconnections among them. They perform the task by using the network portion of the destination IP address to determine the best path to send packets to their destination.

19. **What capability is provided by the use of application-specific integrated circuits in Cisco multilayer switches?**
    - aggregating physical ports into a single logical interface
    - providing user authentication and authorization
    - protecting data traffic in the event of a failed circuit
    - **forwarding of IP packets independent of the CPU***

    Application-specific integrated circuits (ASICs) increase the forwarding speed of a switch by allowing packets to bypass the CPU for processing.

20. **Which statement describes a characteristic of Cisco Meraki switches?**
    - They promote infrastructure scalability, operational continuity, and transport flexibility.
    - **They are cloud-managed access switches that enable virtual stacking of switches.***
    - They are campus LAN switches that perform the same functions as Cisco 2960 switches.
    - They are service provider switches that aggregate traffic at the edge of the network.

    The Cisco Meraki cloud-managed access switches enable virtual stacking of switches. They monitor and configure thousands of switch ports over the web, without the intervention of onsite IT staff.

21. **A network engineer is reviewing a network design that uses a fixed configuration enterprise router that supports both LAN and WAN connections. However, the engineer realizes that the router does not have enough interfaces to support growth and network expansion. Which type of device should be used as a replacement?**
    - a Layer 3 switch
    - **a modular router***
    - a PoE device
    - another fixed configuration router

    Modular routers provide multiple slots that allow a network designer to change or increase the interfaces that exist on the router. A Layer 3 switch may increase the number of ports available on a router, but will not provide WAN connectivity. The PoE capability of a device is not related to the number of ports it has. Using another fixed configuration router will not provide the flexibility to adapt to future growth that using a modular router will provide.

22. **In which situation would a network administrator install a Cisco Nexus Series or Cisco Catalyst 6500 Series switch to promote infrastructure scalability?**
    - to enable virtual stacking of switches to provide cloud-managed access
    - on a service provider network to promote integrated security, and simplified management
    - **on a data center network to provide expansion and transport flexibility***
    - on a campus LAN network as access layer switches

    Cisco Nexus Series switches are employed on data centers to promote infrastructure scalability, operational continuity, and transport flexibility. They also provide secure multitenant services by adding virtualization intelligence technology to the data center network.

23. **Which statement describes a characteristic of Cisco Catalyst 2960 switches?**
    - They do not support an active switched virtual interface (SVI) with IOS versions prior to 15.x.
    - They are best used as distribution layer switches.
    - They are modular switches.
    - **New Cisco Catalyst 2960-C switches support PoE pass-through.***

    Cisco Catalyst 2960 switches support one active switched virtual interface (SVI) with IOS versions prior to 15.x. They are commonly used as access layer switches and they are fixed configuration switches.

24. **Refer to the exhibit. Which command was issued on a Cisco switch that resulted in the exhibited output?**

```
<output omitted>
---------------------------------------------------------------
Vlan   MAC Address      Type          Ports    Remaining Age
                                                (mins)
----   -----------      ----          -----    -------------
1      0025.83a6.4b01   SecureDynamic Fa0/18    -
1      0025.83a6.4b02   SecureSticky  Fa0/19    -
---------------------------------------------------------------
```

    - show mac-address-table
    - show vlan brief
    - show vlan summary
    - **show port-security address***

    The show port-security address command displays all secure MAC addresses configured on all switch interfaces. The show mac-address-table command displays all MAC addresses that the switch has learned, how those addresses were learned (dynamic/static), the port number, and the VLAN assigned to the port. The show vlan brief command displays the available VLANs and the ports assigned to each VLAN. The show vlan summary command displays the count of all configured VLANs.

25. **What is a characteristic of in-band device management?**
    - It uses a terminal emulation client.
    - It is used for initial configuration or when a network connection is unavailable.
    - It uses a direct connection to a console or AUX port.

- **It is used to monitor and make configuration changes to a network device over a network connection.***

  In-band device management is used to monitor and make configuration changes to a network device over a network connection. Configuration using in-band management requires at least one network interface on the device to be connected and to be operational, and it requires the use of Telnet, SSH, or HTTP to access the device.

26. **Which two requirements must always be met to use in-band management to configure a network device? (Choose two.)**
    - a direct connection to the console port
    - a direct connection to the auxiliary port
    - a terminal emulation client
    - **at least one network interface that is connected and operational ***
    - **Telnet, SSH, or HTTP access to the device***

    Direct connections to the console and auxiliary ports allow for out-of-band management. Terminal emulation software is not always required because in-band management can be performed using a browser.

27. **When a Cisco IOS device is being selected or upgraded, which option indicates the capabilities of the Cisco IOS device?**
    - release number
    - platform
    - version number
    - **feature set***

    The version number and release number refer to the overall device operating system. The platform refers to the specific model of a device. The feature set determines what a particular device is capable of.

28. **Immediately after a router completes its boot sequence, the network administrator wants to check the routers configuration. From privileged EXEC mode, which of the following commands can the administrator use for this purpose? (Choose two.)**
    - show flash
    - show NVRAM
    - **show startup-config***
    - **show running-config***
    - show version

    The show startup-config command can be used to display the Cisco device configuration stored in NVRAM. The show running-config command can be used to display the currently active configuration that is stored in RAM. The show flash command displays the files (not file content) stored in the flash memory.

29. **Question as presented:**

Match the purpose to the related configuration item. (Not all options are used.)

identification		assignment of IP address to interface
security		encapsulation
connectivity		hostname
access remote networks		routing protocols
		passwords

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