National University of Computer and Emerging Sciences, Lahore Campus

	Course Name:	Computer Networks	Course Code:	CS 3001
	Program:	BS (SE)	Semester:	Spring 2025
	Duration:	15 minutes	Total Marks:	15
	Paper Date:	20-February-2025	Section	6A
	Exam Type:	Quiz 2 - Chapter 2	Page(s):	2

Student Name **Roll No.** **Section:**

Q1. Encircle the correct option: **[6 marks] [CLO 2]**

1. The protocol commonly responsible for sending emails from a client to a server is:
   A. IMAP
   B. SMTP
   C. POP3
   D. HTTP
2. What is the primary purpose of cookies in HTTP?
   A. To reduce DNS queries
   B. To store client-side session data
   C. To enable encryption
   D. To optimize file transfer speeds
3. Which statement about persistent HTTP is correct?
   A. Persistent HTTP creates a new TCP connection for each request.
   B. Persistent HTTP requires only one RTT to download a webpage with multiple objects.
   C. Persistent HTTP reuses the same TCP connection for multiple requests.
   D. Persistent HTTP is slower than non-persistent HTTP.
4. What does the 304 Not Modified HTTP status code indicate?
   A. The requested resource could not be found.
   B. The requested resource was not modified since the last request.
   C. The server encountered an internal error.
   D. The requested resource was successfully retrieved.

True/False:

i. HTTP is a stateless protocol, meaning it does not retain any information about client requests once the server responds. [T / F]

ii. A web page containing text and three images will require one HTTP request from the client and one HTTP response from the server. [T / F]

Question 2: **[Marks 9] [CLO 2]**

Suppose you are running a webserver on your home machine that connects to the network service provider through a DSL link with 100 Kbps (1K bits = 10^3 bits) connection speed. You come to the University and try to access a web page on the webserver running on your home machine. The campus LAN in the University runs at 100 Mbps with an access link of 8 Mbps (1M bits = 10^6 bits). Further assume that the RTT from your University campus to your home is 150 ms. The base html file size you request is 10 KB (10 kilo bytes). This base file also includes 3 referenced files (3 small images.) The first image that appears on the page is 20 KB (20 kilo bytes, the second which appears somewhere in the middle of the page is 30 KB (30 kilo bytes) and the third image, towards the end of the page, is 15 KB (15 kilo bytes.) Requests for these images are sent by your browser in that order, without using any Parallel TCP connections. (Neglect the time spent in processing of html files, i.e., processing and queuing delays.)

(a) What is the total number of HTTP requests generated from the browser on campus computer?

(b) How long would it take your browser from sending the first HTTP request to receiving the base html file?

(c) Assume http/1.0 (non-persistent). How long would it take your browser from sending the request to displaying the complete web page?