NPTEL Online Certification Courses

Indian Institute of Technology Kharagpur

# Course Name: ETHICAL HACKING

## Assignment- Week 1

### TYPE OF QUESTION: MCQ/MSQ/SA

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

---

**QUESTION 1:**

In which of the following penetration testing models, no information about the network is given to tester?

a. White box model.
b. Black box model.
c. Red box Model.
d. Gray box model.
e. None of these.

**Correct Answer: b**

**Detail Solution:** In the white box model, the tester has complete information about the network. In the black box model, the tester does not have any information about the network. Gray box model is somewhere in between, where the tester is only provided with partial information about the network. There is nothing called red box model.
Thus the correct option is (b).

---

**QUESTION 2:**

Which of the following statement(s) is/are true for a circuit switched network?

a. A communication link can be shared by more than one connection.
b. A communication link is dedicated to a connection and cannot be shared with other connections.
c. The packet transfer delay between a pair of nodes may depend on the prevailing network traffic.
d. The packet transfer delay between a pair of nodes is more or less constant during the entire period of the connection.
e. It is efficient for bursty traffic.

**Correct Answer: b, d**

**Detail Solution:** In a circuit switched network, a communication link remains dedicated to a connection; however, in a packet switched network, communication links may be shared by more than one connection. Also, in a packet switched network, packets between the same source and destination may follow different paths, and hence the packet transfer delay can vary with time; whereas in circuit switched network the link is dedicated so most of the time the delay remains constant. Circuit switched network is acceptable for voice communication but is very inefficient for high traffic like data streaming.

Thus true options are (b) and (d).

---

**QUESTION 3:**

A 1000 byte packet is sent over a 50 kilo-bits-per-second (Kbps) point-to-point link whose propagation delay is 10 msec. The packet will reach the destination after _____ msec. (Assume 1K = 1000)

**Correct Answer: 160 to 170**

**Detail Solution:** 50 x 1000 = 50,000 bits per second can be transferred through the link.

1 bit can be sent in = (1 / 50,000) sec

1000 bytes or 8,000 bits can be sent in 8,000 / 50,000 sec = 0.16 sec = 160 msec

Hence the packet will reach the destination after = 160 msec + 10 msec = 170 msec.

Thus the correct answer will be range 160-170.

---

**QUESTION 4:**

Which of the following statement(s) is/are true for virtual circuit based packet transfer approach?

a. It is a connection-oriented approach, where a route is established priori to transfer of packets.
b. In this approach, each packets follows distinct path.
c. The intermediate node can perform dynamic routing.
d. All the packets reach in order to the destination.
e. It is a true packet switched network.

**Correct Answer: a, d**

**Detail Solution:** Virtual circuit approach is a connection-oriented packet switching approach where a route is established before packet transmission starts. For a session the packets follows the same path, and then once the session is expired a new route is established. In virtual circuit, a virtual id is used which is used by intermediate node of the route such that the packet can be forwarded to the next node. This means that the Intermediate nodes can only forward the packet and cannot make dynamic routing decision. In virtual circuit all packets reach in order to the destination as packet follows the same path. It is not a true packet switched network as it uses a fixed path for transmitting data.

Thus true options are (a) and (d).

---

**QUESTION 5:**

Which of the following OSI layers is responsible for end-to-end reliable data transfer, with error recovery and flow control?

a. Session layer
b. Transport layer
c. Network layer
d. Datalink layer
e. Physical layer

**Correct Answer: b**

**Detail Solution:** The **physical layer** is responsible for actual transmission of signals over a communication medium. The **data-link layer** is responsible for transmitting data frames reliably over point-to-point links. The **network layer** is responsible for the switching or routing of packets from one node to the next on way to the final destination. The **transport layer** is a virtual host-to-host layer between the two end systems which is responsible for end-to-end reliable data transfer, with error recovery and flow control. The **session layer** manages connection sessions.

Thus the correct option is (b).

---

**QUESTION 6:**

Which of the following is/are false for TCP/IP model?

a. It allows cross-platform communications among heterogeneous networks.
b. It is a scalable client-server architecture which allows network modification without disrupting the current services.

c. It can also represent any other protocol stack other than the TCP/IP suite such as Bluetooth connection.
d. None of these.

**Correct Answer: c**

**Detail Solution:** TCP/IP is an open source scalable client-server based architecture used in computer network. It is used to bridge the gap between non-compatible (heterogeneous) networks. In TCP/IP based network a host/network can be added/removed without disturbing the current services/systems of the network. TCP/IP is not generic, and thus can only represent the protocol stacks defined in TCP/IP suite. It cannot represent any protocol that is not defined in TCP/IP such as Bluetooth connection.

Thus the false option is (c).

---

**QUESTION 7:**

Which of the following is true for the IP?

a. It uniquely identifies a network interface of a computer system.
b. It uniquely identifies a host in the network.
c. It indicates how many hardware ports are there in the computer system.
d. None of these.

**Correct Answer: b**

**Detail Solution:** IP uniquely identifies a host in the network.

Thus the true option is (b).

---

**QUESTION 8:**

How many bits are used for IP address (in IP version 4) and port number respectively?

a. 32, 8
b. 32, 16
c. 48, 8
d. 48, 16

**Correct Answer: b**

**Detail Solution:** 32 bits are used for IP address whereas 16 bits are used for port number.

Thus the correct option is (b).

---

**QUESTION 9:**

If a 2000 byte data message is sent using a TFTP, the corresponding Ethernet packet will be of size _____ bytes.

**Correct Answer: 2050**

**Detail Solution:** In TFTP protocol, along with the data, 18 bytes Ethernet header, 20 bytes of IP header, 8 bytes of UDP header and 4 bytes of TFTP header will be added.

Thus the effective size of Ethernet packet will be 2000 + 50 = 2050 bytes.

---

**QUESTION 10:**

If the IP header is 192 bits long, what will be the value (in decimal) of the "HLEN" field _____?

**Correct Answer: 6**

**Detail Solution:** The HLEN field contains the size of the IP header in multiples of 32 bits or 4 bytes. Here, size of the IP header = 192 bits = 6 x 32 bits. Hence, HLEN will contain 0110, which is the binary equivalent of the number 6.

Thus the correct answer will be 6.

---

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