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QUESTION NO: 1

A workstation sends data to a server on the same Ethernet LAN. Before the data can be transmitted on the local cable, the workstation encapsulates the IP packet in a frame addressed to the destination device's network interface.

Which TCP/IP model layer performs this local network-access function?

A. Application

B. Transport

C. Network or internet

D. Physical or network access

ANSWER: D

Explanation:

The **physical or network access** layer is correct because it handles communication over the local network medium. Ethernet framing and MAC addressing are used at this layer to deliver data across a local link to the appropriate network interface.

The network or internet layer uses IP addressing and routes packets between networks. The transport layer provides services such as TCP or UDP communication between processes, while the application layer provides services used directly by applications.

QUESTION NO: 2

A computer network has software that tracks successful and unsuccessful connection attempts to the network in order to better identify attacks.

Which network security concept does this scenario address?

A. Accounting

B. Authentication

C. Availability

D. Authorization

ANSWER: A

Explanation:

Accounting is correct because it records and tracks activity performed on a network or system, creating an audit trail that security personnel can review. In the scenario, software records both successful and unsuccessful connection attempts. These events provide useful evidence of normal use, possible password-guessing activity, unauthorized access attempts, and other attack indicators. Accounting is commonly the third component of the AAA security model: authentication establishes an identity, authorization determines the access that identity is allowed, and accounting logs actions and resource use associated with that identity or connection. Security logs produced through accounting support monitoring, incident detection, investigations, and compliance activities. For example, a high volume of failed attempts followed by a successful connection can alert analysts to a possible brute-force or credential-based attack. NIST guidance identifies audit records and audit logging as key controls for reviewing and analyzing security-relevant events. The National Institute of Standards and Technology describes audit logging practices at NIST SP 800-92: Guide to Computer Security Log Management, and the AAA model is summarized by Cisco AAA configuration documentation.

QUESTION NO: 3

A company is deploying virtualization hosts in a data center. Each host will run many production virtual machines, and the company does not want a general-purpose host operating system installed between the server hardware and the virtualization layer.

Which type of hypervisor should be used?

A. Type 2

B. Open source

C. Proprietary

D. Type 1

ANSWER: D

Explanation:

Type 1 is correct because a Type 1, or bare-metal, hypervisor runs directly on physical hardware. This design is commonly used for production server virtualization because it avoids the additional general-purpose host operating system layer.

A Type 2 hypervisor runs as an application on an existing host operating system and is more commonly used for desktops, labs, and development environments. Open source and proprietary describe licensing models rather than hypervisor architecture.

QUESTION NO: 4

A development team needs to deploy a custom application to the cloud. The provider will maintain the operating system, runtime, and middleware, while the team will manage the application code and its data.

Which cloud service model best fits this requirement?

A. Software as a Service (SaaS)

B. Platform as a Service (PaaS)

C. Infrastructure as a Service (IaaS)

D. Function as a Service (FaaS)

ANSWER: B

Explanation:

Platform as a Service (PaaS) is correct because the provider manages the underlying infrastructure and application platform, including the operating system and runtime environment. The development team can focus on deploying and maintaining its application code and data.

IaaS would require the team to manage the guest operating system, while SaaS provides a complete application rather than a platform for deploying a custom application.

QUESTION NO: 5

In the process of setting up a Linux-based network system, a technician needs to determine if there is connectivity to a hostname.

Which command should be used?

A. ping

B. nslookup

C. ifconfig

D. dig

ANSWER: A

Explanation:

The correct command is **ping**. On Linux, `ping hostname` tests whether the local system can reach a host by sending Internet Control Message Protocol (ICMP) Echo Request messages to the hostname's resolved IP address. When replies return, the command reports useful connectivity information, including packet loss and round-trip response times. For example, `ping example.com` first relies on normal hostname resolution and then attempts ICMP communication with the resulting address. This makes it an appropriate initial command when a technician needs to verify basic network reachability to a named destination during setup or troubleshooting. A successful response demonstrates that the hostname resolved and that ICMP reply traffic can travel between the systems; packet-loss and timing data can also help identify an unstable or slow connection. The Linux `ping` utility is documented in the iputils manual page at man7.org: ping(8). ICMP Echo Request and Echo Reply behavior is specified by the Internet Engineering Task Force in RFC 792.

QUESTION NO: 6

A company wants to use a cloud service to obtain virtual machines with pre-installed and configured software.

Which cloud service model should be used?

A. Software as a Service (SaaS)

B. Infrastructure as a Service (IaaS)

C. Platform as a Service (PaaS)

D. Function as a Service (FaaS)

ANSWER: C

Explanation:

Platform as a Service (PaaS) is the appropriate model because it supplies a managed, ready-to-use application platform rather than only raw virtualized compute resources. The cloud provider provisions and maintains the underlying infrastructure and typically provides the operating environment, runtime, middleware, and supporting software configuration needed to deploy or develop applications. This allows the company to use a preconfigured environment without taking responsibility for building and maintaining every software layer on the virtual machines.

This model is especially useful when the organization needs an environment in which software components are already installed and configured, while retaining the ability to deploy its own applications and data. PaaS shifts operational work such as platform patching, runtime maintenance, and infrastructure management to the provider, enabling internal teams to focus on application delivery. The National Institute of Standards and Technology defines PaaS as the capability to deploy consumer-created or acquired applications onto cloud infrastructure using provider-supported programming languages, libraries, services, and tools. Microsoft similarly describes PaaS as a complete development and deployment environment delivered as a cloud service. See NIST SP 800-145 and Microsoft's PaaS overview.

QUESTION NO: 7

A company connects four regional offices so that every office has a direct network connection to each of the other offices. The design is costly, but the company wants traffic to have alternate direct paths if a single connection fails.

Which network topology is being used?

A. Ring

B. Bus

C. Full mesh

D. Star

ANSWER: C

Explanation:

Full mesh is correct because each regional office has a direct connection to every other office. This design provides substantial redundancy because the failure of one link does not eliminate all communication paths between the offices.

A star topology depends on a central connection point, a ring connects each node to adjacent nodes, and a bus uses a shared backbone medium. None of those topologies provides a direct link between every pair of offices.

QUESTION NO: 8

When setting up a network, a technician needs a router that creates an access point.

Which router should be used?

A. Wireless router

B. Broadband router

C. Core router

D. Inter-provider border router

ANSWER: A

Explanation:

Wireless router is correct because it combines routing functions with a built-in wireless access point. The routing component directs traffic between the local network and other networks, such as an internet service provider connection, while the wireless access point component uses Wi-Fi to let client devices join the local network without an Ethernet cable. In a typical home or small-office deployment, one wireless router can provide network address translation, DHCP addressing, firewall capabilities, Ethernet LAN ports, and Wi-Fi service from a single device. This makes it the appropriate router type when the stated requirement is to create an access point for wireless devices. Wi-Fi clients associate with the wireless radio and service set identifier configured on the router; once connected, they can communicate with permitted local and external resources through the router. Cisco's overview of wireless networks describes an access point as the device that enables wireless devices to connect to a wired network: Cisco: What Is a Wireless Access Point?. The Wi-Fi Alliance also explains the role of Wi-Fi networking in connecting devices wirelessly: Wi-Fi Alliance: Discover Wi-Fi.