1. **Which of the following protocols are examples of TCP/IP transport layer protocols?**

(Choose 2 answers.)

* + **UDP**
  + **TCP**

1. **Which of the following protocols are examples of TCP/IP data-link layer protocols?**
   * **Ethernet**
   * **HDLC**
2. **The process of a web server adding a TCP header to the contents of a web page, followed by adding an IP header and then adding a data-link header and trailer, is an example of what?**
   * **Data encapsulation**
3. **Which of the following terms is used specifically to identify the entity created when**

encapsulating data inside data-link layer headers and trailers?

* + **Frame**

1. **The process of HTTP asking TCP to send some data and making sure that it is received**

correctly is an example of what?

* + **Adjacent-layer interaction**

1. **In what modes can you type the command show mac address-table and expect to get a**

response with MAC table entries?

(Choose two answers.)

* + **Privileged EXEC Mode**
  + **Global Configuration Mode**

1. **Which of the following is a difference between Telnet and SSH as supported by a Cisco**

switch?

* + **SSH encrypts all data exchange, including login passwords**
  + **Telnet encrypts nothing.**

1. **What type of switch memory is used to store the configuration used by the switch when it is up and working?**
   * **RAM**
2. **What command copies the configuration from RAM into NVRAM?**
   * **copy running-config startup-config**
3. **Which of the following is true about the enable secret command?**
   * **It forces you to enter a password when you go from user exec mode to privileged exec mode.**
4. **Which of the following is true in relation to configuring a switch or router? (Choose 2 answers)**
   * **When you configure the Console password, it is not automatically encrypted.**
   * **Using the services password-encryption will encrypt any unencrypted passwords.**
5. **Which of the following statements are true? (Choose 2 answers)**
   * **Half Duplex allows only one device at a time to transmit.**
   * **Hubs can only work in Half Duplex mode.**
6. **In relation to fibre which of the following statements are true?**
   * **Single mode uses laser to transmit.**
7. **Which of the following Ethernet standards defines Gigabit Ethernet over UTP cabling?**
   * **1000BASE-T**
8. **Which of the following is true about Ethernet crossover cables for Fast Ethernet?**
   * **Pins 1 and 2 on one end of the cable connect to pins 3 and 6 on the other end of the cable.**
9. **Each answer lists two types of devices used in a 100BASE-T network. If these devices were connected with UTP Ethernet cables, which pairs of devices would require a straight- through cable?**

(Choose 2 answers.)

* + **PC and switch.**
  + **Router and hub.**

1. **Which of the following is true about the Ethernet FCS field?**
   * **Ethernet uses FCS for error detection.**
2. **Which of the following terms describe Ethernet addresses that can be used to send one frame that is delivered to multiple devices on the LAN?**

(Choose two answers.)

* + **Broadcast address.**
  + **Multicast address.**

1. **Which of the following statements best describes what a switch does with a frame destined for an unknown unicast address?**
   * **It forwards out all interfaces in the same VLAN except for the incoming interface.**
2. **Consider the following output from a Cisco Catalyst switch:**

SW1# show mac address-table dynamic Mac Address Table

Vlan Mac Address Type Ports

1 02AA.AAAA.AAAA DYNAMIC Gi0/1

1 02BB.BBBB.BBBB DYNAMIC Gi0/2

1 02CC.CCCC.CCCC DYNAMIC Gi0/3

Total Mac Addresses for this criterion: 3

Which of the following answers is true about this switch?

* **02CC.CCCC.CCCC was learned from the source MAC address of a frame that entered port Gi0/3.**

1. **In relation to switch which of the following are true?**
   * **All ports on a switch are in the same collision domain.**
2. **In relation to Hubs which of the following is true?**
   * **All devices connected to a hub are in the same collision domain.**
3. **In relation to switches, which of the following is true?**
   * **MAC Address tables are stored in CAM.**
4. **In relation to Switch port security, which of the following is true if Switchport security is**

enabled?

(Choose 2 answers)

* + **By default, the violation action is shutdown.**
  + **The second device that connects to the port causes a violation.**

1. **When you issue the following commands in a switch:**

Switch(config)#switchport port-security mac-address sticky

Which of the following is true?

* + **Sticky copies the first learned MAC address into NVRAM startup-config.**

1. **Which of the following is true about port security?**
   * **The default violation mode is Shutdown.**
2. **A PC has auto-negotiation enabled and is connected to a port on a switch with auto- negotiation enabled. The PC has a maximum speed of 10Mbs and the port on the switch a maximum speed of 1000Mbs. Which of the following is true?**
   * **The PC will connect at 10Mbs and half duplex to the switch.**
3. **In relation to a network with the Network ID 172.16.1.0/24, which of the following is true?**

(Choose 3 answers)

* + **The first host is 172.16.1.1.**
  + **The last host is 172.16.1.254.**
  + **The broadcast is 172.16.1.255.**

1. **In relation to a network with the Network ID 192.168.1.32/27, which of the following is true?**

(Choose 2 answers)

* + **The first host on this network is 192.168.1.33.**
  + **The last host on this network is 192.168.1.62.**

1. **In a PC, the default gateway is:**
   * **The address of the router connected to the PCs LAN.**
2. **The Network Prefix /28 translates to which of the following subnet masks?**
   * **255.255.255.240.**
3. **The subnet mask 255.255.224.0 translates to which Network Prefix?**
   * **/19.**
4. **A PC belongs to a network 192.168.1.16 with a subnet mask 255.255.255.240. Which of**

the following is true? (Choose 2 answers)

* + **All devices on this network share the same first 28 bits of the IP address.**
  + **This PC has an IP address in the range 192.168.1.17 to 192.168.1.30.**

1. **In relation to the ARP protocol, which of the following is true?**
   * **It is used to get a MAC address when an IP address is known.**
2. **In relation to an ARP table, which of the following is true?**
   * **It is used in a PC to map IP addresses to MAC addresses.**
3. **Which of the following are true about a LAN-connected TCP/IP host and its IP routing**

(forwarding) choices?

* + **The host sends packets to its default gateway if the destination IP address is in a different subnet than the host.**

1. **In relation to Classful IP addressing, which of the following is true?**

(Choose 2 answers)

* + **126.1.1.1 is a Class A address.**
  + **126.1.1.1 belongs to a Classful network with a network mask of 255.0.0.0.**

1. **In relation to Classful IP addressing, which of the following is true?**

(Choose 2 answers)

* + **191.1.1.1 belongs to a Classful network with a prefix of /16.**
  + **191.1.1.1 is a Class B address.**

1. **In relation to Unicasts, Multicasts and Broadcasts, which of the following are true?**

(Choose 3 answers)

* + **A Multicast IP packet must use a MAC Multicast MAC address in the frame containing the IP Multicast packet.**
  + **A Multicast MAC destination address always begins with 01:00:5e:.**
  + **An IP broadcast packet must always use a Destination MAC address of ff:ff:ff:ff:ff:ff.**

1. **To find the Network ID of a network when you know the IP address and subnet mask of a device on that network, which of the following is true?**
   * **From the subnet mask, count the number of host bits there are and set them all to 0.**
2. **A device has an IP address of 192.168.10.40/28. Which of the following is true? (Choose 3 answers)**
   * **The Network ID is 192.168.10.32.**
   * **The last host is 192.168.10.46.**
   * **The broadcast for this network is 192.168.10.47.**
3. **A device has an IP address 192.168.10.40 and a subnet mask 255.255.255.240. Which of the following is true?**

(Choose 2 answers)

* + **There are a maximum of 14 hosts on this network.**
  + **The prefix for this network is /28.**

1. **A network with a Network ID 192.168.10.0/24 is to be subdivided into 6 equal subnets. Which of the following is true?**

(Choose 3 answers)

* + **The new subnet mask must be 255.255.255.224.**
  + **Each subnet will have a maximum of 30 hosts.**
  + **The Subnet ID of subnet 2 is 192.168.10.32.**

1. **Which of the following are true in relation to Private IP addresses? (Choose 2 answers)**
   * **10.255.255.1 is a Private IP address.**
   * **Private IP addresses were created because Public IP addresses were getting scarcer.**
2. **Which of the following does a router normally use when making a decisionabout routing IP packets?**
   * **Destination IP address**
3. **When a router receives a packet, which of the following are true?**
   * **The router checks the frame for errors and only if it is good, it extracts the packet and forwards it in a new frame to the destination.**
4. **When a router routes a packet, which of the following is true?**
   * **If a router finds more than one route match in a routing table, it picks the route with the longest match.**
5. **When a router routes a packet, which of the following is true?**

(Choose 2 answers)

* + **The router uses cost metrics to choose the best route to use.**
  + **OSPF uses bandwidth as the cost metric.**

1. **Which of the following is true of Administrative Distance in a router?**
   * **When a router learns a particular route from more than 1 routing protocol, Administrative Distance is used to determine which protocol to accept the route from.**
2. **In relation to Administration Distance in routers, which of the following is true?**
   * **Administrative Distance ranks OSPF better than RIP.**
3. **In relation to Static Routing, which of the following is true?**
   * **Static routing is used to tell a router about any networks not directly connected to that router.**
4. **A default static route does which of the following?**
   * **Tells the router how to get to unknown networks that are not already in the routing table.**
5. **The following command is issued in a router R1:**
   * **R1(config)#ip route 0.0.0.0 0.0.0.0 192.168.1.2**

Which of the following is true?

(Choose 2 answers)

* + **The route is the default static route for the router or gateway of last resort.**
  + **This route will cause a recursive lookup.**

1. **The following commands are issued in a router R1:**

R1(config)#ip route 0.0.0.0 0.0.0.0 g0/0/0

R1(config)#ip route 0.0.0.0 0.0.0.0 g0/0/1 5

Which of the following is true? (Choose 2 answers)

* + **A default static route to 2 different interfaces has been created and the second route, known as a floating static route on g0/0/1 will only be used if the first route to g0/0/0 goes down.**
  + **A default static route to 2 different interfaces has been created. The first route to g0/0/0 will appear in the routing table and second route to g0/0/1 will not appear in the routing table unless g0/0/0 fails.**

1. **In relation to Static Routing, which of the following are true?**

(Choose 2 answers)

* + **You should only use next hop address when configuring static routes that use Gigabit Ethernet interfaces.**
  + **A router will use the next hop address as the target IP address when it needs the MAC address of the next hop address router when connected using Gigabit Ethernet.**

1. **Which of the following are functions of a routing protocol?**

(Choose two answers.)

* + **Advertising known routes to neighbouring routers.**
  + **Learning routes and putting those routes into the routing table for routes advertised to the router by its neighbouring routers.**

1. **In relation to Distance Vector protocols which of the following is true?**
   * **Distance Vector routing protocols involve a router telling all its neighbourrouters about its own directly connected networks and they tell their neighbours.**
2. **Which of the following is true in relation to OSPF and RIP?**
   * **RIP uses hop count as a cost metric.**
3. **In relation to RIP which are true about the command:**

R1(config-router)#network 10.0.0.0 (Choose 2 answers)

* + **Any interface with an IP address belonging to that network will be used for RIP updates.**
  + **Any subnet belonging to the 10.0.0.0/8 network will be advertised to neighbours.**

1. **R1 has a static default route defined to connect to the ISP on interface g0/0/0. Which of**

the following statements in RIP will allow RIP to propagate this route to the other routers?

* + **Default-information originate**

1. **Which of the following is true in relation to the command in RIP:**

R1(config-router)#passive-interface g0/0/2

* + **This tells the router not to forward RIP updates on this interface as it is a LAN.**

1. **In OSPF, when the following commands are issued:**

R1(config)#interface fa0/0 R1(config-if)#ip ospf 1 area 0 Which of the following are true?

* + **The subnet associated with interface fa0/0 will be advertised in OSPF.**

1. **In relation to VLANs which of the following are true?**
   * **All devices on the same VLAN are always in the same Broadcast domain.**
2. **In relation to the IEEE 802.1Q protocol, which of the following are true?**

(Choose 2 answers)

* + **It is a protocol that allows a switch to carry traffic from multiple VLANs on one single connection to another switch, inserting tags in the frames to identify each VLAN.**
  + **The Native VLAN is the only VLAN whose frames do not need a tag.**

1. **In relation to the Router-on-a-stick configuration, which of the following are true?**
   * **The router uses one physical interface to a switch and separate sub-interfaces on that interface for each VLAN required.**
2. **A router is configured as follows:**

R1(config-if)#interface fastethernet 0/0.99 R1(config-subif)#encapsulation dot1q 99 native

R1(config-subif)#ip address 172.17.99.1 255.255.255.0 Which of the following is true?

* + **This configuration assigns VLAN 99 as the native VLAN to sub-interface fa0/0.99.**

1. **Which of the following is true in relation to Inter VLAN routing?**
   * **A router can be replaced by a layer 3 switch.**
2. **In relation to STP which of the following are true?**

(Choose 2 answers)

* + **STP is used to eliminate switching/bridging loops.**
  + **The Bridge/switch with the lowest STP ID is elected the Root bridge.**

1. **In relation to the role of Root Ports in STP, which of the following is true?**

(Choose 2 answers)

* + **All switches/bridges have only 1 Root Port.**
  + **All switches/bridges have 1 Root Port except the Root bridge/switch which has none.**

1. **In relation to the role of Designated Ports in STP, which of the following is true?**

(Choose 2 answers)

* + **The Designated Port is used to forward the STP BPDU frame.**
  + **All the ports on the Root bridge/switch are Designated Ports.**

1. **In relation to wireless networks, which of the following is true?**

(Choose 2 answers)

* + **All frames in Infrastructure networks must pass through an Access Point.**
  + **The SSID uses the same format as a MAC address.**

1. **In relation to frequency bands used in WLANS, which of the following is true?**

(Choose 2 answers)

* + **The 5 GHz band is less prone to interference from overlapping channels.**
  + **There is no overlap in Channels 1, 6, 11 in the 2.4GHz band.**

1. **In relation to Wireless security, which of the following is true?**
   * **WPA2 Personal uses a pre shared key.**
2. **When using IEEE 802.1X for authentication, which of the following are true? (Choose 3 answers)**
   * **It is used in WPA2 Enterprise authentication.**
   * **The client is the Supplicant.**
   * **There is a centrally located Authentication Server.**
3. **When using IEEE 802.1X for authentication, which of the following is true?**
   * **The client can only send EAP frames until authenticated.**
4. **In relation to TCP, which of the following is true?**
   * **In TCP, there is always a connection set-up before data is sent, known as the 3-way handshake.**
5. **In relation to the use of Ports, which of the following are true?**

(Choose 3 answers)

* + **Servers mostly use well known ports as Source Ports.**
  + **Clients generally use dynamic ports as Source Ports.**
  + **A Socket consists of the device IP address, whether it is using TCP or UDP and the Port number.**

1. **In a TCP connection, the client sends 3 segments, each 1000 bytes long. The Sequence Number of the first segment is 1. Which of the following are true?**

(Choose 2 answers)

* + **The Sequence Number in the second segment sent by the client is 1001.**
  + **The Acknowledgment Number sent by the server to acknowledge that all 3 segments were received correctly is 3001.**

1. **In relation to UDP, which of the following is true?**
   * **UDP is used when transmitting real time voice or video.**
2. **In relation to DNS, which of the following is true?**
   * **DNS matches IP addresses to Fully Qualified Domain Names.**
3. **In relation to DHCP, which of the following are true? (Choose 2 answers)**
   * **DHCP uses UDP as its Transport Protocol.**
   * **DHCP is used to assign an IP address and subnet mask to a Client.**
4. **In relation to DHCP, which of the following is true?**
   * **DHCP relay is used on a router where the DHCP server is in a different LAN to the clients connected to the router.**
5. **Which of the following is the correct sequence of events when a client looks for an IP**

address from a DHCP Server?

* + **Client Discover, Server Offer, Client Request, Server Acknowledge.**

1. **In relation to NAT which of the following are true?**

(Choose 3 answers)

* + **NAT translates Private IP addresses into Public IP addresses to use in Public networks.**
  + **NAT was created to address the scarcity of Public IP addresses.**
  + **NAT increases processing time of an IP packet.**

1. **In relation to NAT overload/PAT, which of the following is true?**
   * **PAT translates many Private IP addresses to less Public IP addresses using Port numbers.**
2. **In relation to Network security, which of the following is true?**
   * **Authentication means that the person sending the data is who they say they are.**
3. **In relation to Symmetric Key encryption, which of the following is true?**
   * **Symmetric Key encryption uses the same key for encryption and decryption.**
4. **In relation to Asymmetric Key encryption, which of the following is true?**
   * **There are 2 keys, one private and the other public and when one of the keys is used to encrypt, the other is used for decryption.**
5. **In a conversation between user A and user B, where KUA is A’s Public key and KRA is A’s Private key, KUB is B’s Public key and KRB is B’s Private key, the following message M is sent from A to B:**

A -> B: EKUB[M] =>

Which of the following is true?

* + **The message is confidential/private.**

1. **In a conversation between user A and user B, where KUA is A’s Public key and KRA is A’s Private key, KUB is B’s Public key and KRB is B’s Private key, the following message M is sent from A to B:**

A -> B: EKRA[M] =>

Which of the following are true?

(Choose 2 answers)

* + **The message authenticates A.**
  + **B will use A’s public key to decrypt the message.**

1. **In relation to Hash functions, which of the following are true?**

(Choose 2 answers)

* + **Hash functions generate an almost unique fixed message digest D from a variable length message M.**
  + **Hash functions are used to verify Integrity of a message.**

1. **In relation to Digital Certificates, which of the following is true?**
   * **They are verified with a Digital Signature of the Certifying Authority.**
2. **In relation to security devices in networks, which of the following is true?**
   * **An Intrusion Prevention System can detect attacks from Viruses and Worms using a Signatures Database.**
3. **In relation to IPv6, which of the following are true?**

(Choose 2 answers)

* + **IPv6 uses Multicasts instead of Broadcasts.**
  + **IPv6 uses 128-bit addresses in Hexadecimal.**

1. **In relation to IPv6 addresses, which of the following is true?**
   * a. All IPv6 addresses will be assigned to companies as /32 networks.
   * b. All IPv6 addresses will be assigned to companies as /48 networks.
   * c. All IPv6 addresses will be assigned to companies as /64 networks.
   * **None of the above are true.**
2. **An IPv6 address is shown abbreviated as follows:**

2001:1:1::1.

Which of the following is the full version of that IPv6 address?

* + **2001:0001:0001:0000:0000:0000:0000:0001**

1. **In relation to IPv6 Unique Local Addresses, which of the following is true?**
   * **They are the equivalent to IPv4 Private IP addresses.**