

Course Name: Computer Networks and Internet Protocol

Assignment 2 - Week 2 (Jan 2025)

TYPE OF QUESTION: MCQ/MSQ

Number of questions: 10

Total mark: 10 X 1 = 10

QUESTION 1

What is the difference between a 'domain' and 'zone' in DNS?

- a) Zone is a subset of a domain, and a domain can contain multiple zones.
- b) Domain is a subset of a zone, and a zone can contain multiple domains.
- c) Domain is a logical hierarchy, whereas a zone is a physical DNS server.
- d) DNS zones must be physically separated from each other.

Correct Answer: (a)

Detailed solution: A zone refers to a specific portion of this domain that is managed by a particular administrative entity or DNS server. DNS zones aren't necessarily physically separated from each other.

QUESTION 2

What makes FTP more secure than TFTP (Trivial File Transfer Protocol)?

- a) TFTP lacks features like user authentication and secure data transfer mechanisms.
- b) TFTP allows simultaneous connections without encryption.
- c) TFTP uses TCP, which is inherently less secure than UDP.
- d) TFTP is designed for unreliable networks, making it inherently less secure.

Correct Answer: (a)

Detailed solution: Compared to FTP, which uses TCP and has authentication mechanisms, TFTP is less dependable and safe since it lacks crucial security features like user authentication and runs on UDP.

QUESTION 3

In the HTTP architecture, which of the following best describes a Uniform Resource Locator (URL)?

- a) A secure protocol for encrypting HTTP communication.
- b) A client-side scripting language for web development.
- c) A unique identifier for resources, including the protocol, hostname, and path
- d) A header that allows caching of web pages for better performance.

Correct Answer: (c)

Detailed solution: A URL uniquely identifies resources on the web, specifying the protocol (e.g., HTTP or HTTPS), hostname (e.g., example.com), port (if applicable), and the path to the resource."

QUESTION 4

Which of the following statements about HTTP proxy servers is NOT true?

- a) They can cache responses from web servers to improve performance.
- b) They can filter requests based on predefined rules.
- c) They only work with secure connections (HTTPS).
- d) They act as intermediaries between clients and web servers.

Correct Answer: (c)

Detailed solution: HTTP proxy servers are not limited to secure connections; they can process both HTTP and HTTPS queries. Because they have the ability to filter requests and cache responses, option C is erroneous.

QUESTION 5

Which of the following is correct for statements **P**, **Q** and **R**?

P: HTTP uses TCP port 80 for communication.

Q: TELNET transmits data in an encrypted format.

R: DNS can operate on both TCP and UDP.

- a) Both **P** and **R** is False, Only **Q** is True
- b) Both **P** and **R** is True, **Q** is False
- c) Only **Q** is True
- d) Only **R** is False

Correct Answer: (b)

Detailed Solution:

P: True. HTTP uses TCP port 80 for communication.

Q: False. TELNET transmits data in plaintext, making it unencrypted and insecure.

R: True. DNS typically runs on UDP for queries but switches to TCP for zone transfers or large responses.

QUESTION 6

What is the correct syntax to be written in the command line to initiate a Telnet connection to the web server of `www.iitkgp.ac.in`?

- a) `telnet//www.iitkgp.ac.in`
- b) `telnet:www.iitkgp.ac.in`
- c) `telnet://www.iitkgp.ac.in`
- d) `telnet www.iitkgp.ac.in`

Correct Answer: (d)

Detailed Solution: The command starts with Telnet, followed by the hostname or IP address.

QUESTION 7

Which of the following protocols allow non-ASCII data to be sent over email?

- a) IMAP4
- b) TELNET
- c) MIME
- d) POP3

Correct Answer: (c)

Detailed Solution: MIME transforms data into a format that SMTP can transmit, such as Base64 encoding for binary files, allowing non-ASCII data to be sent over email.

QUESTION 8

Which of the following is true about the mail transfer protocol?

S1: Can send image files with the help of IMAP4
S2: Can send image files with the help of POP3
S3: IMAP4 is more secure than POP3

- a) Only S1
- b) Only S2
- c) S2 and S3 only
- d) S3 Only

Correct Answer: (d)

Detailed Solution:

S1: **Incorrect.** SMTP cannot send image files directly; it requires MIME (not IMAP4) for sending non-ASCII data like images.

S2: **Incorrect.** POP3 is used for retrieving emails, not for sending them. SMTP sends emails, but image files are sent via MIME.

S3: **Correct.** IMAP4 is generally more secure than POP3 because it supports features like encrypted communication and better mailbox management.

QUESTION 9

A user is accessing a webpage hosted on a remote server. The webpage contains multiple elements, such as text content, several images, and a JavaScript file. The user's browser starts by initiating a connection to the server and sending requests to fetch the necessary resources. Assume the following steps:

- The browser must first resolve the web server's domain name to an IP address.
- After the server IP is obtained, the browser opens a TCP connection to request the webpage and its embedded resources.
- The packets leaving the user's machine, in some order, are as follows:

- (i) HTTP GET request for the main HTML page
- (ii) DNS query to resolve the web server's domain name
- (iii) TCP SYN to establish a connection with the server
- (iv) HTTP GET request for a JavaScript file
- (v) HTTP GET request for an image file

Which of the following is the **correct chronological order** in which the packets leave the user's computer (from first to last)?

- a) (ii), (iii), (i), (v), (iv)
- b) (iii), (ii), (i), (v), (iv)
- c) (ii), (iv), (i), (iii), (v)
- d) (ii), (i), (iii), (v), (iv)

Correct Answer: (a)

Detailed Solution:

1. DNS Query: The browser must resolve the web server's domain name into an IP address. This is the first step, so (ii) comes first.
2. TCP Connection Setup: After the IP address is obtained, the browser must establish a TCP connection with the server. This involves the TCP handshake, so (iii) is the second step.
3. HTTP GET Request for Main Page: After the connection is established, the browser sends an HTTP GET request for the main HTML page, which is (i).
4. HTTP GET Requests for Embedded Resources: After receiving the main page, the browser requests the embedded resources (image and JavaScript files). These requests are typically sent after receiving the HTML page, so (v) (image) and (iv) (JavaScript) can be executed in any order.

Thus, the correct chronological order is:

(ii), (iii), (i), (v), (iv)

QUESTION 10

Consider the following statements:

S1: A user requests a web page that consists of some text and one image. For this page the client will send one request message and receive 4 response messages.

S2: It is not possible to send two different web pages (for example, www.nptel.ac.in/student.html and www.nptel.ac.in/course.html) over the same persistent connection.

Which one of the above statements are true?

- a) Only S1 is true
- b) Only S2 is false
- c) Both S1 and S2 are true
- d) Both S1 and S2 are false

Correct Answer: (d)

Detailed Solution: S1: It will send 4 message, and receive 4 response messages

S2: If the connection does not timeout and we do not close it, persistent HTTP keeps the connection open. so that more web pages can be sent over persistent HTTP connections.
