

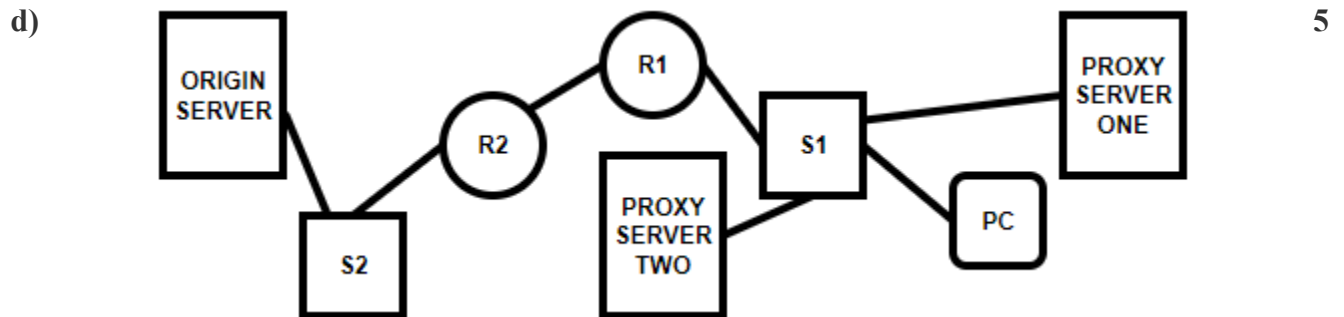
CSE421 / EEE465 : Computer Networks

Answer all the following 3 questions. (Pages: 2)

Figures in the right margin indicate marks.

<b>Name:</b>	<b>ID:</b>	<b>Section:</b>
--------------	------------	-----------------

- Q 1. a) Recall** which layer is responsible for hop-to-hop delivery. **State** how it is different from host-to-host delivery. 5
- CO1**
- b) You wish to watch **Iron Man 4** at a movie streaming website, [www.cinema.com](http://www.cinema.com). **Explain** how the website will ensure that you can stream from a CDN site near you using DNS. 5
- c) **Discuss** why there is a difference in the increase of minimum time to distribute a file as the number of users increases in the Client server and P2P architecture. 5



**Figure 01: Network Topology**

Given the access, Internet, and LAN delays of the topology (Figure 01) are 44ms, 3.05s, and 50ms, respectively. Also, given that 40% of the requests made by PC go to the Origin server while 20% goes to PROXY SERVER ONE. **Calculate** the total delay for the PC.

- Q 2. a) You** visit [www.daraz.com](http://www.daraz.com) using Google Chrome browser at 9:30 AM. Later, at 6:00 PM, you visit the website again. According to the concept of cookies, you should have been able to view your previous searches when you visit the same website. But in this scenario, you did not see anything related to the last time you visited the website. **Identify** the reason behind this. 5
- CO2**
- b) **Explain** which protocol is better, IMAP or POP3, when using your mobile phone for emails? 5
- c) Saif writes [www.ripcgpa.com](http://www.ripcgpa.com) on his web browser URL. To access the website, Saif's PC sends a DNS request to its local DNS server. The local DNS server had no information in its cache. The local DNS server used **recursive DNS lookup**, with an RTT of **26 ms** each, to retrieve the IP address for **Saif's PC**. 3
- I. **Determine** the RTT required for Saif's PC to fetch the IP address. 3

After fetching the IP address, **Saif's PC** sends the request to the website server (which takes **39ms** to be sent) to open a **non-persistent** HTTP connection with the server and request **30**

**objects**, including the base HTML page. It takes the server **4ms** to retrieve each object from the database and prepare it to be sent. Each object takes **215ms** to be downloaded by the client.

- II. **Calculate** the total RTT required to fetch all the objects from the point of requesting the website.
- III. **Calculate** the total time **PC A** takes to load the webpage.

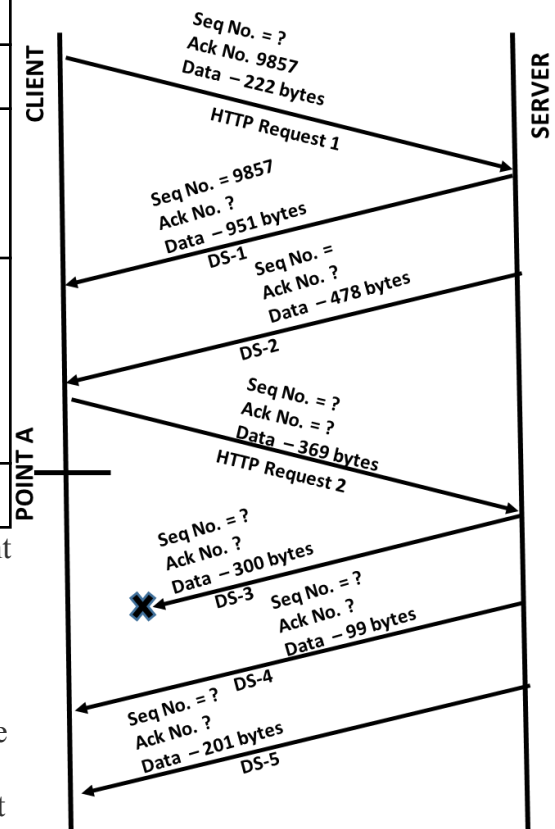
**Q 3. a)** A client sends a packet with its FIN flag ON to the server. The server replies by keeping its ACK flag ON only. **Name** the process and state when it usually occurs. 4

**CO3**

**b)** UDP header has source and destination port numbers. **State** the type of source and destination port numbers generated when you open 3 tabs in your web browser. **Explain** if all tabs can have the same source port number or not. 2  
+  
3

**c)** In a **selective-repeat** TCP connection, the client & server have the following values and flow: 4  
+  
3  
+  
4

	Client	Server
ISN	1546	9856
Segment Sizes DS = Data Segment	<b>HTTP Request 1:</b> (Also the third segment of the 3 way handshake): 222 bytes	<b>DS 1:</b> 951 bytes <b>DS 2:</b> 478 bytes
	<b>HTTP Request 2:</b> 369 bytes	<b>DS 3:</b> 300 bytes <b>DS 4:</b> 99 bytes <b>DS 5:</b> 201 bytes
RWND	1684	6599



- I. **Calculate** the sequence and acknowledgment number of the server's Data Segment 3 sent to the client.
- II. The client sends all the received segments to the upper layers at point A. **Determine** the rwnd of the client after the client receives the 5th Data Segment.
- III. **What** are the sequence and acknowledgment number of the acknowledgment segment that the client will send (not shown) after it receives the 5th Data segment?

=====THE END=====