Homework 1 Sp25

- Due Feb 25 at 11:59pm
- Points 5
- Questions 5
- Available Feb 18 at 12am - Feb 25 at 11:59pm
- Time Limit None
- Allowed Attempts 5

Take the Quiz Again

Attempt History

	Attempt	Time	Score
KEPT	Attempt 4	78 minutes	4.67 out of 5
LATEST	Attempt 4	78 minutes	4.67 out of 5
	Attempt 3	9 minutes	3.75 out of 5
	Attempt 2	12 minutes	3.75 out of 5
	Attempt 1	8,531 minutes	4 out of 5

⊘ Correct answers are hidden.

Score for this attempt: 4.67 out of 5
Submitted Feb 24 at 8:41pm
This attempt took 78 minutes.

Question 1
1 / 1 pts

Suppose users share a 356 Mbps link. Also suppose each user requires 360 kbps when transmitting but each user transmits only 0.33 of the time.

Answer the following questions and for the final answer enter the answer like : Question 1a answer + Question 1b answer. For example, if for first part the answer is 10 and for second part is 256, please enter 266

a- When circuit switching is used, how many users can be supported? each 1 Mbps is 1024 kbps

b- Assume we want to use packet switching instead of circuit switching, suppose there are 10 users. Find the probability that at any given time,
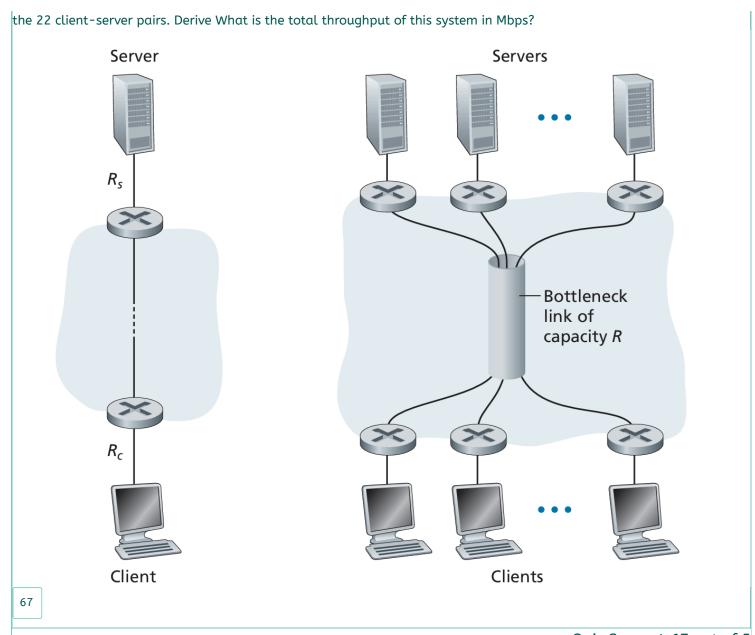exactly 6 users are transmitting simultaneously.

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1,012.68
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PartialQuestion 2
0.67 / 1 pts

Which of the following statements are true regarding the comparison of packet switching and circuit switching? (Choose all that apply)

☐ In packet switching, network resources can be underutilized during idle periods, but the system adapts to fluctuating data loads.

☑ Packet switching leads to more efficient resource utilization by dynamically allocating bandwidth based on the demand of users

☐ Circuit switching generally leads to more efficient use of resources because it reserves bandwidth for the entire duration of a call or session.

☐ Circuit switching guarantees that resources are not shared between users, making it a more flexible solution for varying data loads.

☑ Packet switching can handle sporadic or bursty traffic more efficiently by sharing network paths among multiple users.

Question 3
1 / 1 pts

Consider a client and a server connected through one router. Assume the router can start transmitting an incoming packet after receiving its first 97 bytes instead of the whole packet. Suppose that the link rates are 667 byte/s and that the client
transmits one packet with a size of 193 bytes to the server. What is the end-to-end
delay in seconds with 7 routers between the server and client? Assume the propagation, processing, and queuing delays are negligible.

| 1.31 |

Question 4
1 / 1 pts

Which of the following protocols are application layer protocols?

☐ UDP

☑ HTTP

☐ ICMP

☐ TCP

☑ FTP

Question 5
1 / 1 pts

Suppose that there are 22 client-server pairs.

Denote Rs=34, Rc=76, and R=67 for the rates of the server links, client links, and network link. Assume
all other links have abundant capacity and that there is no other traffic in the network besides the traffic generated by

the 22 client–server pairs. Derive What is the total throughput of this system in Mbps?

Server

R_s

R_c

Client

Servers

Bottleneck
link of
capacity R

Clients

67