



Student Name:

Student Number:

Model Answer for the mid-term exam

Q.1: Complete the following sentences with suitable answer(s). If you believe in multiple answers please identify them (if exist). [10 points]

- 1) What application layer protocols commonly used to support peer to peer communication?
A) HTML B) HTTP C) FTP D) NONE
- 2) Layers _____ of the Internet protocol stack (TCP/IP) are implemented in the end systems but not in the routers in the network core.
A) One and Two B) Two and Three C) Three and Four D) Four and Five
- 3) What is the automated service that allocates required IP address?
A) DNS B) SSH C) FQDN D) DHCP
- 4) What are the forms of application layer software?
A) Semantics B) Services C) Applications D) Requests E) Syntax
- 5) Which two layers of the OSI model have the same functions as the TCP/IP model Network Access Layer
A) Network B) Transport C) Physical D) Data Link E) Session
- 6) What is the maximum number of IP addresses that can be assigned to hosts on a local subnet that uses the 192.168.10.0/26 subnet mask?
A) 15 B) 30 C) 62 D) NONE
- 7) _____ means that a sender must not be able to deny sending a message that he sent.
A) Confidentiality B) Integrity C) Authentication D) Non-repudiation
- 8) DNS receives a _____ service from layer below.
A) Connection-oriented B) connectionless C) a or b D) NONE
- 9) Internet needs the _____ address to make datagram travel to the correct destination.
A) Port B) application C) Internet protocol D) NONE
- 10) What are three properties of peer-to-peer applications?
A) Acts as both a client and server within the same communication B) requires centralized account administration
C) Hybrid mode includes a centralized directory of files D) can be used in client-server networks
E) Requires a direct physical connection between devices F) centralized authentication is required
- 11) Which layer of the OSI model supplies services that allow user to interface with the network?
A) Physical B) session C) network D) presentation E) application F) transport
- 12) A network administrator is designing a network for a new branch office of twenty -five users. What are the advantages of using a client-server model?
A) Centralized administration B) does not require specialized software C) security is easier to enforce
D) Lower cost implementation E) provides a single point of failure
- 13) What application layer protocol is commonly used to support for file transfers between a client and a server?
A) HTML B) HTTP C) FTP D) Telnet
- 14) DNS can use the services of _____ using the well-known port 53.
A) UDP B) TCP C) Either (A) or (B) D) NONE
- 15) Which characteristic correctly refers to end devices in a network?
A) Manage data flows B) Originate data flow
C) Retime and retransmit data signals D) Determine pathways for data
- 16) Which Layer encapsulates the segment into packets?
A) Physical B) Data Link C) Network D) Transport
- 17) Substitution and _____ cipher could be categorized as a classical symmetric data encryption.
A) Authentication B) Transposition C) Integration D) NONE

- 18) Message _____ means that the data must arrive at the receiver exactly as sent.
 A) Confidentiality **B) integrity** C) authentication D) NONE
- 19) TCP is _____ protocol
 A) **Connection-oriented** B) connectionless C) both a and b D) NONE
- 20) Message _____ means that the receiver is ensured that the message is coming from the intended sender.
 A) Confidentiality B) integrity **C) authentication** D) NONE

Q.2:

[6 Points]

Write the name of OSI layer that match the following device or protocol

Hub	physical
Switch	Data link
Router	Network
Repeater	physical
FTP	application
MP4	Presentation

Q.3:

[8 Points]

Suppose that you have been asked to design a network for a company of five departments each one would have a sub-network contain 500 host. Suppose a host in the 1st department would have an IP of 10.10.0.7

Find the subnet mask, network address, broadcast address, first valid IP and last valid IP of the five sub-networks

No	Network address	Broadcast address	first valid IP	last valid IP	Mask
1 st	<u>10.10.0.0</u>	<u>10.10.1.255</u>	<u>10.10.0.1</u>	<u>10.10.1.254</u>	<u>255.255.254.0</u>
2 nd	<u>10.10.2.0</u>	<u>10.10.3.255</u>	<u>10.10.2.1</u>	<u>10.10.3.254</u>	<u>255.255.254.0</u>
3 rd	<u>10.10.4.0</u>	<u>10.10.5.255</u>	<u>10.10.4.1</u>	<u>10.10.5.254</u>	<u>255.255.254.0</u>
4 th	<u>10.10.6.0</u>	<u>10.10.7.255</u>	<u>10.10.6.1</u>	<u>10.10.7.254</u>	<u>255.255.254.0</u>
5 th	<u>10.10.8.0</u>	<u>10.10.9.255</u>	<u>10.10.8.1</u>	<u>10.10.9.254</u>	<u>255.255.254.0</u>

Q.4:

[6 Points]

A) What is the difference between security policy and security mechanism?

<u>Security Policy</u>	<u>Security Mechanism</u>
<i>It is a statement of what is, and is not allowed.</i>	<i>It is a procedure, tool or a method that enforce the policy.</i>

B) Compare between Stream cipher vs. block cipher

<u>Stream Cipher</u>	<u>Block Cipher</u>
<i>It processes messages a bit or byte at a time when en/decrypting</i>	<i>It processes messages in into blocks, each of which is then en/decrypted.</i>

C) Compare between Unconditional vs. Computational Security

<u>Unconditional Security</u>	<u>Computational Security</u>
<i>Cipher text generated by the scheme does not contain enough information to determine uniquely the corresponding Plaintext. That irrespective with how much cipher text is available.</i>	<i>1. Cost of breaking the cipher exceeds the value of the encrypted information, 2. Time required to break the cipher exceeds the useful lifetime of the information</i>

D) What is the difference between passive and active security threats?

<u>Passive security threats</u> <u>(Passive attacks)</u>	<u>Active security threats</u> <u>(Active attacks)</u>
<i>It is done with eavesdropping on, or monitoring, transmissions. Examples: Electronic mail, file transfers, and client/server exchanges are examples of transmissions that can be monitored.</i>	<i>In addition to passive attack it includes the modification of transmitted data and attempts to gain unauthorized access to computer systems.</i>