B

BRAC UNIVERSITY
Department of Computer Science and Engineering

Examination : Semester Midterm | Semester: Spring 2024
Duration: **1 Hour 10 Minutes** | Full Marks: **45**

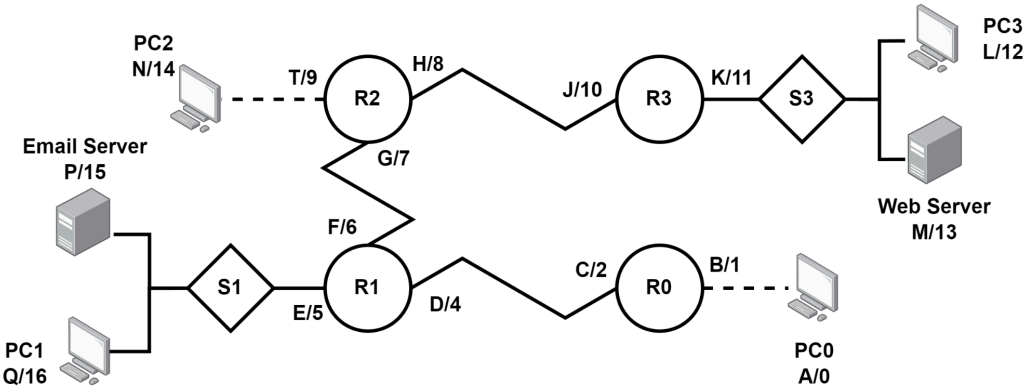
CSE421 / EEE465 : Computer Networks

Answer **ALL** the following questions. (**Pages: 2**)

Figures in the right margin indicate marks.

Name:	**ID:**	**Section:**

Q1. [CO1] **a)** **Identify** the source and destination IP, Port and MAC addresses when the packet is leaving Router R0 and going towards PC2. PC0 initially sent the packet. Consider the alphabets as MAC addresses and numbers as IP addresses (given beside the figures). You need to figure out the port numbers yourself. **3 + 2**



[CO1] **b)** Identify the destination port type in (a).

Q2. [CO2] Mr. Mahalabia calls you to troubleshoot a website that is not loading properly. **Mention** the field/value of the HTTP response message seeing which you can deduce the problem. What HTTP method can be used for troubleshooting communication between the client and web server? **5**

Q3. [CO2] **Deduce** how an iterative DNS lookup can potentially be faster than a recursive DNS lookup. **5**

Q4. [CO2] **State** where and when SMTP and HTTPS are used together. **5**

Q5. [CO2] A TCP connection setup uses an RTO timer of 70ms for each transmitted data segment. Suppose, the sender sends a data segment. However, the data segment never reaches the receiver. **Explain** the steps taken by the sender and receiver to address the lost segment. **5**

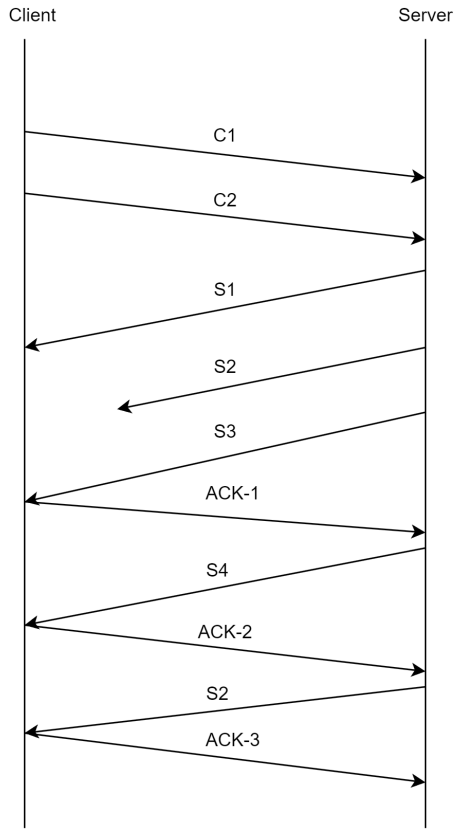
Q6. [CO3] **Calculate** the network address, broadcast address, and prefix mask for a host with the IP address 175.172.122.75 and a subnet mask of 255.255.128.0. **6**

Q7. The total RTT required to fetch all the objects from the website abcd.net is 480 ms. Given, it takes 15 ms for a small packet to be sent from the client to the server. Each object size is 10MB **3 + 3**

[CO3] a) If a non-persistent HTTP connection was used, calculate the number of objects that were requested.

[CO3] b) If the web server speed is 80Mbps, find the file transmission time.

Q8. At a given moment of data transferring, the client sent the C2 segment with sequence number 5044 and acknowledgment number 2024. The data sent through C1, C2, S1, S2, S3, S4 are 192, 250, 350, 127, 412 and 387 Bytes respectively. **4 + 2 + 2**



[CO3] a) **Calculate** the sequence and acknowledgment number of the S4 segment.

[CO3] b) **Calculate** the acknowledgment number of the ACK-2 segment

[CO3] c) **Calculate** the acknowledgment number of the ACK-3 segment if the Go-Back-N sliding window protocol is used.

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