NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

Course Name: ETHICAL HACKING

Assignment- Week 2

TYPE OF QUESTION: MCQ/MSQ/SA

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

QUESTION 1:

Why there is a need for fragmentation of IP packets?

a. Fragmentation is necessary because every network has a unique limit for the maximum size of datagrams that it can process.
b. Fragmentation is necessary for faster data transfer.
c. Fragmentation is necessary for error-recovery and flow control.
d. All of these.

Correct Answer: a

Detail Solution: IP fragmentation is necessary for data transmission, as every network has a unique limit for the size of datagrams that it can process, which is known as maximum transmission unit (MTU). In fragmentation, the packets are divided into smaller pieces and each piece is considered as separate IP packet. This is typically done by the routers in the network layer (or layer-3 switches).

Thus the correct option is (a).

QUESTION 2:

Which of the following statement(s) is/are **true**?

a. In transparent fragmentation the subsequent networks are aware that the fragmentation had occurred.
b. In transparent fragmentation, it is required to route all packet to the same exit router in a network.
c. In non-transparent fragmentation, each fragment is treated as an independent packet.
d. In non-transparent fragmentation, an exit router reassembles all fragmented packets.

Correct Answer: b, c

Detail Solution: In transparent fragmentation, all packets are routed through an exit router that assembles the fragmented packets. In this approach the subsequent network(s) have no information about fragmentation. Whereas in non-transparent fragmentation the packets can be transmitted through multiple routers as each packet is treated as independent packet and the reassembly is done by the destination host system.

Thus the true options are (b) and (c).

QUESTION 3:

An IP packet arrives at the final destination with the M flag set as 1. Which of the following statement is true about the packet?

a. Prevents the fragmentation from taking place.
b. The packet will be fragmented by the next router.
c. The packet represents a fragment of a larger packet.
d. None of these.

Correct Answer: c

Detail Solution: When the More (M) flag in a packet is 1, this indicates that the original packet has definitely been fragmented and there are more fragments following.

Thus the true option is (c).

QUESTION 4:

Which of the following statement(s) is/are **false** for IP address?

a. IP address is 32-bit quantity.
b. IP address is typically expressed as dotted decimal notation where dots are used to separate each of the four octets of the address.
c. IP address consists of three logical parts: network number, host number and port number.
d. None of these.

Correct Answer: c

Detail Solution: IP address is 32-bit quantity, it is expressed as dotted decimal notation where dots are used to separate each of the four octets of the address. IP address consist of two logical parts: network number and host number, while routing a packet to the destination network, only

the network number is looked at whereas for uniquely identification of the system inside a network host number is used which is managed by local network administrator.

Thus the correct option is (c).

QUESTION 5:

Which address classes do the IP addresses 144.16.75.12 and 10.10.85.120 belong to?

a. Class C and Class A
b. Class B and Class C
c. Class B and Class A
d. Class B and Class D

Correct Answer: c

Detail Solution: Class A addresses start with "0", class B addresses start with "10", class C addresses start with "110", and class D addresses start with "1110". For the IP address 144.16.75.12, the first byte 144 = **10**010000 in binary; for the IP address 10.10.85.120, the first byte 10 = **0**000 1010 in binary. Clearly, the first one is Class B, and the second one is Class A address.

Hence, the correct option is (c).

QUESTION 6:

Which of the following IP addresses represent broadcast address?

a. 144.15.255.255
b. 144.16.0.255
c. 202.0.255.250
d. 202.0.255.255

Correct Answer: a, d

Detail Solution: In a broadcast address, all the bits in the "host" part of the IP address will be 1. (a) and (b) are class B addresses, where the last 16 bits indicate the host. (c) and (d) are class C addresses, where the last 8 bits indicate the host.

Hence, the correct options are (a) and (d).

QUESTION 7:

The maximum number of hosts that are possible in a class C network is _____ .

Correct Answer: 254

Detail Solution: For a class C network, 8 bits are provided to specify the host. The all-0 and all-1 combinations cannot be used as host addresses. Therefore, the maximum number of hosts possible is $2^8 - 2 = 254$.

QUESTION 8:

What is a TCP half-open connection in the context of connection establishment using 3-way handshake?

a. The first transaction does not complete.
b. The second transaction does not complete.
c. The first transaction does not complete but the second transaction completes.
d. The last transaction does not complete.
e. None of these.

Correct Answer: d

Detail Solution: In the TCP protocol, connection establishment is carried out using a 3-way handshake protocol. When the third transaction in the 3-way handshake does not complete, it is referred to as a half-open connection.

The correct option is (d).

QUESTION 9:

In the TCP header field, what do SYN=1 and ACK=0 represent?

a. Connection request message.
b. Connection confirmation message.
c. Reject connection request.
d. Reset connection request.

Correct Answer: a

Detail Solution: In the TCP header, SYN=1 and ACK=0 represents connection request, whereas SYN=1 and ACK=1 represents connection confirmation. RST is used to reset/reject connection.

Thus the correct option is (a)

QUESTION 10:

What is the subnet address if the destination IP address is 144.16.75.105 and the subnet mask is 255.255.240.0?

a. 144.16.32.0
b. 144.16.75.0
c. 144.16.16.0
d. None of these

Correct Answer: d

Detail Solution: Let us express the two numbers in binary:

```
144.16.75.105  =  10010000 00010000 01001011 01101001
255.255.240.0  =  11111111 11111111 11110000 00000000
```

If we take bit-by-bit AND, we shall get the subnet address as

```
10010000 00010000 01000000 00000000 = 144.16.64.0
```

******END*******