NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

Computer Network and Internet Protocol

(Jan-Apr 2024)

Assignment- Week 8

TYPE OF QUESTION: MCQ/MSQ

Number of questions: **10** **Total mark: 10 X 1 = 10**

QUESTION 1:

When you connect your personal computer (end device / host) to the internet, how does it know/ assign its own IP address, and the Gateway IP address to use for sending packets to remote hosts, without any manual configuration?

a) Domain Name System (DNS)
b) From its own routing table.
c) Address Resolution Protocol (ARP)
d) Dynamic Host Configuration Protocol (DHCP)

Correct Answer: (d)
Explanation: Dynamic Host Configuration Protocol (DHCP) assigns IP addresses to devices that connect to the network.

QUESTION 2:

Why do we consider dividing an IP address into network address and host address?

a) To increase the total number of IP addresses possible.
b) So that routers route the packets based on the host address.
c) To avoid the overhead of storing all possible host IP addresses in each router.
d) For resolving IP addresses from domain names.

Correct Answer: (c)
Explanation: By using network address, routers can forward packets like the postal system (country, state, city,..), by looking at the relevant network address only instead of the entire host address. Thus routers do not need to store all possible host IP addresses.

QUESTION 3:

Which of the following statements are correct?

I. The Internet is a single network controlled by one organization.
II. A transit AS can also be a stub AS.
III. All AS must have the same local routing algorithm.
IV. Distance vector routing and Link state routing protocols are examples of Intradomain routing.

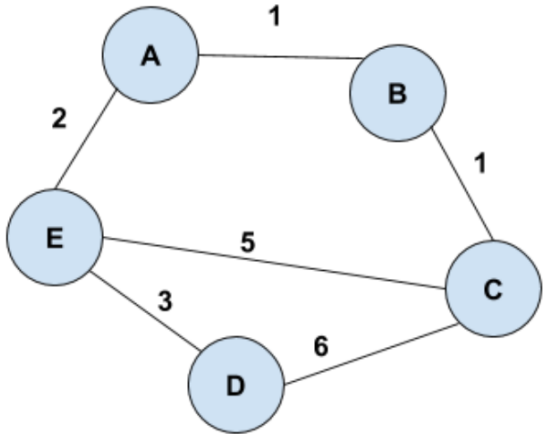
a) II and IV

b) Only II
c) Only IV
d) I and II

Correct Answer: (c)
Explanation: Distance vector routing and Link state routing protocols are examples of Intradomain routing.

QUESTION 4:

For the following network, what will be the routing table for C, if we use link state routing?



a)

To	NextHop
A	B
B	B
D	D
E	B

b)

To	NextHop
A	B
B	B
D	E
E	E

c)

To	NextHop
A	B
B	B
D	E
E	A

d)

To	NextHop
A	B

B	B
D	B
E	B

Correct Answer: (a)

Explanation: The cost of every possible route from C to other nodes is shown below.
Cost(B) = 1 When Next Hop is B
Cost(A) = 1+ Cost(A from B) = 1 + 1 = 2, when Next Hop is B
Cost(D) = 6, when Next Hop is D
Cost(E) = 5 as directly connected to C
Cost(E) = Cost(E from A) + Cost(A from B) + Cost(B) = 2 + 1 + 1 = 4 when Next Hop is B, better than the previous cost
Cost(E) = Cost(E from D) + Cost(D) = 6 + 3 = 9. Which is not better than the previous cost 4
So option (a) is correct.

QUESTION 5:

In the BGP protocol, UPDATE and NOTIFICATION messages are used for:

a) Exchanging reachability information and Confirming a BGP connection.
b) Ensuring that a BGP neighbour is still alive and Confirming a BGP connection.
c) Exchanging reachability information and to notify an error.
d) Opening a BGP connection and Closing a BGP connection.

Correct Answer: (c)

Explanation: UPDATE and NOTIFICATION messages are used for exchanging reachability information and to notify an error in the BGP protocol.

QUESTION 6:

Which is TRUE about BGP routing protocol?

a) It is an Intradomain routing protocol.
b) It is a type of Link State routing protocol.
c) BGP replaces the IGP protocol in an AS.
d) BGP relies on IGP for packet forwarding between IBGP peers.

Correct Answer: (d)

Explanation: BGP relies on IGP for packet forwarding between IBGP peers.

QUESTION 7:

BGP communication packet types are:

a) SYNC, OPEN, UPDATE, NOTIFICATION
b) OPEN, UPDATE, NOTIFICATION, KEEPALIVE
c) SYNC, FINISH, NOTIFICATION, KEEPALIVE
d) FINISH, OPEN, UPDATE, NOTIFICATION

Correct Answer: (b)

Explanation: BGP communication packet types are OPEN, UPDATE, NOTIFICATION, KEEPALIVE.

QUESTION 8:

Open Shortest Path First (OSPF) is:

a) Distance Vector routing protocol
b) Link state routing protocol
c) Path vector routing protocol
d) Hybrid routing protocol

Correct Answer: (b)
Explanation: Open Shortest Path First (OSPF) is a link state routing protocol.

QUESTION 9:

Which type of routing protocol uses the Bellman-Ford algorithm to calculate the best path for forwarding IP packets?

a) Link-state routing protocol
b) Distance-vector routing protocol
c) Hybrid routing protocol
d) Path-vector routing protocol

Correct Answer: (b)
Explanation: Distance-vector routing protocols use the Bellman-Ford algorithm to calculate the best path for forwarding IP packets. They exchange routing information between routers by periodically sending their entire routing table to their neighbors.

QUESTION 10:

Consider a network with three routers, A, B, and C. The routing table for router A has the following entries:
Destination: 192.168.1.0/24, Next Hop: B
Destination: 192.168.1.128/28, Next Hop : D
Destination: 192.168.2.0/24, Next Hop: C
If router A receives an IP packet with a destination address of 192.168.1.10, what will be the next hop for this packet?

a) D
b) B
c) C
d) None of the Above

Correct Answer: (b)
Explanation: Since the destination address of the IP packet is in the 192.168.1.0/24 subnet, router A will forward the packet to the next hop router B.
