

الاسم ..... الرقم .....

**أجب عن جميع الأسئلة**  
**\* ورقة الإمتحان 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	Protocols control sending, receiving of messages.	
2	In P2P architecture server must has permanent IP address.	
3	All communication activity in Internet governed by protocols.	
4	End systems connect to Internet via access ISPs.	
5	Server process: process that initiates communication.	
6	Persistent HTTP : downloading multiple objects required multiple connections.	
7	Transport: process-process data transfer.	
8	Network-core devices do not run user applications .	
9	Process: program running within a host.	
10	Processes in different hosts communicate using inter-process communication.	
11	Within same host, two processes communicate by exchanging messages.	
12	HTTP is “stateless”: server maintains information about past client requests.	
13	Applications with P2P architectures have client processes & server processes.	
14	HTTP messages exchanged between browser and Web server.	
15	Client process: process that waits to be contacted.	
16	To receive messages, process must have IP address.	
17	POST method: input is uploaded to server in entity body.	
18	Cookies permit sites to learn a lot about you.	
19	RETR filename: list of all the files in the current remote directory.	
20	Transport layer: logical communication between hosts.	

## Question (2) [ 20 Marks ]

Part1 [ 10 Marks ]: Match A with B

A		B	
1	UDP	1	Client-Server
2	P2P	2	Individual ACK
3	HTTP	3	Distance vector
4	DNS	4	Connection less
5	Virtual-Circuit network	5	Connection
6	Decentralized	6	Best-effort
7	URL	7	Pushing e-mail
8	Unreliable	8	Self-scalability
9	SMTP	9	Distributed Database
10	Selective Repeat	10	GET Method

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

link state – dynamically – messages – identifier - global - TTL – Socket– local – rwnd – process

- 1- Process sends/receives messages to/from its .....
- 2- To receive messages, process must have .....
- 3- OSPF uses ..... algorithm.
- 4- ..... is the time for a small packet to travel from client to server and back.
- 5- A ..... is a program running within a host.
- 6- Processes in different hosts communicate by exchanging .....
- 7- When host makes DNS query, query is sent to its ..... DNS server.
- 8- Sender limits amount of unacked (“in-flight”) data to receiver’s ..... value.
- 9- DHCP: allow host to ..... obtain its IP address from network server when it joins network.
- 10- ..... all routers have complete topology, link cost info.

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

1- What we mean by HTTP is “stateless”?

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

2- What are possible structure of applications?

.....  
.....

3- What cookies can be used for?

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

4- What are the DNS services?

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

5- TCP socket identified by 4-tuple, what are they?

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

6- Retransmissions can be triggered by two things, what are they?

.....  
.....

7- What are the manifestations of congestion?

.....  
.....

8- What are the components of Virtual Circuit (VC)?

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

9- What is a subnet?

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

10- We can classify routing algorithm into two types, what are they?

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

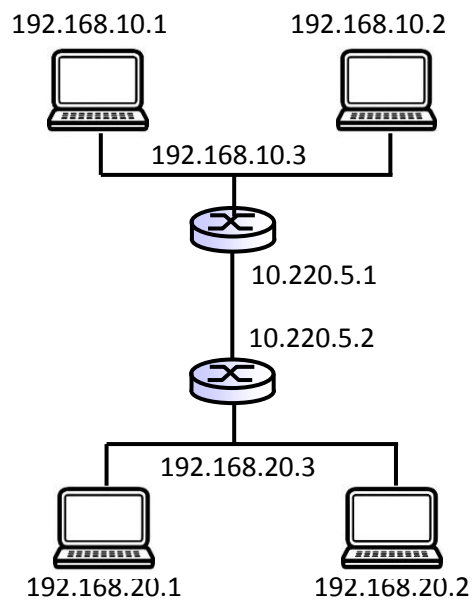
**Question (4) [ 20 Marks ]**

1- Complete the missing field names of the following IP header? [ 6 Marks ]

		Type of services	
32-bit Destination IP address			

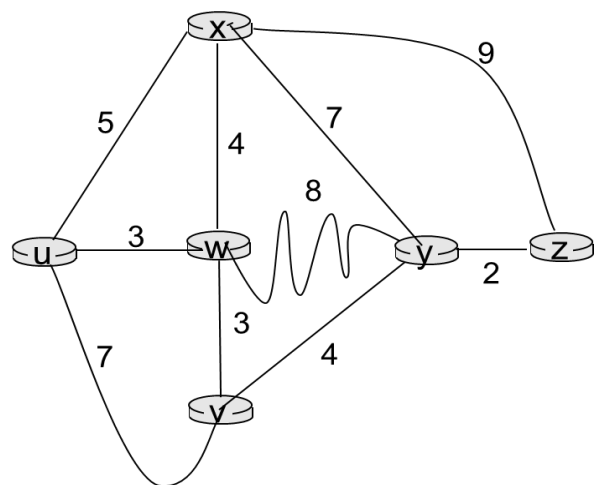
2- How many subnets, and what is the network ID of each subnet? [ 4 Marks ]

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



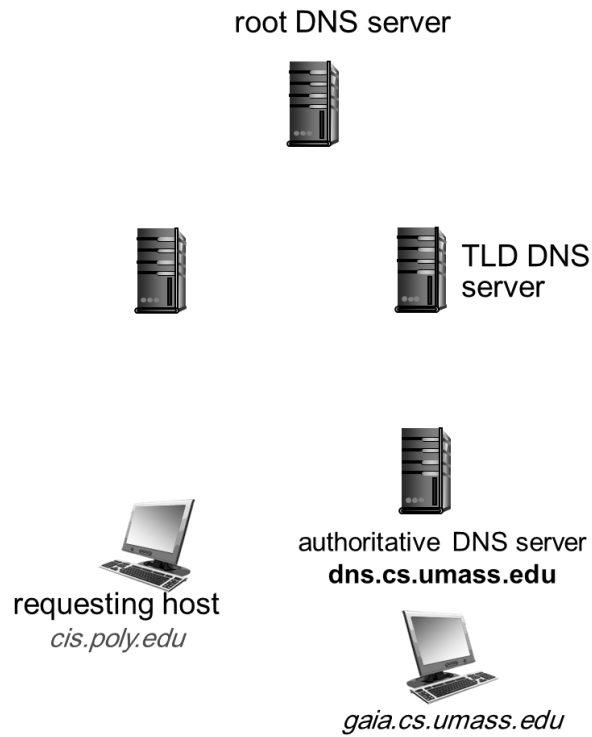
3- Using Dijkstra's algorithm, find the shortest path to each router from router (U)? [ 10 Marks ]

Step	N'	D(v) p(v)	D(w) p(w)	D(x) p(x)	D(y) p(y)	D(z) p(z)
0	u	7,u	3,u	5,u	∞	∞



**Question (5) [ 20 Marks ]**

1- Host at cis.poly.edu wants IP address for gaia.cs.umass.edu, show the steps by drawing arrows that explain how DNS name resolution works using *recursive query*? [ 4 Marks ]



2- Using the following diagram, show and explain how DHCP works [ 8 Marks ]:

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

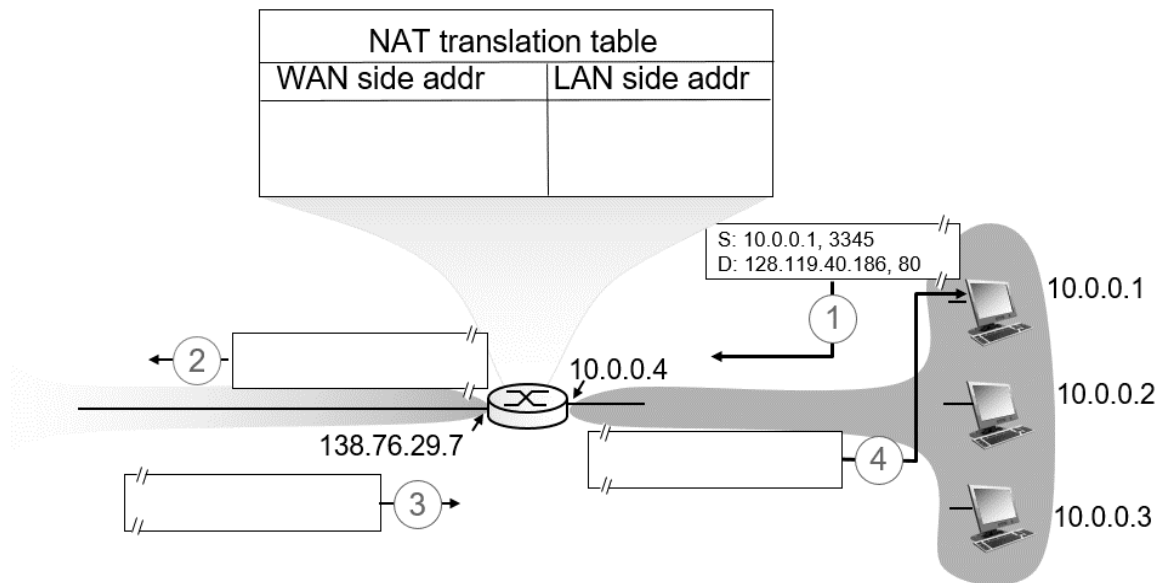
.....

.....

.....

.....

3- Complete the following diagram by explaining the steps [ 4 Marks ].



4- Convert the following IEEE 802 MAC addresses to IPv6 modified EUI-64 identifiers? [ 4 Marks ]

0	8	16	24	32	40	48
<b>39</b>	<b>A7</b>	<b>94</b>	<b>07</b>	<b>CB</b>	<b>D0</b>	
00111001	10100111	10010100	00000111	11001011	11010000	

**Good Luck**