

**National University of Computer and Emerging Sciences, Lahore
Campus**

	Course Name:	Computer Networks	Course Code:	CS 3001
	Program:	BS (Computer Science)	Semester:	Fall 2025
	Duration:	15 minutes	Total Marks:	15
	Paper Date:	18-September-2025	Section	5 A , C
	Exam Type:	Quiz 2 - Chapter 2	Page(s):	2

Student Name

Roll No.

Section:

Q1. Encircle the correct option: **[5 marks] [CLO 2]**

1. When retrieving emails from a recipient's mail server, which protocol is commonly used?
 - a) SMTP
 - b) DNS
 - c) IMAP
 - d) FTP
2. Which of the following is present in both, an HTTP request line & HTTP response status line?
 - a) HTTP Version Number
 - b) URL
 - c) Method
 - d) None of the above
3. Which DNS record type is used to map an alias (alternate name) to a canonical domain name?
 - a) A
 - b) CNAME
 - c) MX
 - d) PTR

True/False:

1. Socket number is the combination of only port numbers. [T / F]
2. Cookie information is stored only on the server-side in a computer network.. [T / F]

Q2:

[10 Marks] [CLO 2]

Fill in the blanks for each layer of the 5-layer Internet model. For every layer, specify each value (**0.5 marks for each**):

	Name of the Layer	Protocol (Any One Example)	Name of the Data Packet	Description from below (A to E)
Layer 7				
Layer 4				
Layer 3				
Layer 2				
Layer 1				

Descriptions:

- A. Provides a definition of mechanical and electrical standards for communication systems
- B. Concerned with routing packets across a communication network
- C. Provides end-to-end logical communication between application processes
- D. Format and transfer files between communication paradigm and the user's software
- E. Frames of data are transferred across a single link

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Q1. Encircle the correct option:

[5 marks] [CLO 2]

1. Which HTTP header is commonly used in Conditional GET requests to check if a resource has been modified since a certain date?
 - a) Cache-Control
 - b) Last-Modified
 - c) If-Modified-Since
 - d) Expires
2. What is the primary purpose of an MX record in DNS?
 - a) used to map an alias to a canonical domain name
 - b) specifies which DNS server is authoritative for this domain
 - c) used to map (point) a domain name to an IP - address
 - d) mail server aliasing
3. In the context of email communication, which protocol is commonly used for sending emails between servers?
 - a) SMTP
 - b) DNS
 - c) IMAP
 - d) HTTP

True/False:

1. DNS uses TCP as a transport layer protocol. [T / F]
2. Persistent Pipelining HTTP connections require a new connection to be established for each resource request. [T / F]

Q2:

[3 + 3 + 4 Marks] [CLO 2]

Alice is shopping online via the internet with a connection of 2 Mbps. The base web page of size 50 Kbytes contains 10 images of 25 Kbytes each. Assume that the one way propagation delay is 10 ms.

1. How long does it take for the entire page (including images) to be completely displayed on Alice's screen, assuming **non-persistent HTTP using a single connection** at a time? Show your calculation in detail.
2. What would be the total time for the complete page including base and images to appear on Alice's screen if she used **persistent HTTP without pipelining** instead of non-persistent HTTP? Show your calculation in detail.
3. Repeat part (2) but use **Persistent HTTP with Pipelining**.