

الاسم الرقم

أجب عن جميع الأسئلة
*** ورقة الامتحان تشتمل على عدد 6 صفحات ***

Question (1) [20 Marks]

Read each statement carefully and then tick (✓) for the true statement and (×) for the false statement.

#	Statement	Answer
1	TCP has no message boundaries.	
2	POP3: Transfers messages from recipient's mail server to his local PC.	
3	VC number can be changed on each link.	
4	In Selective Repeat: sender has timer for oldest unacked packet.	
5	Cache acts as both client and server.	
6	FTP: Transfer files to or from a remote host.	
7	Host uses mac address to direct segment to appropriate socket.	
8	In client-server architecture clients may be intermittently connected.	
9	Network layer protocols only implemented in routers.	
10	Application can open multiple parallel connections between two hosts.	
11	UDP is connection-oriented.	
12	Network layer: logical communication between hosts.	
13	Applications with P2P architectures have client processes & server processes.	
14	Network-assisted congestion control: approach taken by TCP.	
15	TCP Protocol: before exchanging data, sender/receiver "handshake".	
16	HTTP: allow host to dynamically obtain its IP address from network server.	
17	If K TCP sessions share same bottleneck link of bandwidth R, each should have average rate of R/K.	
18	IP addresses associated with each host.	
19	Pipelined: TCP congestion and flow control set window size.	
20	Packets can get lost within a computer network.	

Question (2) [20 Marks]

Part1 [10 Marks]: Match A with B

A		B	
1	DNS poisoning	1	Datagram network
2	Error detection	2	Cumulative ACK
3	Connectionless	3	Routers
4	Virtual circuits	4	Redirect attack
5	Parallel connections	5	Non-persistent HTTP
6	Network core	6	Bi-directional
7	Reference model	7	Connection oriented
8	Full duplex	8	Checksum
9	Handshaking	9	ATM
10	GBN	10	OSI

A	1	2	3	4	5	6	7	8	9	10
B										

Part2 [10 Marks]: Fill the missing words for the below statements with suitable word

segments – flow control - encapsulates – communication links – port number – socket – the server – congestion control – parallel – connectionless

- 1- The transport-layer segment thus the application-layer message.
- 2- In a client-server architecture, there is an always-on host, called
- 3- Transport layer breaks app messages into..... , passes to network layer.
- 4- A process sends messages into, and receives messages from, the network through a software interface called a.....
- 5- Identifier includes both IP address and associated with process on host.
- 6- UDP does not include a mechanism.
- 7- Browsers often open TCP connections to fetch referenced objects
- 8- End systems are connected together by a network of and packet switches.
- 9- Sender will not overwhelm receiver (.....).
- 10- means no handshaking between UDP sender, receiver.

Question (3) [20 Marks, 2 for each] Give short answer

1- What are the method types of HTTP/1.1?

.....
.....

2- What are the services that are not available in the Internet transport-layer?

.....
.....

3- What is the main service of the DNS?

.....
.....

4- Electronic Mail has three major components, what are they?

.....
.....
.....

5- What are possible structure of applications?

.....
.....

6- What we mean by reliable service?

.....
.....

7- What is the difference between flow control and congestion control?

.....
.....
.....

8- Why we use NAT service? (mention two reasons)

.....
.....

9- What is the function of RETR filename (FTP command)?

.....
.....

10- Simple Mail Transfer Protocol (SMTP), what does it use for?

.....
.....

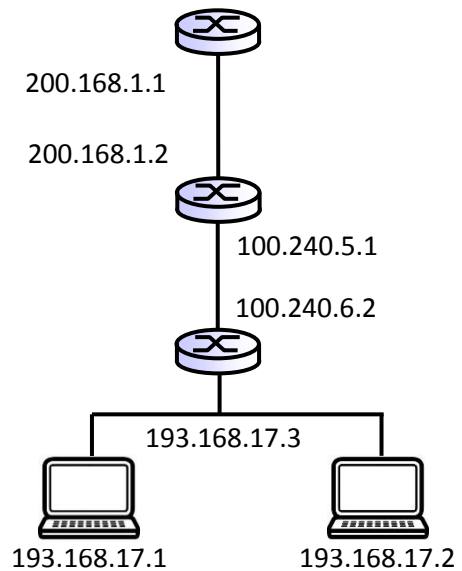
Question (4) [20 Marks] Fill the fields of the following figures

1- Complete the missing field names of the following TCP segment header? [7 Marks]

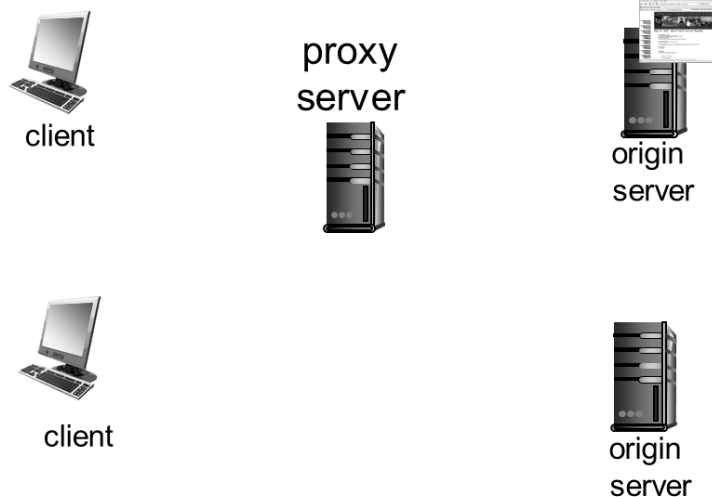
Sequence number			
		ACK	
Internet Checksum			

2- How many subnets, and what is the network ID of each subnet? [7 Marks]

.....



3- Show the steps by drawing arrows that explain how Web caches works? [6 Marks]



Question (5) [20 Marks]

1- Show and explain how Non-persistent HTTP works [4 Marks]:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

2- The router has received 4000 byte datagram, but the output interface MTU is 1500 bytes. Explain how this datagram will be fragmented to be transferred through the router's output interface [8 Marks].

	length	ID	fragflag	offset	
	=4000	=x	=0	=0	

3- Show and explain how TCP 3-way handshake works? [4 Marks]

4- You have the following 16-bit integers, find the internet checksum? [4 Marks]

```
1 1 1 0 0 1 1 0 0 1 1 0 0 1 1 0  
1 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1  
-----
```

Good Luck