Ans. to the ques. no - 01

Source IP : 1

Destination IP : 11

Source Port : Dynamic

Destination Port: SMTP (25)

R1 → R3;

Source MAC : G

Destination MAC : H

Ans. to the ques. no-02

For uploading a new assignment, the post method should be used because it is meant to add new information on files to the server. When a student uploads their assignment for the first time, the portal creates a new entry for it using Post. To update a previously submitted assignment, the PUT method should be used. This method replaces the old version of the assignment with the new one. The put method is idempotent, meaning if the same request is sent multiple times, the final result will still be one updated version of the file. Finally, to ~~delll~~ delete a mistakenly uploaded assignment the delete Method should be used since it removes the file from the server completely.

Ans. to the ques. no-03

To make sure the website www.university.edu works with its domain name, the IT team should use an A record and a CNAME record. The A record maps the domain name to the cloud server's IP Address so users can reach the side

by name. The CNAME record maps www.university.edu to university.edu, allowing both versions of the Address to open the same website easily. This setup ensures users can access the site with or without typing "www".

Ans. to the ques. no-04

The website ranked lower in search results most likely because it was not using a secure HTTPS connection. Search engines like Google prefer websites that use HTTPS since it keeps user data safe. The security improvement made was adding an SSL/TLS certificate, which change the website link from http to https. This made the website more secure by encrypting data between users and the server. As a result, search engines improved its ranking because secure websites are considered more trustworthy.

Ans. to the ques. no-05

When Dipu watches two IPTV channels in two browsers tabs, this device uses the source port and destination port fields to separate (demultiplex), the data for each channel. These port numbers help the device know which data belongs to which browser tab. For the channel where the device received segments in the order 4, 2, 5, 1, 3 the transport layer will re-arrange them using their sequence numbers before sending them to the application layer. Therefore, the correct order in which the segments will be sent to the application layer is 1, 2, 3, 4, 5 ensuring the video plays smoothly without errors.

Ans. to the ques no-06

The webpages stored in the proxy server has a TTL of 5 days starting from March 16th, 2025, which means it is valid until March 21st, 2025. Since the request was made on March 18th, 2025, the cached copy is still fresh. Therefore, the proxy server will send the

stored copy of the webpage to the user instead of fetching it again from the original website. This action helps save bandwidth because no new data is downloaded from the internet. and it improves efficiency by delivering the page faster to the user from the local cache.

Ans. to the ques. no - 07

(i)

Each new connection takes 2 RTTs

Also there are 15 objects.

So, The total number of round-trips is = 15 × 2
= 30 RTTs

Here, total Delay 1200ms

So, Time for a single RTT = $\frac{1200}{30}$ = 40 ms.

(Ans)

(ii)

Total file sizes,

10 objects × 3 MB = 30 MB

5 objects × 7 MB = 35 MB

So, total size = 30 + 35 = 65 MB

= 65 × 8 = 520 Mb (Megabits)

Ans. to the ques. no - 08

i. Sequence Number : 10522 [9877 + 645 = 10522]

Acknowledgment Number: 5433 [As first segment was lost]

ii. Receiving window Size : 7313 [8000 (total buffer) - 687 (re-transm...)] = 7313 bytes

iii. S1 starts at seq = 5433

S2 starts at seq = 5433 + 687 = 6120

S3 starts at seq = 6120 + 586 = 6706

So, the new segment would start at seq = 6706 + 65...

= 7358