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:

Which of the following is/are **false** for IP fragmentation?

      a. It is a process that divides packets into smaller fragments.
      b. Fragmentation is required due to intermediate networks with smaller maximum transmission unit (MTU).
      c. Each fragmented packet is considered as separate IP packet.
      d. IP fragmentation is typically done by layer-2 switches.
      e. None of these.

Correct Answer: d

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. It is typically done by the routers in the network layer (or layer-3 switches).

Thus the correct option is (d).

QUESTION 2:

Consider the following statements:

(i) In transparent fragmentation, all fragmented packets are reassembled by an exit router.

(ii) In non-transparent fragmentation, all fragmented packets reassembled by host.

      a. Only (i) is true.
      b. Only (ii) is true.
      c. Both (i) and (ii) are true.
      d. Both (i) and (ii) are false.

Correct Answer: c

Detail Solution: In transparent fragmentation, in every network that a packet passes through, 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 the reassembly is done by the destination host system.

Thus the correct option is (c).

QUESTION 3:

For reassembling the fragmented packets at the final destination, which of the following header field(s) is(are) used by IP?

  a. Fragment offset.
  b. Flags.
  c. Header checksum.
  d. HLEN.
  e. Identification.

Correct Answer: a, b, e

Detail Solution: For fragment assembly, identification (ID), fragment offset and flag fields are used.

Thus true options are (a), (b) and (e).

QUESTION 4:

An IP packet arrives at a router with the first eight bits as 01001100. How many bytes are there in the OPTIONS field _____?

Correct Answer: 28

Detail Solution: The first four bits (0100) is the IP version, and the next four bits (1100 = 12) is the header length. The header length of 12 indicates 12 x 4 = 48 bytes of header. The basic IP header is 20 bytes long. Hence, the size of the OPTIONS field will be 48 – 20 = 28 bytes.

QUESTION 5:

In an IP packet, the value of HLEN is 6, and the value of the TOTAL LENGTH field is 1000 (one thousand). The number of data bytes in the packet will be _____.

Correct Answer: 976 to 1000

Detail Solution: Since HLEN = 6, the size of the IP header will be 6 x 4 = 24 bytes. The total size of the IP packet is given as 1000 bytes. Hence, the number of data bytes = 1000 – 24 = 976 bytes.

QUESTION 6:

Which of the following is/are **true** for IP addressing?

      a. Each host connected to the Internet is defined by an IP address.
      b. IP address consist of two parts: network number and host number.
      c. When a packet is routed to the destination network, only the host number is used.
      d. Class A address can have a maximum of 16,777,214 networks.
      e. None of these.

Correct Answer: a, b

Detail Solution: Each host connected to the Internet is uniquely defined by IP address, where the IP address consists of network number and host number. When a packet is routed to the destination network, then only the network number is used. Class A address can have maximum of 127 networks and 16,777,214 hosts.

Thus the correct options are (a) and (b).

QUESTION 7:

Which of the following is/are **not** a feature of TCP?

      a. Process to process communication.
      b. Stream delivery service.
      c. Connection-oriented service.
      d. Unreliable service.
      e. Full duplex communication.
      f. None of these.

Correct Answer: d

Detail Solution: All given points except (d) are features of TCP. TCP provides reliable service.

Thus the correct option is (d).

QUESTION 8:

Which of the following statement(s) is/are **false** for flag bits in TCP header?

      a. SYN=1 and ACK=1 represents a connection request message.
      b. SYN=1 and ACK=0 represents a connection confirmation message.
      c. RST bit is used to reject connection request.
      d. PUSH bit is used to indicate end of a message
      e. None of these.

Correct Answer: a, b

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, and PUSH bit is used to indicate end of message.

Thus the false options are (a) and (b).

QUESTION 9:

What is the subnet address if the destination IP address is 144.16.34.124 and the subnet mask is 255.255.242.0?

      a. 144.16.32.0
      b. 144.16.34.0
      c. 144.16.34.255
      d. 144.16.242.0
      e. 144.16.242.255

Correct Answer: b

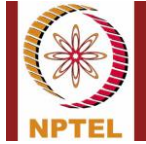**Detail Solution:** Let us express the two numbers in binary:

```
144.16.34.124 = 10010000 00010000 00100010 01111100
255.255.240.0 = 11111111 11111111 11110010 00000000
```

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

```
10010000 00010000 00100010 00000000 = 144.16.34.0
```

Thus the correct option is (b).

QUESTION 10:

An organization is allotted a block with beginning address as: 144.16.192.16/28 in CIDR notation. What will be the address range for that block?

      a. 144.16.192.0 to 144.16.192.16
      b. 144.16.192.0 to 144.16.192.255
      c. 144.16.192.16 to 144.16.192.31
      d. 144.16.192.16 to 144.16.192.32

Correct Answer: c

Detail Solution: First 28 bits in the IP address will denote network number. The range will be:

    144.16.192.16 = 10010000 00010000 11000000 00010000

                         to

    144.16.192.31 = 10010000 00010000 11000000 00011111

Thus the range given in option (c) is correct.

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