1. Centralized routing

A: Mandates that traffic traverses a specific network node

B: is an obsolete solution that is never used in modern networks

C: Mandates that network nodes do not exchange routing information

D: Consists in one network node computing routes for other network nodes and providing the computed routes to them

1. In topology-based control-driven label binding

A: A LSP (label switched path) is setup as a result of discovering a route to a destination (on other words, one LSP is setup for each discovered destination)

B: Forwarding tables in MPLS routers are manually configured

C: MPLS routers must deploy BGP

D: Traffic belonging to different applications executing on the same host is transported on different LSPs

1. Indicate the false claim among the below statements about the Link State algorithm

A: The Link State algorithm converges faster than the Distance Vector algorithm

B: The RIP (Routing Information Protocol) protocol is based on the Link State algorithm

C: The Link State algorithm seldom generates loops

D: The Link State algorithm exchanges less information than the Distance Vector algorithm.

1. Using a privacy-aware autoconfiguration method (RFC-4941: privacy extensions for autoconfiguration), an IPv6 host contains an address:

A: With both prefix and interface ID that are untraceable

B: With an untraceable prefix

C: Only valid within a VPN which guarantees user privacy

D: With an untraceable interface ID

1. Two hosts A and B belong to the same physical network and have IP addresses 130.192.1.1./25 and 130.192.1.100/24, respectively

A: B communicates with A but not vice versa

B: A communicate with B only by means of a router

C: A directly communicates with B but not vice versa

D: A directly communicates with B and vice versa

1. In MPLS (unlike in IP) support for scalable traffic engineering is specifically enabled by

A: The availability of efficient label distribution protocols

B: The deployment of a unified control plane

C: The deployment of dynamic and distributed routing protocols

D: The forwarding information in the data plane (e.g., the forwarding table) not being automatically updated when the routing information (e.g., The routing table) changes in the control plane

1. The IPv6 Aggregable Global Unicast addresses are

A: Aggregable only in very small address ranges, in order to favor the precision of the evaluation of routing paths

B: Globally unique, substantially equivalent to the IPv4 public addresses

C: Usable only on devices belonging to the same local area network

D: Usable in a global IPv6 network only with proper Network Address Translation (NAT) techniques.

1. In the layer 3 MPLS-based VPN solution based on BGP packets traveling to the MPLS backbone have two labels.

A: Both labels are used by Internal (P) routers to forward packets towards a PE router

B: Internet (P) routers never change (swap) the external label

C: The external label is used by internal (P) routers to forward packets towards a PE router

D: The internal label is used by internal (P) routers to forward packets towards a PE router

1. One of the main properties of the new 5G infrastructure is

A: The comeback to the circuit switching technology in order to guarantee a proper quality of service, which is key in a new generation mobile network

B: The join use of virtualization techniques and flexible solutions for the network control, with the aim of dividing available network resources in an efficient and effective way

C: The use of virtualization techniques on mobile terminals, in order to properly support novel applications

D: The use of software emulators and simulators for the design of the mobile operators’ network infrastructures, which for this reason are usually referred to as Software-Defined networks.

1. An ARP Request that a host with IP address 130.192.10.1/24 sends to learn the MAC address of a host with IP address 130.192.10.200

A: Arrives at the destination if the two hosts are connected by means of an Ethernet switch, ignoring possible failures of links and devices involved

B: Never arrives at the destination

C: Actually, the ARP Request is not sent because the destination host is outside the IP network of the source

D: Always arrives at the destination, ignoring possible failures of links and devices involved

1. The fact that a VPN (Virtual Private Network) supports centralized Internet access means that

A: Packets sent to stations that are not part of the private network (i.e., that are on the internet) could follow a sub-optimal path on the physical network topology

B: The corporate network must utilize a single internet service provider

C: Public traffic (i.e., originated from a destined from or destined to the Internet) uses the corporate network infrastructure in a negligible way

D: It is not necessary to deploy devices, such as firewalls, for protecting the corporate network from attacks originated on the Internet

1. The MAC address of an ICMPv6 Neighbor Solicitation packet is

A: a broadcast address

B: an anycast address

C: a multicast address

D: a unicast address, the one of the hosts to reach

1. Indicate the false claim among the below statements about a SSL (Secure Socket Layer)-based VPN (Virtual Private Network)

A: There is no authentication of the IP header

B: They are weak against DOS attacks

C: Standard solutions are available

D: Tunnels over TCP or UDP connections are used

1. The term handover in cellular networks refer to

A: The movement of a mobile terminal from a cell to another without the interruption of an active communication (e.g., a call)

B: The use of a mobile terminal in the network of a different operator with respect to the one the SIM card installed in the terminal belongs to

C: The movement of a mobile terminal from a cell to another, even if in that moment there are no active communications

D: The turn on of the mobile terminal after a long period of inactivity.

1. In a cellular network operating according to the Frequency Division Multiple Access (FDMA) technology

A: Only one frequency is adopted for the entire network

B: Voice calls are not possible. The network is used only for data traffic

C: Frequencies to use are randomly selected by mobile terminals which then resend voice sample in the case of collisions with other users.

D: Available frequencies are divided among a group of neighboring cells and then reused in sufficiently far cells

1. In MPLS label binding consists in

A: Including a label in BGP advertisements

B: Associating a label to a routing path in the network

C: Associating a label to a forwarding equivalence class (FEC)

D: Sending to another MPLS node a label associated to a forwarding equivalence class (FEC) using a proper protocol

1. in the context of VPNs (Virtual Private Networks) traffic encryption is  
   A: Not utilized in any VPN solution, even though it is an essential technology in modern networks to ensure data confidentiality encryption does not have anything to do with VPN solutions

B: An essential component that is the basis of every VPN solution

C: An important component of the VPN solution but it is not strictly necessary, and it is not available, at least as non-mandatory option in every VPN solution.

D: An important component of the VPN solution but it is not strictly necessary, and it is not supported in a few VPN solutions

1. The smallest aggregation that can contain the IP networks 130.192.0.0/25 and 130.192.1.0/25 is:

A: 130.192.0.0/24

B: 130.192.1.0/24

C: 130.192.1.0/23

D: 130.192.0.0/23

1. The Count to Infinity

A: is a Link State-based algorithm to prevent the generation of loops

B: is a transient period in the Distance Vector algorithm

C: None of the other answers is correct

D: Helps to understand if a node no longer reachable.

1. The Solicited Node Multicast Address is

A: The multicast address used as source address in a Neighbor Solicitation packet

B: The multicast address that is inserted in the payload (Target Address field of ARPv6) of a Neighbor Solicitation packet

C: The multicast address used destination address in a Neighbor Solicitation packet

D: The multicast address that is inserted in the payload (Target Address field of ICMPv6) of a Neighbor Solicitation packet

1. Indicate the true claim among the below statements about a VPN (Virtual Private Network)

A: None of the other proposals

B: An end-to-end solution is always better than a site-to-site solution

C: A skewed channel is an IPSec tunnel that supports encryption only.

D: Firewalls and IDSs cannot be placed inside a network protected by a VPN Gateway

1. In a GSM cellular network, a “Regular Burst” is used

A: Only for sending call control information

B: For sending voice sample or, in case of need, some control information

C: During the connection phase to the GSM network, in order to obtain a dedicated communication channel

D: Only for sending voice samples

1. Multicast groups in IPv4

A: Are identified by the list of IP addresses of the hosts belonging to the group. These addresses are then used as destination IP addresses on multicast packets directed to these hosts

B: Are identified by means of special IP addresses that cannot be assigned to single hosts

C: are identified by the list of MAC addresses of the hosts belonging to the group. These addresses are then used as destination MAC addresses on multicast directed these hosts

D: Do not exist

1. Label distribution in MPLS (Multi-Protocol Label Switching)

A: Can be performed implicitly through the routing protocol OSPF (Open Shortest Path First)

B: Is not needed when network nodes deploy the BGP (Border Gateway Protocol) routing protocol

C: Can be performed with the RSVP (Resource ReServation Protocol)

D: Involves both network nodes and hosts

1. OSPF-TE and ISIS-TE include enhancements to tradition routing protocols OSPF and ISIS that have been standardized in the context of MPLS in order to

A: Enable the distribution of additional information (named constrained data) in support of constraint-based routing

B: Ensure faster convergence and enhance stability.

C: Allow the independence of control plane and data plane in MPLS routers, which ultimately enables traffic engineering

D: Include adequate fields in routing messages to support explicit routing

1. The IPv6 address 2001:4600::0201:06FF:FEA5:3A4C is

A: An address that can be used on a server to offer a service over the public IPv6 Internet

B: An address that can be used by a host only to perform communications with another host on the same link

C: A private address

D: An address currently not valid in IPv6

1. Multicast communications in an IPv4 network

A: Are possible only within a single LAN, even if additional protocols are used

B: Are always possible, IGMP only makes them more efficient

C: Are not possible without the deployment of additional protocols in the network

D: Are possible at global scale it is only required to enable the IGMP protocol in the network

1. The distance Vector routing algorithm

A: Has shorter convergence time when compared to the link state algorithm

B: Is deployed in specific routing scenarios

C: Has better stability properties when compared to the link state algorithm

D: Is outdated and is not any longer used

1. The basic ideal of MPLS (Multi-Protocol Label Switching) consists in

A: Inserting a label in IP packets so that network nodes can use it to determine the path the packet must follow

B: Inserting a label layer two frames so that network nodes can use it to identify the various higher-layer protocols (multi-protocol) encapsulated in the frame

C: Association a label to each packet so that the destination can identify the data flow the packet belongs to. Independently of the protocol being used (multi-protocol)

D: Associating a label to each packet so that network nodes can use it to determine how to process such packet

1. An optical switch is a device capable of switching

A: Different optical channels on a given wavelength on different input fibers to a given wavelength on a given output fiber

B: Packets arriving on a given optical channel from a given input fiber to different optical channels to different output fibers based on information in the header of each packet

C: An optical channel on a given wavelength from a given input fiber to different wavelength on different output fibers

D: An optical channel on a given wavelength from a given input fiber to a given output fiber.

1. In MPLS label binding consists in:

A: Including a label in BGP advertisements

B: Associating a label to a routing path in the network

C: Sending to another MPLS node a label associated to a forwarding equivalence class (FEC) using a proper protocol

D: Associating a label to a forwarding equivalence class (FEC)